



Zambia Water Stewardship Masterclass

Event summary and evaluation report

Fringilla Lodge, Chisamba, Zambia. 22nd – 24th January 2018.

Presented by:



With support from:



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Water Witness International is a charity registered in the UK which carries out research and advocacy and takes action so that water resources are managed equitably and sustainably.

Contents

Executive summary	3
1. Opening and launch of the Zambia National Water Stewardship Awards	4
2. Zambia Water Stewardship Masterclass	5
3. AWS training participant evaluation	8
Annex 1: Zambia Water Stewardship Masterclass agenda.....	14
Annex 2: Zambia Water Stewardship Masterclass participant list	16
Annex 3: Zambia Water Stewardship Masterclass – Water stewardship plans for Fairy Bottling	18

Executive summary

Water stewardship provides a framework through which government, business and civil society partners can work together to address the growing risks we all face in relation to water, and to improve water security at community, municipal, basin, national and international scales. Building on the pioneering stewardship work done in Africa over the past decade, the Zambia Water Stewardship Masterclass brought together practitioners from the region to learn about and share best practice in water stewardship.

Hosted in January 2018 by Water Witness International and its partners: Action for Water, the Alliance for Water Stewardship, the International Water Stewardship Programme (IWaSP), and Fairy Bottling – the Masterclass delivered the first Alliance for Water Stewardship (AWS) training to take place in Zambia. The AWS Standard is the ISEAL compliant, global framework for implementing water stewardship, helping water users to understand and mitigate water risks facing sites, supply chains, local communities and basins of operations.

The Masterclass was supported by the Scottish Government, the UK's Department for International Development (DFID), The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), the German Federal Ministry for Economic Cooperation and Development (BMZ) and Fairy Bottling. The event brought together 29 participants (10F, 19M) from five countries. Participants included representatives from businesses, government institutions, consultancies, civil society organisations, conformity assessment bodies, and academia.

With an emphasis on action, the Masterclass saw the Director General of Zambia's Water Resources Management Authority (WARMA), Lemmy Namayanga, launch the Zambia National Water Stewardship Awards. The Awards have been established to promote, incentivise and recognise good corporate water stewardship amongst water using companies in Zambia. The Awards are hosted by the Zambian Chamber of Commerce and Industry (ZACCI) and will be awarded on an annual basis starting in 2018 to leading companies that demonstrate sustainable water use in line with international best practice. Judging criteria for the awards will be based on the criteria of the AWS Standard, and a panel of judges will be appointed from government, industry and civil society. The Awards are a project within the Lusaka Water Security Initiative (LuWSI), managed by a project task team led by Action for Water.

The training combined expert led sessions and group work with hands-on application of the AWS Standard using the real-life case study of Fairy Bottling, which is implementing the standard at its site in Chilanga, Zambia. The hands-on nature of the Masterclass was a major contributing factor to the quality of the training and depth of learning generated. Participants rated the event highly, as indicated by evaluation results and feedback:

- 83% of participants rated the training as very good (69%) or excellent (14%).
- 97% of participants indicated that they were confident that they could use the information and skills gained via the training.
- 97% of participants indicated that they would recommend AWS training to colleagues and clients.
- 93% of participants indicated that they were interested in working with the AWS to advance water stewardship in the region.

1. Opening and launch of the Zambia National Water Stewardship Awards

The Zambia Water Stewardship Masterclass opened with a high-level session, during which Nick Hepworth of Water Witness International set out the strategic case for water stewardship within the broader context of water security in Africa. Caroline Banda drew on the experience of Fairy Bottling to outline the business benefits of water stewardship and the AWS Standard, and Monica Chundama of Action for Water made a compelling case for the importance of civil society engagement in the realm of water stewardship. Speaking on behalf of IWaSP, Robin Farrington gave an insightful overview of water stewardship initiatives in the region to draw out lessons and common ingredients for success.

Lemmy Namayanga of Zambia's Water Resources Management Authority (WARMA) spoke about the importance of water stewardship from a government perspective - emphasising the importance of cooperation amongst all stakeholders in the water sector, including business, and the promising potential of stewardship to drive compliance with environmental laws and regulations in Zambia. Finally, he launched the Zambia National Water Stewardship Awards. The Awards are hosted by the Zambian Chamber of Commerce and Industry (ZACCI) and will be awarded on an annual basis starting in 2018 to leading companies that demonstrate sustainable water use in line with international best practice. Judging criteria for the awards will be based on the criteria of the AWS Standard, and a panel of judges will be appointed from government, industry and civil society. The Awards are a project within the Lusaka Water Security Initiative (LuWSI), managed by a project task team led by Action for Water.



Nick Hepworth on speaker's panel



Robin Farrington delivering presentation



Lemmy Namayanga launching stewardship awards

2. Zambia Water Stewardship Masterclass

From 22nd – 24th January 2018, 29 participants (10F, 19M) from five countries (Zambia, Malawi, Nigeria, South Africa, Switzerland) took part in the Alliance for Water Stewardship training. The Masterclass consisted of Advanced and Specialist AWS training and the participants included representatives from leading businesses, government institutions, consultancies, conformity assessment bodies, civil society organisations, and academia.

The AWS Advanced training was a two-day course for water management and sustainability professionals, for people implementing water stewardship in their operations and people providing consulting, auditing and training services. The program introduced participants to water stewardship and the AWS Standard and helped them to understand how it can support water management goals, business sustainability and risk management. The program took an in depth look at the steps involved in implementing the AWS Standard by working through a real-life case study of Fairy Bottling. The training built on knowledge generated during the first applications of the AWS Standard in Africa, and combined hands-on, practical engagement with group work and expert led workshop sessions.

The AWS Specialist training program was a one-day course for people seeking accreditation as AWS auditors, consultants and trainers. The training reviewed the material from the Advanced program from an auditor’s perspective and examined the requirements of the AWS verification processes. The learning objectives for the Masterclass were as follows:

Table 1: Zambia Water Stewardship Masterclass learning objectives

Day	Learning objectives
Day 1 (8:30 – 10:30): Opening and launch of Zambia National Water Stewardship Awards (Monday 22 nd January)	<ul style="list-style-type: none"> Enhanced understanding of water risks, stewardship opportunities and relevant regional initiatives; Enhanced understanding of how business engagement and stewardship contributes to public policy goals, compliance and regulatory implementation; Overview of water stewardship and the AWS Standard, how they contribute to shared objectives on water management, and opportunities for involvement; Introduction and overview of the Zambia National Water Stewardship Awards and opportunities for involvement.
Days 1 & 2: Advanced AWS Training Program (Monday 22 nd and Tuesday 23 rd January)	<ul style="list-style-type: none"> Understanding of the core requirements of each of the six implementation steps of the AWS Standard; Achieve a deeper knowledge of the Standard’s criteria and indicators and how they are applied at a site and catchment level; Build confidence in working with the Standard through experience with the application of criteria and indicators and groups exercises to raise and resolve questions and ambiguities; Deepen understanding about the relationship between water stewardship and other water initiatives, particularly integrated water resources management, that are used at a site and catchment level
Day 3: AWS Special Training	<ul style="list-style-type: none"> Equip service providers with a deeper knowledge of the application of

Program

(Wednesday 24th January)

the water stewardship system to water using sites

- Provide potential specialist service providers with an understanding of the AWS verification system and its requirements
- Provide potential specialist service providers in developing a business case to market their services to business and organisations likely to engage with water stewardship

The underlying logic of the training was: **understand, apply, evaluate**. Participants developed an understanding of key concepts and processes through expert led sessions. Mark Dent of the Alliance for Water Stewardship facilitated sessions covering the terminology, steps, criteria and indicators involved in the AWS Standard, as well as the AWS accreditation requirements and verification programs, 3rd party auditing and certification, and claims. Nick Hepworth of Water Witness International facilitated complementary sessions on the application of the AWS Standard in the broader context of water resources management.

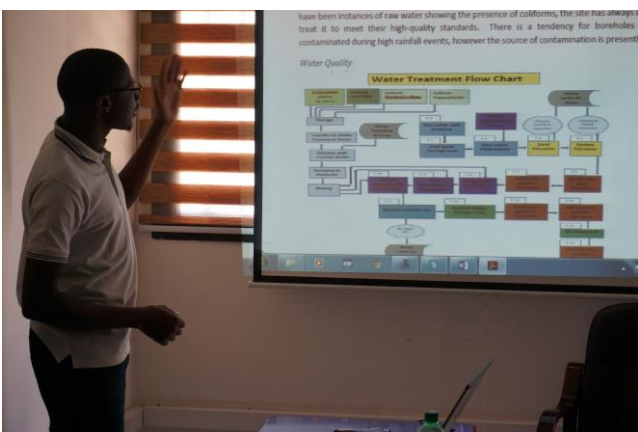
Participants also gained hands-on experience in applying their learning to the real-life case study of Fairy Bottling (FB). FB are a leading bottling company in Zambia and are implementing the AWS Standard at their site near Lusaka as a proactive response to the water risks faced at their site and in the catchment. In addition to being provided with unprecedented access to FB data and insight into the process of AWS Standard implementation, participants also took part in a field visit to the FB site. This live case study provided the basis for group work throughout the duration of the training, including water risks and opportunities and analysis, application of the six steps of the Standard, the development of water stewardship plans, and 3rd party auditing role plays.



Field visit to Fairy Bottling



Group work session



Presentation by Fairy Bottling



Peer review panel for water stewardship plans

To consolidate learning and stimulate discussion, participants provided feedback on and evaluated the work of their peers throughout the training. The water stewardship plans developed by the participants' teams were subjected to a peer review panel, and participants engaged in a 3rd party auditing role play to test their findings from the field visits as well as their understanding of the AWS Standard. The water stewardship plans created by the participants are provided in Annex 3.



Peer review panel

Towards the end of the training, participants were asked to reflect on the training, and to analyse the challenges of working with and promoting the AWS Standard, and give recommendations for how these challenges may be addressed. The session provided crucial insights into the priorities for the AWS development in the region. The feedback generated during the session is provide below:

Table 2: Challenges and recommendations for working with the AWS Standard

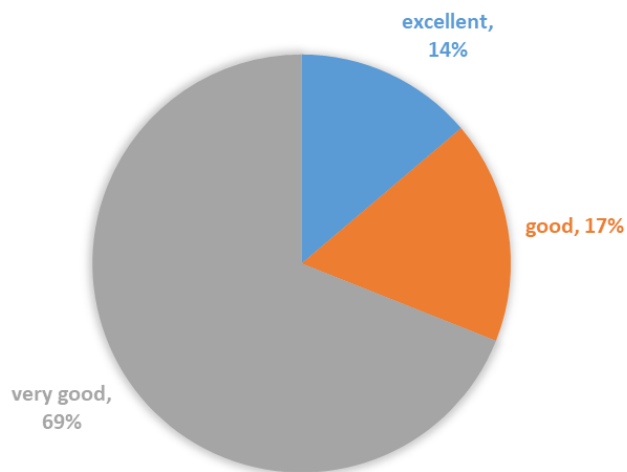
Challenges	Recommendations
<p>Government</p> <ul style="list-style-type: none"> • Duplication of existing systems and institutional structures. • There is no budget line within government institutions for water stewardship. • Lack of awareness about water stewardship amongst government institutions. • Potential negative public perception of the government promoting one standard over others. 	<ul style="list-style-type: none"> • Possibility of ZABS adopting AWS as a national standard so that it can be recognised country-wide. • AWS cab be implemented through a donor cooperating partner (GIZ). • Bring together key stakeholders to participate in AWS.
<p>Business</p> <ul style="list-style-type: none"> • Balance between profit and implementation of the AWS standard. • Limited availability of resources for implementation of the standard. • Difficult to secure management commitment. 	<ul style="list-style-type: none"> • Extend shared value initiatives with communities. • Continuous lobbying of government and other key stakeholders. • Education/training. • Create incentivise for AWS

	<ul style="list-style-type: none"> • Lack of clear integrated policies / fragmented legislature. • Conflicts / stakeholder priorities / lack of capacity. 	implementation.
Civil society	<ul style="list-style-type: none"> • Limited financing opportunities / resources. • Lack of access to information on AWS. 	<ul style="list-style-type: none"> • Advocacy. • Training. • Community engagement.
Consultants	<ul style="list-style-type: none"> • Insufficient data available at catchment level – unrealistic for companies to collect all that data. • Few firms moving to certification. • Limited awareness about the standard. • Lack of funding to implement – no immediate return on investment. 	<ul style="list-style-type: none"> • Marketing: piggy back on conferences such as water institute of Southern Africa. • Use pilot sites as showcase locations. • Regional AWS people join local chamber of commerce or business society. • Flexibility for different setting (i.e.: smallholders). • Speak to development finance institutes & corporate standards to promote AWS.
Conformity assessment bodies	<ul style="list-style-type: none"> • Limited capacity amongst CABs to work with the AWS standard. • Limited knowledge on the complete process of accreditation and certification. • Limited awareness of the AWS Standard and its benefits amongst potential customers. • Inadequate awareness of potential stakeholders on the existence of the AWS standard. 	<ul style="list-style-type: none"> • AWS should engage CABs in continuous awareness and capacity building. • AWS should regularly organise conferences, programmes and workshops to sensitize relevant stakeholders about the AWS Standard and its benefits.
Academia	<ul style="list-style-type: none"> • Limited economic benefits for institutions. • Promotion – limited information available on the standard. 	<ul style="list-style-type: none"> • AWS can link up with relevant departments and institutions to carry out training of trainers.

3. AWS training participant evaluation

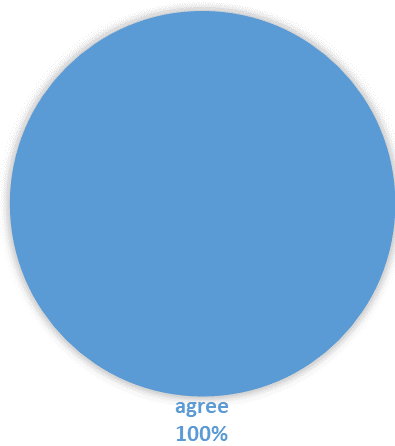
At the end of the training, 29 participants (10F, 19M) filled out an evaluation questionnaire, designed to gather critical feedback on the training, and inform development priorities for the Alliance for Water Stewardship and future training events. The feedback generated from the evaluation is displayed below:

1. How would you rate the training overall?

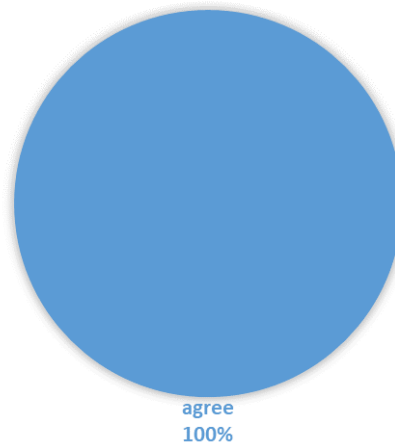


2. How much do you agree with the following statements?

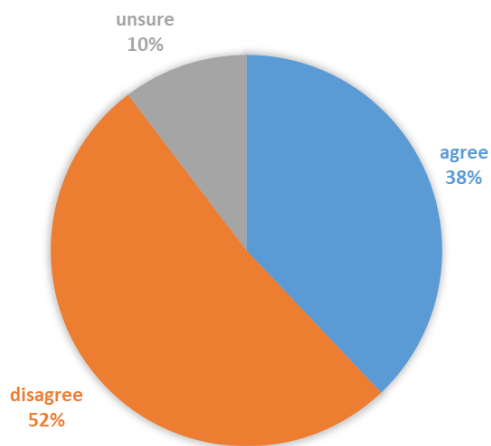
a. Training aims clearly stated



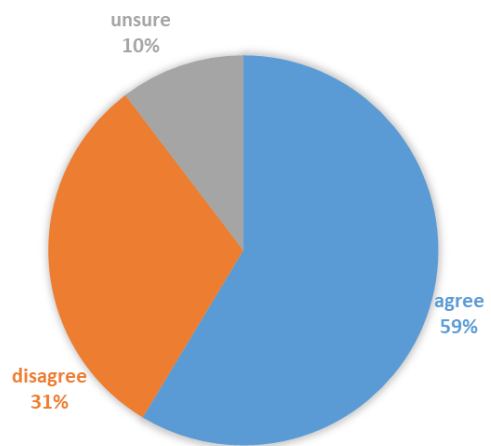
b. Presenters were easy to understand



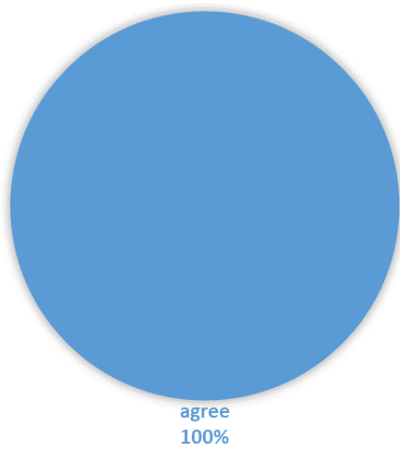
c. Time was managed effectively



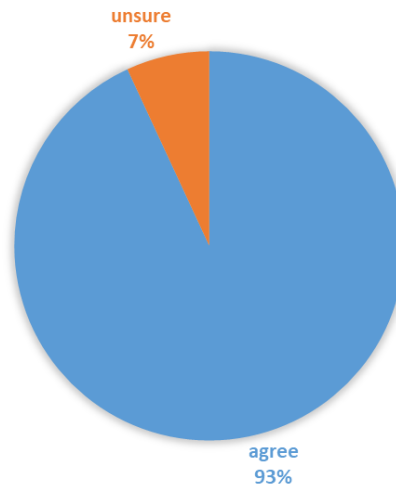
d. The pace of the training was appropriate



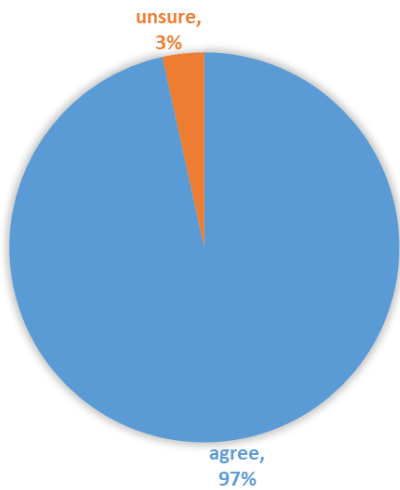
e. Facilitators encouraged participation



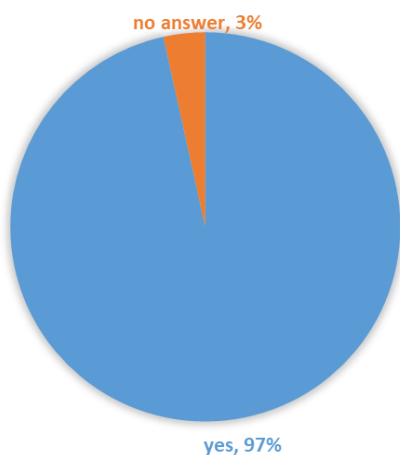
f. Facilitators kept the attention of all participants



g. I am confident I can use the information and skills gained in the training



3. Would you recommend this AWS training for colleagues or clients? Why?



Feedback highlights

“Yes. It is a holistic approach to managing water risk, not only for a site but also at a catchment level. It applies an integrated approach that is very comprehensive”.

“Yes, it is very beneficial in understanding what institutions can do to promote good water management practices”.

“Yes, this is very relevant in managing water risks for business and the nation”.

4. Objectives

a. What were your personal objectives for the training?

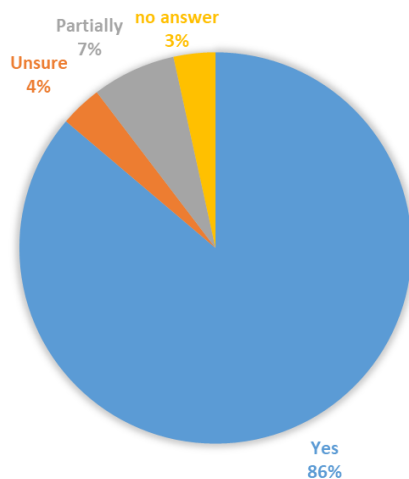
Feedback highlights

“To increase knowledge on how to effectively implement and interpret the standard, to further develop my skills in AWS standard implementation, and to gain more knowledge and connect with other professionals interested in AWS”.

“To familiarise myself with the AWS steps and how to implement AWS in my organisation, to understand concepts in the standard, and gain confidence to propel AWS in my organisation”.

“To be equipped with a sound understanding and ability to apply the standard”.

b. Were your personal objectives met?



5. Knowledge and applied learning

a. What new knowledge and skills have you gained through your involvement in the training?

Feedback highlights

“How to communicate the importance of water stewardship to potential clients”.

“Skills on how to develop a water stewardship strategy and plan as well as how to audit the performance against the AWS Standard”.

“There is a high likelihood that I will drive the process of implementing the standard in my organisation”.

“Understanding the focus and intent of the standard as well as the process of gaining certification”.

b. How will you apply the knowledge and skills gained in your work?

Feedback highlights

“I will an effort to talk more about the standard and create awareness to our clients on the need to adopt and implement the standard”.

“Enforce and support other water security initiatives around the country such as the Chambeshi water security initiative”.

“I will team up with others to share with them the opportunity that AWS brings to the consulting market”.

c. What benefits will this bring for water stewardship?

Feedback highlights

“By implementing the standard in my work, it will add value in managing the water resource sustainably”.

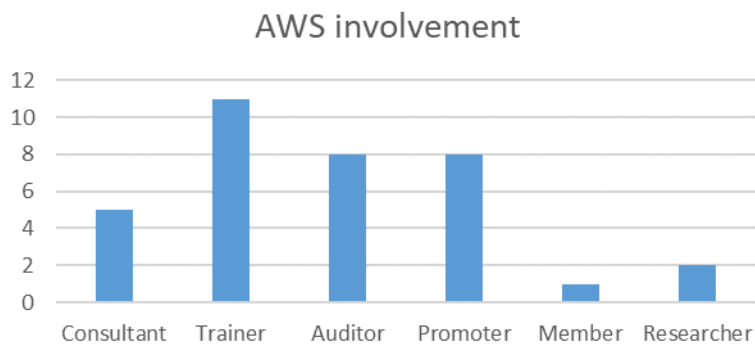
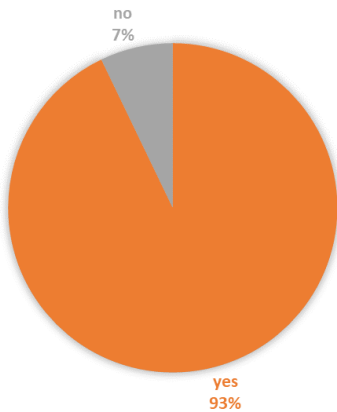
“Scaling up of water stewardship initiatives to get more stakeholders involved in such work”.

“Tackling water risks related to business operations”.

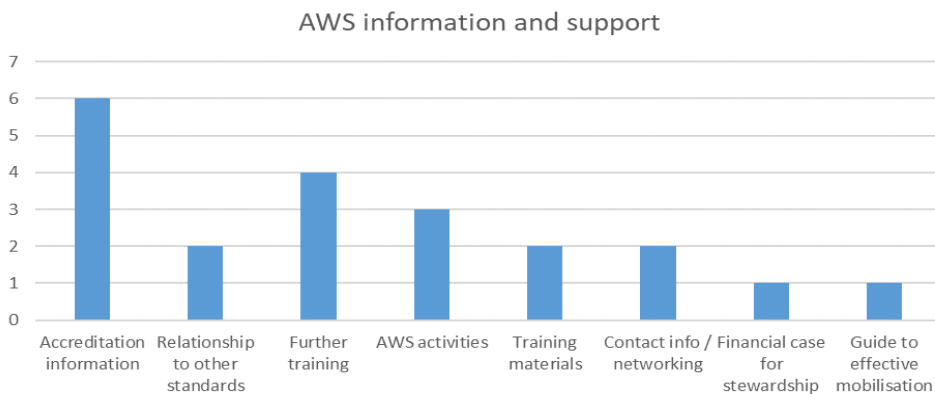
“It will promote water stewardship in Nigeria and create acceptability of the standard”.

6. Alliance for Water Stewardship

a. Are you interested in working with the Alliance for Water Stewardship? If so, how? (examples: joining as a member, acting as a consultant, applying the Standard in your company)



b. What additional information or support do you require to work with the Alliance for Water Stewardship?



7. Improving the impact of our work

a. What did you see as the strengths of the training?

Feedback highlights

“The resourcefulness of the facilitators – they are knowledgeable about the standard and friendly. The site visit is superb”.

“It promoted a participatory approach that participants could provide input to the training content. It brought together people from various fields which allowed them to gain knowledge on how water issues are perceived by others”.

“The training gave a lot of links to information to enable further study at your own pace”.

b. What did you see as the weakness of the training?

Feedback highlights

“Duration of the training is very short (i.e.: number of days allocated to the training)”.

“Need more time to cover all the elements in detail”.

“Limited time to understand the details of each step in more detail and associated nuances”.

c. What are your recommendations for improving the impact of our training in the future?

Feedback highlights

“Allocate more time for participants to digest materials and answer effectively”.

“More days should be allocated for the training – like 5 or 6 days”.

“Continue doing real life site visits to bring theory to life. For the participants – develop a toned-down training for shop floor workers which can be used to promote stewardship on a site level”.

“Training could be coupled with an introductory course on IWRM”.

8. Additional comments

Feedback highlights

“Thank you so much for having me in this training. I have gained knowledge which will help me in my everyday job and responsibilities”.

“More field trips should be encouraged in subsequent training. Site visit is best practice”.

“The light, interactive method of delivery was easy to absorb and very engaging”.

Annex 1: Zambia Water Stewardship Masterclass agenda

	Day 1 – Monday 22 nd	Day 2 – Tuesday 23 rd	Day 3 – Wednesday 24 th
	Foundation and Advanced course		Specialist course
AM	<p>Welcome and registration (8:30)</p> <p>Opening remarks and official welcome (9:00), presentations to include:</p> <ul style="list-style-type: none"> • The strategic case for stewardship in Africa: Dr. Nick Hepworth, Water Witness International • The business benefits of water stewardship: Caroline Banda, Fairy Bottling • Civil society’s role in water stewardship: Monica Chundama, Action for Water • Water stewardship in practice: Lessons and successes from implementing partnerships • Importance of stewardship from a government perspective and launch of the Zambia National Water Stewardship Awards: Lemmy Namayanga, Water Resources Management Authority. 	<p>8. Field trip (8:00): Groups will conduct visits to the FB site. During the visit they will gather the necessary information to:</p> <p>a) Conduct a gap analysis against standard requirements</p> <p>b) Seek to better understand water risks and opportunities and potential responses.</p>	<p>11. Reflections on Advanced course (8:30)</p> <p>12. Interim Accreditation requirements (9:00): Expert led session on:</p> <ul style="list-style-type: none"> • Expression of Interest • Consultant, Trainer or CAB? • Accreditation <p>13. AWS Verification and Self-verification programs (9:30) – Expert led session</p> <p>14. Multi-site and group certification (10:00) – Expert led session.</p>
	Break 10:30 – 11:00	Break 10:30 – 11:00	Break 10.30 – 11:00
	<p>1. Participant introductions and objectives (11:00)</p> <p>2. Implementing the AWS Standard (11:30): Key terminology and introduction to steps 1-6 of the AWS Standard</p> <p>3. Practitioners view of the AWS Standard (12:20): Session to discuss the Standard in the broader context of WRM, and link to a real world application.</p>	Continued...	<p>15. 3rd party auditing – Overview and mock audit role play (11:00) – Following an overview of 3rd party monitoring and evaluation, groups will carry out a mock audit role play based on the FB case study using the results of the gap analysis conducted on day 2, with participants playing the roles of auditors and auditees.</p> <p>16. Claims (12:30) – Expert led session.</p>
	Lunch 13:00 – 14:00	Lunch 13:00 – 14:00	Lunch 13:00 – 14:00
PM	4. Introduction to Fairy Bottling (FB) case study (14:00): Participants will	9. Field trip findings – group work (14:00): Based on their findings from	17. AWS opportunities analysis - plenary (14:00) – Groups analyze the

<p>be introduced to FB case study and provided with written materials on the site and catchment context.</p> <p>5. Water risk and opportunity analysis – Group work (14:15): Using the FB case study, groups will conduct an analysis of water risks and opportunities as they relate to the four AWS outcome areas, and present their findings.</p>	<p>the field visit, participants will work in their original groups to:</p> <p>a) complete the gap analysis, which sets out what FB needs to do to fully align with the standard</p> <p>b) develop a water stewardship strategy which addresses the identified water risks and opportunities.</p>	<p>opportunities for the AWS Standard system and its application in the region.</p> <p>18. Knowledge evaluation (14:30):</p> <p>19. Participant evaluation (15:15):</p>
<p>Break 15:15 -15:30</p>	<p>Break 15:15 -15:30</p>	<p>Close at 15:30</p>
<p>6. Applying the AWS Standard – Steps 1-6 (15:30): Expert led overview of steps 1-6 of the AWS Standard, and group work to apply each of the steps to the FB case study and conduct a gap analysis against the criteria of the Standard.</p> <p>7. Field trip preparation (17:00): Groups formulate plans and determine roles for the field trip on the following morning. During the field trip teams will:</p> <p>a) Continue conducting a gap analysis against standard requirements.</p> <p>b) Seek to better understand water risks and opportunities and potential responses.</p>	<p>Continued...</p> <p>10. Water stewardship strategy presentations, and peer review panel (16:00): Groups will present their water stewardship strategies which will be subjected to a peer review panel.</p>	

Annex 2: Zambia Water Stewardship Masterclass participant list

	Name	Position	Company	Based	Email
1	Alice Ngulube	MSc in Water Resources Management Student	Mzuzu University	Malawi	alicengulube@yahoo.com
2	Lawrence Kanjira	Association Business Manager	Kaporo Smallholder Farmers Association	Malawi	lawrencekanjira@yahoo.co.uk
3	Walter Chinangwa	Programme Officer	Water Witness International	Malawi	walterchinangwa@waterwitness.org
4	Jedrick Siyingwa	Sustainability Manager	Olam International - Northern Coffee Corp. Limited	Zambia	jedrick.siyingwa@olamnet.com
5	John Kaluba	Hydrogeologist	Aquaquest Limited	Zambia	john@aquaquest.info
6	Emmanuel Olalekan Akinwekomi	Auditor and Control Union Country Rep (Nigeria)	Control Union Certifications B.V. (Ghana)	Nigeria	emmanuelakinwekomi@gmail.com
7	Arnold Malambo	Environmental Manager	Kansanshi Mining Plc.	Zambia	arnold.malambo@fqml.com
8	Owen Wentzel	Engineering Consultant	Private (Resilience Environmental Advice)	South Africa	olwentzel@gmail.com
9	Warrick Stewart	Principal Environmental Advisor & Managing Director	Resilience Environmental Advice	South Africa	warrick@resilience-advice.co.za
10	Kachiwala Sapalo	Environmental Superintendent	Kalumbila Minerals Limited	Zambia	Kachiwala.Sapalo@fqml.com
11	Fronscen Haloba	Legal Affairs Manager	Fairy Bottling	Zambia	legal@fairybottling.com
12	Rabecca L. Mutelo	Stock Analysis	Fairy Bottling	Zambia	rmutelo@yahoo.com
13	Amos Angolile	Senior Engineer - Network Analysis	Lusaka Water and Sewerage Company Limited	Zambia	amosangolile@gmail.com
14	Gilbert Kaimana	Sustainability Manager	Zambia Sugar	Zambia	Gkaimana@zamsugar.zm

15	Wilma Sithabiso Nchito, Dr	Senior Lecturer	University of Zambia	Zambia	wsnchito@yahoo.com
16	Monica Chundama	Programme Manager	Action for Water	Zambia	monicachundama@actionforwater.org
17	Naomi Rosenthal	Senior Consultant	Southpole Group	Switzerland	n.rosenthal@southpole.com
18	Brenda Mwalukanga	Embedded Researcher	Lusaka City Council / University of Zambia	Zambia	lunela2004@gmail.com
19	David Nonde Mwamba	Technical Advisor	IWaSP (GIZ)	Zambia	david.mwamba@giz.de
20	Barbara Miyoba	Corporate Affairs Officer	Zambia Sugar	Zambia	BSMiyoba@zamsugar.zm
21	Kasenga Hara	Senior Inspector - Technical	NWASCO	Zambia	kasengahara@gmail.com
22	Thomas Rurangwa	Laboratory Supervisor	Fairy Bottling (Z) LTD	Zambia	Rurangwatom@gmail.com
23	Tinashe Chinembiri	Security & Industrial Retail Director	Fairy Bottling	Zambia	safety@fairybottling.com
24	Moffat Tembo	Urban Sanitation Engineer	SNV Netherlands Development Organisation	Zambia	mtembo@snv.org
25	Rowan Jani	Kafue Catchment Manager/PhD Student UNZA	Water Resource Management Authority (WARMA)	Zambia	rowen.jani@gmail.com
26	Belinda Soko Kancheya	Senior Standards Officer	Zambia Bureau of Standards (SADCSTAN Secretariat)	Zambia	btsoko@zabs.org.zm
27	Brenda Mpande	Associate Consultant, Environment and Development Leader	LuWSI Secretariat	Zambia	brendampande09@gmail.com
28	Davy Ng'oma	Programme Manager WASH	WaterAid Zambia	Zambia	davyngoma@wateraid.org
29	Mwiza Muzumara	Catchment Manager	Water Resource Management Authority (WARMA)-Kasama Office	Zambia	mwizaso@gmail.com

Annex 3: Zambia Water Stewardship Masterclass – Water stewardship plans for Fairy Bottling

Group 1

Objective (SMART)	Actions	Linkage to WS outcomes	Linkage catchment shared water challenges	Linkage to site risks	Timeline (short or medium term)	Notes/ Comments
Determine available amount of groundwater for business sustainability for upto 2035 within the catchment	Conduct geophysical surveys (ground water modelling)	Water Balance	Depletion of groundwater resource	Drying of boreholes	Medium	
Investigate potential groundwater pollution sources within the catchment by 2020	Conduct groundwater quality study and implement monitoring program	Good groundwater quality	Groundwater contamination	Risk of contamination of groundwater within the catchment	Medium	
Develop an understanding of indirect water use within the supply chain of sugar on an annual basis.	Conduct major supplier audits of their water use	Good water balance in the broader catchment	Depletion of surface water	Risk of increased water footprint	Short	

Group 2

Objective (SMART)	Actions	Linkage to WS outcomes	Linkage catchment shared water challenges	Linkage to site risks	Timeline (short or medium term)	Notes/ Comments
Lobby government to map aquifer and recharge area in more detail and support during next 3 year.	<p>FB CEO and technical team meet with ministries of Water, Energy & Environ to lobby them.</p> <p>Committ funding to support impl.</p>	1, 2, 4	Extreme events, Ecosystem vulnerability, Increased water scarcity, Projected water scarcity, Impaired or declining water quality,	Mitigate future inadequate water supply.	Medium	
Engage government to assess abstraction level across aquifer, determine current (updated) sustainable yield and monitor water quality and support government during next 3 years.	<p>FB CEO and technical team meet with ministries of Water, Energy & Environ to lobby them.</p> <p>Committ funding to support impl.</p>	1, 2, 4	Extreme events, Ecosystem vulnerability, Increased water scarcity, Projected water scarcity, Impaired or declining water quality,	Mitigate future inadequate water supply and declining quality.	Medium	
Raise awareness amongst other stakeholders within catchment of need to monitor water quality of aquifer, water	<p>FB technical team develop and implementation awareness campaign, incl. training for priority stakeholders</p>	1, 2, 3, 4	increased water scarcity, increased difficulty in obtaining water licenses etc, higher water prices, poor	Mitigate unsustainable over-abstraction of GW and reduction in ground water quality	Medium	

demand vs. supply, and need for water stewardship, so 20 priority stakeholders are aware within next 3 years			enforcement of water regulation, limited or no catchment management agencies.			
Support development of a Catchment Water Users Committee during next 3 years	FB CEO and technical team lobby key water users to establish Committee	1, 2, 3, 4	increased water scarcity, increased difficulty in obtaining water licenses etc, higher water prices, poor enforcement of water regulation, limited or no catchment management agencies, Extreme events, Ecosystem vulnerability, Projected water scarcity, Impaired or declining water quality, poor enforcement of water regulations	Mitigate future inadequate water supply and declining quality.	Medium	

Group 3

Objective (SMART)	Actions	Linkage to WS outcomes	Linkage catchment shared water challenges	Linkage to site risks	Timeline (short or medium term)	Notes/ Comments
To ensure all company employee's are aware of the company's commitment on water stewardship policies and strategies, etc by 2020	<ul style="list-style-type: none"> - Develop training materials - Cascade through appropriate training workshops 	Governance	Sustainable use of resource	Escalated operational costs	Medium	
To engage all identified relevant stakeholders.	<ul style="list-style-type: none"> - Review stakeholder analysis - Engage stakeholders 	Governance	Important information on Water related areas	Water quality, quality and balance	Medium	Should be done on a continuous basis
To update site water balance	<ul style="list-style-type: none"> - Install flow measuring devices on all boreholes processing sites and effluent streams etc - Record measurements regularly 	Water Balance	Unsustainable water use	Excessive usage Increased Costs	Short	
Create awareness to all primary input suppliers on water stewardship	<ul style="list-style-type: none"> - Engage the suppliers 	Water related areas	Water Scarcity	Reputational risk	Medium	
Develop an emergency response	<ul style="list-style-type: none"> - Risk assessment prioritisation 	Governance Water related plans	Water scarcity	Loss of business Loss of livelihoods	Medium	

strategy	- Formulate the response guidelines and plans			Reputational		
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Group 4

Objective (SMART)	Actions	Linkage to WS outcomes	Linkage catchment shared water challenges	Linkage to site risks	Timeline (short or medium term)	Notes/ Comments
Outline site level water balance	<ul style="list-style-type: none"> • Measure water abstraction from each borehole • Outline percentage of used water that goes into product vs. effluent • Clearly understand available water on site (eg. Recharge of boreholes; complete pump testing) 	Sustainable water balance	Equitable water availability	Potential for inadequate water supply	12 months	
Implement system for improved water quality monitoring	<ul style="list-style-type: none"> • Improve water testing for wastewater effluent; by adding more parameters: metals, organics • Develop early warning system by monitoring neighboring boreholes • Hydro census: identify sources of potential risks and threats near the borehole 	Good water quality status	Securing safe water for all water users	Poor water quality impacts ability to produce products	3 months	

Indirect water use: improve understanding of water stress and intensity of primary inputs	<ul style="list-style-type: none"> Define regions and water catchments for primary inputs Evaluate how water stressed the sourcing regions and catchments are Calculate water intensity for primary inputs 	Sustainable water balance	<p>Ensuring equitable use of water resources.</p> <p>Securing water resources in areas where inputs are sourced from.</p>	Water use conflicts	12 months	
Understand localized catchment dynamics	<ul style="list-style-type: none"> Defining important water related areas (delineating) Understand future water scenarios 	Healthy status of important water related areas	<p>Ensuring equitable use of water resources</p> <p>Securing water for all (in the future)</p>	Water use conflicts and inadequate future water supply	6 months	
Identify opportunities for improvement	<ul style="list-style-type: none"> Identify financial opportunities that result from stewardship Set a target on improving water balance or quality 	Good water governance (+ all other outcomes, depending on targets set)	Demonstrating stewardship for shared water resources and physically improving resources	Reputational and regulatory risks	6 months (need to come after objectives on water balance and quality are completed)	By demonstrating improvement it is possible to be in good relations to government authorities once regulations change in the future.
Implement water stewardship strategy, publicly communicate on this	<ul style="list-style-type: none"> Outline objectives Communicate to public Measure and communicate progress 	Good water governance	Demonstrating leadership for shared water resources showing commitment to improve these	Reputational and regulatory risks	6 months	

Group 5

Objective (SMART)	Actions	Linkage to WS outcomes	Linkage catchment shared water challenges	Linkage to site risks	Timeline (short or medium term)	Notes/ Comments
1. Understand detailed site map features defining the physical scope of the site and their inter-relatedness	1.2 Identify important physical features at site 1.3 Create a map outlining the site boundaries with associated water sources and discharge points 1.4 Identify and interact with stakeholders through a stakeholder analysis/local catchment committee and their uses/impact on resource and costs	<ul style="list-style-type: none"> • Goodwater governance 	<ul style="list-style-type: none"> • Willness to participate 	<ul style="list-style-type: none"> • Disposal is very close to abstraction point especially that casing is only 6m • Pollution from surrounding waste disposals 	<ul style="list-style-type: none"> • Short term 	
2. Information system on water related data for the site including volumes, water quality and related cost	2.1 Install flow metters on all boreholes and outlets 2.2 Maintain constant records of water quantity and quality 2.3 Log of water use/abstraction 2.4 Determine and monitor water footprint	<ul style="list-style-type: none"> • Goodwater governance • Sustainable water balance • Good water quality status 	<ul style="list-style-type: none"> • Willness to participate • Data not readily available at catchment scale • Weak collaboration with neighbours 	<ul style="list-style-type: none"> • No risk • Incorrect records • Lack of monitoring 	<ul style="list-style-type: none"> • Short to medium term 	
3. Understand water quality at the site (disposal, including upstream and downstream of the site)	3.1 Monitor effluent discharge 3.2 Determine flow direction of GW 3.3 Institute good repair and maintenance for machine and equipment	<ul style="list-style-type: none"> • Good water quality status 	<ul style="list-style-type: none"> • Pollution of local aquifer • Weak • Callaboration with surrounding stakeholders 	<ul style="list-style-type: none"> • No early warning system for contamination 	<ul style="list-style-type: none"> • Short to medium term 	