

# Meeting Report

## BIREGIONAL ADVOCACY MEETING ON RISK MITIGATION IN TRADITIONAL FOOD MARKETS IN THE ASIA PACIFIC REGION



1–2 September 2021  
Virtual meeting

WORLD HEALTH ORGANIZATION  
REGIONAL OFFICE FOR THE WESTERN PACIFIC

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English

MEETING REPORT

BIREGIONAL ADVOCACY MEETING ON RISK MITIGATION IN TRADITIONAL FOOD  
MARKETS IN ASIA PACIFIC REGION

Convened by:  
WORLD HEALTH ORGANIZATION  
REGIONAL OFFICE FOR THE WESTERN PACIFIC

Manila, Philippines  
1–2 September 2021

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## **NOTE**

The views expressed in this report are those of the participants of the Biregional Advocacy Meeting on Risk Mitigation in Traditional Food Markets in the Asia Pacific Region and do not necessarily reflect the policies of the conveners.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for Member States in the Region and for those who participated in the Biregional Advocacy Meeting on Risk Mitigation in Traditional Food Markets in the Asia Pacific Region in Manila, Philippines, 1–2 September 2021.

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Keywords: Food Contamination – prevention and control / Food Handling / Food Safety / Food Supply / Risk Assessment

## **ABBREVIATIONS**

APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
COVID-19	coronavirus disease 2019
DPM	Director of Programme Management
FAO	Food and Agriculture Organization of the United Nations
ILRI	International Livestock Research Institute
LMIC	low- and middle-income countries
OIE	World Organization for Animal Health
SARS-CoV-2	severe acute respiratory syndrome coronavirus 2
UNEP	United Nations Environment Programme
WHO	World Health Organization

## SUMMARY

Traditional food markets are public spaces where fresh food from vegetal and animal origins are sold. Ready-to-eat food is also very common in these settings. They are a nuclear part of the cultural and social contexts of communities around the world. Traditional food markets are common in the Asia Pacific region, and they play a very strategic role in urban food security and are preferred venues for fresh and affordable food, as well as for carrying out economic transactions and sociocultural interactions.

However, traditional food markets, when not managed properly, can be unsafe environments that pose serious health risks related to food safety and zoonoses. Food markets also potentially serve as amplification settings for the human-to-human transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) – the virus that causes coronavirus disease 2019 (COVID-19) – if appropriate public health and social measures are not in place.

In this regard, the World Health Organization Regional Office for South-East Asia and the Regional Office for the Western Pacific conducted the Biregional Advocacy Meeting on Risk Mitigation in Traditional Food Markets in the Asia Pacific Region. The meeting was held virtually on 1–2 September 2021. The first day included presentations with a general overview of the situation in traditional food markets in the Asia Pacific region, and breakout-room sessions to discuss risk mitigation strategies in traditional food markets in the following four areas: 1) food safety; 2) zoonoses; 3) COVID-19 human-to-human transmission; and 4) risk assessments. The second day included presentations on the practical application of risk assessments in traditional food markets in different settings and the exchange of country perspectives and experiences in managing traditional food markets in several countries of the Asia Pacific region. The meeting concluded with recommendations and the way forward.

The meeting also provided the Member State representatives with country experiences, lessons identified, communications and community engagement strategies, risk assessment and management strategies, and scientific evidence related to risk mitigation in traditional food markets. Access to this information and knowledge contributes supporting national authorities to advocate for the improvement of traditional food markets at the local level. Likewise, the meeting promoted interaction and the involvement of the Member State representatives and sought their commitment to support local authorities in promoting changes in traditional food markets. The topics addressed during the meeting on risk mitigation and other public health interventions made clear that strategic communications and community engagement to encourage effective behaviour-change communications are essential to start the transformation of traditional food markets into safer places for consumers, vendors and local food inspectors.

## **1. INTRODUCTION**

### **1.1 Workshop organization**

The Biregional Advocacy Meeting on Risk Mitigation in Traditional Food Markets in the Asia Pacific Region was jointly organized by the World Health Organization (WHO) Regional Office for South-East Asia and the WHO Regional Office for the Western Pacific. The meeting was held virtually on 1–2 September 2021. The first day included presentations with a general overview of the situation in traditional food markets in the Asia Pacific region, and breakout-room sessions to discuss risk mitigation strategies in traditional food markets in the following four areas: 1) food safety; 2) zoonoses; 3) coronavirus disease 2019 (COVID-19) human-to-human transmission; and 4) and risk assessments. The second day included presentations on the practical application of risk assessments in traditional food markets in various settings and the exchange of country perspectives and experiences in managing traditional food markets in several countries of the Asia Pacific region. The meeting concluded with recommendations and the way forward.

### **1.2 Objectives**

The objectives of the meeting were:

- a) to support national authorities to advocate for the improvement of traditional food markets with local regulators/local governments;
- b) to discuss strategies to mitigate risks and enhance risk perceptions, aiming for the adoption of policies to reduce the risk of unsafe foods and spill over of zoonotic pathogens and to prevent public health emergencies; and
- c) to provide a platform for Member States to share lessons on improving traditional food markets.

## **2. PROCEEDINGS**

During the two-day session, 133 connections by participants who took part in both days of the meeting were registered. It should be noted that some participants attended the meeting as a group, using a single connection for several participants.

Participants included officials from national authorities from 28 Member States from the WHO regions. For the South-East Asia Region, nine Member States participated: Bangladesh, Bhutan, India, Indonesia, Maldives, Nepal, Sri Lanka, Thailand and Timor-Leste; for the Western Pacific Region, 18 countries and areas participated: Australia, Brunei Darussalam, Cambodia, China, Hong Kong SAR (China), Cook Islands, Fiji,

Kiribati, the Lao People's Democratic Republic, Malaysia, Mongolia, New Zealand, the Philippines, Papua New Guinea, Singapore, Vanuatu, Tonga and Viet Nam.

The WHO Secretariat included staff from all three levels (country, regional and headquarters) of the Organization. Observers from the following organizations also participated: the Asia-Pacific Economic Cooperation (APEC) Food Safety Forum; the Association of Southeast Asian Nations (ASEAN); the International Livestock Research Institute (ILRI); and the World Organisation for Animal Health (OIE). Annex 1 and Annex 2 of the present document show the Programme of activities and List of participants, respectively.

## **2.1 Opening session**

Dr Simone Moraes Raszl, Technical Officer for Food Safety at the WHO Regional Office for the Western Pacific and the responsible officer for the meeting, welcomed participants. She said that the event was co-organized with the WHO South-East Asia Region Food Safety team, led by Dr Gyanendra Gongal. Dr Raszl outlined that traditional food markets have different names and characteristics throughout the region and that they are an essential part of the food system, existing for as long as humans have engaged in trade. They are source of fresh and healthy food, as well as a source of livelihood for many people, but they are also part of the region's culture and history, and they have influenced the urbanization of ancient cities. Dr Raszl highlighted that traditional food markets have also been linked to many public health issues in the past. Facing these threats is a challenge for many Member States, and it is the duty of the WHO and other international organizations to support the application of measures to mitigate these risks. She mentioned that the current WHO biregional meeting is an action that is part of this duty.

Dr Takeshi Kasai, WHO Regional Director for the Western Pacific, welcomed the participants, noting the excellent participation of Member States of both regions. The Regional Director said that traditional food markets play an important role in providing access to prepared and fresh food at affordable prices, and they are a source of livelihood for local food producers and vendors. He also noted that traditional food markets are an important social platform in the community, serving as a place for human connection. Likewise, the Regional Director mentioned that under the conditions of the COVID-19 pandemic, the challenges faced by traditional food markets in the region are greater than they have been for many decades. He said that for food markets to become safer and healthier places, it will be necessary to have socially accepted measures, which allow identification, assessment and categorization of the risks, which in turn would allow prioritization of the risks and the design of adequate interventions to reduce them.

Dr Pem Namgyal, Director of Programme Management (DPM), WHO Regional Office for the South-East Asia, gave her welcoming remarks on behalf of the Regional Director, Dr Poonam Khetrpal Singh. DPM acknowledged that traditional food markets are an



important part of communities in the Asia Pacific region because they are a main source of affordable fresh foods for many low-income groups and an important source of livelihoods for millions of urban sellers. However, problems arise when traditional food markets allow the sale and slaughter of live animals – especially wild-captured exotic animals – in areas open to the public. These conditions introduce the risk of emerging zoonoses, which have long persisted in such markets. DPM said that there is no evidence that food is implicated in the transmission of COVID-19 and that there is no evidence that the virus responsible for the pandemic is carried by domestic food-producing animals. However, traditional food markets can promote human-to-human transmission of disease, which is why it is necessary to apply the necessary biosafety and hygiene measures to avoid this transmission. Finally, DPM noted that the biregional advocacy meeting was intended to engage Member States and help policy-makers and participants support local authorities in promoting the changes required.

Dr Francesco Branca, Director, Department of Nutrition and Food Safety, WHO headquarters, sent a video message. Dr Branca recognized that traditional food markets are an important source of livelihoods for many people in the world and they are also a source of quality food for hundreds of millions in low- and middle-income countries (LMICs). But at the same time, there is a risk associated to food sold in traditional markets, in terms of food safety and transmission of zoonotic diseases. Dr Branca said that these risks can be mitigated by having better infrastructure, better design and better placement of markets. However, there are other challenges and other mitigation measures that can be implemented, considering the peculiar characteristics of each region. Dr Branca stressed that WHO must understand these challenges and special conditions to provide adequate support to Member States to undertake the process of transforming traditional food markets into safer places. He noted that the COVID-19 pandemic added new important challenges, such as preventing the spread of human-to-human infections from in the traditional food markets. Finally, Dr Branca noted that COVID-19 allows us to reflect on the risks of zoonotic transmission of disease and that the food system can become a vehicle for this type of infection that involves humans, animals and the environment. He indicated that recently WHO, in collaboration with the World Organisation for Animal Health (OIE) and the United Nations Environment Programme (UNEP), published *Reducing public health risks associated with the sale of live wild animals of mammalian species in traditional food markets*. The document proposes that adequate risk assessments be put in place as long-term measures.

## **2.2 Lecture 1. Overview of traditional food markets in Asia Pacific**

Dr Hung Nguyen-Viet, Co-leader, Animal and Human Health Program, ILRI, gave the first presentation of the meeting: an overview of traditional food markets in the Asia Pacific

region.<sup>1</sup> The presentation provided information about traditional markets and so-called or wet markets in the Asia Pacific region.

Dr Nguyen-Viet said that traditional food markets are very important in LMICs, where 80% of the food is produced by small farmers and sold in informal markets, providing many benefits to farmers, value-chain actors and consumers. He said that food safety threats related to traditional food markets can have a considerable impact on human health and socioeconomic life. Dr Nguyen-Viet showed two examples of these impacts in Member States of the Asia Pacific region, in Cambodia and in Viet Nam.

Dr Nguyen-Viet noted the many zoonotic pathogens, with a high potential for spread through traditional food markets, are present in the Asia Pacific region.

**Table 1. Overview of zoonotic pathogens with high potential for spread through traditional food markets in Asia Pacific region**

<b>Pathogen</b>	<b>Vector/natural host</b>	<b>Potential for spread in markets</b>	<b>High-risk area</b>
Crimean–Congo haemorrhagic fever virus	Ticks, ruminants	Live ruminants brought to markets could spread virus through body fluids or through vectors.	Africa, the Balkans, the Middle East and Asia
Hantaviruses	Rodents, shrews, moles, bats	Reservoir animals may be sold at markets, but scavenging rodents may also bring the pathogens close to the markets and contaminate products.	Worldwide
Hepatitis E virus	Domestic pigs, wild boars and perhaps other animals	Spread through food products or contacts with live animals at markets	Worldwide
Avian influenza virus	Wild birds, poultry	Infected birds can transmit the virus to humans	Worldwide (mainly in South-East Asia and the Middle East)
Nipah virus	Fruit bats, pigs	Contaminated food products or live animals sold	South and South-East Asia
Rabies virus	Carnivores, bats, dogs	Not transmitted by food, but by bringing carnivores or bats live to markets, there is a risk of bites. Markets may attract dogs, increasing risks for bites.	Africa and Asia
Coronaviruses	Bats, mammals	Large variety of coronaviruses could be brought by live animals	Worldwide

<sup>1</sup> <https://cgspace.cgiar.org/handle/10568/114862>

		taken to the market; some of these viruses may have zoonotic potential	
<i>Leptospira</i> spp.	Livestock, rodents	Could be brought to markets through infected animals for sale, but also risk of scavenging rodents spreading the pathogen in the environment	Worldwide, with a higher incidence in tropical climates
Nipah virus	Fruit bats, pigs	Contaminated food products or live animals sold	South and South-East Asia

Source: Adapted from Naguib, M. et al. (2021)<sup>2</sup>

Dr Nguyen-Viet said that in the Asia Pacific region various measures have been implemented to control or mitigate the risks associated with traditional food markets. These measures consist of interventions for various elements of the food system: many of them are applied to regulation, and others are related to investment in improving market infrastructure. Dr Nguyen-Viet said these specific interventions must be supported by three types of cross-cutting interventions necessary to create an enabling environment: 1) an enabling (regulatory) environment; 2) training and simple technology; and 3) incentives.

Finally, Dr Nguyen-Viet highlighted the following key messages and called for their consideration to design adequate risk mitigation measures to transform traditional food markets into safe and healthy places for all:

- Hazards are common in traditional food markets:
  - Risks can be low, especially if subsequent food processing involves reliable control steps. The cost of illness from foodborne diarrhoea has been estimated at US\$ 63 per case.
  - The informal sector is not always dangerous, and the formal sector is not always safe.
- Live animals in traditional markets are linked to zoonosis transmission and the spillover of new diseases, as well as animal welfare; however,
  - many consumers have a strong preference for live animals
  - live animals can be safer than dead animals.

### 2.3 Session 2. Risk mitigation in traditional food markets (Breakout session)

<sup>2</sup> Naguib, M. M., Li, R., Ling, J., Grace, D., Nguyen-Viet, H., & Lindahl, J. F. (2021). Live and Wet Markets: Food Access versus the Risk of Disease Emergence. *Trends in Microbiology*, 29(7), 573–581. <https://doi.org/10.1016/j.tim.2021.02.007>

In order to facilitate a more focused discussion, breakout-room sessions were held. Participants were divided into four thematic groups: 1) food safety; 2) zoonoses; 3) human-to-human transmission of COVID-19; and 4) risk assessments. The main results obtained from each of the four rooms are described below.

### **2.3.1 Room 1: Food safety**

The food safety room was moderated by Mr Alexander Von Hildebrand, Senior Consultant on Health and Environment, from Portugal. In this session, food safety issues related to traditional food markets were discussed in terms of regulation, communication and community engagement. The main challenges and opportunities for improvement for traditional food markets in both WHO regions in terms of food safety were discussed. Likewise, recommendations were made for the establishment of risk mitigation measures appropriate to the general situation of the regions.

Among the main challenges identified were the fact that food safety regulation is controlled by different regulatory agencies; the lack of guidelines and standard operating procedures to implement food inspection programmes; limited laboratory capacities, including a low number of trained officials; the need for enforcement of food safety regulations; and limited coordination among market regulators and market managers. It was also noted that the behaviour of vendors and consumers is driven by food prices rather than hygiene. Promoting food safety awareness along the food chain remains a challenge as there is limited knowledge and awareness about the various aspects of hygiene among vendors.

The group listed recommendations to tackle the challenges noted. Among those is the need for food safety legislation specifically designed for food markets, implementation of traceability systems to ensure the quality and determine the origin of the products, and development of guidance to carry out joint capacity-building for risk communication at the national and subnational levels.

### **2.3.2 Room 2: Zoonoses**

The zoonoses room was moderated by Dr Ashok Kumar, Assistant Director General, Animal Health, Indian Council of Agricultural Research, India. In this session, zoonosis-related issues in traditional food markets were discussed in terms of regulation, communication and community engagement. Likewise, recommendations were made for the establishment of risk mitigation measures appropriate to the general situation of the Asia Pacific region.

Among the challenges identified were: 1) little investment in traditional food markets, resulting in poor infrastructure for drainage and sanitation, poor hygiene, and unsafe water and ice supplies; 2) the possibility of interspecies transmission, for example mixing chickens and ducks that may be susceptible to avian influenza; 3) the presence of live

animals; 4) legal and illegal trade of wild animals; 5) overlapping control and inadequate communication and coordination among various agencies involved in monitoring informal markets; 6) lack of understanding of how the “One Health” concept can be used to control zoonoses; and 7) limited capacity and programmes in place for surveillance of zoonotic diseases in traditional food markets and in animal markets.

The group listed recommendations to tackle these challenges, including: 1) the involvement of various stakeholders in the proposed solutions; 2) the establishment of a long-term policy; 3) implementation of monitoring; 4) the regulation of permanent and temporary informal markets; 5) implementation of public awareness and education initiatives that take into account the local sociocultural context; 6) the establishment of capacity-building for market staff members; 7) the application of risk mitigation measures at the farm level; and 8) the development and implementation of basic biosafety guidelines for traditional food markets, such as compartmentalization of activities to prevent zoonoses.

### **2.3.3 Room 3: COVID-19 human-to-human transmission**

The COVID-19 human-to-human transmission room was moderated by Dr Anna Okello, Research Program Manager, Livestock Systems Research, Australian Centre for International Agricultural Research. In this session, COVID-19 issues related to traditional food markets were discussed, focusing on regulation, communication and community engagement. Likewise, recommendations were made for the establishment of risk mitigation measures appropriate to the general situation of the Asia Pacific region.

The group identified as an opportunity the fact that the COVID-19 pandemic has increased awareness and confirmed the importance of concepts such as health; water, sanitation and hygiene; and food safety. Among the challenges identified by this group was the fact that roles, responsibilities, and risk management and risk communication for disease spillovers cross various mandates – public, private, health, agriculture, veterinary, trade bodies, etc. – making it difficult to identify who is responsible for risk mitigation. Also, the large number of commodities and value chains involved in traditional markets mean that risks are not always equal across potential intervention points, for example, farms, abattoirs, points of catch, transportation and points of sale. Another challenge identified is how to manage misinformation, rumours, fear-mongering, etc., particularly via social media. Related to communication, the need for tailored message for different cultural groups, languages and channels was noted. The messages also need to be tested with the target audience, with the understanding that the concept of participation and buy in is important, especially if promoting incentive-based approaches.

Among the recommendations, the group discussed how utilizing the broad range of stakeholders responsible for community governance will help engender trust and participation and suggested the consideration of using “champions” and community leaders

for this purpose. The need to better inform and empower vendors and consumers to minimize risk of disease spillover also was noted. The various combinations of “command and control” vs “incentive-based” policies and practices are context-specific, and we must ensure that they are appropriate in terms of what communities can be accepted and managed, as well as the role of enforcement. Another recommendation called for finding ways to integrate the concept of food safety and spillover risks into broader sectoral mandates, for example, food systems and food security, infection prevention and control, etc. This will help increase visibility and support for improved systems, but also can ensure that concepts such as economics and livelihoods are included, which is central to participation of actors along the value chain and in the design of appropriate interventions. Public awareness and education focused on sociocultural and local concerns also are important.

#### **2.3.4 Room 4: Risk assessments**

The risk assessments room was moderated by Dr Roy Alexander Sparringa, Chairperson, Indonesian Food Safety Professional Association. In this session, COVID-19 issues related to traditional food markets were discussed, with a focus on regulation, communication and community engagement. Likewise, recommendations were made for the establishment of risk mitigation measures appropriate to the general situation of the Asia Pacific region.

The challenges identified by the group included the fact that not all countries regulate traditional food markets. In those countries with regulation, enforcement is weak. There is limited capacity of local authorities to conduct risk assessments and perform risk communication, and there is limited awareness of safety concerns about traditional food markets. The fact that there are multiple food safety authorities but poor coordination mechanisms was also mentioned. And finally, the need for better food safety and zoonoses surveillance was noted.

The group’s recommendations included the development of practical assessment tools to facilitate the conduct of risk assessments by local authorities or market communities and to implement a simple approach, such as a Hazard Analysis Critical Control Points approach or code of practices, starting with guidelines or best practices. Other recommendations included: development of risk-based regulations for traditional food markets; establishment of a task force including academia to support risk assessments of traditional food markets; and capacity-building on risk communication, particularly for local government and the engagement of media to support risk communication. Community engagement is essential to raise commitment among all stakeholders and to increase consumer awareness about traditional food markets. The implementation of coordinated control measures involving relevant stakeholders at the country level was

recommended, as was development of a risk profile as a preliminary step for further risk assessments of traditional food markets.

#### **2.4 Session 3. Risk assessments in traditional food markets**

Dr Gyanendra Gongal, Regional Adviser, Food Safety, WHO Regional Office for South-East Asia, moderated the session on risk assessments in traditional markets. Lectures by specialists were conducted on this topic.

##### *Specialist presentation*

The first lecture was by Dr Peter Ben Embarek, Head of the One Health Initiative, WHO headquarters, who presented on reducing public health risks through risk assessments in traditional food markets. Dr Embarek raised important points about risks in the markets, beginning with insufficient consideration given to food safety and environmental health when building markets, the lack of basic infrastructures (no running water, polluted water, poor waste management), inadequate zoning and the presence of live wild animals. In response to this situation, OIE, UNEP and WHO developed guidance to address the public health risks in traditional markets called *Reducing public health risks associated with the sale of live wild animals of mammalian species in traditional food markets*.<sup>3</sup>

The second lecture was delivered by Dr Samuel Yeung, Consultant Community Medicine, Risk Assessment and Communication, Centre for Food Safety, and Dr Eric Tai Hing-fung, Senior Veterinary Officer, Veterinary Public Health, Risk Management Division, both from Food and Environmental Hygiene Department, Hong Kong SAR (China). The presentation focused on risk assessments in traditional food markets. It provided an overview of the markets in Hong Kong SAR (China) and explained how outbreaks of avian influenza drove the improvement of food markets there.

#### **2.5 Session 4. Panel on country experiences on risk mitigation in traditional food markets.**

Dr Gyanendra Gongal, Regional Adviser, Food Safety, WHO Regional Office for South-East Asia, moderated the panel session on country experiences on risk mitigation in traditional food markets. Five countries shared their experience in improving conditions in wet market over the years.

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<sup>3</sup> <https://www.who.int/publications/i/item/WHO-2019-nCoV-Food-safety-traditional-markets-2021.1>

## *Country presentations*

### **2.5.1 Hong Kong SAR (China)**

Ms Leung Shu-yan, District Environmental Hygiene, Superintendent (Tuen Mun), Environmental Hygiene Branch, Food and Environmental Hygiene Department, Hong Kong SAR (China), shared experiences on how the measures to reduce zoonotic and foodborne risks were applied in traditional food markets in Hong Kong SAR (China):

- Legal and licensing require: Specific licensing requirements for premises selling food was developed for different items, for example, fresh, chilled or frozen beef, mutton, pork, fish (including live fish) and poultry.
- Inspection and management system: Health inspectors perform regular checks to ensure that safety and hygiene standards are being followed.
- Zoned design of public market: Zoning was implemented so that markets have specific sections for each type of product sold.
- Cleaning, disinfection and anti-rodent measures: A rest day has been declared once a month when all facilities must be cleaned, and the Government provides resources for cleaning and disinfections; all common areas are cleaned. A trial of the Intelligent Sterilization Robot showed that it was 90% efficient in killing bacteria, using both disinfectant vaporizers and UV-C lamps.
- Specific requirements for selling live seafood: The fish stall must be inspected regularly by the health inspectors, and they must check the filtration and disinfection system, the sources of fish tank water, cleansing records, cleanliness of the premises, and sampling and microbiological testing of fish tank water
- Specific requirements for selling live poultry: It is prohibited to keep waterbirds with poultry, and keeping live poultry overnight in retail outlets is now banned. Birds can only be slaughtered from 05:00 to 08:00 hours, otherwise a penalty can be invoked.

Live poultry needs to be under the Avian Influenza Surveillance Programme, in which the birds are monitored at the retail level and samples are collected from faeces, drinking water, defeathering machines and chopping boards. Live poultry stalls and slaughtering areas must be separated from consumers with barriers made with a transparent acrylic panel. Measures related to COVID-19 include wearing masks, body temperature screening, contact tracing through a mobile app and promotion of contactless payment.

### **2.5.2 Bangladesh**



Dr Sukanta Chowdhury, Associate Scientist, Programme for Emerging Infections, Infectious Diseases Division, International Center for Diarrhoeal Diseases Research, Bangladesh, shared experiences of traditional food markets in Bangladesh. He noted that most of the food markets are retail outlets, the majority are regulated by local government, and a few markets are operated by private authorities.

The Government had introduced more than 15 laws to ensure safe food in markets. From 2011 to 2013, markets were upgraded and renovated with draining facilities and small-scale slaughterhouses. The Government enforced an order for a weekly rest-day closure in the Dhaka poultry market to reduce avian influenza transmission. In Bangladesh, traditional food markets and foods are highly contaminated with zoonotic pathogens. In addition, the infrastructure of traditional food markets is not supportive of cleaning and disinfection; cleaning and disinfection practices are very limited; and there are no rest days for cleaning and an absence or very limited monitoring to assess the risk of food contamination. Many laws have been enacted but implementation is limited, and in general there is a lack attention on traditional food markets with no guidelines on their management.

Dr Sukanta recommended risk assessments in traditional food markets to identify risks, hazards and critical control points, as well as the development and design of risk-based interventions and guidelines on standard management of traditional food markets, with weekly rest days, regular disinfection, safe slaughtering, personal hygiene and infrastructure improvement. He also recommended more research to assess risks and evaluate interventions, as well as risk communication to increase awareness about food safety to the vendors, consumers and market managers.

### **2.5.3 Indonesia**

Dr Roy Alexander Sparringa, Chairperson, Indonesian Food Safety Professional Association, said that about 89% of 448 traditional food markets surveyed in 28 provinces in 2017 by the Ministry of Health had not met environmental health requirements and were at risk of spreading disease. WHO in 2006 developed [\*A Guide to Healthy Food Markets\*](#), with Indonesia as a pilot project. The programme was subsequently replicated with domestic funds, and for this reason the Ministry of Health issued guidelines for healthy food markets in 2008, and revised it with input from the Ministry of Health in 2020.

He noted a list of challenges while highlighting the importance of good hygiene practices as a prerequisite for healthy markets, and urged the Government to remain vigilant to insure healthy food markets in Indonesia.

Dr Sparringa recommended that best hygiene practices in traditional food market should be in place and called for the development of a simple tool to implement efficient mitigation measures.

#### **2.5.4 Singapore**

Ms Siti Suriani, Senior Director of the Licensing and Permit Division, Singapore Food Agency, presented a timeline of the transformation of the wet markets from 1950 to the present day.

She described the historical context that led to the transformation of the markets, with the important role of the Government driving change through new regulations and investment in infrastructure and the cold chain. The market project was completed after 20 years of constant improvements, including demolition work and rebuilding. The upgrade was carried out in phases and covered the following areas: roof, tile and electrical work; the new tables and stools; the replacement of water and sanitary pipes; improved ventilation; and the provision and/or replacement of the fluid exhaust system.

Presently, hawkers must be licensed to ensure food is prepared in clean premises equipped with proper facilities and equipment, with all food handlers trained in good personal hygiene and food safety. Ms Suriani noted that a safe supply of food for Singapore is a joint responsibility shared by government, industry and consumers.

#### **2.5.5 Thailand**

Ms Naiyana Chaitiemwong, Director, Centre for International Cooperation, Department of Health, Ministry of Public Health, Nonthaburi, Thailand, said that the situation in Thailand is similar to the experiences other countries shared previously, such as infrastructure problems, waste management, garbage, the sale of live animals, and the fact that there are no standards, rules or regulations in the food management systems.

She noted that between 2004 and 2007 cases of avian influenza were detected that led to the culling of 1 million poultry and 17 human cases. To intervene in the case, they needed a multisectoral approach (Ministry of Agriculture and Ministry of Health) to monitor and control the cases in humans and poultry. Singapore had to destroy the dead poultry, trace the disease in live poultry, and strengthen the transfer system of poultry across the country and border areas. Investigation and surveillance were carried out to reduce public health risks.

In 2002, a project to upgrade and improve hygiene, sanitation and management of fresh markets was implemented. The Ministerial Regulation on Market Hygiene published in 2008 was implemented after a three-year transition leading to a Healthy Market standard. It includes environmental health, personal hygiene, food safety, customer protection and management responsibilities. The Government has a system to recognize when these standards are adequately covered, giving a certificate of "basic", "good" and "very good",

thus providing confidence to consumers, and an incentive to markets to improve practices in hopes of achieving a higher ranking.

## 2.6 Survey results

During the two-day meeting, a short survey was conducted to collect information regarding existing food safety and zoonosis controls applied in traditional food markets in the Asia Pacific region. The survey was conducted using the Microsoft Forms web tool. The content and structure of the survey included 17 questions distributed in two blocks.

The first block of questions sought to collect information on the characteristics of the national or subnational mechanisms applied by Member States to mitigate food safety and zoonoses risks in traditional food markets. This block is divided into five thematic sections: 1) Policy and legal framework; 2) Inspection and enforcement of control measures; 3) Information underpinning evidence; 4) Incident and emergency response; and 5) Communications and education.

**Table 2. Survey results: Main challenges of the traditional food markets in Western Pacific Region**

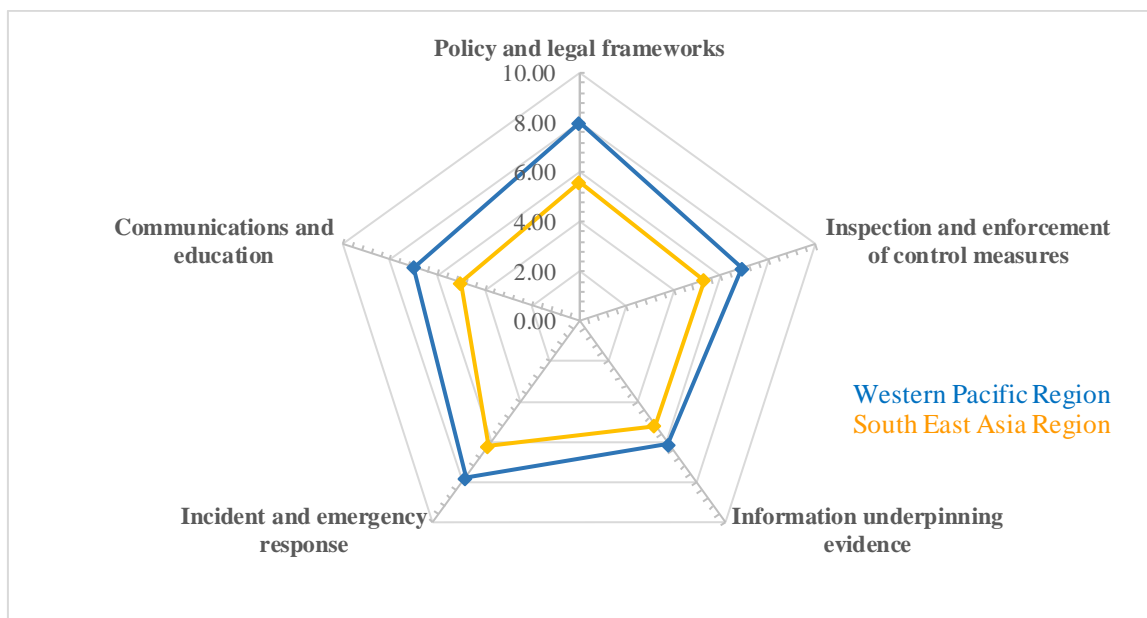
Policy and legal framework	<ul style="list-style-type: none"> <li>- Costs of implementing mitigation measures.</li> <li>- Some countries banned live animals in markets. A regional strategy is necessary.</li> <li>- Adapt the regulation to the subnational context.</li> <li>- Lack of interaction between the legal framework and authorities of different sectors.</li> <li>- Strengthening hygiene and the capacity and application of risk-based approaches.</li> <li>- Low implementation of risk-based inspection.</li> </ul>
Inspection and enforcement of control measures	<ul style="list-style-type: none"> <li>- Lack understanding of food safety.</li> <li>- Lack of inspector training.</li> <li>- Limited enforcement.</li> <li>- Missing incentive for retailers to change practices or comply with controls.</li> <li>- Limited resources and information about food safety and zoonosis are available.</li> <li>- Different types of traditional food markets.</li> </ul>
Information underpinning evidence	<ul style="list-style-type: none"> <li>- Lack scientific information.</li> <li>- Lack of tools and monitoring programmes.</li> <li>- Regulators share the data in a timely manner.</li> <li>- Limited capacity.</li> <li>- Access, capacity and commitment of laboratory services.</li> <li>- Some countries did not develop risk assessments and response mechanisms.</li> <li>- No surveillance programmes or laboratories for zoonoses.</li> <li>- Only some countries report their food samples through national laboratories.</li> </ul>

Incident and emergency response	<ul style="list-style-type: none"> <li>- Facilitating traceability measures for incidents within food markets.</li> <li>- Lack of emergency tools.</li> <li>- Lack of food safety awareness and coordination.</li> <li>- Lack emergency measures and responses.</li> </ul>
Communications and education	<ul style="list-style-type: none"> <li>- Language barrier.</li> <li>- Lack of enforcement with the concerned authorities.</li> <li>- Huge number of markets.</li> <li>- Lacking appropriate tools and messages adapted to the local context.</li> <li>- People have a low level of education.</li> <li>- Lack of public awareness about food safety for consumers.</li> </ul>

**Table 3. Survey results: Main challenges of traditional food markets in South-East Asia Region**

Policy and legal framework	<ul style="list-style-type: none"> <li>- Difficulty in implementing legislation and policy.</li> <li>- No funding for surveillance.</li> <li>- Lack of human resources.</li> <li>- Unregulated and lack communication among stakeholders.</li> <li>- Lack of risk assessments in traditional food markets.</li> <li>- Ban on live animals in traditional food markets.</li> <li>- Weak multisectoral approach.</li> </ul>
Inspection and enforcement of control measures	<ul style="list-style-type: none"> <li>- The few food testing laboratories are under various departments/public institutions.</li> <li>- Insufficient food inspectors and difficulty carrying out frequent inspections of markets.</li> <li>- Lack of data on the number of registered food manufacturing facilities.</li> </ul>
Information underpinning evidence	<ul style="list-style-type: none"> <li>- No contingency plan among the sectors.</li> <li>- Inadequacies in data.</li> <li>- Inadequacies in the value chain and in laboratory capacity.</li> <li>- Limited laboratory capacity and limited human resources.</li> <li>- Inadequate food safety officers and limited laboratory facilities.</li> <li>- Limited laboratory surveillance.</li> </ul>
Incident and emergency response	<ul style="list-style-type: none"> <li>- No surveillance plan for all zoonotic diseases.</li> <li>- Limited human resources during the COVID-19 pandemic.</li> <li>- Miscommunication.</li> <li>- Increase in avian influenza cases.</li> <li>- Traceability.</li> <li>- Little attention related to emergency and incident response applied to traditional food markets.</li> <li>- Competency of food safety and veterinary personnel.</li> </ul>
Communications and education.	<ul style="list-style-type: none"> <li>- No proper channel to communicate and not enough awareness programmes.</li> <li>- No budget.</li> <li>- Incorrect or misleading news that causes a loss of trust and confidence among the public.</li> <li>- Limited human resources.</li> <li>- Limited education.</li> <li>- School and home education related to traditional food markets.</li> </ul>

The second block of questions sought to understand the perception of the audience about the implementation level of the five topics evaluated in the first block of the survey. Furthermore, in this block, two questions were added related to the probability of implementation of risk mitigation programmes in traditional food markets and about the support that WHO should provide in this implementation process. The level of implementation was measured using a numerical scale from 1 to 10, where 1 was “not implemented” and 10 was “fully implemented”.



**Fig. 1.** Level of implementation of the traditional food market control mechanisms for food safety risk and zoonoses

Member States were consulted about their expectations for WHO to support the implementation of risk mitigation strategies in traditional food markets in Asia Pacific region. Each response was analysed. Table 4 shows a list of the results of this question.

**Table 4. Expectations for WHO support for the implementation of risk mitigation strategies in traditional food markets in Asia Pacific region**

Western Pacific Region
<b>Technical support</b>
- Develop legal frameworks and related procedures for implementation in the country level.
- Integrated technical support strategies, in conjunction with FAO, Codex Alimentarius, ASEAN.
- Enhance intersectoral collaboration.
- Support sharing of research evidence and other information related to traditional markets.
- Advocate at the national and subnational levels on mitigation risk in traditional markets.
<b>Communication</b>

- 
- Risk communication materials such as infographics, short videos.
  - Consumer engagement.
- 

#### **Training and capacity-building**

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- Support capacity-building for responsible officers and food inspectors.
  - Technical capacity for risk assessments.
  - Training programmes for traditional food market managers and vendors.
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#### **Funding support**

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- Financial on mitigation risks in traditional markets.
  - Funding support to conduct the specific monitoring programme for fresh produce, such as pesticide residues in vegetable and fruits.
- 

#### **Publications and information**

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- Regular updated information.
  - Guidelines, manuals or tools.
  - Guidelines for step-by-step improvement, with an emphasis on avoiding the sudden closure of these markets.
  - Guidance on mitigation risks in traditional food markets.
  - Publication of the workshop's report.
- 

### **South-East Asia Region**

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#### **Technical support**

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- Implementation of a national control framework for traditional food markets.
  - Zoonotic disease control strategies.
  - Support to conduct more laboratory analyses; strengthening the laboratory system.
  - Support national authorities to advocate for improved traditional food markets.
  - Policy dialogue and advocacy for increasing food safety officers.
- 

#### **Communication**

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- Effective risk communication and education programme to involve public.
  - Risk communication materials.
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#### **Training and capacity-building**

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- Strengthening laboratory facilities.
  - Strengthening food safety surveillance.
  - Strengthening risk communication.
  - Mitigation risk in traditional food markets.
  - Technical capacity for risk assessments.
- 

#### **Funding support**

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- Financial resources for LMICs to build better traditional food market infrastructure and hygiene facilities.
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#### **Publications and information**

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- Sharing of knowledge and information.
  - Generate more information of food safety and risk assessments of traditional food markets.
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## **3. CONCLUSIONS AND RECOMMENDATIONS**

### **3.1 Conclusions**

During the closing session, Dr Raszl and Dr Gongal noted that each Member State needs to consider its specific context and regulatory system to determine which mitigation

measures to implement and how to undertake the task. Dr Raszl suggested that the recommendations and messages from this meeting should be discussed at the national level among all local authorities and stakeholders. She noted the importance of the adoption of an integrated approach to transform and keep traditional food markets safe and healthy for everyone, and at the same time maintain the economic and social benefits that they represent to the community.

The meeting provided the Member State representatives with country experiences, lessons identified, communications and community engagement strategies, risk assessment and management strategies, and scientific evidence related to risk mitigation in traditional food markets. Access to this information and knowledge contributes to supporting national authorities to advocate for the improvement of traditional food markets at the local level.

Likewise, the meeting contributed to the interaction and involvement of the representatives of the Member States and gained their commitment to support local authorities in promoting changes in traditional food markets. The topics addressed during the meeting on risk mitigation and other public health interventions noted that strategic communications and community engagement to encourage effective behaviour-change communications are essential to start the transformation of traditional food markets into a safer place for consumers, vendors and local food inspectors.

During the event, it was recognized that multiple technical, cultural, social and economic factors help determine the operational, infrastructural and managerial aspects of traditional food markets in the Asia-Pacific region. These factors are influenced by diverse stakeholders, socioeconomic development, and the specific characteristics of the community and sociocultural environment where these markets have been established in each Member State. The complexity of factors and conditions mentioned represent a challenge for the design and implementation of risk mitigation strategies for public health risks associated with traditional food markets in the Asia Pacific region, and they need to be taken in consideration in designing appropriate, socially acceptable interventions for risk mitigation.

## **3.2 Recommendations**

### **3.2.1 Recommendations for Member States**

The main recommendation from this meeting for Member States is to liaise and work together with local authorities, regulators and food market managers to adopt strategies and implement interventions that will assess and mitigate risks for public health protection in traditional food markets.

The strategies and interventions to be considered that resulted from discussions and interactions with Member States during the meeting are listed below and are categorized based on the expected timeline for the result-oriented interventions. In this regard, Member States and local food market stakeholders are encouraged to consider the following:

**Short term:** 1) reorganize the distribution of areas in food markets aiming to reduce risks of contamination; 2) implement biosafety measures to mitigate risk of food contamination, the outbreak of zoonoses and human-to-human transmission of COVID-19; and 3) strengthen the skills and availability of food inspectors dedicated to traditional food markets.

**Medium term:** 1) implement intersectoral and multi-level government coordination and working mechanisms to achieve better risk mitigation in traditional food markets; 2) implement adequate control strategies to improve the enforcement of hygienic and sanitary requirements; 3) strengthen the application of preliminary risk management activities to identify priority health issues; 4) strengthen public awareness and educational strategies considering sociocultural and local aspects for consumers and vendors; 5) develop a multi-stakeholder and multidisciplinary scientific task force to support risk assessments in traditional food markets; 6) maintain contingency plans for outbreak control and public health emergencies; and 7) establish sustained financing mechanisms dedicated to improving the infrastructure and management of traditional food markets.

**Long term:** 1) implement a risk-based approach to manage public health and food safety risks along the food chain in traditional food markets; 2) adopt practical user friendly tools to facilitate the organization of risk assessments by local authorities or market communities; 3) develop a specific policy and legal framework for the management of traditional food markets; 4) include education strategies on traditional food markets aimed at schoolchildren so that they become actors of change; and 5) promote the development of innovative ways to mitigate risk in traditional food markets.

### **3.2.2 Recommendations for WHO**

It is recommended that the WHO Secretariat:

Provide technical support in the application of appropriate strategies for mitigation of public health and food safety risks in traditional food markets, which includes the development of a framework for the management of public health issues in traditional food markets in resource-poor settings, the facilitation of intersectoral and intergovernmental collaboration, and the implementation of a risk-based approach in the management of traditional food markets.



Incorporate the output of technical discussions during the meeting and the input from Member States in a manual for risk mitigation in traditional food markets in the Asia Pacific region, improving the practicability and applicability of the present document in the specific context of both WHO regions.

Develop a communication strategy and campaign on public health risks associated with traditional food markets in the Asia Pacific region, including the design and publication of digital and printing communication materials.

Continue promoting the international exchange of information and knowledge on risk mitigation strategies in traditional food markets, which includes developing platforms to share best practices, country experiences and research evidence, as well as other relevant information.

Liaise with partners and potential donors in future actions to support the adoption of measures to reduce food safety and public health risks associated with traditional food markets.

## ANNEXES

### Annex 1. Programme of activities

Time New Delhi	Time Manila	Activities	Speaker (Moderator)
<b>Day 1: Wednesday, 1 September 2021</b>			
9:00 – 9:40	11:30 – 12:10	Opening Session	
		1. Welcome and opening remarks  2. Self-introductions (via Mentimeter) 3. Overview of objectives and agenda 4. Administrative announcements 5. Group photo (virtual)	Dr Takeshi Kasai, Regional Director, WHO Regional Office for the Western Pacific (WPRO)  Dr Pem Namgyal, Director Program Management, WHO Regional Office for South-East Asia (SEARO)  Dr Francesco Branca, Director, Department of Nutrition and Food Safety, WHO/headquarters (video message)  Dr Simone Moraes Raszl, Technical Officer, Food Safety, WHO/WPRO
09:40 – 10:00	12:10 – 12:30	Overview of traditional food markets in Asia Pacific	Dr Hung Nguyen-Viet, Co-leader Animal and Human Health Program, International Livestock Research Institute (ILRI)
10:00 – 10:10	12:30 – 12:40	<i>Healthy break</i>	
10:10 – 11:10	12:40 – 13:40	Risk mitigation in traditional food markets  Breakout rooms: 1. Food safety	Moderators:  <u>Food safety:</u> Mr Alexander Von Hildebrand, Senior Consultant on Health and the Environment, Portugal

		<p>2. Zoonosis</p> <p>3. COVID-19</p> <p>4. Risk assessment</p>	<p><u>Zoonosis</u>: Dr Ashok Kumar, ADG (Animal Health), Indian Council of Agricultural Research (ICAR), India</p> <p><u>COVID-19</u>: Dr Anna Okello, Research Program Manager, Livestock Systems Research, Australian Centre for International Agricultural Research (ACIAR)</p> <p><u>Risk Assessment</u>: Dr Roy Alexander Sparringa, Chairperson, Indonesian Food Safety Professional Association (APKEPI), Indonesia</p>
11:10 – 11:30	13:40 – 14:00	<p>Presentations from breakout groups (5 min/group)</p> <p>Closing of day 1</p>	

Time New Delhi	Time Manila	Activities	Speaker (Moderator)
<b>Day 2: Thursday, 02 September 2021</b>			
9:00 – 9:05	11:30 – 11:35	Recap Day 1	Moderator: Dr Gyanendra Gongal, Regional Adviser (Food Safety), WHO/SEARO
9:05 – 9:45	11:35 – 12:15	Risk assessment in traditional food markets	<p>Dr Peter Ben Embarek, Lead, One Health Initiative WHO/HQ</p> <p>Dr Samuel Yeung, Consultant (Community Medicine) (Risk Assessment and Communication), Centre for Food Safety Food &amp; Environmental Hygiene Department, Hong Kong SAR (China)</p>

<b>Time New Delhi</b>	<b>Time Manila</b>	<b>Activities</b>	<b>Speaker (Moderator)</b>
			Dr Eric TAI Hing-fung Senior Veterinary Officer (Veterinary Public Health), Risk Management Division, Food and Environmental Hygiene Department, Hong Kong SAR (China)
9:45 – 10:15	12:15 – 12:45	Panel on country experiences on risks mitigation in traditional food markets  - Hong Kong SAR China   - Bangladesh    - Indonesia	Moderator: Dr Gyanendra Gongal, Regional Adviser (Food Safety), WHO/SEARO  Ms Leung Shu-yan District Environmental Hygiene, Superintendent (Tuen Mun), Environmental Hygiene Branch, Food and Environmental Hygiene Department, Hong Kong SAR (China)  Dr Sukanta Chowdhury, Associate Scientist, Programme for Emerging Infections, Infectious Diseases Division. International Center for Diarrhoeal Diseases Research Bangladesh. (ICDDR), Bangladesh  Dr Roy Alexander Sparringa, Chairperson, Indonesian Food Safety Professional Association (APKEPI), Indonesia
10:15 – 10:25	12:45 – 12:55	<i>Healthy break</i>	
10:25 – 10:55	12:55 – 13:25	Panel on country experiences on risks mitigation in traditional food markets (continued)	Moderator: Dr Gyanendra Gongal, Regional Adviser (Food Safety), WHO/SEARO

<b>Time New Delhi</b>	<b>Time Manila</b>	<b>Activities</b>	<b>Speaker (Moderator)</b>
		<ul style="list-style-type: none"> <li>- Singapore</li>   <li>- Thailand</li>   <li>- Q&amp;A</li> </ul>	<p>Ms Siti Suriani, Senior Director of the Licensing and Permit Division, Singapore Food Agency, Singapore</p> <p>Ms Naiyana Chaitiemwong, Director, Centre for International Cooperation, Department of Health, Ministry of Public Health, Nonthaburi, Thailand</p>
10:55 – 11:30	13:25 – 14:00	<p>Recommendations</p> <p>Next steps and closing remarks</p>	<p>Dr Simone Moraes Raszl, Technical Officer, Food Safety, WHO/WPRO</p> <p>Dr Gyanendra Gongal, Regional Adviser (Food Safety), WHO/SEARO</p>

## **Annex 2. List of participants**

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