

Appendix 6- Online Questionnaire: Sustainability of pond and cage fish farming systems in Ashanti, Bono, Eastern and Volta regions in Ghana

Module A. Business Identification

Code	Item	Response
A1	Location	
A2		
A3	Region	
A4		
A5	Type of fish farming (Pond; cage; if other please specify)	<input type="checkbox"/> Pond
A6		<input type="checkbox"/> Cage
		<input type="checkbox"/> other (please specify).....
A7	Number of employees	
A8	Current quantity of fish stock (how much fish do you have in stock)	
A9	Farm size (space)	
A10	Number of years in operation	
A11	Name of respondent /business	
A12	Is your business registered with the fisheries commission?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I am not sure <input type="checkbox"/> I prefer not to say
A13	Are you a member of any aquaculture association in your area or elsewhere	<input type="checkbox"/> Yes (Please specify the name of the association) <input type="checkbox"/> No (please comment on reasons) <input type="checkbox"/> I am not sure (please comment on reasons) <input type="checkbox"/> I prefer not to say
A14	What is the main reason why you are into fish farming?	<input type="checkbox"/> it provides livelihood for my family <input type="checkbox"/> it is very profitable <input type="checkbox"/> it is the only work available <input type="checkbox"/> I do it just for fun because everyone else is doing it <input type="checkbox"/> it is what I studied in school

A1 (Bono, Ahafo, Brong), A2 (Volta lake), A3 (Bono, Ahafo, Brong regions), A4 (Volta region, Ashanti region etc); A5 (pond) A6 (cage) A7,A8 and A9 (Small Scale or Big scale aquaculture)

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Module B. Fish production, Input, output, storage, cost

Code	Item	
B1	What type of fish do you cultivate	<input type="checkbox"/> Tilapia <input type="checkbox"/> Catfish <input type="checkbox"/> Carps <input type="checkbox"/> All of the above <input type="checkbox"/> Other type of fish (specify):
B2	What type of fish sells <u>better</u>?	<input type="checkbox"/> Tilapia <input type="checkbox"/> Catfish <input type="checkbox"/> Carps <input type="checkbox"/> All of the above <input type="checkbox"/> Other type of fish (specify):
B3	Type of fish sells <u>faster</u>?	<input type="checkbox"/> Tilapia <input type="checkbox"/> Catfish <input type="checkbox"/> Carps <input type="checkbox"/> All of the above <input type="checkbox"/> Other type of fish (specify):
B4	What type of fish you cultivate requires more feed?	<input type="checkbox"/> Tilapia <input type="checkbox"/> Catfish <input type="checkbox"/> Carps <input type="checkbox"/> All of the above <input type="checkbox"/> Other type of fish (specify):
B5	How many times do you feed your fish?	<input type="checkbox"/> Once a day (morning/afternoon/ evening) <input type="checkbox"/> Twice a day (morning and afternoon/ Morning and evening/ afternoon and evening) <input type="checkbox"/> 3 times a day (morning, afternoon and evening) <input type="checkbox"/> More than 3 times a day <input type="checkbox"/> It depends (please comment):
B6	How much does a bag of fish feed cost?	
B7	What brand of fish feed do you use?	<input type="checkbox"/> Foreign (specify with name of product) <input type="checkbox"/> Local (specify with name of product) <input type="checkbox"/> I am not sure

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B8	Do you know the content and composition of the fish feed you use?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I am only told it is the best and I trust the content <input type="checkbox"/> I am not sure
B9	What is the basis of your choice of fish feed you use?	<input type="checkbox"/> Price (It is affordable / relatively expensive) <input type="checkbox"/> Quality (it is good, and the fish like it) <input type="checkbox"/> Quantity (it is cost-efficient) <input type="checkbox"/> Availability (it is always available in the market) <input type="checkbox"/> Accessibility (I can find it easily) <input type="checkbox"/> Other (specify)
B10	How often do you harvest your fish?	<input type="checkbox"/> Every day <input type="checkbox"/> At least once a week <input type="checkbox"/> More than once a week <input type="checkbox"/> Once a month <input type="checkbox"/> More than once a month <input type="checkbox"/> Other (specify).....
B11	On a scale of 1-5, how satisfied are you with the <u>QUANTITY</u> of fish you harvest?	<input type="checkbox"/> Very satisfied (1) <input type="checkbox"/> Quite satisfied (2) <input type="checkbox"/> Satisfied (3) <input type="checkbox"/> Not satisfied at all (4) <input type="checkbox"/> I don't know (5)
B10	On a scale of 1-5, how satisfied are you with the <u>QUALITY</u> of fish you harvest?	<input type="checkbox"/> Very satisfied (1) <input type="checkbox"/> Quite satisfied (2) <input type="checkbox"/> Satisfied (3) <input type="checkbox"/> Not satisfied at all (4) <input type="checkbox"/> I don't know (5)
B11	On a scale of 1-5 how satisfied are you with the <u>SALES</u> of fish you harvest?	<input type="checkbox"/> Very satisfied (1) <input type="checkbox"/> Quite satisfied (2) <input type="checkbox"/> Satisfied (3) <input type="checkbox"/> Not satisfied at all (4) <input type="checkbox"/> I don't know (5)
B12	Do you have space for storage of fish harvested?	<input type="checkbox"/> Yes, I have more than enough space <input type="checkbox"/> Yes, I have space, but it is not enough <input type="checkbox"/> No, I have never had storage space because I don't need it <input type="checkbox"/> I used to have storage space but not anymore
B13	Where do you sell your fish?	<input type="checkbox"/> Within the same community <input type="checkbox"/> Outside the same community

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	(Please tick possible answers)	<input type="checkbox"/> In other regions <input type="checkbox"/> I do export <input type="checkbox"/> I do not sell: The fish harvested is processed and consumed by members of my household
B14	Who are your customers?	- - -
B15	Do you engage in any kind of agricultural activity close to your fish farm?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not yet
B16	Approximately how much of your total household income is from selling farmed fish?	<input type="checkbox"/> Almost all <input type="checkbox"/> Most of it <input type="checkbox"/> Some of it <input type="checkbox"/> a small amount <input type="checkbox"/> None
B17	How often do you keep records of the following: <ul style="list-style-type: none"> - amount of fish produced and sold - amount of fish feed used, - amount of time spent in feeding and caring for the fish - number of deaths and survival rate of the fish - Other routines: specify 	<input type="checkbox"/> Everyday; <input type="checkbox"/> most of the time; <input type="checkbox"/> sometimes; <input type="checkbox"/> never <input type="checkbox"/> Everyday; <input type="checkbox"/> most of the time; <input type="checkbox"/> sometimes; <input type="checkbox"/> never <input type="checkbox"/> Everyday; <input type="checkbox"/> most of the time; <input type="checkbox"/> sometimes; <input type="checkbox"/> never <input type="checkbox"/> Everyday; <input type="checkbox"/> most of the time; <input type="checkbox"/> sometimes; <input type="checkbox"/> never

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Module C. Fish welfare

Code	Item	Response
C1	<p>Has your farm been affected by any disease in the last 5 years?</p> <p><i>If you answer No, please skip question C2, C3</i></p>	<p>Yes</p> <p>No</p>
C2	What kind of disease?	
C3	What treatment did you use?	
C4	How often do you vaccinate your fish	
C5	At what stage in the production do you vaccinate your fish?	
C6	How expensive is the treatment of fish against diseases?	<p>Very expensive</p> <p>Expensive</p> <p>Affordable</p> <p>Free of charge</p>
C7	Who does the vaccination?	<p><input type="checkbox"/> Mass vaccination programmes by the fisheries commission</p> <p><input type="checkbox"/> I do it by myself with the help of my local staff</p> <p><input type="checkbox"/> I pay external services</p>
C8	In your opinion, what is the main factor that affects fish welfare in the aquaculture sector in Ghana	<p><input type="checkbox"/> Lack of knowledge about fish diseases</p> <p><input type="checkbox"/> lack of fish veterinarians</p> <p><input type="checkbox"/> Lack of adequate infrastructure such as laboratories</p> <p><input type="checkbox"/> Lack of government support</p> <p><input type="checkbox"/> Importation of illegal fingerlings</p> <p><input type="checkbox"/> Lack of regulations</p> <p><input type="checkbox"/> inappropriate fish feeds</p> <p><input type="checkbox"/> Other (specify).....</p>

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Module D. Decision making and level of participation

Code	Item	Response
D1	How often do you participate in decision making regarding the welfare, price and production cost of farmed tilapia catfish etc.	<input type="checkbox"/> All the time <input type="checkbox"/> most of the time <input type="checkbox"/> sometimes <input type="checkbox"/> never
D2	Do you determine your own prices?	Yes No It depends (specify)
D3	How often do you take part in a training need analysis for capacity building?	
D4	Do you think you need training and capacity building to manage your fish farm more efficiently?	Yes, Very much needed Yes I need training but I don't have the funds Yes I need training but I don't have time No, you do not need education/training to run a fish farm No, I am not interested Other reason?.....
D5	How efficient is the aquaculture association in your locality?	Very efficient Efficient Somehow efficient Not efficient at all Not functioning
D6	How satisfied are you with Government support in the fish farming industry?	<input type="checkbox"/> very satisfied <input type="checkbox"/> satisfied <input type="checkbox"/> not satisfied at all
D7	To what extent do you think political nepotism affect the stability and sustainability of the aquaculture industry	<input type="checkbox"/> Highly <input type="checkbox"/> very much <input type="checkbox"/> somehow <input type="checkbox"/> not a all