

Urban food markets in Africa: Incentivizing food safety using a pull–push approach

Training of food safety regulators on best practices, hygiene and handling of chicken consumed in Ouagadougou, Burkina Faso

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Background

The Pull-Push project, 'Urban food markets in Africa: Incentivizing food safety using a pull-push approach', aims to improve food safety in urban informal markets in Burkina Faso and Ethiopia. While previous efforts have focused on training producers or regulators, with little attention to incentives for behaviour change, the project investigates whether consumer demand can provide the same incentive ('pull') for food safety in low- and middle-income countries as it has in high-income countries. It also builds the capacity of market-level value chain actors to respond to demand (for example, by improving practices or adapting technologies) and of regulators to provide an enabling environment ('push'). The training of regulators reported here is a component of Work Package 4, which aims to build the capacity and motivation of regulators to manage food safety, representing the 'push' approach.

Overall objective of the training

The overall objective of the training was to provide food regulators with understanding of food safety issues, the means to assess and manage them, and a common understanding of key foundation concepts of food safety in the context of Burkina Faso.

Specific objectives of the training

The specific objectives of the training were to:

- Discuss key food safety concepts and their application by regulators in their daily professional life.
- Discuss with regulators key food safety issues that have been documented in the Pull-Push project chicken value chain assessment and come up with realistic recommendations to inform interventions.
- Discuss the current protocols used by the national regulators to monitor street food outlets, identify their weaknesses, and provide recommendations.
- Raise awareness among regulators on Good Hygienic Practices (GHP) for food (with a focus on chicken) handling and processing.
- Improve the regulators' knowledge and application of the Hazard Analysis Critical Control Points (HACCP) system in the food chain.
- Develop a decision support tool for easy sanitary inspection of food in street restaurants by regulators.

Primary outcome

The main outcome was increased knowledge and awareness of food safety practices among regulators.

Primary intended users

The course targeted 24 local regulators and policymakers in the food safety/health domain in Burkina Faso, including junior or mid-level professionals such as local and national regulators and advisors. Participants were expected to be graduates with a background in public health as well as several years of experience in hygiene and animal-source food regulation in Burkina Faso. The aim of training at the national level was to build overall capacity in food safety system improvement and promote use of the scientific information generated and long-term sustainability of the interventions if found acceptable. This is a pre-requisite to helping establish modern, effective food safety systems.

National level regulators

Twelve national organizations working on food safety regulation in Burkina Faso were involved in the training:

- Laboratoire National Santé Publique (LNSP) - *National Public Health Laboratory*
- Ministère de l'Agriculture, des Aménagements Hydro-agricoles, de la Mécanisation, des Ressources Animales et Halieutiques (MAAHMRAH)/Direction Générale de la Promotion de l'Economie Rurale - *Ministry of Agriculture, Hydro-agricultural Development, Mechanization, Animal and Fishery Resources/Directorate for the Promotion of the Rural Economy*
- MAAHMRAH/Direction de la Protection des Végétaux et du Conditionnement - *Ministry of Agriculture, Hydro-Agricultural Development, Mechanization, Animal and Fishery Resources /Directorate of Plant Protection and Packaging*
- Agence Burkinabè de la Normalisation, de la Métrologie et de la Qualité - *Burkinabe Agency for Standardization, Metrology and Quality*
- Brigade Mobile de Contrôle Economique et de la Répression des Fraudes (BMCERF)- *Mobile Brigade for Economic Control and Fraud Prevention*
- Fond National pour le Développement Communautaire (FONADEC) - *National Fund for Community Development*
- Ministère de la Santé /Direction de la Nutrition - *Ministry of Health / Directorate of Nutrition*
- Ministère de la Santé /Direction des Services de Santé/Service Hygiène - *Ministry of Health/Directorate of Health Services/Hygiene Service*
- Direction Générale des Services Vétérinaires (DGSV) – *General Directorate of Veterinary Services*
- Direction Salubrité Publique et Hygiène (DSPH) – *Directorate of Public Health and Hygiene*

Project site level regulators

The project level regulations are enforced by 12 food safety inspectors, with each covering a commune in Ouagadougou. They conduct daily inspection of food outlets, and provide training and guidance on hygiene.

Trainers

The team of trainers was led by Prof Kagambèga Assèta, a food microbiologist at the

University Joseph Ki-Zerbo of Ouagadougou (UJKO). She developed the course content, conducted the theoretical training sessions and supervised the visit to the microbiology laboratory. She was supported by Michel Dione (ILRI), the Pull-Push project coordinator in Burkina Faso. Dione developed training videos and was in charge of showing these videos to participants and leading group discussions. Ilboudou Guy (ILRI), a veterinary epidemiologist and the project field coordinator, and Valérie Raymonde Lallogo (ILRI), a social scientist research assistant, were in charge of taking notes during the theoretical sessions, evaluation of the training and logistics during field visits.

Training approach

The training content was built on research findings of the poultry and vegetable qualitative value chain assessments (Dione et al., 2021) and the quantitative knowledge, attitude and practice surveys of chicken and tomato hygiene and handling in Burkina Faso (Gemedo et al., 2021). Among recommendations by value chain actors to improve food safety, capacity building of regulators was considered a critical step to be implemented.

The first part of the training consisted of a series of theoretical sessions using PowerPoint presentations, brainstorming, videos and discussions. The second part consisted of field visits to selected food retailers to assess their work environment and a visit to the microbiology laboratory of the University of Ouagadougou to demonstrate laboratory processes for bacterial culture and identification.

Training content

The modules covered during the training were:

Module 0: The context and background of the training

- *To describe the Pull-Push project approach and how the training of the regulators is linked to the project objectives.*

Module 1: Basic concepts in general microbiology

- *To discuss microbiology concepts such as microbes, their roles, environment, and life cycles, and how they are detected and identified.*

Module 2: Food safety in Burkina Faso

- *To show the importance of foodborne diseases globally and locally; using results of previous studies carried out in Burkina Faso, to discuss the level of contamination of food of animal origin, especially chicken.*

Module 3: Food contamination pathways

- *To describe the sources of contamination in the chicken food chain in Burkina Faso and discuss how to prevent contamination.*

Module 4: Hygiene and quality of raw materials and ingredients

- *To demonstrate how food may be contaminated before or during preparation (focus on cross-contamination between chicken and vegetables such as tomato, onion and lettuce).*

Module 5: Hygiene of premises, preparation and sale equipment

- *To show how the environment and processing material can be a source of food contamination.*

Module 6: Hygiene of people, methods and practices in the food sector

- *To show that people and practices can be a source of contamination: for example, management of rinse water for chicken carcasses.*

Module 7: Water management in the food preparation and sales process

- *To show that water quality could affect food quality: for example, if the water used to serve customers is dirty, it can be a source of disease.*

Module 8: Food quality regulation and control (including HACCP)

- *To explain the principles of HACCP and discuss food safety regulations in force in Burkina Faso (strengths and weaknesses).*

Training implementation

Day 1: Modules 1 and 2

On day 1 of the training, the participants were asked to introduce themselves and state their expectations and concerns with regard to the training. The main expectations were to :

- Learn from each other and share their experiences
- Strengthen knowledge on food safety and hygiene
- Find out the roles of each actor in food safety
- Learn more about the Pull-Push project
- Get more knowledge on food microbiology.

The main concern reported by participants was that those of them with lower academic qualifications would not master the concepts at the same speed as their more highly educated counterparts.

The participants also discussed the in-house practices to observe during the workshop to allow good success. These practices included :

- Put phones on silent or vibrate mode.
- Raise your hand before speaking.
- Keep time.
- Respect each other's opinions and questions.
- Allow everyone to participate.

After that, Dione made a brief presentation of the project, the activities carried out so far and those in progress. He also described the context and background of the training (Module 0). After the presentation, the following contributions were made by the participants:

- The project interventions should include informal food vendors who run small enterprises.
- Why only tomato? Cucumber and lettuce should also be included in the course syllabus.
- Regulators are concerned about the standards at chicken slaughtering facilities.
- There are many food safety regulations, but their enforcement is lacking. On some occasions, there is need to engage the municipal police in enforcing the regulations.
- Meat inspection is not done properly. For example, for ruminants, only the liver is examined.

- There is need for a lot of sensitizations of food and market actors on good hygiene practices.
- There is need for behavioural change among consumers to demand good quality food.
- The veterinary department needs to improve food inspection at the slaughter point, as well as in the importation of animal-source foods.

A pre-test was conducted to assess the participants' level of knowledge on good hygiene practices, food contamination pathways and control measures prior to training. The same test was repeated on the last day of the workshop (post-test), the results of which are set out in Figure 1.

Following the evaluation of the participants, the trainer introduced module 1, entitled 'Basic concepts on general microbiology' by starting with a discussion on general knowledge in microbiology. Each participant expressed their knowledge of microbiology with a fairly good level of understanding, which reassured the trainer to continue to address the content of this module in a more in-depth manner. At the end of the module, the facilitator answered questions from the participants for better understanding. Afterwards, module 2 entitled 'Food safety in Burkina Faso' was presented, followed by discussions and group work on topics related to foodborne diseases, their impact and control measures in Burkina Faso. At the end of the module, participants were divided into two groups to reflect on different questions. The results are shown in the table below (Table 1)

Table 1: Discussion of Modules 1 and 2

Question 1: Name food borne diseases occurring in Burkina Faso.		
Question 2: What is the impact of the diseases on the population and how are they controlled?		
	Group 1	Group 2
Foodborne diseases in Burkina Faso	Dysentery	Amoebic dysentery
	Cholera	Bacillary dysentery
	Salmonellosis	Typhoid fever
	Campylobacteriosis	Giardiasis
	Botulism	Salmonellosis
	Hookworm	Hepatitis A and E
	Hepatitis A and E	Certain carcinogenic diseases associated with consumption of contaminated cereals
	Tuberculosis	
	Brucellosis	
	Anthrax	
Impact of foodborne diseases on people	Socioeconomic	Socio-economic impact (decrease in productivity)
	Stigmatization	Increased mortality and morbidity rates
	Mortality and morbidity	
Foodborne disease control measures	Regulatory and legislative texts	Creating awareness for behaviour change
	Existence of control structure and supervision	Capacity building of actors
	Epidemiological surveillance	Containment
	Inspection and containment	
	Communication/sensitization	
	Management and risk analysis	

In the afternoon (2–4 pm), all participants were transported to the microbiology laboratory at Joseph KI-ZERBO University of Ouagadougou. The objective of this visit was to show the participants the methods of microbiological analysis of food and the possibilities of collaboration if need arose. Discussions were also held on the roles of laboratories in the surveillance of foodborne pathogens.

Day 2: Modules 3, 4 and 5

On the second day, the presentation of module 3 entitled ‘Food contamination pathways’ began in the morning. Participants brainstormed on what is likely to contaminate food and the types and routes of contamination, with focus on chicken processing. Later, they were shown a video on processing and cooking meat in a street restaurant. At the end of the video, participants were asked to discuss the good and bad practices they had observed that influenced contamination of food during preparation. This enabled them to link the training to what they see during their daily duties.

After this module came module 4 entitled ‘Hygiene and quality of raw materials and ingredients’, which took the form of a PowerPoint presentation. The participants were asked questions on how they inspected the quality of raw materials during field visits. Further discussions were organized into two groups (Table 2).

Table 2: Discussion of Modules 3 and 4

Question 1: What are the main ways that the food you inspect is contaminated? Question 2: How can food contamination be prevented?		
	Group 1	Group 2
Main ways through which food is contaminated		Production Dirty water Pesticide residue Transport Inappropriate means of transport Storage Inappropriate materials Poor cold chain Inadequate humidity Processing Lack of hygiene Use of toxic products Poor food handling practices
How to prevent food contamination	Production High quality poultry feed Good quality of chicks and eggs Clean water Good quality farm inputs Processing/consumption Clean vegetables and condiments (tomato, onion, garlic, salt, pepper and chili) Clean water and cooking oil Use of detergents and disinfectants	Creating awareness on the need for a clean environment Hygienic handling of raw materials Safe processing Using clean equipment Having healthy and clean personnel Creating awareness on contamination Containment

Question 1: What are the main raw materials used from production to consumption (poultry sector)? Question 2: How do you verify their quality?		
	Group 1	Group 2
Raw materials used		Production Antibiotics Vitamins Water Disinfectants Processing Chicken (carcass) Vegetables
Quality assessment	Inspection Sampling for laboratory analysis	Referring to the veterinarians' inspection report Referring to the laboratory analysis report

Module 5 entitled 'Hygiene of premises, preparation, and sale equipment' was presented in the afternoon, followed by a plenary discussion on the subject 'How do you verify the hygiene of the premises, preparation and sales equipment?'. The main issue highlighted was the handling of food with bare hands. Participants suggested the use of gloves or plastic bags to protect the hands although there is a high risk of more contamination if food handlers do not change the gloves. This is very likely because gloves are considered expensive. Most participants thought it was better to promote good hand washing although access to clean water could be problematic for some people. The use of aluminium paper to wrap meat was also highlighted because the potential impact on the quality of food is unknown.

Day 3: Modules 6, 7 and 8

The presentation of Module 6 on 'Hygiene of people, methods and practices in the food sector' began with reminder questions about previous sessions before delving into that morning's content. This was followed by module 7, 'Water management in the food preparation and sales process'. Participants shared their experiences on the state of water quality and management, especially at chicken grilling outlets, before the presentation of the module. At the end of the presentation, the two groups were given an hour for discussions. During the presentation of Module 8 on food quality regulation and control (including HACCP), participants asked questions to better understand the HACCP method. It emerged that Burkina Faso does not have established standards to qualify the acceptable or unacceptable sanitary quality of food on microbiological or chemical parameters. International standards are used for the interpretation of results to assess the microbiological qualities of food. It appears that the food inspection approach is not harmonized and there is no common checklist to be used by all regulators at street chicken restaurants. Table 3 shows the responses to the questions during group work.

Table 3: Discussion of Modules 6, 7 and 8

Question 1: What rules ensure good food hygiene?		
	Group 1	Group 2
Rules that ensure good food hygiene	Personal hygiene: hair protection, and clothing hygiene Cooking food well Covering food Use of appropriate equipment	Cleanliness of the clothing and body of the workers Cleanliness of premises (environment) Quality of the raw material Cleanliness of equipment/utensils Use of appropriate work clothing Good waste collection and management system Good behavioural practices
Question: What are the pathways of disease spread and how can the spread of microbes be stopped?		
Pathways of disease spread	Respiratory tract Digestive tract Skin	Dirty water Food Respiratory tract
How to stop the spread of microbes	Compliance with hygiene measures	Sensitization Training on good hygiene practices
Question: Are there any regulations on food safety? Which ones? What are the inadequacies?		
	The steps for setting up a food outlet are: Request documents from the relevant authorities. Get the appropriate papers from the governing body. Compile the files (authorization to open / practice, authorization to occupy the public domain for non-commercial areas). Measures taken by regulators to ensure food safety: Having the proper documentation. Having regular medical checkups.	The steps for setting up a food outlet are: Contact the relevant authorities. Apply for authorization to open a food outlet Set up production premises and the sales environment. Wait for results (authorization). These protocols are not observed.

Each working group was also asked to develop a checklist for inspection of food sale premises, with a focus on chicken, based on the training and their own experience. The main components of the checklist were:

- Management of live chickens where there is slaughter in the outlet)
- On-site slaughter process/practices
- Carcasses transportation from market to outlet
- Treatment and handling of carcasses before preparation
- Cooking of the chickens
- General hygiene of the outlet
- Utensils and other equipment
- Cleanliness of water

- Staff personal hygiene
- Consumer food service hygiene

The checklist was then tested the following day during field work.

Day 4: Field visits to poultry markets and street restaurants

A bus was made available to take participants from the hotel to the sites. Participants visited two poultry slaughter sites in the markets and two previously identified poultry grilling sites. The site managers had agreed to the visits with the participants. The checklist developed on day 3 was printed and given to each participant to inspect the poultry grilling site, note the practices observed and make a judgment on good and/or bad practices. The general observations made at the slaughter sites were the lack of hygiene and the lack of adequate treatment of biological waste.

Day 5: Feedback and wrap up

On day 5, participants were asked to provide feedback from the field visits (Table 4) and potential adjustments of the food outlet inspection checklist.

Table 4: Feedback from field visits

Question 1: What observation did you make in the field on behavioural and personnel hygiene?		
	Group 1	Group 2
Observation during field work on behavioural and personnel hygiene	Behavioural hygiene: fair Personal hygiene: Fairly good	Insufficient hygiene rules Lack of work clothes Improper food handling Inadequate utensil washing system Lack of a waste management system Ignorance on hygiene
Recommendations to improve food safety	Train Communicate Mentor/support	Raising awareness on compliance with hygiene rules Training on good hygiene practices Strengthening the control and inspection system Repression

At the slaughter slabs, the following recommendations were made to improve sanitation:

- Training of actors at the technical level
- Ensuring clean water supply
- Improving latrines and/or toilets
- Ensuring a good slaughter waste management system
- Raising awareness of the importance of a cold chain
- Improving the general hygiene of the sales premises.

At the point of sale of prepared food (chicken):

- Separate slaughter and cooking areas
- Use separate equipment such as knife, tables, and buckets between processes
- Maintain latrines and keep them clean
- Improve management of waste
- Improve conditions for water storage and supply
- Wear proper work clothes
- Improve personal hygiene (clothes) and utensils
- Use disinfectants when cleaning premises.

The last session of day 5 was reserved for selected organizations (Ministry of Livestock, Ministry of Commerce, Ministry of Health, Public Veterinary Laboratories and Hygiene Services) to make presentations about their work, with a focus on the roles in relation to food safety, and issues that affect proper implementation of good practices and policies. The following issues were raised:

- Lengthy procurement procedures affect timely release of laboratory test results that would be used to make decisions for intervention
- Technical institutions are not financially autonomous, affecting their timely interventions
- Poor enforcement of existing food safety regulations
- Lack of communication/collaboration across several food safety control bodies (agriculture, livestock, commerce, hygiene)
- The current slaughterhouse is not adapted to small-scale local chicken production
- Food handlers are not motivated to change because of lack of support from the government.

Training evaluation

Each participant filled an online survey to assess the level of knowledge of best practices before and after the training. The evaluation was done using 21 technical questions related to the training content:

The graph below (Figure 1) shows the obtained points of each participant at the beginning and at the end of training. The test was anonymous.

Figure 1: Responses of the 23 regulators to the pre- (blue) and post- (red) training evaluations

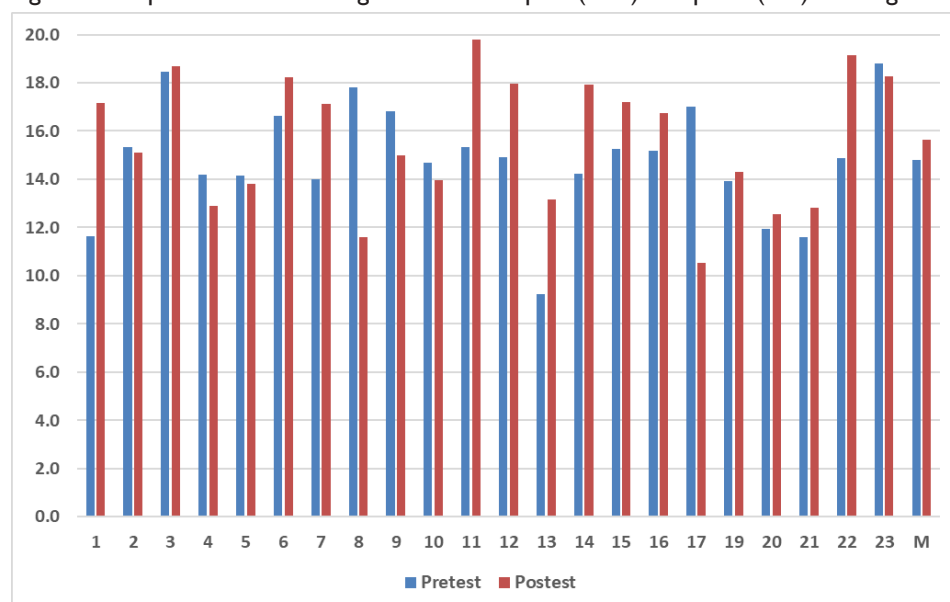


Table 5 shows the scores of all the participants. In the pre-training test, less than 50% of the participants answered more than 75% of the questions correctly compared to 55% in the post-training test.

Table 5: Participant scores in the tests

Score (%)	Pre-training		Post-training	
	No. of participants	%	No. of participants	%
0-25	0	0	0	0
26-50	1	5	0	0
51-75	11	50	10	45
76-100	10	45	12	55

Participants were also asked to evaluate the training. The results are presented in Figures 2, 3 and 4.

Figure 2: To what extent have your expectations been met?

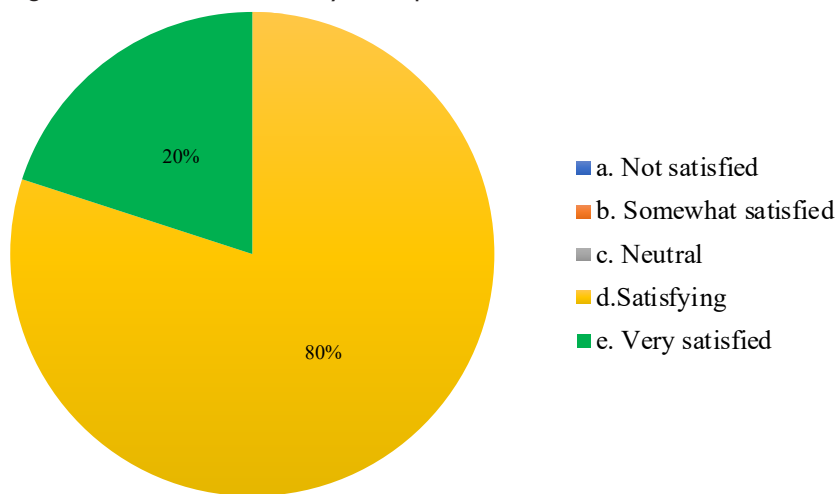


Figure 3: How satisfied are you with the theoretical part of the training?

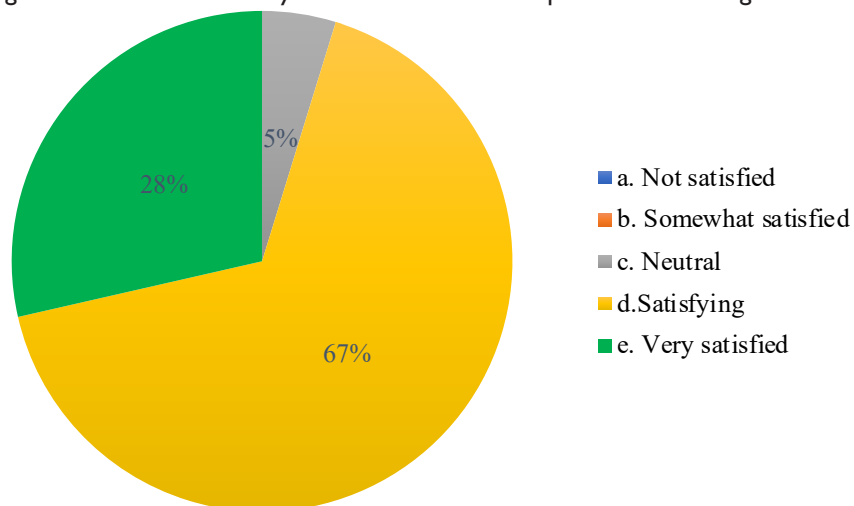


Figure 4: How satisfied are you with the practical part of the training (field visits)?

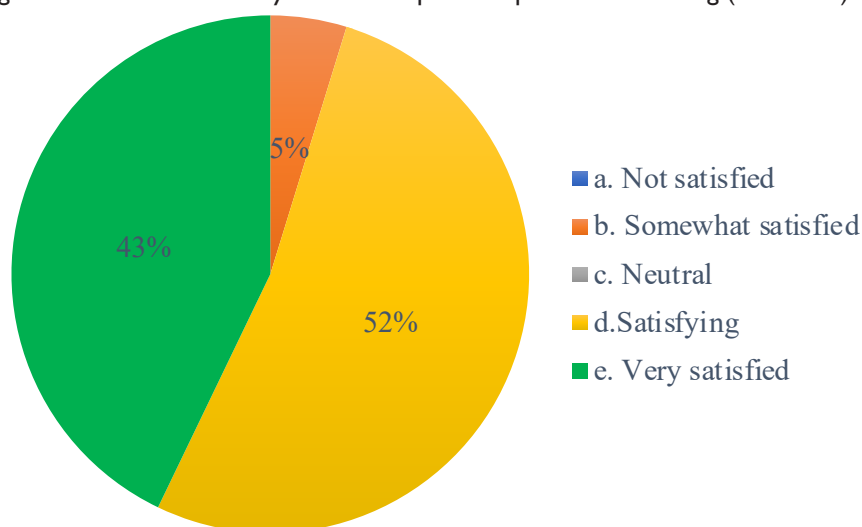
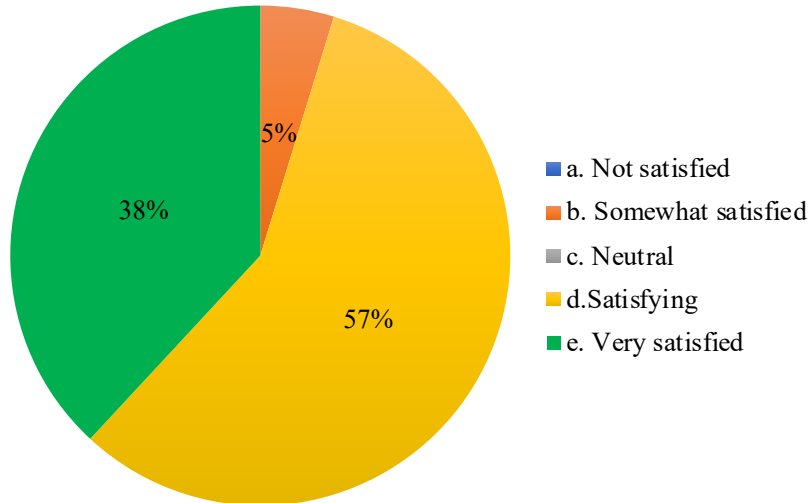


Figure 5: How satisfied are you with the organization of the training (logistics, environment, duration etc.)?



Recommendations for improvement for the next trainings

Theoretical course

- Start with presentations of regulatory and control structures to identify strengths and weaknesses for strong recommendations.
- Require compliance with the activity schedule (the start and end times of training sessions. Reduce the duration of sessions (finish at 1500 hours).
- Use more images and videos.
- Improve in the facilitation of the discussions as some participants over were out of the topic sometimes.
- Separate profiles of the trainees and adapt content by profile
- Use less technical terms during training.
- Have more discussions than theoretical presentations.
- Focus the training on the direct aspects of the field and formulate concrete actions that each structure will implement. Organize the follow-up of these actions.
- Increase the number of days of practical sessions/Give more time for field visits.
- Improving care conditions.
- The training should contain presentations based on the realities on the ground.

Field work

- Organize the field visits better; explain to the actors the philosophy of the project and its objectives so that they understand the partnership.
- Conduct debriefing on the same day the site visit is held.
- Allow more time for more sites.
- Associate certain control services in the choice of sites to visit.

Overall training implementation

- Offer participants support after each communication or module.
- Reduce the duration of the theoretical phase.
- Revise the duration of the training to two weeks.
- Organize sub-committees to collect as many recommendations as possible.

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Annexes

Annex 1 : Inspection checklist

National food regulator training workshop PULL PUSH PROJECT		National food regulator training workshop PULL PUSH PROJECT	
Check list of inspection for grilled/flamed/braised chicken outlets			
1. Outlet identification			
1. Name of owner.....			
2. GPS coordinates			
3. Kind of chicken sold	Flamed/___	Grilled/___	Braised/___ Others.....
4. Phone number.....			
2. Management of live chickens (case of slaughter in the outlet)			
5. Presence of	Yes/___	No/___	
6. Good condition of the cage	Yes/___	No/___	
7. Good location of the house in relation to the direction of the wind	Yes/___	No/___	
8. Chicken stay time	Less than 12h/___	More than 12h/___	
9. Mixture of sick chickens and healthy chickens	Yes/___	No/___	
10. Good density of chickens in the cage (not too crowded)	Yes/___	No/___	
3. On-site slaughter process/practices			
11. Hygiene conditions of slaughter place	Unsatisfactory/___	Acceptable/___	Satisfactory /___
12. Slaughter technique	Unsatisfactory/___	Acceptable/___	Satisfactory /___
13. Plucking technique	Unsatisfactory/___	Acceptable/___	Satisfactory /___
14. Evisceration technique	Unsatisfactory/___	Acceptable/___	Satisfactory /___
15. Plucking water quality	Unsatisfactory/___	Acceptable/___	Satisfactory /___
16. Regular cleaning and disinfection of equipment	Yes/___	No/___	
17. Waste storage container	Yes/___	No/___	
18. Management of dead chickens	Unsatisfactory/___	Acceptable/___	Satisfactory /___
4. Carcasses transportation from market to outlet			
19. Mean of transportation	Unsatisfactory/___	Acceptable/___	Satisfactory /___
20. Transport conditions	Unsatisfactory/___	Acceptable/___	Satisfactory /___
5. Treatment and handling of carcasses before preparation			
21. Presence of cold chain	Yes/___	No/___	
22. Storage/conservation conditions	Unsatisfactory/___	Acceptable/___	Satisfactory /___
23. Washing of carcasses	Unsatisfactory/___	Acceptable/___	Satisfactory /___
6. Cooking of the chickens			
24. Source of heat (gas, coal, wood)	Unsatisfactory/___	Acceptable/___	Satisfactory /___
25. Quality of ingredients	Unsatisfactory/___	Acceptable/___	Satisfactory /___
26. Cooking surface quality	Unsatisfactory/___	Acceptable/___	Satisfactory /___
27. Cook under host	Yes/___	No/___	
7. General hygiene of the outlet			
28. Full infrastructure	Yes/___	No/___	
29. Water and sanitary facilities	Yes/___	No/___	
30. State of sanitary facilities	Unsatisfactory/___	Acceptable/___	Satisfactory /___
31. Presence of adequate hand washing facilities and soap	Yes/___	No/___	
32. Existence of wastewater management device	Yes/___	No/___	
33. Adequate soil	Yes/___	No/___	
34. Well-ventilated place of sale	Yes/___	No/___	
35. Neglected corners	Yes/___	No/___	
36. Presence of dustbin	Yes/___	No/___	
37. Regular waste removal	Yes/___	No/___	
38. Existence of smell of putrefaction or stagnant water	Yes/___	No/___	
39. Dusty atmosphere	Yes/___	No/___	
40. Presence of stray animals	Yes/___	No/___	
41. Medical monitoring of employees	Yes/___	No/___	
8. Utensils and other equipment			
42. Utensil washing device	Unsatisfactory/___	Acceptable/___	Satisfactory /___
43. Easily cleanable utensils	Yes/___	No/___	
44. Use of detergent/disinfectant	Yes/___	No/___	
45. Status of sales tables	Unsatisfactory/___	Acceptable/___	Satisfactory /___
46. Pre-sale knife and table cleaning	Yes/___	No/___	
9. Hygiene of water			
47. Water supply sources	Unsatisfactory/___	Acceptable/___	Satisfactory /___
48. Hand washing water quality	Yes/___	No/___	
49. Water quality for washing utensils	Unsatisfactory/___	Acceptable/___	Satisfactory /___
50. Use of the same equipment for water supply and storage	Yes/___	No/___	
10. Staff personal hygiene			
51. Regular hand washing	Yes/___	No/___	
52. Hair Protection	Yes/___	No/___	
53. Cut nails	Yes/___	No/___	
54. Clean clothing	Yes/___	No/___	
55. Washing hands after the toilet	Yes/___	No/___	
56. Careless handling of dirty objects	Yes/___	No/___	
11. Consumer food service hygiene			
57. Storage of ready-to-eat carcasses	Unsatisfactory/___	Acceptable/___	Satisfactory /___
58. Separation of stains by employee	Yes/___	No/___	
59. Well-covered utensils for service	Yes/___	No/___	
60. Packaging/service material	Unsatisfactory/___	Acceptable/___	Satisfactory /___
61. Provision of hand washing water for customers	Yes/___	No/___	
62. Provision of soap for customers	Yes/___	No/___	

Annex 2: List of participants

Full name	Institution
Nikiema Fulbert	Laboratoire National Santé Publique (ANSSEAT)
Ouedraogo Agnès	Direction Générale de la Promotion de l'Economie Rurale/MARAH
Kabore Caroline	Mairie de l'Arrondissement N°8
Compaore Moussa	Direction de la Protection des Végétaux et du Conditionnement/MAAHMRAH
Sebgo Yabre	Mairie de l'Arrondissement N°3
Ouily Boureima	Mairie de l'Arrondissement N°12
Zoungrana Paul	Mairie de l'Arrondissement N°2
Zongo/Tiendrebeogo P.Alice	Agence Burkinabè de la Normalisation, de la Métrologie et de la Qualité
Sawadogo P. Emmanuel	Mairie de l'Arrondissement N°6
Kabore Rasmata	Mairie de l'Arrondissement N°4
Belemeyegre Bernard	Brigade Mobile de Contrôle économique et de la Répression des Fraudes
Yonaba Zacharia	Fond National pour le Développement Communautaire (FONADEC)
Diallo Kadissa	Mairie de l'Arrondissement N°11
Bougma/kagambega Asseta	Université Joseph Ki-Zerbo
Michel Dione	ILRI
Ilboudo S. Guy	ILRI
Lallogo N. R. Valerie	ILRI
Sourkoumde G. Emile	Mairie de l'Arrondissement N°10
Thiombiano/Coulibaly Nana	Ministère de la Santé /Direction de la Nutrition
Yawa Fahouzia	ILRI
Ilboudo Irissa	ILRI
Sanfo Kadré	Direction Générale des Services Vétérinaires/DSPVL
Tiendrebeogo T. Hyacinthe	Mairie de l'Arrondissement N°1
Yago Emmanuel	Mairie de l'Arrondissement N°5
Nabaloum Ablaye	Direction des Services de Santé/Service Hygiène
Nikiema Boukari	Direction des Services de Santé/Service Hygiène
Sawadogo Siméon	Direction Salubrité Publique et Hygiène
Ouandaogo Sandaogo M.	Direction Générale des Services Vétérinaires/DGSV

Annex 3: Training schedule

Question 1: What rules ensure good food hygiene?		
	Group 1	Group 2
Rules that ensure good food hygiene	Personal hygiene: hair protection, and clothing hygiene Cooking food well Covering food Use of appropriate equipment	Cleanliness of the clothing and body of the workers Cleanliness of premises (environment) Quality of the raw material Cleanliness of equipment/utensils Use of appropriate work clothing Good waste collection and management system Good behavioural practices
Question: What are the pathways of disease spread and how can the spread of microbes be stopped?		
Pathways of disease spread	Respiratory tract Digestive tract Skin	Dirty water Food Respiratory tract
How to stop the spread of microbes	Compliance with hygiene measures	Sensitization Training on good hygiene practices
Question: Are there any regulations on food safety? Which ones? What are the inadequacies?		
	The steps for setting up a food outlet are: Request documents from the relevant authorities. Get the appropriate papers from the governing body. Compile the files (authorization to open / practice, authorization to occupy the public domain for non-commercial areas). Measures taken by regulators to ensure food safety: Having the proper documentation. Having regular medical checkups.	The steps for setting up a food outlet are: Contact the relevant authorities. Apply for authorization to open a food outlet Set up production premises and the sales environment. Wait for results (authorization). These protocols are not observed.

Annex 4: A sample of the certificate of participation

 	
<h3>ATTESTATION</h3>	
<p>Je soussigné Dr Michel DIONE, coordonnateur du projet PULL PUSH au Burkina Faso atteste que,</p>	
<p><u>Monsieur Guy ILBOUDO</u></p>	
<p>a participé à l'atelier de recyclage du personnel des structures en charge de la réglementation sur les denrées alimentaires dans la ville de Ouagadougou organisé par l'International Livestock Research Institute (ILRI) du 14 au 18 février 2022 à Ouagadougou dans le cadre de la mise en œuvre du projet Pull Push</p>	
<p>_____ DATE</p>	<p>_____ SIGNATURE</p>

Annex 5 : Photo gallery



Photo 1: Participants in a theory session (photo credit: ILRI/Michel Dione).



Photos 2: Participants in group discussions (photo credit: ILRI/Michel Dione).



Photo 3: Participants in group discussions (photo credit: ILRI/Michel Dione).



Photo 4: Laboratory visit at Joseph K-Zerbo University of Ouagadougou (photo credit: ILRI/Michel Dione).



Photo 5: Laboratory visit at Joseph K-Zerbo University of Ouagadougou (photo credit: ILRI/Michel Dione).



Photos 6: Interview with the chicken market leader (photo credit: ILRI/Michel Dione).



Photos 7: Observation of chicken processing at cooking site during field visit (photo credit: ILRI/Michel Dione).



Photos 8: Passinguemisin Alice Sonia Tiendrebeogo from Abnorm receiving training certificate (photo credit: ILRI/Michel Dione).



Photos 9: Yabré Sebgo from third arrondissement receiving training certificate from the project partner Asseta Kagambèga from the University Joseph Ki-Zerbo of Ouagadougou (photo credit: ILRI/Michel Dione).