

Applied Aqua-DST Training – Yangon, Myanmar

Yangon, Myanmar | September 22 and 23, 2025

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CGIAR Sustainable Animal and Aquatic Foods Program

The [Sustainable Animal and Aquatic Foods](#) (SAAF) Program is part of [CGIAR](#)'s 2025-2030 Research Portfolio. SAAF works across Africa, Asia, and beyond to improve access to nutritious foods while reducing emissions and supporting inclusive livelihoods. By combining livestock and aquatic systems, it develops integrated, climate- and environment-friendly solutions tailored to local contexts. CGIAR research is supported by contributions to the [CGIAR Trust Fund](#). CGIAR is a global research partnership for a food secure future dedicated to transforming food, land, and water systems in a climate crisis.

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Front cover photo: Workshop participants in Myitkyina, Myanmar. *Photo:* Shelly Win

Back cover photo: Shelly Win

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Contents

Exclusive Summary	3
Introduction	4
Objectives	4
Targeted Users	4
Study Area	5
Summary of the training program	5
Workshop Agenda	7
Workshop Participants	8
Pre- and post-Assessment	9
Overall training assessment	9
Feedback from the participants	11
Conclusions	14
Annex : 1 Pictures from the trainings	16

Exclusive Summary

The Sustainable Animal and Aquatic Food project aims to improve access to nutritious foods while reducing environmental impacts and promoting inclusive livelihoods. By integrating diverse livestock and aquatic systems, the project will offer context-specific solutions to local challenges, enhancing food security and resilience. Our vision is to sustainably transform animal and aquatic food systems in low- and middle-income countries—ensuring they are inclusive, climate-smart, and capable of delivering healthy, nutrient-rich foods to those who need them most.

In 2024 AqFI project, we developed and launched a demo version of an aquaculture suitability decision support tool (DST) – Aqua-DST, which helps decide land area suitability for small-scale aquaculture (SSA) and fishponds large-scale at the township level for the improvement, promotion, and expansion in future. The DST built on this analysis will enable informed decision-making that can reduce risks and thus increase the sustainability of fishponds by applying multi-criteria suitability assessments. Now Aqua-DST is upgraded to full version of all including 170 townships which are projected by the results of demo version, this version conducted validations and refinements with 29 stakeholders to fully realize Aqua-DST's potential benefits and address potential limitations or uncertainties that may emerge in different climatic and geographic contexts.

The next step is to deliver the applied Aqua-DST training to the next users – the technical expert and field staff of the Department of Fisheries, land use division under the Department of Agriculture, Members of Myanmar Fishery Federation (MFF), researchers from University of Yangon, NGOs, CBO, CSO, aquaculture related companies, private sectors as the initiative implementation and responsible for scaling and uptake of dissemination of the Aqua-DST. On September 22, 2025, IWMI officially hands over the Aqua-DST dashboard to Myanmar's Department of Fisheries (DoF), cementing the tool's long-term role in guiding aquaculture planning and decision making. The blogs about Aqua-DST were published on the official website of Department of Fisheries (DoF) www.dof.gov.mm (in Burmese and English version) and IWMI official website (English version). On top of that, Aqua-DST dashboard interface link can be accessible on both websites.

As the critical component of the project is to increase aquaculture production by secured use of land and water, and increased access to information, training participants will gain the knowledge of how the Excel DST Model and DST Dashboard Interface were developed, how to use the DST and Dashboard Interface, and how to find the data and information which are potentially required to improve the productivity of their fishponds or businesses.

The 2-day training program included an introductory presentation, a demonstration of Aqua-DST, series of lecture presentation, group work activities, debates and group discussions, to understand better the usefulness and usage of Aqua-DST dashboard and its suitability analysis in giving weighting inputs to disseminate the information on decision making that can reduce risks and thus increase the sustainability of ponds. All the training output and feedback were drawn up by the respective key stakeholders from the aquaculture sector. During the training, we took the content of participants who wanted to be involved in the working group of Aqua-DST in future. This list will be sent to DoF for the officialised the working group for next activities.

Based on the respective output and feedback from the training, the Aqua-DST full version will be revised and approached the mature stage by applying the different use case scenarios in the working group. Aqua-DST was valued as a promising tool but emphasize the need for better data (quality, updates, village-level), stronger ownership from DoF and stakeholders, and user capacity building to fully realize its potential. Expanding networks and systematically engaging farmers and experts will make the tool more effective and sustainable. It was highlighted that offering Aqua-DST training sessions to students on the newly established Fishery Science diploma course at the Department of Fisheries would be highly beneficial. Universities are also considering integrating Aqua-DST into their curricula to equip young students and researchers with the skills to apply such tools in their studies. Beyond academic settings, private sector partners have shown interest in collaborating on training seminars for youth farmers through digital platforms such as mobile applications and YouTube. Expanding the dashboard to include national-scale data was also recommended, as this would provide broader insights and understanding. In addition, the Department of Agriculture expressed interest in developing a similar decision support tool for crop suitability analysis, inspired by the Aqua-DST model.

Introduction

The Sustainable Animal and Aquatic Food project aims to improve access to nutritious foods while reducing environmental impacts and promoting inclusive livelihoods. By integrating diverse livestock and aquatic systems, the project will offer context-specific solutions to local challenges, enhancing food security and resilience. Our vision is to sustainably transform animal and aquatic food systems in low- and middle-income countries—ensuring they are inclusive, climate-smart, and capable of delivering healthy, nutrient-rich foods to those who need them most.

In 2024 AqFI project, we developed and launched a demo version of an aquaculture suitability decision support tool/model (DST) – Aqua-DST, which helps decide land area suitability for small-scale aquaculture (SSA) and fishponds large-scale at the township level for the improvement, promotion, and expansion in future. The DST built on this analysis will enable informed decision-making that can reduce risks and thus increase the sustainability of fishponds by applying multi-criteria suitability assessments.

In this case, a wide range of suitability analysis techniques exist; however, no dedicated attempt has been made to support the direct application of suitability analysis by stakeholders and decision-makers. This is largely due to the significant complexity associated with the analysis process. The aquaculture Decision Support Tool package broaches this gap, providing an evidence-based digital and analytical tool (and supporting guidelines) that can be used to inform the planning and management of aquatic food production systems via suitability analysis.

This suitability analysis will be used to identify high-risk areas subject to flooding and water scarcity through the DST, thereby enabling DoF, MFF, WorldFish and CBOs to guide potential SSA adopters to minimize these risks, increase the sustainability of ponds, and avoid financial loss to adopters. The prevalent impacts of both floods and water scarcity reported by SSAs are notable and reflect the current ad-hoc nature of SSA adoption that leads to poor pond location.

Aqua-DST is upgraded to full version of all including 170 townships which are projected by the results of demo version, this version conducted validations and refinements with 29 stakeholders to fully realize Aqua-DST's potential benefits and address potential limitations or uncertainties that may emerge in different climatic and geographic contexts. Continued research, validation, and iterative improvements will be essential to harness its capabilities effectively within the constantly evolving climate scenarios. Hence, this Aqua-DST is required to be delivered to the different stakeholders commencing the showcase demonstration and technical training to the ideal technical working group.

Objectives

- Introducing the showcase of the Aqua-DST full version in front of all stakeholders – government officials, MFF, universities, NGO, CBO/CSO, private sectors and companies.
- To conduct the Aqua-DST handover ceremony to the host, Department of Fisheries (DoF).
- To deliver the necessary technical training to the working group of the next user – host department (DoF).
- To focus on dissemination pathway and adoption by the next user.

Targeted Users

The Aqua-DST targets decision-makers and stakeholders who play a key role in land use planning regarding food production within a given area, providing guidance on the potential suitability of land area for a given system. The tool is suitable for application by a range of entities including planners at township and district levels, SSA adopters, MFF members, CSO/CBO, NGOs, private sector input suppliers, research organizations that have an interest in supporting the development of tailored and targeted investments for aquatic food production systems within a given region. The tool may additionally be of interest to institutions engaged in sustainable integrated farming – agricultural and aquaculture development, with the Aqua-DST capable of providing an insight into where integrated aquatic food production systems would be best placed to support human development goals (e.g., improved food and nutritional security and reductions in poverty) or to guard against the negative implications of global environmental change (e.g., climate change).

Study Area

The Upper Ayeyarwady includes 6 states/regions - Kachin, Mandalay, Sagaing, Magway, Kayah, and Shan. This full version includes 170 townships.

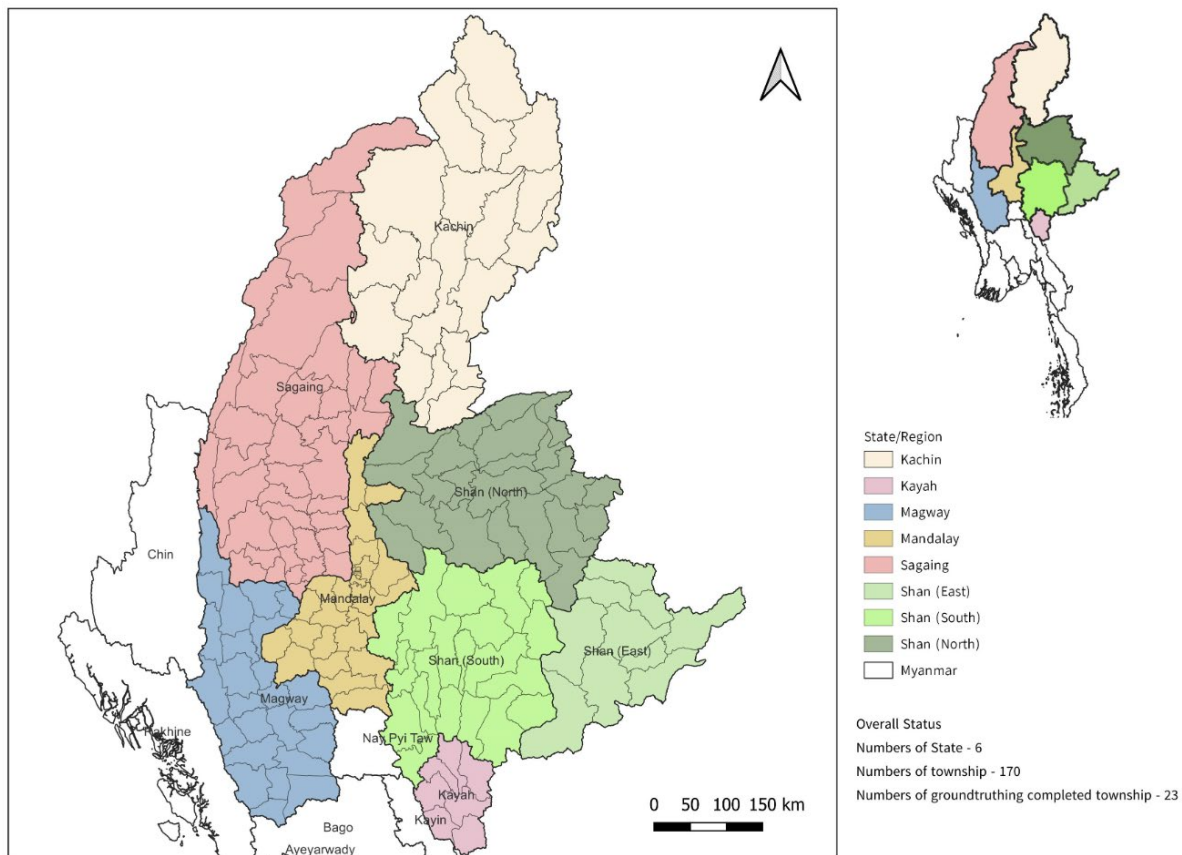


Figure 1. Study Area of Aqua-DST (170 townships)

Summary of the training program

The training materials were prepared, translated, and conducted by Dr. Shelly Win – Research Consultant, and Ms. Aye Chan Myint – Consultant from IWMI who led the applied Aqua-DST training, together with Mr. Phay Ko U – Project Coordinator, who carried out as the facilitator and moderator.

The Applied Aqua-DST Training Course was successfully conducted over two days in Yangon, with the primary objective of building capacity in using the Aqua-DST tool for aquaculture suitability assessments. The training focused on enhancing participants' understanding of the Aqua-DST Excel model and dashboard interface to make informed decisions in aquaculture planning and expansion. A total – of 38 participants, 27 males and 11 females on Day 1 and a total – of 15 participants, 9 males and 6 females on Day 2 of government officials from Naypyitaw and regional DOF offices, Yangon University, MFF, private sectors, and companies, attended the training on the Applied Aqua-DST course for aquaculture development.

According to the agenda in Table 1, the workshop session was opened with the orientation of the overall agenda of the workshop by Aye Chan Myint and explained the summary of the development of Aqua-DST. After that, the handover ceremony was followed by Mr. Micheal Akester handing over the Aqua-DST to U Nyunt Win, the representative of the Department of Fisheries (DoF).

Then Mr. Micheal Akester, the Director of World Fish from the SEA region, gave an opening speech for the training and Dr. Khin Maung Soe translated the summary of it. In his opening speech, Mr. Akester gave a summary regarding the usefulness of the Aqua-DST model, to extend further for the village track level and to cooperate with the social media platforms like Greenway and HtwetToe apps in order to share the usefulness of Aqua-DST to the local fish farmers and to wider expansion to the fishery stake-holder. After that, U Nyunt Win, director from the Department

of Fisheries (DoF) provided an opening remarks and recommendations for Aqua-DST's future trajectory, summarized as follows:

- ❖ How to update the technical work after handing over Aqua-DST to Department of Fishery (DoF)
- ❖ The process of Aqua-DST implementation
- ❖ Underlined the importance of quality data collection
- ❖ Thanked CGIAR (IWMI and World Fish) for their support with aquaculture planning as well as improved inland capture fisheries management.

Then there was a group photo session. An insightful overview of the Aqua-DST tool was followed by Dr. Shelly Win at 9:35 AM, detailing its problem statements, purposes, functions, development journey, and findings relevance to the aquaculture sector. After a coffee break, Aye Chan Myint conducted a pre-training assessment to gauge the participants' initial understanding of the Aqua-DST model. This was a key session in setting the foundation for the hands-on exercises that followed. The morning session continued with the demonstration of the Aqua-DST dashboard interface, guiding participants through a demonstration exercise on data and result visualization, led by Dr. Shelly Win. The demonstration the showcase of the Aqua-DST module 2 was followed – the dashboard visualization viewer using the quick guidebook – the case study example of Sagaing region. By doing the exercise, Dr. Kay Lwin Tun, the professor head from Yangon University, commented that the township level suitability of fish species should be based on the technical research analysis, and the term here should be changed into the common cultured fish species for townships because the surveyed data of the most dominant and common fish species cultured in each township applied for this regard. Dr. Khin Maung Soe and Dr. Shelly Win gave the justification about this concern by adding the word “example of fish species suitable for townships” because the applied surveyed data is very limitation under time and budget stressed and this fish species suitability should be elaborated by the technical working group team members led by the professors and professionals from aquaculture sector.

The afternoon began with a session on an orientation for the group work exercises, led by Dr. Shelly Win. The participants would be applied the Aqua-DST dashboard interface for data visualization and explanation of each scenario setup for future expansion i.e. (1) Selection of township for expansion of grow-out farmers, (2) for expansion of fish-feed suppliers, and (3) for expansion of hatcheries and nurseries. These exercises provided hands-on experience in applying the tool in real-world scenarios. After the coffee break, the participants were tested their understanding and application skill of Aqua-DST by doing “Quiz” and they played the debate game by dividing 2 groups siding positive and negative on the future of Aqua-DST led by Dr. Shelly Win and Htet Htet Linn. Then, each group presented their results, demonstrating their understanding of the Aqua-DST model and its applications. Group leaders led the presentations, showcasing the data visualization results and explaining their approach. Following the group presentations, Aye Chan Myint conducted a post-training assessment to evaluate the participants' progress. The day 1 was concluded with the wrap-up and gratitude conveyed by Dr. Shelly Win.

The Day 2 began with a pre-training assessment to gauge the participants' initial understanding of the Aqua-DST excel module and powerBI platform. Then, it was followed by a session on the Aqua-DST Excel metadata structure and database, led by Aye Chan Myint. The focus was on understanding the metadata structure and how to work with datasets. After that, Phay Ko U demonstrated how to use the Aqua-DST Excel model to weight indicators and work through steps 1 to 5 of the model. Then, the participants were working the group work activities by conducting the data updates, weighting the criteria in the Module 1 Excel sheet, allowing participants to apply the practical skills they had learned. Before lunch break, each group presented their results, demonstrating their understanding of the Aqua-DST excel model system and its applications. Group leaders led the presentations, showcasing the criteria weighting results and explaining their approach.

The afternoon session began with a continuation of the Aqua-DST Excel model session covering Step 6, led by Aye Chan Myint. Participants were engaged in practical exercises, using the quick guidebook which is in Burmese language (draft) to reinforce their learning including how to develop a quick mapping by using 3D map feature in MS Excel. Then, Dr. Shelly Win made the consent of the participants to involve in the Aqua-DST working group and confirmed the list of people. After the coffee break, Dr. Shelly Win delivered the introduction of Power BI platform lecture and conveyed the creating the data visualization using Power BI hands-on exercise together with participants using the quick guidebook. Before conclusion of Day 2, Aye Chan Myint conducted a post-training assessment to evaluate the participants' progress. Then, Dr. Shelly Win then delivered closing remarks, expressing appreciation for the active participation and encouraging attendees to continue applying the Aqua-DST tool in their work.

The Applied Aqua-DST Training Course provided participants with valuable knowledge and practical experience in using the Aqua-DST tool. Through a mix of theoretical sessions and hands-on exercises, participants gained a deeper understanding of how to leverage the tool for aquaculture suitability assessments. The training was well-received, and participants expressed enthusiasm for applying their new skills in their respective fields.

Workshop Agenda

Table 1. Agenda of Training Day 1 and Day 2

Agenda for the Applied Aqua-DST Training Course			
Time	Activities	Presenter	Remark
Day 1 (Basic Application of Aqua-DST dashboard interface)			
9:00 – 9:05	Overall agenda	Aye Chan Myint	
9:05 – 9:10	Aqua-DST Handing over session		
9:10 – 9:30	Welcome and Opening remark	Director from DoF	
9:30 – 9:35	Group photo session		
9:35 – 10:30	Aqua-DST overview presentation	Dr. Shelly Win	
10:30 – 10:45	Coffee break		
10:45 – 10:55	Pre-training assessment session	Aye Chan Myint	
10:55 – 12:00	Aqua-DST dashboard interface demonstration exercise		Hand-on guidebook
12:00 – 12:15	Orientation for group work exercise	Dr. Shelly Win	
12:15 – 13:15	Lunch break		
13:15 – 15:15	Group work exercise session Apply Aqua-DST dashboard interface for data visualization for explanation Scenario setup	Group	Led by group facilitators
15:15 – 15:30	Coffee break		
15:30 – 16:30	Presentations by each group	Group leader	
16:30 – 16:45	Post-training assessment session	Aye Chan Myint	
16:45 – 16:55	Wrap up session and Close	Dr. Shelly Win	
Day 2 (ToT – Refresher training for developers)			
9:00 – 9:10	Pre-training assessment session	Aye Chan Myint	
9:10 – 10:00	Excel metadata structure and database	Aye Chan Myint	Hand-on guidebook
10:00 – 10:15	Coffee break		
10:15 – 12:30	Aqua-DST Excel Model Weighting the indicators Step 1 to 5	Phay Ko U	Hand-on guidebook
12:30 – 13:30	Lunch break		
13:30 – 15:00	Aqua-DST Excel Model Step 6 – Mapping	Aye Chan Myint	Hand-on guidebook
15:00 – 15:15	Coffee break		

15:15 – 15:30	How to build a dashboard using PowerBI	Dr. Shelly Win	Hand-on guidebook
15:30 – 16:30	Hands-on exercise of building a dashboard	Dr. Shelly Win	Hand-on guidebook
16:30 – 16:45	Post-training assessment session	Aye Chan Myint	
16:45 – 17:00	Closing remark	Phay Ko U	

Workshop Participants

A total – of 38 participants, 27 males and 11 females on Day 1 and a total – of 15 participants, 9 males and 6 females on Day 2 were educated on the understanding of the fishpond criteria indicators, data structures, and application of Aqua-DST dashboard online.

Table 2. Participants Attendance List for training Day 1

No	Name	Gender	Designation	Organization
1	U Nyunt Win	M	Director	DoF, Napyitaw
2	U Zaw Tun Aung	M	Staff Officer	DoF, Napyitaw
3	Ma Kay Khine Tint	F	Staff Officer	DoF, Napyitaw
4	Daw Zin Mar Lwin	F	Deputy staff officer	DoF, Shan
5	Daw Zi Za Wah	F	Deputy staff officer	DoF, Yangon
6	U Kyaw Thet Oo	M	Staff Officer	DoA, Napyitaw
7	U Paing Oo Zaw	M	Deputy Staff Officer	DoA, Napyitaw
8	U Yan Pi Moe	M	Deputy Officer	DoF, Napyitaw
9	Dr. Myo Min Hlaing	M	Deputy Director	DoF, Bago Region
10	U Kyaw Thant Zin	M	Deputy Officer	DoF, Ayeyarwady
11	U Mya Thein	M	Deputy Director	DoF, Ayeyarwady
12	U Min Khaing	M	Deputy Officer	DoF, Napyitaw
13	U Ye Kyaw	M	Staff Officer	DoF, Napyitaw
14	Michael Akester	M	Regional Director	World Fish
15	Dr. Khin Maung Soe	M	Consultant	World Fish
16	U Htin Aung Kyaw	M	General Secretary	MFF
17	U Tun Myint Oo	M		MFF
18	U Than Htay Oo	M	Chief	Arsha Thar Aquaculture Co.,Ltd
19	U Myint Soe	M		Zartiman Fish Farm, MFF
20	U Maung Maung Lwin	M	Freelancer	
21	U Myint Soe	M		MFF
22	Ko Thant Zin Oo	M	Feed Association	MFF
23	U Aung Ko Ko	M	Secretary (1)	MFF
24	U Yar Zar Moe	M	Secretary (3)	MFF
25	Dr.Kay Lwin Tun	F	Professor & Head	University of Yangon
26	Dr.Yu Yu Aye	F	Lecturer	University of Yangon
27	Dr.July Maung Maung	F	Lecturer	University of Yangon
28	Daw Thet Htar Myint	F	Executive Director	Gold Myanmar Future Light

29	U Kyin Nyein Chan	M	Program Senior Officer	LIFT
30	U Win Min Htike	M	Assistant IT Manager	GrandWynn Enterprise
31	U Pyae Soe Aung	M		Spectrum
32	Ma Poe Ei Phyu	F		Spectrum
33	Ma Tinzar Win Pyae Kyaw	F	Agronomist	Freelance
34	Ma Theint Theint Aye	F	Freelance	Environmentalist
35	Ma Htet Htet Linn	F	Project Officer	World Vision Myanmar
36	U Phoe Cho	M	Team Leader	Mercy Corps
37	U Thein Win	M	Project Coordinator	Fresh Studio
38	U Halley Nay Myo	M	Aquaculture Specialist	Fresh Studio

Table 3. Participants Attendance List for training Day 2

No	Name	Gender	Designation	Organization
1	Ma Kay Khine Tint	F	Staff Officer	DoF, Naypyitaw
2	Daw Zi Za Wah	F	Deputy staff officer	DoF, Yangon
3	Daw Zin Mar Lwin	F	Deputy staff officer	DoF, Shan
4	U Paing Oo Zaw	M	Deputy staff officer	DoA, Naypyitaw
5	U Kyaw Thet Oo	M	Staff Officer	DoA, Naypyitaw
6	U Ye Kyaw	M	Staff Officer	DoF, Naypyitaw
7	U Yan Pi Moe	M	Deputy Officer	DoF, Naypyitaw
8	Dr.Yu Yu Aye	F	Lecturer	University of Yangon
9	U Kyaw Naing Than	M	Demonstrator	University of Yangon
10	Dr.July Maung Maung	F	Lecturer	University of Yangon
11	U Min Khaing	M	Deputy Officer	DoF, Naypyitaw
12	U Kyaw Thant Zin	M	Deputy Officer	DoF,Ayeyarwady
13	Dr. Myo Min Hlaing	M	Deputy Director	DoF, Bago Region
14	U Mya Thein	M	Deputy Director	DoF,Ayeyarwady
15	Ma Theint Theint Aye	F	Freelance	Environmentalist

Pre- and post-Assessment

Overall training assessment

The IWMI training team designed suitable pre- and post-training assessment forms to measure the uptake of training topics by the participants. The same set of questions was distributed at the beginning and end of the training. It was found that all 22 trainees on Day 1 and 15 trainees on Day 2 provided valid responses to the questions as the completed questionnaire forms were collected and analyzed. On Day 2, we mainly focused to train the developers (aquaculture technicians) who participate in the Aqua-DST working group. A summary of the results is presented in (Table 4).

Table 4. Change of Knowledge per topic

Questions	Topic	Pre-No of correct Answer	Post-No of correct Answer	Pre- % of Knowledge	Post % of Knowledge	% Improvement
1	Consistency ratio test on criteria weighting knowledge	2	14	13%	93%	80%

2	Standard function of Aquaculture suitability	14	15	93%	100%	7%
3	The file format used in 3D map feature in Excel	2	10	13%	67%	54%
4	What is BI?	4	14	27%	93%	66%
5	Power BI functionality	13	14	87%	93%	6%
6	Mapping tool used in Power BI	2	14	13%	93%	80%
7	The file format used in Power BI mapping feature	6	10	40%	67%	27%
8	Aqua-DST dashboard functionality	11	20	50%	91%	41%
Overall Improvement				42%	87%	45%

The results showed an improvement in the overall knowledge level of 45 % (Figure 2). Although the results of knowledge improvement level for comprehensive topics such as consistency ratio test, standard function of Aqua-DST suitability, file format used in Excel 3D mapping, BI, Power BI functionality, Mapping tool used in Power BI, file format used in Power BI mapping, and functions of Aqua-DST dashboard interface were 80%, 7%, 54%, 66%, 6%, 80%, 27%, and 41% respectively.

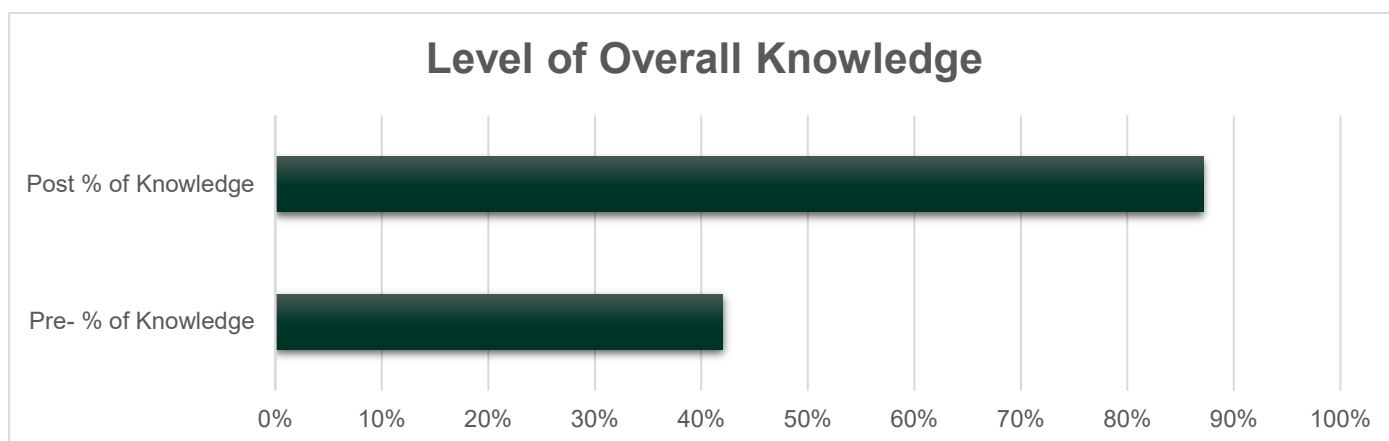


Figure 2: Average overall level of knowledge

Approximately 33% of the trainees utilized the decision support tools, including the Aqua-DST on previous training, the DSS tool specifically designed for Rice-Fish systems, Ayeyarwaddy River Basin DSS, FishAdapt learning platform, Ecosystem Approach to Fishery Management (EAFM) and Aquaculture Management (EAAM).

It was observed that the majority of participants had successfully acquired the skills to use the Aqua-DST dashboard, the Excel-based Decision Support Tool (DST) and how to design the Dashboard Interface using Power BI. They were also able to locate the relevant data and information needed to enhance the productivity of their fishponds or aquaculture businesses. Overall, a comparative analysis between pre-training and post-training survey results indicated that participants had gained experience in township suitability mapping and developed an understanding of the Aqua-DST and its Dashboard Interface designed by using Power BI. Specifically, they recognized the value of the data provided by these tools in identifying opportunities for the expansion of aquaculture-related businesses.

In the post-training assessment, all participants (100%) responded affirmatively to the question, "Do you think that the township-level information provided by Aqua-DST is relevant to the needs of users such as NGOs, CBOs, private sector entities, aquaculture operators, and fish farmers?" Additionally, 100% of participants responded that the training was beneficial and efficient for their works. Over 22% rated DST as "very useful," while the others found

it "useful." 100% of participants responded that the Aqua-DST is an efficient and cost-effective approach to choosing suitable locations for aquaculture expansion.

Feedback from the participants

1. **What kind of activities are your organization currently doing in the aquaculture sector? What is your primary area of expertise (e.g., farming, processing, marketing, etc.)?**
 - a) Farming & Production
 - ✓ Widely reported as the main activity, including fish, prawn, shrimp, crab farming, hatcheries, grow-out operations, and freshwater aquaculture.
 - b) Feed & Inputs
 - ✓ Several organizations specialize in fish/prawn feed production, seed supply, and support for quality control and disease diagnosis.
 - c) Research, Teaching & Capacity Building
 - ✓ Activities include teaching and research, delivering lectures (Diploma/Bachelor level), online education, aquaculture training, and R&D on fish quality control and management.
 - d) Market & Business Development
 - ✓ Work on market relations, digital platforms, project management, export/import data, and fishery-related business expansion.
 - e) Management & Coordination
 - ✓ Roles in aquaculture coordination, project funding (e.g., LIFT), aquaculture division management, and technical advisory support.

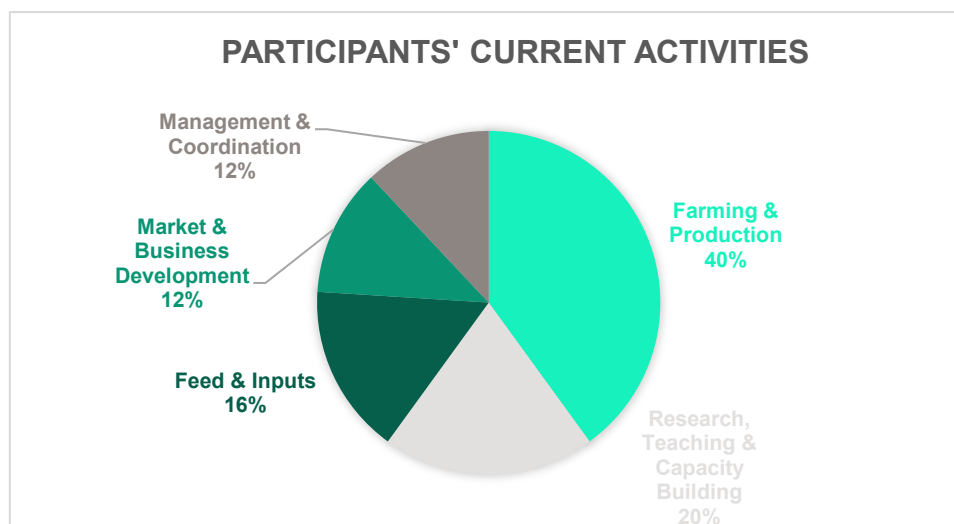


Figure 3: Pie chart of current activities of participants

2. **What challenges or constraints do you currently face in your aquaculture work?**
 - a) Input Costs & Availability
 - ✓ High fish feed prices, scarcity of raw ingredients, and lack of good quality seeds.
 - ✓ Rising production costs and difficulty accessing affordable inputs.
 - b) Land & Water Constraints
 - ✓ Limited land availability and land tenure issues.
 - ✓ Water allocation challenges, pesticide-laden water, and difficulty in water inflow/outflow.
 - c) Climate & Environmental Factors
 - ✓ Impacts of climate change, natural hazards, and habitat degradation.
 - ✓ Poor water quality and frequent fish diseases.
 - d) Market & Infrastructure
 - ✓ Unstable fish prices and unsatisfactory/limited market access.
 - ✓ Poor transportation, weak infrastructure, and lack of value-added production, hygiene, packaging, and technology.
 - e) Capacity, Policy & Investment
 - ✓ Lack of professional experts, technical challenges, and limited awareness (climate change, biosecurity, water management, species selection).
 - ✓ Insufficient finance/investment opportunities.
 - ✓ Policy constraints around land allocation and aquaculture prioritization.

- 3. Who would be the most suitable user of the aquaculture suitability decision support tool?**
- Fish Farmers & Aquaculture Sector
 - ✓ Fish farmers, prawn farmers, nurseries, SMEs, feed millers, exporters, aquaculture businesses.
 - Government Departments
 - ✓ Department of Fisheries (DoF), Ministry of Fisheries and related departments, local government staff.
 - Researchers & Academic Sector
 - ✓ University students, researchers, academics, IT-friendly persons.
 - NGOs, INGOs & Development Organizations
 - ✓ NGO/INGO project planners, international organizations, local groups, aquaculture projects.
 - Decision Makers & Policy Makers
 - ✓ Government decision makers, planners, policy makers, private investors, stakeholders.

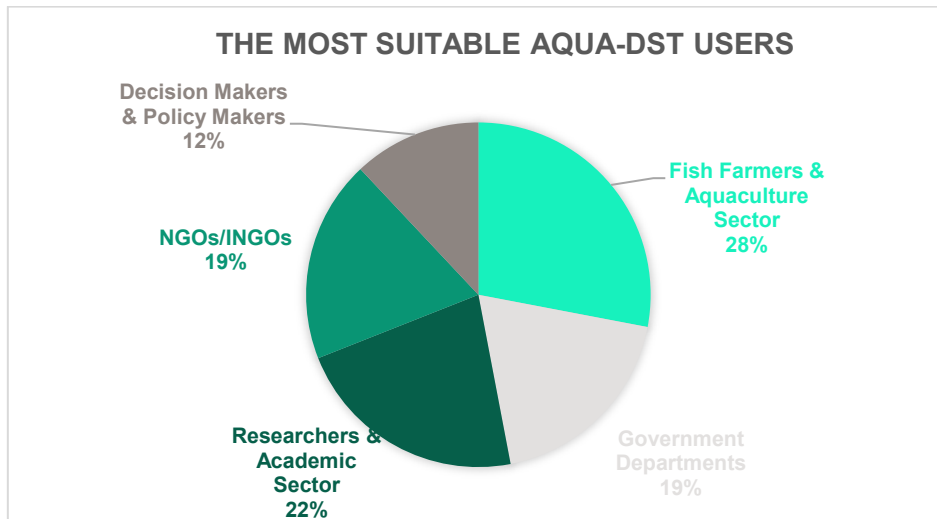


Figure 4: Pie chart of the most suitable Aqua-DST users feedbacked by participants

- 4. Do you think the data/information provided by Aqua-DST helps you and your organization in expanding aquaculture operations?**

While Aqua-DST is widely appreciated as a useful and cost-effective decision-support tool, users seek improved precision, frequent updates, and expanded datasets (both geographically and in terms of socio-economic and market variables). Depending on the specific context, the information may partially support or fully assist in the expansion of operations. If the data is accurate, it can be very beneficial for planning and execution. While it may not be applicable in all cases, in certain areas or regions, it proves to be quite helpful.

- 5. In which types of activities/sectors do you believe Aqua-DST can be most helpful, and to what extent (e.g., 10%, 20%, etc.)?**

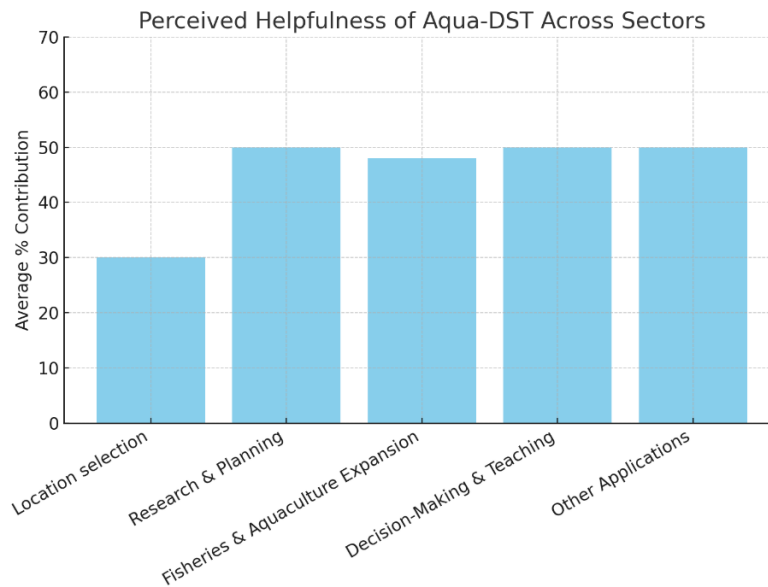


Figure 5: Bar chart of perceived helpfulness (in percent) of Aqua-DST across sectors

Aqua-DST can be particularly helpful in expanding aquaculture operations, with its support ranging from 30% to 50%, depending on the specific activity or sector. The chart shows that Aqua-DST is seen as most valuable for research, planning, and decision-making, while also significantly supporting fisheries expansion and location selection for aquaculture. In general, Aqua-DST could offer over 50% assistance in various sectors. For aquaculture expansion, Aqua-DST could provide approximately 48% support. When it comes to selecting suitable locations for fishpond or evaluating seasonal and regional factors, Aqua-DST could be helpful in decision-making, contributing 30% of the required information. For research institutes, policymakers and individuals wishing to engage in aquaculture, Aqua-DST can provide valuable insights and support, potentially offering at least 50% assistance or more. Other applications include the private sectors such as feed mill, exporters and investors.

6. What is your opinion on the relevance/importance of Aqua-DST in making decisions regarding the suitability of fishpond locations?

The majority of respondents view Aqua-DST as highly useful, relevant, and important for identifying suitable fishpond locations and supporting decision-making.

1. Usefulness & Importance

- Described as very useful, very important, supportive, efficient, applicable, and nice.
- Seen as a good data source for preliminary analysis and a helpful reference for farmers and planners.

2. Decision-Making Support

- Helps users decide where to start fish farming projects or businesses.
- Allows for review and estimation of business opportunities based on location suitability.
- Provides information to understand ground conditions and make informed decisions.

3. Areas for Improvement

- Requests for more localized (village-level) data.
- Some feedback that Aqua-DST is helpful but should be further detailed and refined.

In summary, Aqua-DST is broadly recognized as an important, practical tool for aquaculture decision-making, particularly for site selection and business planning. While praised for efficiency and accessibility, users note that its value could be enhanced by adding finer-scale data and continuous improvements.

7. How would you suggest improving the decision support tool for aquaculture to make it more effective?

Respondents value Aqua-DST as a promising tool but emphasize the need for better data (quality, updates, village-level), stronger ownership from DoF and stakeholders, and user capacity building to fully realize its potential.

Expanding networks and systematically engaging farmers and experts will make the tool more effective and sustainable.

1. Data Quality & Updates
 - ✓ Regular data updates and validation.
 - ✓ Improve data precision and reliability.
 - ✓ Go into more detailed datasets, including confirming inputs from DoF.
2. Training & Capacity Building
 - ✓ Provide additional training sessions (including one more training day).
 - ✓ Offer PowerBI training and technical support.
 - ✓ Support fish farmers' understanding of technology for better tool usage.
3. Broader Sharing & Engagement
 - ✓ Conduct more trainings while importing richer data and results for demonstration.
 - ✓ Expand outreach to ensure knowledge sharing with wider user groups.

8. What other technical areas do you feel you need to improve upon after this training?

- **Computer skills** – need to enhance trainees' overall computer proficiency.
- **Excel** – need to become more proficient in Excel for data analysis and visualization.
- **Power BI** – want to learn more about Dashboard creation and how to create effective dashboards.
- **Mapping** – need to improve skills in creating maps and utilizing GIS tools.
- **Data analysis** – requires knowledge of software tools and techniques for more advanced data analysis – R .

9. Which areas of this training do you think you could improve upon (e.g., teaching, distribution of supporting documents, group activities, etc.)?

- **Group activities & Teamwork** – More time could be allocated for group activities, as this could enhance collaboration and practical learning. Promoting teamwork and collaborative learning would improve the effectiveness of group activities.
- **Training duration** – The training period may need to be extended to 3 days to allow more time for effective teaching and hands-on practice. And need additional time for teaching would be beneficial to ensure participants fully understand the concepts. This could include more focused sessions on practical activities.
- **Computer and software readiness** – It's important to verify that all computers are compatible with the software required for the training and to notify participants in advance about the technical specifications.

10. If you have any additional comments, please provide them.

It would be highly beneficial if training sessions on software like Aqua-DST could be offered to the three-year diploma students who are currently attending a newly established Fishery Science (Diploma) course in the Department of Fishery. Similarly, Professor Dr. Kay Lwin Tun from Yangon University remarked that they will arrange a mini-session to input in their curriculum in next semester for teaching young students and researchers to apply Aqua-DST in their studies. This would help the younger generation better adopt these technologies in the future. On top of that, Daw Yin Yin Phyu, the director from Green Way technology, showed her interest in collaborating with arranging a training seminar for youth farmers from their Green Way app and YouTube platform.

It would also be great if data were available on a national scale on the dashboard, it would provide broader insights and understanding. Lastly, the Department of Agriculture (DoA), represented by U Kyaw Thet Oo, has expressed keen interest in developing a decision support tool for crop suitability analysis, inspired by the Aqua-DST model.

Conclusions

The main objective of the workshop is to deliver the knowledge of how the Excel DST Model and DST Dashboard Interface were developed, how to use the DST and Dashboard Interface, and how to find the data and information that are potentially required to improve the productivity of their fishponds or businesses. The 2-day training program included a series of presentations, a demonstration of Aqua-DST, and intensive groupwork exercise and presentation by the trainees, to get hands-on practice and to understand better the usefulness and applicability of Aqua-DST and the powerfulness of its suitability result visualization dashboard viewer to disseminate the information on decision-making that can reduce risks and thus increase the sustainability of ponds. A total – of 38 participants, 27 males and 11 females on Day 1 and a total – of 15 participants, 9 males and 6 females on Day 2

were educated on the understanding of the fishpond criteria indicators, data structures, and application of Aqua-DST dashboard online.

Based on the respective output and feedback from the training, the Aqua-DST full version will be revised and approached the mature stage by applying the different use case scenarios in the working group. Aqua-DST was valued as a promising tool but emphasize the need for better data (quality, updates, village-level), stronger ownership from DoF and stakeholders, and user capacity building to fully realize its potential. Expanding networks and systematically engaging farmers and experts will make the tool more effective and sustainable. It was highlighted that offering Aqua-DST training sessions to students in the newly established Fishery Science diploma course at the Department of Fisheries would be highly beneficial. Universities are also considering integrating Aqua-DST into their curricula to equip young students and researchers with the skills to apply such tools in their studies. Beyond academic settings, private sector partners have shown interest in collaborating on training seminars for youth farmers through digital platforms such as mobile applications and YouTube. Expanding the dashboard to include national-scale data was also recommended, as this would provide broader insights and understanding. In addition, the Department of Agriculture expressed interest in developing a similar decision support tool for crop suitability analysis, inspired by the Aqua-DST model.

Annex : 1 Pictures from the trainings



Group photo with all attendees in Yangon Training (Photo: Shelly Win, Consultant/IWMI)



Photo: Shelly Win, Consultant/IWMI







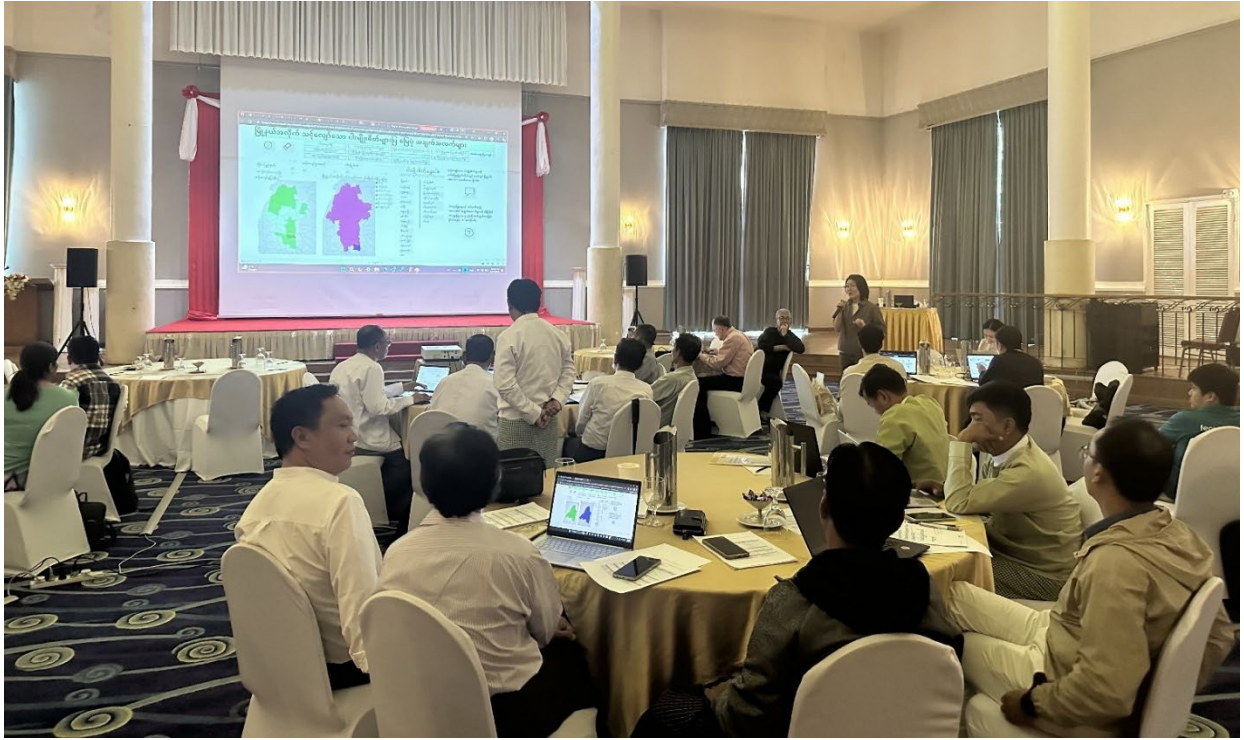


Photo: Shelly Win, Consultant/IWMI



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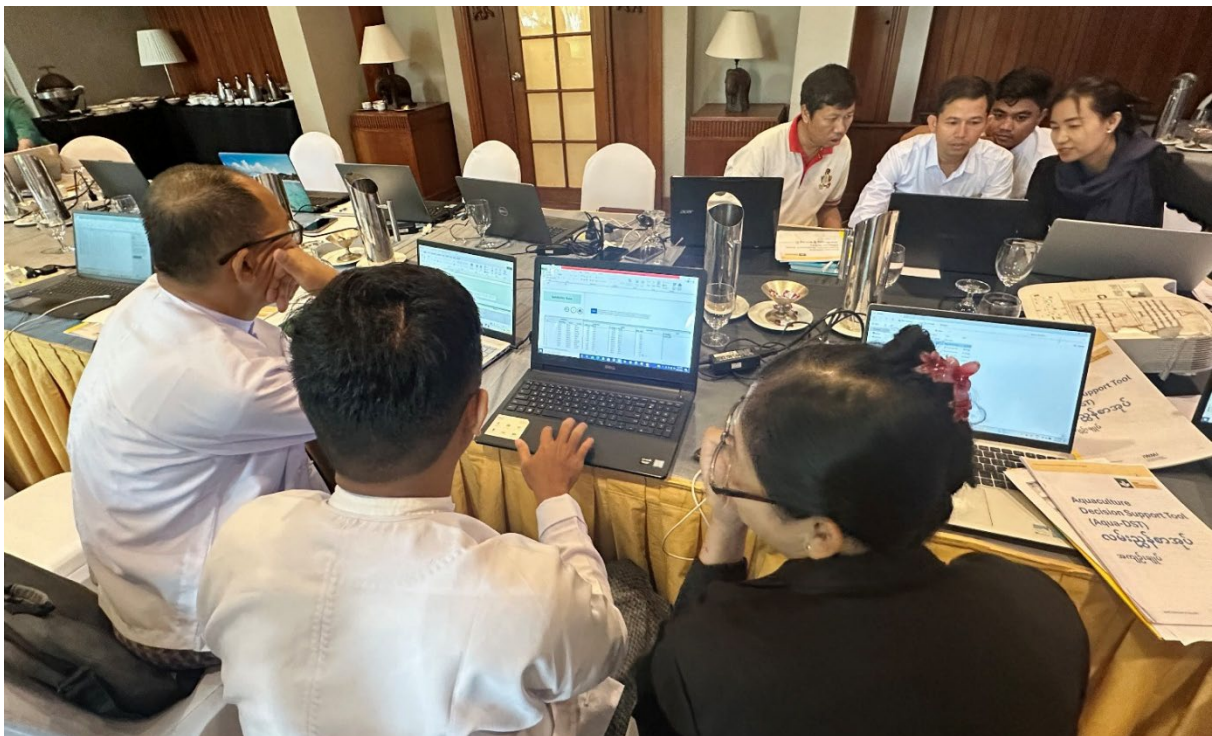


Photo: Shelly Win, Consultant/IWMI



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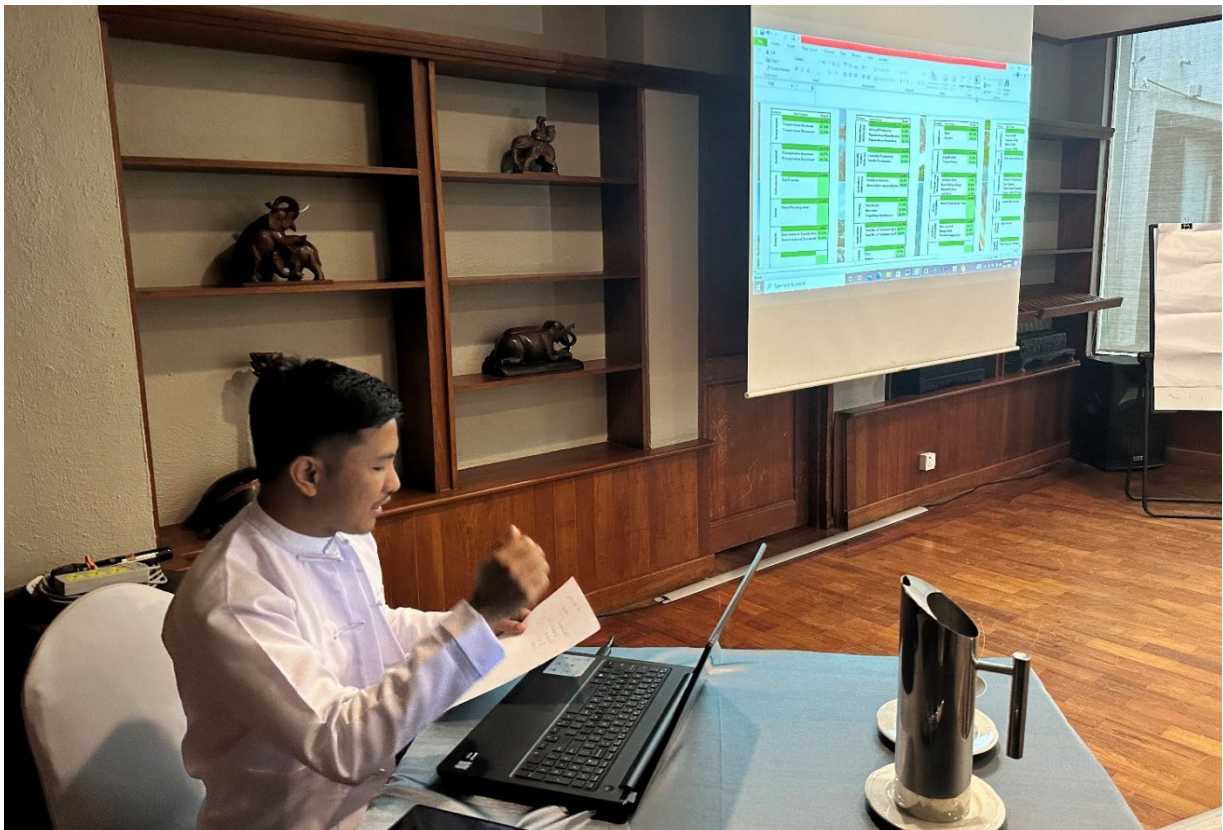


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