Roadmap approach for improving food value chain efficiencies

Results from the food value chain workshops for beef, chicken, fish, onion, potato and rice

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Food and Agriculture Organization of the United Nations

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Report 2414, Final, Version 1

Information and/or data as presented in these slides are part of project 8141907600, financed by Embassy of the Kingdom of the Netherlands in Dhaka and commissioned by Food and Agriculture Organization of the United Nations, and shall be treated as public. These slides are available at https://doi.org/10.18174/630087 and were reviewed by drs.ing. J.C.M.A. (Joost) Snels and authorized by dr.ir. H. (Henk) Wensink. The research that is documented in this report was conducted in an objective way by researchers who act impartial with respect to the client(s) and sponsor(s).

This research project has been carried out by Wageningen Food & Biobased Research (WFBR), which is part of Wageningen University & Research.
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Acknowledgement

The food value chain workshops are organized in the project ‘Support for Modelling, Planning and Improving Dhaka’s Food System’ (DFS project), implemented by the Food and Agriculture Organisation in Bangladesh (FAOBD) in collaboration with Wageningen University and Research (WUR), and funded by the Embassy of the Kingdom of the Netherlands (EKN) in Bangladesh. The workshops were part of the Food Value Chain cluster, one of the six thematic areas in the project.

The results of the food value chain workshops will be used as input source for the report: Roadmap approach for improving food value chain efficiencies: How to identify and implement interventions for reducing food loss and waste in Dhaka’s food system?, which is one of the deliverables within the project.

We hereby want to express our gratitude to the colleagues from the Food and Agriculture Organization of the United Nations (FAO) in Bangladesh for organizing the workshop logistics, their inputs and facilitating the group discussions. Additionally, we want to thank all workshop participants for their participation, inputs and commitment in the food value chain workshops.

List of abbreviations

Abbreviations	Description
BADC	Bangladesh Agricultural Development Corporation
BARI	Bangladesh Agricultural Research Institute
BFSA	Bangladesh Food Safety Authority
BPDB	Bangladesh Power Development Board
BRDB	Bangladesh Rural Development Board
BREB	Bangladesh Rural Electrification Board
BRRI	Bangladesh Rice Research Insitute
BSTI	Bangladesh Standard Testing Institute
CC	City Corporation
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing

Abbreviations	Description
DLS	Department of Livestock Services
DoF	Department of Fisheries
GoB	Government of Bangladesh
MFI	Micro Finance Institution
MMC	Market Management Committee
MoA	Ministry of Agriculture
MoF	Ministry of Finance
NBFI	Non-banking Financial Institutes
NBR	National Board of Revenue
NGO	Non-Governmental Organization
TCB	Trading Corporation of Bangladesh

Outline

Introduction (1)

The aim of the workshops was twofold:

- Capacity: Strengthening the capacity and collaboration between food value chain stakeholders via (further) familiarization with food value chain thinking, specifically to find interventions and identify an implementation strategy to solve food value chain inefficiencies collaboratively.
- Validation of preliminary report findings (see acknowledgements): Finding out what food value chain inefficiencies are most urgent to solve regarding food value chain stakeholders.

Introduction (2)

- The value chain

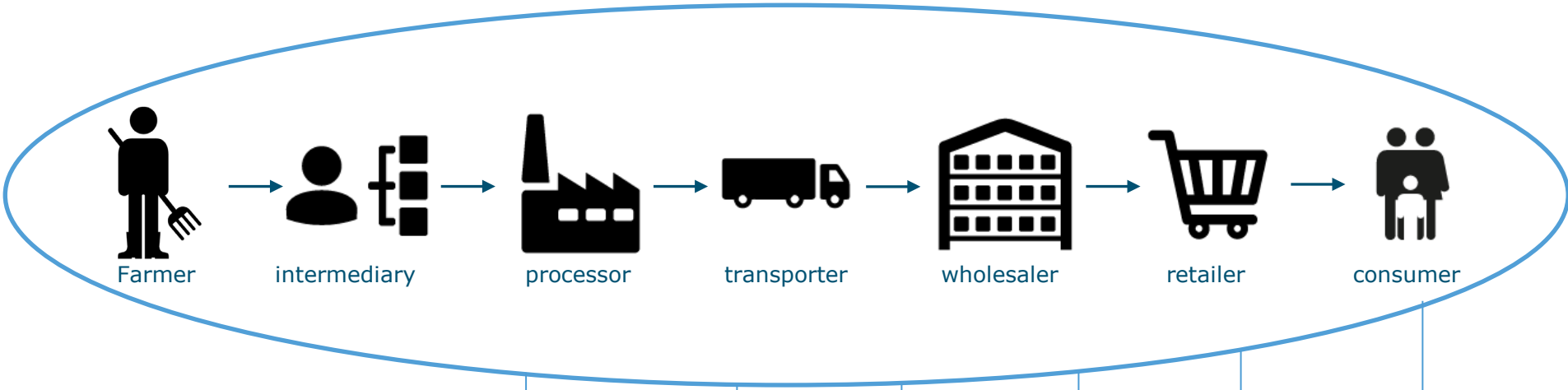

Image made for the purpose of this presentation

Input suppliers

Investors

Other

Trade associations

Governments

Communities

Introduction (3)

Waste segregation at biodigester in Jessore (photo by FAOBD)

Fish retailer in Dhaka (photo by WUR)

- Value chain inefficiencies can lead to undesirable outcomes, including:
  - Food losses and waste
  - Deteriorating food quality
  - Food safety issues
  - High food prices

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Introduction (4)

- The goal is to intervene in food value chains to reduce value chain inefficiencies, and support greater availability and access to safe and nutritious food
- But we also know that >50% of interventions fail → white elephants (Ika, 2012)
- Therefore, we need lasting, long-term change, with attention to interlinking interventions, inclusivity, and implementation conditions
- However, intervention selection is a complex task as they should (Soethoudt et al., 2021):
    - Fit the context
    - Make economic sense (be profitable)
    - Not burden the environment
    - Improve access to food
    - Be socially and culturally acceptable
    - Be affordable and accessible
    - Address real problems

- Ika, L. A. (2012). Project management for development in Africa: Why projects are failing and what can be done about it. Project management journal, 43(4), 27-41.

- Soethoudt, J. M., Pedrotti, M., Bos-Brouwer, H. E. J., & Castelein, R. B. (2021). Adoption of food loss and waste-reducing interventions in Low-and Middle-Income Countries (No. 2196). Wageningen Food & Biobased Research.

Methodology description

- Value chain workshop approach
    - *Presentations, group work and sharing results*
- Workshop logistics
    - *Dates and participation*
- Value chain assessment
    - *Issues, root causes, interventions and strategy**
- Group assignments
    - *Assignment 1*
    - *Assignment 2*

* This approach is loosely based on the EFFICIENT protocol for estimating food loss and waste (FLW). During these workshops the approach was applied to broader value chain inefficiences than FLW. See 'further reading' for more info about the EFFICIENT protocol, including the Food Loss & Waste cause & intervention tool.

Methodology – Value chain workshop approach

- General introduction about improving food value chain inefficiencies
- Explain value chain assessment
- Group assignments per table of 5-8 actors active in one product value chain
- Presenting outcomes per food value chain product group

General introduction and explanation of value chain assessment (photo by FAOBD)

Group assignments (photo by FAOBD)

Presenting outcomes group work (photo by FAOBD)

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Methodology – Workshop logistics

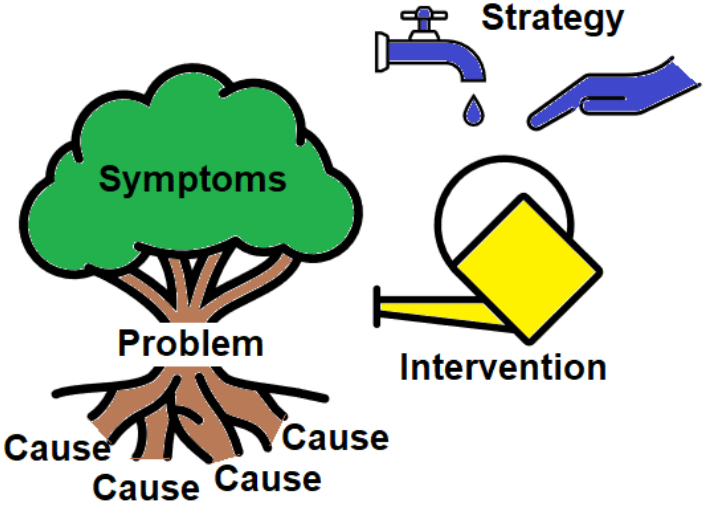
- Two food value chain workshops were held in Dhaka:
  - 26th of February 2023: beef and chicken
  - 5th of March 2023: fish, onion, potato and rice

- Participants included managers, directors, agricultural officers, consultants and others from:
  - Private sector (from farm to retail)
  - Governmental organizations (GoB)
  - Non-governmental organizations (NGO's)
  - Donor organizations
  - Associations and foundations
  - Research institutes

Beef	- 5 participants
Chicken	- 6 participants
Fish	- 5 participants
Onion	- 5 participants
Potato	- 6 participants
Rice	- 7 participants

Methodology – Value chain assessment

- Steps of the value chain assessment:
  - Determine issues in the food value chain
  - Determine root causes of issues and bottlenecks
  - Evaluate potential interventions
  - Formulate coherent long-term intervention strategy



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Methodology - Group assignment 1

a) What are the major issues in the value chain?

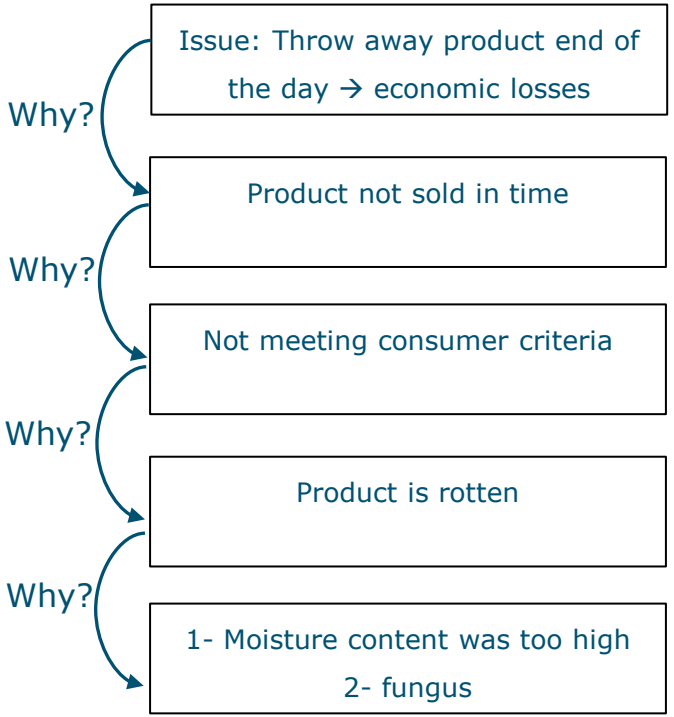
b) To which actors do these issues apply mainly?

c) What are the intermediate causes of this issue at this actor?

d) What is/are the root cause(s) for this issue at this actor?

		Issue 1	Issue 2	Issue 3
a)	What are the major issues in the supply chain? (mention 1 – 3 issues)			
b)	To which actor does every issue apply mainly?			
c)	Why is this issue occurring? 1x			
	2x			
	3x			
	4x			
d)	Root cause(s) 5x			

Template for group assignment 1



5 times why approach. Image made for the purpose of this presentation

Methodology - Group assignment 2

a) Select one of your identified root causes to solve

b) Come up with 1 to 3 suitable interventions to solve this root cause

c) What strategy would you suggest to address the identified root causes? A strategy consists of:

I. Pick 1 suitable intervention to solve the root cause

II. Describe supportive actions

III. Prioritize the intervention and supportive action in terms of a timeline (what to do first)

IV. Per action, describe the stakeholder involvement

V. Per action, describe the duration of implementation

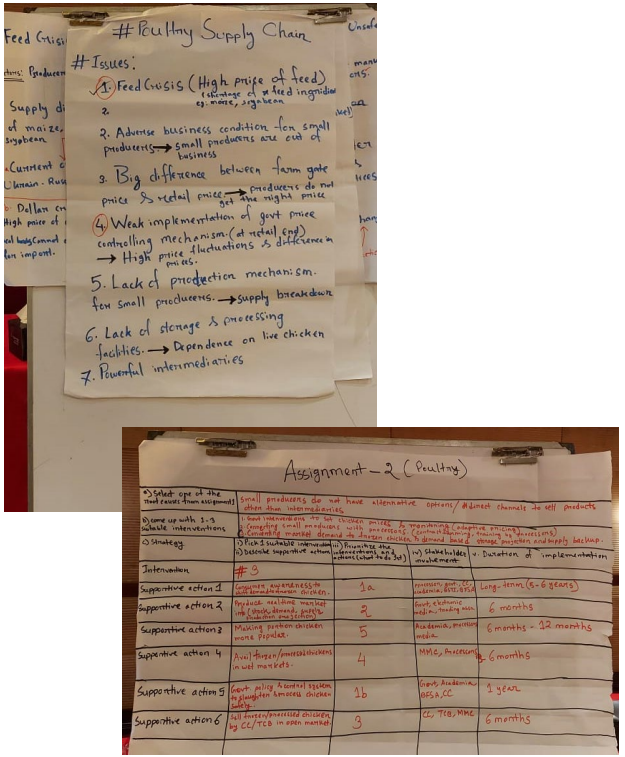
a) Select one of the root causes from assignment 1	
b) Come up with 1-3 suitable interventions	

c) Strategy	i. Pick 1 suitable intervention ii. Describe supportive actions	iii. Prioritize the intervention and actions (what to do first)	iv. Stakeholder involvement	v. Duration of implementation
Intervention				
Supportive action 1				
Supportive action 2				
Supportive action 3				
Supportive action 4				
Supportive action 5				
Supportive action 6				

Template for group assignment 2

Results

- Results per food value chain
  - Results assignment 1
    - Template with: 1-3 issues, main actor the issue applies to, cause description and root cause
  - Other issues mentioned during assignment 1
    - List of other issues
  - Results assignment 2
    - Template with: Selected root cause, 1-3 intervention
    - Template with: Selected intervention and it's implementation strategy



Results from the group work (photo by FAOBD)

Beef – assignment 1

			Issue 1	Issue 2	Issue 3
a)	**What are the major issues in the supply chain? (mention 1 – 3 issues)**		High feed costs	Transport related cost	Spoilages of meat
b)	**To which actor does every issue apply mainly?**		Farmers	Traders	Processors, retailers
c)	**Why is this issue occurring?**	**1x**	Import dependent	High transport cost, required more space for live cattle	Lack of infrastructure of standard processing
		2x	Low domestic production	High fuel cost	High temperature during handling, transport & storage
		3x	a) High competition of human food b) No feedstock seed available	Bribes required on transport routes	Costly cooling system
		4x		Body weight loss of live cattle	
d)	**Root cause(s)**	**5x**	a) Competition with high value food crops	Long distance, farness of production hub, high land cost at Dhaka	High fuel cost, High cost for cooling system (as technology should be imported)

Beef – assignment 1 other issues

Other issues discussed between group members during the group assignments that did not make it to the final ranking in assignment 1:

- Inadequate veterinary services
- Lack of grazing land
- Lack of capital to invest in beef rearing
- Low productivity of cattle
- Lack of market infrastructures to process meat
- Lack of import of cattle due to government ban
- Lack of adopting high-tech beef processing equipment by the butchers
- Lack of hygienic place in retail markets

Beef – assignment 2

a)	**Select one of the root causes from assignment 1**	Land scarcity/ Competition with high value crop
b)	**Come up with 1-3 suitable interventions**	i. Production of high yielding and climate resilience fodder & grain ii. Vertical/ hydroponic production iii. Awareness of farmers

c) Strategy	**i. Pick 1 suitable intervention ii. Describe supportive actions**	**iii. Prioritize the intervention and actions (what to do first)**	**iv. Stakeholder involvement**	**v. Duration of implementation**
Intervention	Cattle farmers produce their cattle feed	7		
Supportive action 1	Cattle farming area selection & Farmers group formation	1	DLS & Development organization	6 months
Supportive action 2	Classroom training	2	DLS, Development organization	6 months
Supportive action 3	Providing high yielding variety	3	Research organization, Development organization & private sector	12 months
Supportive action 4	Demonstration & piloting	4	DLS, Development organization & private sector	12 months
Supportive action 5	Govt. subsidy	5	GoB	24 months
Supportive action 6	Provide modern machine & technology	6	DLS, machine supplier, development organization & GoB	6 months

Chicken – assignment 1

			Issue 1	Issue 2	Issue 3
a)	**What are the major issues in the supply chain? (mention 1 – 3 issues)**		Feed crisis	Price fluctuation & gap between farmer gate price and retail price (live bird)	Unhygienic & unsafe chicken
b)	**To which actor does every issue apply mainly?**		Producers/farmers	Direct: producers Indirect: Consumer, intermediaries, GoBt. and retailers	Direct: Processors Indirect: Consumer and wet market vendors
c)	**Why is this issue occurring?**	**1x**	Supply disruption of maize and soybean	Small producers are depending on the intermediaries price	Slaughter dead chicken & unhygienic practices
		2x	a - Current ongoing Ukrain-Russia war b - Dollar crisis (lack of dollars) + high price of dollar (money exchange rate)	No other options to sell (lack of other buyers	For profit & resistance to change the practices
		3x			
		4x			
d)	**Root cause(s)**	**5x**	b - Local body cannot open LC (license of import) for import	No other options to sell (lack of other buyers	Unwilling to change practices

Chicken – assignment 1 other issues

Other issues discussed between group members during the group assignments that did not make it to the final ranking in assignment 1:

- Adverse business condition for small producers -> Small producers are out of business
- Weak implementation of GoB. price controlling mechanism (at retail end) -> high price fluctuation & difference in prices
- Lack of production mechanisms for small producers -> supply breakdown
- Lack of storage & processing facilities -> Dependence on live chicken
- Powerful intermediaries
- 1% of total production die during transportation (Mortality rate of 1%)
- Dead chicken are sold to restaurants

Chicken – assignment 2

a)	**Select one of the root causes from assignment 1**	Small producers do not have alternative options/direct channels to sell products other than intermediaries
b)	**Come up with 1-3 suitable interventions**	i. Govt. Interventions to set chicken prices & monitoring (adaptive pricing) ii. Connecting small producers with processors (Contract training, training by processors) iii. Converting market demand to frozen chicken & demand based storage projection and supply backup

c) Strategy	**i. Pick 1 suitable intervention ii. Describe supportive actions**	**iii. Prioritize the intervention and actions (what to do first)**	**iv. Stakeholder involvement**	**v. Duration of implementation**
Intervention	Converting market demand to frozen chicken & demand based storage projection and supply backup	6		
Supportive action 1	Consumer awareness to shift demand to frozen chicken	1a	Processor, GoB, CC, academia, BSTI, BFSA	Long-term (5-6 years)
Supportive action 2	Produce real time market info (stock, demand, supply production projection)	2	GoB, electronic media, trading association	6 months
Supportive action 3	Making portion chicken more popular	5	Academia, processors, media	6 – 12 months
Supportive action 4	Make available frozen/processed chickens in wet markets	4	MMC, processors	3-6 months
Supportive action 5	GoB Policy & control system to slaughter & process chickens safely	1b	GoB, academia, BFSA, CC	1 year
Supportive action 6	Sell frozen/processed chicken by CC/TCB in open market	3	CC, TCB, MMC	6 months

Fish – assignment 1

		Issue 1	Issue 2	Issue 3
a)	**What are the major issues in the supply chain? (mention 1 – 3 issues)**	High input price (feed, seed, utility)	Losses during handling & transportation	Value addition (Lack of technology – from fresh fish to processed fish e.g. ready to cook/ready to eat)
b)	**To which actor does every issue apply mainly?**	GoB (DoF, NBR, PDB, REB), Private organization (Feed miller, hatchery owner), Farmer, Producer	Farmer/ Processor, wholesaler, Retailer, Broker	Exporter, processors
c)	**Why is this issue occurring?** **1x**	Inflation	Perishable item	Less policy support
	2x	Dependency on import for raw materials	Low storage facility (cold storage, packaging)	Low interest of investors
	3x	No subsidy on electricity	Unavailability of cool chain facility	Don't maintain international compliance
	4x	Low fish price in market	Technical know how (Training)	Market promotion/ Diversification of processed fish
d)	**Root cause(s)** **5x**	Insufficient production of inputs and dependency on importation of some inputs	Highly perishable items having chance of rapid contamination	Lack of appropriate technology

Fish – assignment 1 other issues

Other issues discussed between group members during the group assignments that did not make it to the final ranking in assignment 1:

- Unavailability of fish feed
- Lack of food safety & hygiene
- Technology gap between farmers/processors & exporter

Fish – assignment 2

a)	**Select one of the root causes from assignment 1**	Highly perishable items having chance with rapid contamination
b)	**Come up with 1-3 suitable interventions**	i. Establishment of fish cold storage at different fisheries hubs ii. Transportation through well designed vehicles iii. Capacity development of stakeholders

c) Strategy	**i. Pick 1 suitable intervention ii. Describe supportive actions**	**iii. Prioritize the intervention and actions (what to do first)**	**iv. Stakeholder involvement**	**v. Duration of implementation**
Intervention	Establishment of fish cold storage at different fisheries hubs	3	GoB, NGO, farmers association, investor	12 months
Supportive action 1	Survey to find out the suitable location	1	Investor	2 months
Supportive action 2	Access to finance	2	GoB, bank	1 months
Supportive action 3	Direct access to farmers in cold storage and avoid intermediaries	5	Producer, investor, local DoF officer	12 months
Supportive action 4	Training (how to handle, transport, store, packaging, processing)	4	GoB, investor	3 months
Supportive action 5	Market promotion	6	GoB, investor	12 months (continuous process)
Supportive action 6	Government subsidy	7	GoB	12 months

Onion – assignment 1

		Issue 1	Issue 2	Issue 3
a)	**What are the major issues in the supply chain? (mention 1 – 3 issues)**	Import dependency (4 months lean period- November to February)	Very much perishable materials (No modern technology for storage)	Onion loss due to poor transportation.
b)	**To which actor does every issue apply mainly?**	Importer	Farmer	Supplier
c)	**Why is this issue occurring?** **1x**	Summer variety scarcity	High Price	Poor packaging system
	2x	One time production	Traditional technology	Lack of proper transportation
	3x	No modern storage facilities	Lack of innovation	
	4x			
d)	**Root cause(s)** **5x**	No year-round production. (4 months lean period)	No high tech or modern technology for storage	Poor packaging and transportation

Onion – assignment 1 other issues

Other issues discussed between group members during the group assignments that did not make it to the final ranking in assignment 1:

- Lack of technology for storage of onions properly
- Increase of production of onion will not result in meeting the year-round demand → With current technology for storage not possible to store onion for more than 8 months
- Low production of summer onions (produced in August to September with harvest in October) → Lean period may be filled up by this summer production
- Summer variety is available BARI onion 3, 4 and 5, but need to disseminate in the field level
- Need to develop modern technology for summer onion production technology

Onion – assignment 2

a)	**Select one of the root causes from assignment 1**	No year-round production. (4 months lean period)
b)	**Come up with 1-3 suitable interventions**	1. Summer onion production and summer seed production 2. Development of improve variety

c) Strategy	**i. Pick 1 suitable intervention ii. Describe supportive actions**	**iii. Prioritize the intervention and actions (what to do first)**	**iv. Stakeholder involvement**	**v. Duration of implementation**
Intervention	Summer onion production	5	MoA (DAE, BADC, Private Sectors, BARI)	4 months
Supportive action 1	Ensure seed availability	1	MoA (DAE, BADC, Private Sectors)	9 months
Supportive action 2	Farmers capacity development	2	DAE, NGO	Continue process
Supportive action 3	Market linkage	4	MoF (NBFI, MFI, Bank)	Continue process
Supportive action 4	Financial support for seed production	3	DAM, NGO, Private Sectors	Continue process
Supportive action 5	Farmers Association formation	6	Departure of Co-operative, BRDB	12 months
Supportive action 6				

Potato – assignment 1

			Issue 1	Issue 2	Issue 3
a)	**What are the major issues in the supply chain? (mention 1 – 3 issues)**		High price of seeds and low availability of quality seed	Minimal mechanized farming for small farmers (sowing, grading, harvesting)	Small farmers do not have collection points and access to cold storage
b)	**To which actor does every issue apply mainly?**		Farmers, exporters, processors	Farmers	Farmers, wholesalers, bulk buyers (processor)
c)	**Why is this issue occurring?**	**1x**	a - Syndicate of seed companies (high price) b - Fraud with selling low quality seeds (low quality)	No training and limited knowledge	a - Need for instant cash b - Small operating capital
		2x	a - No or limited monitoring in the seed market for price and syndicates b - Farmers cannot understand the seed quality	Too expensive	a,b - no business knowledge a,b - Limited access to finance
		3x			Limited market access
		4x			
d)	**Root cause(s)**	**5x**	b – No grading system in place for seed quality	Farmers are accustomed to traditional farming	Low profit

Potato – assignment 1 other issues

Other issues discussed between group members during the group assignments that did not make it to the final ranking in assignment 1:

- Quality seeds are not available
- High price of quality seed
- Low selling price for farmers
- Quality pesticides and fungicides are not available
- Low production due to pest and fungus infection
- High labor wage during harvesting
- Mechanized farming is too expensive for the small farmers (sowing to harvesting, grading)
- No collection point at producer level
- Extension service (like soil testing) is not available
- Small farmers cannot access cold storage facilities
- High wastage at farm level

Potato – assignment 2

a) Select one of the root causes from assignment 1	Farmers are accustomed to traditional farming
b) Come up with 1-3 suitable interventions	Formation of farmers groups/association/organization capacity funding (production, business etc.)

c) Strategy	**i. Pick 1 suitable intervention ii. Describe supportive actions**	**iii. Prioritize the intervention and actions (what to do first)**	**iv. Stakeholder involvement**	**v. Duration of implementation**
Intervention	Formation of farmers group + capacity building	1b	GoB, private sector	Minimum 5 years
Supportive action 1	Awareness building to motivate + build model forms	1a	GoB, NGO, academia, research, media	10 years
Supportive action 2	Access to finance (credit, insurance)	3	Financial institute (bank, non-bank financial institute,	Minimum 5 years
Supportive action 3	Technical training (GAP, mechanization, input)	2	GoB, NGO, research organization	Minimum 5 years
Supportive action 4	Logistic support (machinery)	4	Private sector, processor, GoB	Minimum 5 years
Supportive action 5	Post harvest management	5	GoB, NGO, academia, research	Minimum 5 years
Supportive action 6	Access to wider market (export, processor, direct sales to consumers)	6	GoB, NGO, processor, private sector	Minimum 5 years

Rice – assignment 1

		Issue 1	Issue 2	Issue 3
a)	**What are the major issues in the supply chain? (mention 1 – 3 issues)**	Shortage of good quality seed	Labor shortage + high wages	
b)	**To which actor does every issue apply mainly?**	Farmer		
c)	**Why is this issue occurring?** **1x**	Low knowledge and money capacity of farmer		
	2x	No resources (training) for good quality seed production		
	3x	Low interest of farmers		
	4x			
d)	**Root cause(s)** **5x**	Dependent on seed production company		

Rice – assignment 1 other issues

Other issues discussed between group members during the group assignments that did not make it to the final ranking in assignment 1:

- Water scarcity is profoundly visible in norther and southern part during the summer season which hampers rice production
- Soil structure of rice production areas differ from region to region → tailor made practices/seeds needed
- Labor shortage and high wages → more people are getting education and other alternative opportunities which attract them more in other jobs than agriculture
- Modern scientific technology is not introduced and, in some extent, unavailable for the local farmers

Rice – assignment 2

a)	**Select one of the root causes from assignment 1**	Dependent on seed production company
b)	**Come up with 1-3 suitable interventions.**	I) Subsidy from Govt II) Production of good quality seed by farmer

c) Strategy	**i. Pick 1 suitable intervention ii. Describe supportive actions**	**iii. Prioritize the intervention and actions (what to do first)**	**iv. Stakeholder involvement**	**v. Duration of implementation**
Intervention	Production of good quality seed by farmer	6	Local farmer, GoB	3 years
Supportive action 1	Training based project implementation	3	Local farmer, local political leader	5 years
Supportive action 2	Involve local farmer leader for awareness building	2	Farmer, BRRI, DAE, private sector (seed company)	Continuous
Supportive action 3	Linkage development between Govt. and private sector	4	GoB and seed company	2 years
Supportive action 4	Market facilities development by proper govt policy	5	GoB, retailer, beneficiaries, farmer	5 years
Supportive action 5	Pilot project implementation	1		5 years
Supportive action 6				

Conclusions

- Multiple issues, root causes and suitable interventions were collaboratively described by the participants per food value chain
- Per food value chain, participants collaboratively designed an implementation strategy to adress a food value chain inefficiency
- The inputs of the participants generated new insights regarding the most urgent issues per food value chain
- Findings from the food value chain workshops are used in the final report: Roadmap approach for improving food value chain efficiencies: How to identify and implement intervention for reducing food loss and waste in Dhaka's food system?

Further reading

- The steps of the value chain assessment during this workshop were loosely based on the EFFICIENT protocol for identifying interventions to reduce Food Loss and Waste. Find more information here:

	EFFICIENT Protocol → https://www.wur.nl/en/research-results/research-institutes/food-biobased-research/show-fbr/take-the-target-measure-act-approach-to-reduce-food-waste-yes-but-be-pragmatic-about-it.htm
EFFICIENT Protocol explanation video → https://www.youtube.com/watch?v=a3ojTcQYlwc&t=40s	
	Part of the EFFICIENT protocol is the Food Loss & Waste cause & intervention tool → https://the-efficient-protocol.azurewebsites.net/
Pilot studies & measurement templates of the EFFICIENT protocol → Tomato Nigeria: https://edepot.wur.nl/470201 Rice Nigeria: https://www.sciencedirect.com/science/article/pii/S2666790822000921	

Thank you

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