



**ONE
HEALTH
POULTRY
HUB**

Roadmap Series synthesis workshops

Summary report

SEPTEMBER - NOVEMBER 2021

Table of contents

1. Background.....	3
1.1 Constructing the Roadmap.....	3
1.2 Outputs from the Roadmap Series discussions	3
2. Synthesis “workshops for the future”.....	5
2.1 Objectives.....	5
2.2 Design, schedule and organisation.....	5
2.3 Outcomes from the workshops.....	6
3. Bringing it together: the concluding discussion meeting.....	11
3.1 Relevance for national food production systems, and gaps.....	11
3.2 Future prospects	12
4. Conclusions and next steps	13
Annexes.....	14
Annex 1: Key messages from Roadmap Series discussions	14
Annex 2. Briefing document / workshop slides.....	19
Annex 3. Workshop participants.....	21
Annex 4. Closing workshop slides	25

1. Background

The Roadmap Series was a public online forum comprising eighteen live panels with associated resources, recordings and discussions. Prominent experts gave short talks enshrining a few key messages. The series framed holistic and inclusive debates of major issues linked to contemporary poultry health and production, firmly set within global One Health contexts of human, animal and environmental health, food systems and governance.

The Roadmap Series enabled the One Health Poultry Hub to consult a wide stakeholder group and reflect on risks, problems and complexities linked to intensification of poultry production. The insights from external experts and the wider stakeholder community could also be applied to triangulate or stress-test the assumptions underpinning the Hub's Theory of Change.

1.1 Constructing the Roadmap

The series was conceived and organised by an interdisciplinary team from Chatham House, the Royal Veterinary College (RVC), Institute of Development Studies (IDS) and City University of Hong Kong. Topics for each live event were selected to link five overarching themes:

- Poultry production and distribution systems
- Food systems
- Disease and pandemics
- Disease risk governance
- Food systems governance

Figure 1 shows how themes and discussion topics clustered along the Roadmap.

The 17 moderated discussions were held between October 2020 and August 2021. Panellists were identified on the basis of relevant expertise whilst ensuring diversity in terms of discipline, geography, gender and seniority. Live discussions were held as Zoom webinars where panellists each gave a 10-minute pitch followed by a moderated Q&A session, concluding with a set of key messages. All discussions have been recorded and are available for viewing on the [Hub website](#).

An average of 104 people participated in each discussion. There were a total of 787 individual participants, representing at least 321 organisations. The participants originated from 74 countries. Approximately half of participants registered from Europe, with South Asia (25%) and East Asia (15%) well represented.

1.2 Outputs from the Roadmap Series discussions

The panellists identified a total of 105 key messages from their discussions (see Annex 1: Key messages from Roadmap Series discussions). These messages were subsequently clustered into nine broad themes (Figure 2):

- Poultry are key to global food and nutrition security; moving forward risk management (including innovative preventive veterinary medicine, AMR and environmental impact) and animal welfare must be tailored to production systems through interdisciplinary and intersectoral actions.
- Equity and justice (environmental, gender and youth) are vital for sustainable, safe, just food and poultry production systems.
- Cultural aspects of more traditional poultry production systems remain important in many countries.
- Local perspectives and priorities are key to sustainable food systems and health security.
- Antimicrobial stewardship requires an equitable interdisciplinary and intersectoral approach.
- Robust and relevant data sets are required for different production and biosecurity systems that facilitate analysis and action by different disciplines and sectors.

- Effective science communication and education are essential to achieving buy in and appropriate action. It must be tailored for each key partner, foster collaborative, intersectoral and interdisciplinary approaches and make appropriate use of models.
- Nature-based food systems are essential for sustainable development.
- One Health governance and coordinated equitable implementation is the way of the future.

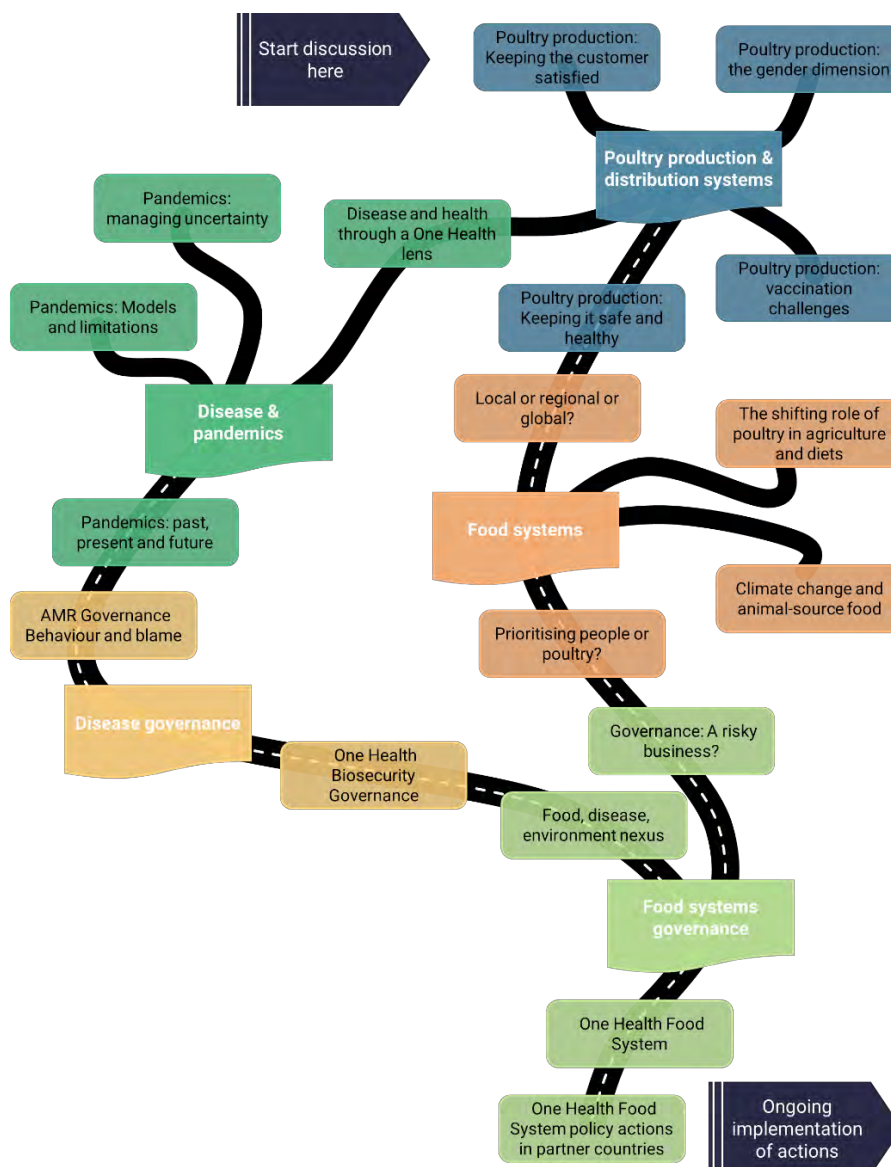


Figure 1. The Roadmap showing themes and discussion topics. Note that while broadly in sequence, the progression is not strictly linear.

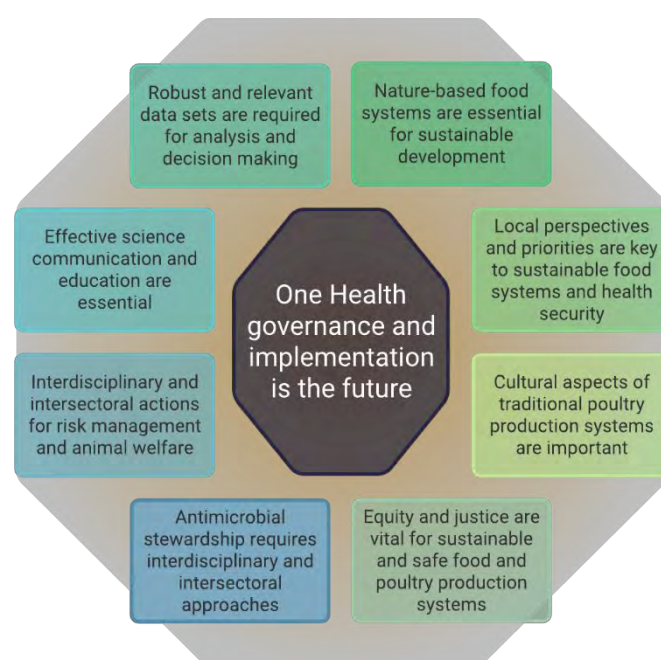


Figure 2. The nine themes identified from the presenters' key messages, with One Health governance represented as the underpinning principle.

2. Synthesis “workshops for the future”

2.1 Objectives

While these nine themes appeared to be a reasonable reflection of the Roadmap Series discussions, it was not clear whether they resonated in the Asian countries in which the Hub is implementing most of its activities.

Furthermore, these themes were developed entirely separately from the discussions which culminated in the Hub's Theory of Change (ToC), which effectively represents the template for its aspired long-term impacts. Nor was it clear how these themes related to the country-level ToCs.

To explore these questions, five focus group “workshops for the future” were organised: one in each Hub country and one incorporating external participants of the discussion series. The overarching question that informed organisation of these workshops was formulated as, “How can the Roadmap Series inform plans and policies for sustainable poultry production?”. Specific objectives were then defined as:

1. Review Roadmap Series findings in relation to national food production systems: what's relevant and where are the gaps?
2. Reflect on how the findings can inform national One Health research strategies and policies and the Hub's Theory of Change.
3. Assess if a national level Roadmap discussion would be beneficial to engage key cross-sectoral stakeholders.

2.2 Design, schedule and organisation

These workshops took place in September / October 2021. They aimed to address the objectives by engaging with key representatives, stakeholders and participants from each Hub country (Bangladesh, India, Sri Lanka and Viet Nam). A fifth workshop included non-DAC participants who had attended most of the Roadmap Series discussions.

Participants were identified and invited by the Hub National Coordinators or the key country team. Invitees included people who had participated in Roadmap Series (internal as well as external to the Hub), supplemented by key stakeholders as identified by the organisers.

Invitees were requested to register via an online form. This gave access to an [introductory video](#) and a [briefing document](#), to assist preparation.

The workshops had a duration of 90 minutes. The emphasis was on small-group, facilitated discussion addressing the three objectives. The outcomes of the discussions in these groups were summarised in a subsequent whole-group session, in which there was some further discussion.

One final Roadmap Series event was organised on 3 November 2021 to present the outcomes of each workshop to the wider group. All participants in the prior workshops were invited. The event was also opened to all Hub investigators and researchers. The aim was to expand on the workshop objectives by highlighting areas of commonality as well as divergence between countries, themes and stakeholders. Another aim was to discuss the future of the Roadmap Series, and how this can eventually be followed up.

2.3 Outcomes from the workshops

Annex 2. Briefing document / workshop slides shows the introductory slides used in these workshops. Annex 3. Workshop participants records the participants. Annex 4. Closing workshop slides reflects the outcomes of these discussions. The text below summarises this.

Bangladesh

The Bangladesh workshop consisted of members of the Hub's National Advisory Group.

Relevance of the Roadmap Series in relation to national food production systems

There was general agreement that the nine thematic areas were relevant to sustainable development in Bangladesh. However, it was thought beneficial to reduce the number of areas to proceed for action. It was also noted that all Roadmap Series thematic areas were relevant but not sufficient for successful implementation of national strategies.

The importance of increasing general awareness of the importance of the One Health approach was recognised. Participants emphasized the importance of economics (especially feed costs), marketing and biosecurity (especially zoonotic disease issues). Considering pathways and communication strategies for implementation of priority thematic areas tailored to local conditions was also highlighted as strategic issues to be addressed.

How can the findings inform national One Health research strategies and policies?

Participants also emphasised the need for continuing work in relation to:

- Gender (equity and justice).
- AMU and AMR.
- Interdisciplinary and intersectoral activities (including One Health).
- Interaction with farmers, especially regarding behaviours.

Would a national-level Roadmap Series be beneficial to engage key cross-sectoral stakeholders?

Workshop participants endorsed the idea of a Roadmap Series for Bangladesh and suggested additional topics relevant to local circumstances. These new topics were:

- Marketing, export and phasing out.
- Reviewing and revising national policies relating to SDGs, commodity export.
- Simplifying the poultry distribution networks (direct and short chains).
- Biosecurity improvement (market/ farm/ slaughterhouse/distribution).
- Building collaboration mechanisms between private and public sectors (e.g. surveillance system).

- Strengthening the One Health Approach including all disciplines/organizations/sectors.

Viet Nam

Relevance of the Roadmap Series in relation to national food production systems

The nine themes were modified on the basis of the discussion. The food system plays an important role in the food security, social stability and ensuring the livelihood of more than 80% of people in the rural areas. Hence, this was identified as the guiding goal. All nine themes were relevant to contributing towards this.

Challenges include complex food value chains, the weak competitiveness of the smallholder sector in the global chain and the negative impact of climate change and disease.

Restructuring these local food systems, exploring advantages of regional ecosystems, and utilizing the diversity of local generic resources will result in higher productiveness and profitability. In addition, technological advances (digital transformation, including development of a national database, information sharing and data management), green transition and the One Health approach are vital to maintain a green, safe, environment-friendly agriculture and to address the escalating challenges.

Interdisciplinary and intersectoral actions are required for monitoring food safety, AMR / AMU, and disease risks. Public sector monitoring and evaluation remain essential for surveillance / control activities.

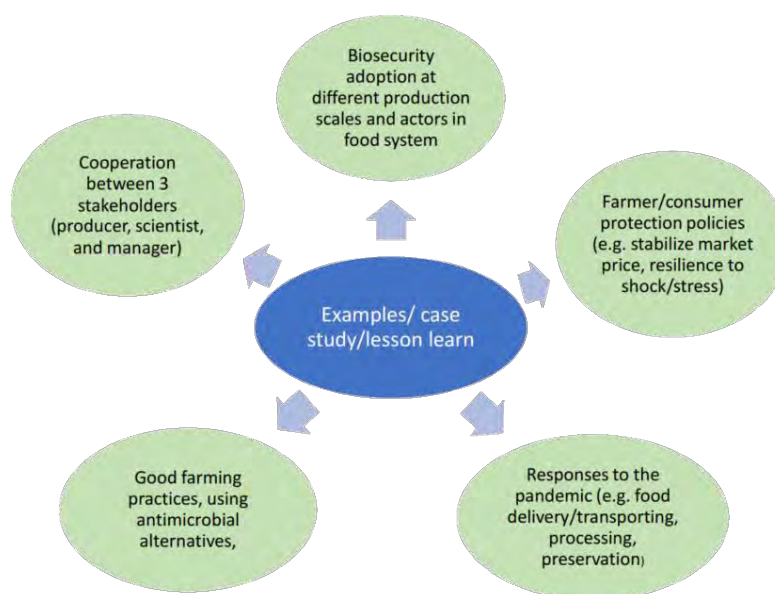
It was also noted that equity and justice in gender plus resource access are vital for sustainable and safe food.



Gaps

Five areas were identified in which there is currently insufficient knowledge, and in which case studies or examples would be useful.

- Intersectoral collaboration (producers, scientists and managers).
- Increased adoption of biosecurity measures at different levels of production and by different actors in the food system.
- Better regulatory protection of farmers as well as consumers, to stabilise markets and reduce price volatility.
- Improved farming practices, including responsible AMU to reduce AMR.



- Effective responses to disease incursions.

These areas would increase the competitiveness of smallholders in marketing and global trade, result in better prediction and management of emerging risks and reduce environmental impacts of food productions, and adapt to climate change.

How can the findings inform national One Health research strategies and policies?

Five stakeholder groups were identified. The delivery method varied for each. These are reflected in the table below.

Stakeholders	Outputs to delivery	Delivery methods
Policy makers, State management organizations at national / provincial level	Policy brief, summary of research findings, research - proof-based documents	Engage state management organisations, national advisory groups; private companies, associations, unions in the project and / or conference, workshops, events. They can work as a bridge to transfer research outputs to policy makers
Research institutions, universities	Published papers, research documents / reports, abstracts	Journals, Workshop / Conference, Forum, Webinar, website
Private sector / actors in food system	Training documents, protocols, documentary film / video	Traditional/social media (TV, Facebook, Zalo, Youtube) Training courses
Media	Media release, documentary film / video	Invite journalist to conference / workshop / events. Collaborate with TV channels to make documentary film / video / interview
Donors, supporters	Published papers, research documents / reports	Send the research outputs via email/post and present the research findings at the meeting

Would a national-level Roadmap Series be beneficial to engage key cross-sectoral stakeholders?

A national-level Roadmap Series would be very useful. It could be organized at different levels, from provincial to national, incorporating different institutions (e.g. Ministry, research institutions, agricultural universities, FAO, ILRI etc.) as co-organisers. There would be an opportunity to collaborate with other projects and organisations if the discussion topic was a good fit.

Such a series may seek to present research outputs, practical stories etc. to the discussion topic. These need to be relevant for the defined target audiences. It was noted that human and financial resources were required to do so.

India

This workshop included 33 participants from a wide range of stakeholder groups (entrepreneurs from pharma industry, officers from Department of Animal Husbandry, scientists, medical professionals, academics etc.).

Relevance for national food production systems, and gaps

All nine themes were considered to be important. In terms of importance, a ranking showed that One Health governance and implementation, antimicrobial stewardship and effective science communication and education were considered to be the top three. Cultural aspects, local perspectives and equity and social justice were considered to be relatively the least important.

How can the findings inform national One Health research strategies and policies?

Improved awareness and understanding of AMR through effective communication, education and training was most important. This would include aspects such as investigating natural products as alternatives to antibiotics. It was also thought the Government of India should provide incentives in the form of subsidies or a separate market for AM free chicken. Besides this, the Government should strengthen disease surveillance, introduce or enforce policies to reduce pathogen transmission and raise awareness of biosecurity. Education in the importance of One Health also needs to be improved.

The points above would inform appropriate research strategies and policies. An explicit point was made that this needs to incorporate the huge diversity in a large country like India, with different ethnicities, cultures and languages. Finally, the importance of gender equity and a more recognised role for women producers was highlighted.

Would a national-level Roadmap Series be beneficial to engage key cross-sectoral stakeholders?

Considering a national-level Roadmap Series, the participants agreed that workshops would be helpful related to AMR understanding and awareness, vaccine technology (particularly for backyard poultry production), and an awareness about healthcare and business management in the backyard poultry sector.

Sri Lanka

Relevance for national food production systems, and gaps

There was general agreement that all themes were relevant, but perhaps to variable degrees:

- “One Health governance and implementation is the future”, “Local perspectives and priorities key to sustainable food systems and health security for risk management and animal welfare” and “Interdisciplinary and intersectoral actions” specifically identified as being of particular relevance.
- “Equity and justice vital for sustainable and safe food and poultry production systems” was perhaps of less relevance.

The relevance was defined as follows:

- Help to **promote intensification** of the poultry sector.
- **Improve the quality** of the end product.
- Help the **socio-economic wellbeing** who are involved.

The themes gave wide coverage and there were no specific gaps. However, there were several topical issues which were not explicitly mentioned (even if they can be classified under one of the themes):

- Environmental impacts due to poultry production.
- Vaccine development.
- Partnerships.
- Issues associated with gender.
- Lack of equity: focusing on commercial production risks exclusion of marginalized groups that cannot access capital etc. due to issues of class, caste, gender, etc. While increased intensification would benefit the national economy, the subgroup of commercial producers would benefit most.

How can the findings inform national One Health research strategies and policies?

There are gaps in the regulatory framework. The only governing document available is the “National Livestock Development Policy and Strategies”. No specific policy for poultry exists. Furthermore, there

is no policy for the usage and monitoring of antimicrobials. In addition, there is a gap between policy formulation and policy implementation.

Therefore, much work is required in this area. It was discussed that it would be desirable to shift from policy imposition (i.e. compliance and enforcement) to policy transference. Policies should be contextually formulated to regulate and promote the poultry sector in Sri Lanka.

It was also observed that the Sri Lankan Theory of Change is more biased towards the production aspect and does not give good coverage to the themes addressing equity and social justice, traditional production systems, cultural aspects and nature-based food systems. Themes should not be merely epistemological but should move towards pragmatic action.

Would a national-level Roadmap Series be beneficial to engage key cross-sectoral stakeholders?

It was agreed that there was scope for an in-country Roadmap Series to engage key stakeholders in Sri Lanka. Ideas and perspectives of the stakeholders are contradicting. There's should be a common objective for all the stakeholders. DAPH should be the moderator for this process. Ideas for topical discussion areas included:

- Export market orientation.
- Inequality of power dynamics between actors; small-scale producers should be encouraged to participate actively in the system. This may include awareness programs about biosecurity risks and health systems
- Barriers to improving product quality / food quality standards of poultry products, and biosecurity risks
- Financial arrangements between actors / investment methods
- Risk factors for disease transmission and product quality.

Non-DAC / rest of the world

The discussion was comparatively informal and less structured than the other workshops. There was no attempt to link back to the Hub Theory of Change, given that most participants were external. The key discussion points are summarised below.

Focus, coverage and gaps

- **Selective focus on LMICs and insufficient engagement with industry.** An aim of the Hub is to work in an interdisciplinary way, and the scope of the Roadmap Series is global. However, in practice it focused (too) strongly on LMICs. This is understandable considering the Hub background. However, it insufficiently explored the history and development of the global industry (to where it is today), which should contextualise further discussion. It also didn't really acknowledge that policies and practices set by HICs, and the global big industrial players, are equally impactful for global poultry production and intensification. Engagement with these powerful actors is essential as they have the greatest potential to drive change. In addition to "interdisciplinary" and "intersectoral", "international" should be added. The Covid pandemic has shown once again that pathogens spread without respect for borders; the rise of AMR is likely to be the same. It's really important to get the international and large-scale, integrated commercial industry on board to tackle such global issues, as they cannot and should not be expected to be tackled at a national or local level.
- **Harmful effects of intensification and globalisation.** Despite the influence of the industry globally, and growing markets that are driving enormous consolidation and concentration of large-scale production, particularly in regions like South Asia, intensification can be harmful. Such rapid growth has implications for multiple areas including feed production, trade, supply chains etc.; it extracts value upwards and risks marginalising and excluding small-scale producers and people deriving livelihoods from poultry production. In addition, local systems, which are sustainable at a lower level of production, can be damaged by introduction of genetically-improved, fast-growing breeds if the infrastructure and expertise required to support this (e.g. nutrition, management) are not in place. Such scenarios emphasize the

need to engage with industry. How to ensure parallel systems can develop and co-exist sustainably is a question the Roadmap Series has grappled with, but there are no easy answers.

- **The problem of sustainability and feed.** There are no alternatives to soy and maize to feed the rapidly growing global poultry population. But we need to avoid making the same mistakes as with genetic selection of breeds and creating vertically integrated monopolies of production. Issues such as the global nature of growing crops for livestock feed and climate change were addressed, but there is scope to dig into this more deeply.
- **Knowledge management.** There is a lot of complexity in these systems and a lot of information is being generated. Managing this information is critical, both in terms of research findings, social data, policies and the regulatory framework and economics. This requires an integrated framework to build a common understanding. Critically, this enables different domains to inform each other (intersectoral). Knowledge gaps can't be identified if this is lacking.
- **Consumer behaviours.** The Roadmap Series also did not sufficiently take into account consumer perspectives. These are important but it's a two-way process. On the one hand, consumer opinions and preferences can drive change in production systems. On the other hand, consumers are influenced by the information they are given, advertising strategies etc. We need a better understanding of how cultural aspects, belief and value systems and local perspectives drive consumer behaviours, particularly in LMICs so the same mistakes (regarding intensification) aren't made.

The future

- **Local versus global.** There is so much diversity at the local level that it's not meaningful to try to generalise. At the global level, the Hub needs to more clearly elucidate its position on relevant issues (e.g. AMR, environmental impacts, sustainability, climate change, welfare) and its long-term vision for global outcomes. For this, the Hub needs to engage with stakeholders including large-scale commercial industry and business. As issues of governance and regulation are not within the remit of industry, the Hub has a brokering role here.
- **Roadmap Series v2.0: a Vision 2040.**
 - Can we use the outcomes from the first series to articulate a coherent vision for the future as a starting point, and use a second series to further develop such a vision? This would work with key stakeholders (industry, decision-makers, FAO and OIE) to incorporate the big picture issues and areas mentioned i.e.
 - global aspects including production and trade, biosecurity, genetics, sustainable feed for poultry and managing supply chains;
 - access to animal-source protein and micronutrients;
 - environmental impacts and climate change;
 - AMU and AMR, and investing in vaccine development.
- **An advocacy plan.** In tandem with this, the Hub should work towards developing a more formal advocacy plan.

3. Bringing it together: the concluding discussion meeting

The country-level workshops were very briefly presented (see Annex 4. Closing workshop slides). This was followed by a semi-structured discussion; the following summarises this.

3.1 Relevance for national food production systems, and gaps

Environmental impacts of production. Currently there is insufficient monitoring of such impacts, and they are poorly understood. More effective environmental surveillance is required. A key element of this is AMR, which may be spread and amplified by poor AMU practices.

Weak regulation and dominance by commercial industry. Compared to other livestock production industries, poultry is very silo'ed, and is controlled by a small number of major private sector players. In India, the veterinary authority does not have strong control, and regulation of the sector is poor. For example, the Food Safety Authority is unable to provide oversight of retail chicken shops. There are no specific slaughterhouses for poultry, and little control of environmental waste. In Sri Lanka, there is no Governmental development policy for poultry; insofar as regulations exist, enforcement is lacking. This is a common problem. Similarly, in India poultry science is not separately represented in the veterinary curriculum, but is merged with livestock production, management and health. This is at odds with the huge (and rapidly growing) scale of the industry.

Although a number of these large private industry companies are global or multinational, there are indications that their influence is growing nationally too; this includes development of genetic types and breeds that are optimised for local production. Industry transcends production: for example, bodies such as the National Egg Coordination Committee are able to fix prices, without being involved in day-to-day activities or biosecurity; this gives them immense power.

The point was made that unless a rapport can be developed with industry bodies and representatives, it will be very difficult to have any impact.

In Viet Nam, the emphasis is on developing the scope for export of poultry products. However, there is a growing domestic demand for poultry due to the impacts of ASF on the pig production industry. On the one hand, smallholder producers are at risk of being marginalised by commercial producers that are able to control the entire production process. However, on the other hand, such smaller-scale producers have adaptation strategies that may make them more resilient and efficient. For instance, they may use by-products or leftover food products to feed their poultry. Where the large companies can control biosecurity and health more effectively, small farms can apply good production practices to reduce antibiotic use.

The importance of extension training and education. This remains important, particularly changing practices associated with AMU. For example, in Papua New Guinea, the poultry industry sells 20 million day-old chicks to small and medium enterprise farmers. However, there is a lack of expertise that requires training and education. This could be through tertiary institutions, or school or institutions in the community that have respect (e.g. churches). It may be delivered by NGOs or other community groups (e.g. women's groups). It may use different mechanisms including social media.

Biosecurity, disease control and AMR. It should be acknowledged that in many LMICs, antibiotics are still widely used, and the reality is that there is a reluctance to reduce this. This is logical as the production losses to disease can be very high (and factoring in the investment cost, much higher than the direct losses). Producers are not unreceptive to reducing AMU but they are facing a disease burden which is much higher than in HICs, and a paucity of alternatives to antibiotics to mitigate losses. Smaller scale producers simply can't invest the capital required to provide the infrastructure to reduce mortality without using antibiotics. Consequently, they have little choice if they want to stay in business. Another point is that there is a relatively high turnover of farmers; this means that they don't have the required expertise or experience, e.g. to apply good biosecurity practices.

3.2 Future prospects

A Vision 2040. The Roadmap Series aimed to look at the global poultry industry as it is currently. The challenge is about where we want it to be in the future, e.g. by 2040. The world has many challenges, but it needs to be a better place by this time. Poultry may represent a significant part of this, on the basis of our protein nutrition and requirements. Consequently, future activity could be focused on working with these challenges to develop a vision for where we expect or hope the poultry industry to be in 20 years' time.

This would need to be done within each country to incorporate the variable conditions, but would represent a combined effort towards that future vision. Such a vision can feed back into local plans and inform how things are taken forward in the development of all different aspects of poultry

production. It would also not need to be exhaustive, but prioritise or target certain areas; and it would also set interim goals towards achieving the longer-term goals. So it would represent a defined process map. It's important to work with the industry; if we can get the global poultry players to support particular ambitions in-country, that would really help us get there.

The impact of COVID-19. Over the past 18 months, COVID-19 has had a huge impact on people and on the poultry industry. So the question is, going forward, how do we prepare for the next one?

Influencing policy and decision-makers. In some of the country workshops, the issue was discussed of how to generate evidence and how to get this integrated into policy frameworks. The Hub may facilitate further discussion, and for countries to learn from each other. However, this must of course be seen in the context of the differences between political systems, political economy etc. between the countries. So perhaps this is something that needs further exploration.

In terms of the relationship with policy-makers, this is not one that can be pushed too hard. It is a very sensitive relationship that one needs to develop over time. The learning from the Hub is probably useful in this context. This is bigger than just the poultry, the pathogens etc.: it's about the poultry food system, and it's about meat, etc. It's not just about the country or region but it transcends that.

4. Conclusions and next steps

The Roadmap Series discussions aimed to discuss high-level and holistic issues, taking systems-based perspectives to contextualise global poultry production. By contrast, the discussions in the country-level workshops were markedly more granular and focused on immediate issues and current priorities. It could be that this simply reflected different priorities and perspectives.

A common feature of the workshops was that it was considered that the nine themes identified by the Roadmap Series did provide broad coverage. However, specific high-priority issues which were relevant at country level were not always specifically represented, and gaps were identified. It should be noted that there was, inevitably, variability between countries and between groups within each workshop.

Linking to the Hub Theory of Change was relevant as this represented an opportunity to ground-truth this, and ascertain whether review was required. It is clear that the Roadmap Series themes are more global and holistic whereas the Hub ToC (including the country-level ToCs) tend to be more applied, process-driven and production / research focused. A second observation is that certain areas in the Roadmap Series themes are poorly reflected in the ToCs – particularly those topics reflecting traditional production practices, cultural aspects and equity and social justice. These topics were however considered relevant in the workshops, but comparatively less so; this again reflects the bias towards production as represented in the ToCs. Ultimately, given the more applied discussion in the country workshops, the ToCs were considered to be fit for purpose.

Clearly, the future of the Roadmap Series will be shaped by the future of the Hub. There is currently uncertainty about this. Next steps include:

- Development of outcomes from the Roadmap Series, including briefing documents, other published outputs, etc.
- If the Hub continues, a second series may use these outcomes as a starting point. The proposal to develop a Vision 2040 document and an advocacy plan can be further examined. In effect, the Theory of Change should represent exactly this (although in a different format). However, such a Vision 2040 may firstly differ considerably from the ToC, and secondly be more appealing for engaging industry and other stakeholders.
- At national level, similar initiatives would require input or co-organising with other key stakeholders. Resourcing is required for this, as well as overall coordination.

Annexes

Annex 1: Key messages from Roadmap Series discussions

Poultry is key to global food and nutrition security; interdisciplinary and intersectoral actions are required to tailor risk management and animal welfare to production systems.

- Expansion of animal-derived foods will happen where population growth is greatest, and where human and animal health services are often not well developed.
- Poultry production can play a key role in reducing child stunting but we need a stronger evidence base: new tools are required to better understand this complexity.
- The role of poultry keeping in environmental enteric dysfunction in children is disputed and will likely depend on behaviours at the household level.
- Healthy chickens, equal healthy food (poultry and eggs).
- Rationalising the use of antibiotics in farms and improving farm and value chain biosecurity are key to reducing AMR risks.
- Poultry will play a central role in building back resilient global food systems.
- The needs, risks, safety and livelihoods of poultry producers must be considered alongside consumers.
- Harnessing existing poultry genetic diversity is essential to help solve 'wicked problems' of production systems.
- Consumers care about animal welfare; this is driving change to poultry production in high-income countries.
- Poultry welfare encompasses both the health and the behavioural needs of birds.
- We must seek synergistic solutions to deliver safe, affordable, welfare- and environment-friendly food.
- With the current COVID-19 pandemic and absence of tourism income, small scale chicken rearing is a key economic alternative for lower-income tourism industry workers.
- New vaccine development requires careful preparation, planning and execution.
- Poultry vaccines often rely on innovation for improved safety, efficacy, delivery, convenience, stability and cost.
- There are multiple points to consider when contemplating a new vaccine for poultry.
- Vaccines are essential for good animal welfare: it reduces suffering and losses for individual birds.
- Animal welfare needs to be considered in all production systems and situations.
- Considering animal welfare is important to the birds, their owners, the community and the environment.
- Demand for poultry is increasing at fast rates.
- Poultry has lowest greenhouse gas emissions of all animal source foods.
- Poultry systems need to be well regulated for welfare, pandemic risk, pollution.
- Animal-source food provides multiple essential bioavailable micronutrients in addition to calories and protein.
- The role of animal-source foods in sustainable, healthy diets varies substantially between contexts, population groups, food items and production systems.
- Livestock are likely to be an ongoing component of food and nutrition security so we need to find ways to reduce its footprint and to adapt to accelerating climate change.
- Poultry and other animal source foods provide important nutrients and improve child growth and development.
- Animal protein intake helps maintain muscle mass in adults, but consumption should be in moderation.
- The trend towards intensification and commercialisation of poultry production is likely to continue as demand for animal-source foods continues to rise.

- Different poultry production systems have different benefits and trade-offs.
- Replacement of wild meat consumption by domesticated animals, such as chickens, represents one pathway to lowered disease risk, improved health, and reduced impact on wild species.
- The COVID-19 pandemic has magnified the vulnerability of hegemonic food systems based on increasingly lengthening global supply chains.
- Experiential knowledge and often tacit knowledge are required to learn more about the context in which the risk manifests itself.
- Many risks are interconnected or operate in cascades.
- Food borne outbreaks are frequent and caused by known pathogen/food associations.
- Standards for food safety are required and are developed by Codex Alimentarius through standardised risk assessment.

Equity and justice (environmental, gender and youth) are vital for sustainable and safe food and poultry production systems.

- Ethics and social justice in pandemic preparedness and response has emerged as a key consideration.
- Equity and evidence are central.
- Low-input, extensively raised poultry are important for income generation, food security and nutrition of smallholders, especially rural women.
- Providing women with access to assets, credits programs, access to market, training, and support increases poultry productivity and output.
- Providing low-income households, including women, with support and training for safe animal-husbandry, marketing and nutrition education contributes to women's empowerment and self-reliance.
- Smallholder poultry rearing can be almost gender neutral due to its economic versatility; everybody in the family contributes and benefits.
- Animal-source foods improve nutrient intake of vulnerable groups in resource-poor settings, and should be balanced with efforts to promote healthy diets and avoid over-consumption.
- Despite increased production, animal source food consumption is very low in vulnerable groups in many LMICs; social protection programs should prioritise poultry food.
- A resilient food farming system is grounded on principles of solidarity, reciprocity and agency in the hands of smallholder producers.

Cultural aspects of more traditional poultry production systems remain important in many countries.

- Poultry rearing activities are embedded in traditional culture that add many values beyond economics.
- Poultry can play multiple roles at the household level in addition to food and nutrition security.

Local perspectives and priorities are key to sustainable food systems and health security.

- Wider socio-economic, political and ecological changes drive pathogen emergence and create a context of global transformations and uncertainty.
- One Health approaches must address local meanings and priorities around human, animal and ecosystem.
- Understanding and acting effectively on complex, dynamic drivers of disease requires deliberation amongst multiple knowledges and perspectives.
- One Health is an increasingly securitised space where powerful national interests, politics and profit play a significant role in determining global disease control priorities.
- The major risk factor for pandemics? Humans...
- Models are a reality-based heuristic, their effectiveness requires input from a diverse assembly of scientists and practitioners.

- The contribution of smallholder farmers will be critical in supporting sustainable and inclusive Food Systems.
- All stakeholders have a responsibility to undertake action.
- The critical role played by frontliners (farmers, policy makers, environmentalists, livestock and human health professionals) is clear but incremental gains through individuals' actions will just be as important.

Antimicrobial stewardship requires an equitable interdisciplinary and intersectoral approach.

- The impact of environmental AMR and the role of the poultry sector in LMIC countries is largely unknown.
- In environments with often weak regulatory frameworks, technological solutions may be the best way forward.
- Public sector monitoring and evaluation is required of surveillance and control activities and policy implementation.
- Having public sector disease action plans require government commitment, including financial.
- Multisectoral collaboration from day-1 is crucial, and every sector should "own" the AMR response.
- AMR surveillance and response should be embedded within existing health information systems, disease surveillance programmes, and health system strengthening initiatives.

Robust and relevant data sets are required for different production and biosecurity systems that facilitate analysis and action by different disciplines and sectors.

- Better integration is required of data from different disciplines to better understand the contribution of drivers of disease emergence.
- Better integration is required of data from different disciplines to prepare and respond to epidemics in ways that are acceptable and effective.
- A One Health solution requires technical, social and institutional components to be successful.
- Cooperation between stakeholders across agricultural and food chains is essential to transform the rich data into actionable insights.
- Studies into sustainable diets for people and poultry are hampered by a lack of robust data from different agroecological zones, poultry production systems and nature of carcass parts entering the human food chain.
- Diverse forms of evidence can contribute to an improved understanding of the nutritional impact of animal source food consumption.
- The links between livestock and climate change are important and complex: they go both ways and intersect with many other issues.
- Action is needed but is currently not well-supported by options.
- There is alignment between animal health, human health, action on climate change and environmental stewardship.
- Comprehensive solutions are required to address the immense and escalating challenges.
- Biosecurity at the enterprise and national level is a key contributor to prosperity.
- A One Health approach to generate, synthesise and publicise comprehensive data and evidence is required for consumers, producers and policy makers to understand the benefits and trade-offs.
- The global wildlife trade includes species groups that are known vectors of zoonotic diseases.

Effective science communication and education are essential to achieving buy in and appropriate action; it must foster collaborative, intersectoral and interdisciplinary approaches and make appropriate use of models.

- There is pressure on scientists at the science-policy interface to project certainty and underplay scientific contestation – scientists need to be better at communicating uncertainties and delineating political or ethical decisions.
- Communication and coordination on preparedness and response planning and implementation between governments and agencies, plus engagement of communities and civil society.
- Schools should educate children about pandemics, why they happen, and how vaccines work.
- Traditional and social media have a huge role in guiding people's perceptions of epidemics and pandemics.
- Models are efficient mathematical expressions of dynamic associations, and the study of associations is what defines social science.
- Models support rather than bypass decision-making, the process of diverse assembly should not be displaced by a false sense of precision.
- Models are simply formalised, quantitative ways of thinking through the complexities of reality.
- Models have many uses, not just predictions.
- Specifying the objectives of a modelling study and interpreting its findings accordingly remain cornerstones of appropriate deployment and securing buy-in.
- Invest in public education and awareness about AMR to change the behaviour of consumers; this leads to behavioural change of all stakeholders.
- Introduce the One Health concept and appropriate use of antibiotics in high school curricula - this will improve understanding of AMR, lead to behavioural change and reduce the blame game.

Nature-based food systems are essential to sustainable development.

- If you bet against nature, you will lose.
- Global supply chains in agricultural products and wildlife largely negatively impacts on nature, except where sustainable use is practiced by local communities.
- The Global Food Regime contributes to protein deficiencies, malnutrition, and alienation of communities - it has to be dismantled, for the survival of future generations.
- Climate change will have implications for global food yields, prices, availability etc., especially in LMICs.
- Technology (poultry production and consumption), Transition (towards greener futures), Transformation (vision rather than incremental change).

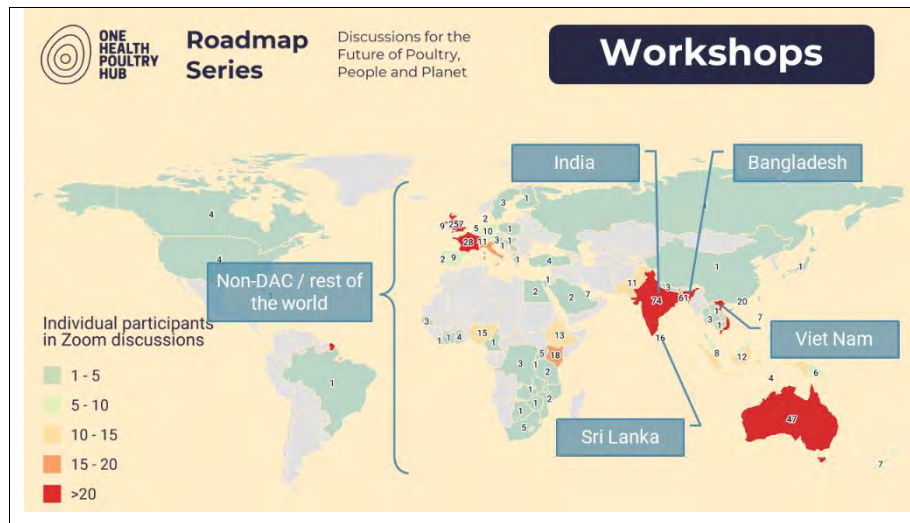
One Health governance and coordinated equitable implementation is the way of the future.

- We're only as good as the weakest link in the chain.
- A systematic approach is a must – or you will miss warnings and threats.
- Sustainable resourcing – biosecurity is the insurance you can't afford to not invest in.
- Lasting change requires good governance.
- Food system governance is a complex and multilevel issue involving multiple interactions between different actors and stakeholders at different stages of the food value chain.
- Food policies should avoid being fragmented and dispersed over different policy domains and should not be dominated by a 'productionist' paradigm.
- The One Health approach can play an important role in integration of food policy domains driven by ecological, health and food security concerns across sectors, domains and actors.
- Human and environmental health is not a one-dimensional issue, necessitating a systemic approach to risk assessment and risk governance.

- Scientific knowledge for both assessment and governance is crucial but not sufficient for understanding the complex impacts of human actions and natural events.
- Risk governance relies on multi-disciplinary contributions and an ethical appraisal about the level of interventions in the natural and social environments that are deemed acceptable for the people affected.
- Countries require capacity to do their own risk assessment in order to develop guidelines and policies based on risk assessments provided by the Codex Alimentarius.
- Food Systems and One Health are intricately connected; impacts and challenges of one affects the other - they should be called One Health Food Systems.
- Food systems work within environmental “boundaries”, so addressing one system while ignoring the other will not be sufficient.
- The UNFSS 2021 and COVID-19 have opened important policy windows that must be leveraged to develop a common vision and to chart a path to synergistic actions.
- One health governance mechanisms must be holistic from community to global and considering plant, animal, human, environment and planetary health; the interlinkages are critical to inform actions.
- Do not ignore existing policy instruments in LMICs and elsewhere from which momentum can be built.

The slides below were used to give a brief introduction to the five workshops. Some additional slides were used for specific workshops; these are not reproduced here.

19



Annex 3. Workshop participants

3.1 Bangladesh

Name	Organization	Email
Prof. Dr. Goutam Buddha Das	Chattogram (previously Chittagong) Veterinary and Animal Sciences University	gbrmadhu07@yahoo.com ; vccvasu2016@gmail.com
Prof. Dr. Abul Bashar Mohammad Khurshid Alam	Directorate General of Health Services	alamdr2003@yahoo.com ; dg@ld.dghs.gov.bd ; dr.moin@mis.dghs.gov.bd ; adcoord@ld.dghs.gov.bd
Professor Meerjady Sabrina Flora	Directorate General of Health Services	meerflora@yahoo.com ; meerflora@gmail.com
Prof. Dr. Tahmina Shirin	Institute of Epidemiology Disease Control and Research	tahminashirin14@gmail.com ; director@iedcr.gov.bd
Maj Gen Md. Mahbubur Rahman	Directorate General of Drug Administration	rahman_1962@yahoo.com ; dgda.gov@gmail.com
Dr. Shaikh Azizur Rahman	Department of Livestock Services, Ministry of Fisheries & Livestock	directoradmin@dls.gov.bd ; skazidls@gmail.com
Dr. Shamima Aktar	Department of Livestock Services	shamimanazir10@gmail.com
Dr. Md. Abdul Jalil	Bangladesh Livestock Research Institute	infoblri@gmail.com ; dg@blri.gov.bd
Md. Abdul Kayowm Sarker	Bangladesh Food Safety Authority	chairman@bfsa.gov.bd
Mr. Moshir Rahman	Bangladesh Poultry Industries Coordination Committee (BPICC), Paragon Ltd., Paragon Group	mrahman@paragongroup-bd.com
Mr. Abu Luthfe Fazle Rahim Khan	World's Poultry Science Association (WPSA)	md@abflbd.com ; frkshahriar@gmail.com
Prof. Nitish Chandra Debnath	One Health Bangladesh	nitish.debnath@cvasu.ac.bd ; nitishdebnath13@gmail.com ; Nitish_Debnath@dai.com
Prof. Mahmudur Rahman	Programme for Emerging Infections, Infectious Disease Division, International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b)	mahmudur57@gmail.com
Sherin Sultana	শিরিন সুলতানা, পিতা: মৃত হায়দার আলী, মাতা : রেহানা বেগম, পো: বাবুলের বাজার, উপজেলা: ফুলবাড়িয়া, জেলা:- ময়মনসিংহ	sherinrehan3008@gmail.com
Meherjan Islam Ashrafi		
Esrat Jahan Esha		

Nurun Nahar Chisty		
Robyn alders	Global Health Programme, Chatham House	RAlders@chathamhouse.org

3.2 Viet Nam

Last name	First name	Organisation	Email
VU DINH	Ton	VNUA	vdton.hua@gmail.com
Nguyen Thi	Dien	VNUA	namdien@gmail.com
Nguyen	Khue	VNUA	minhkhuehere@gmail.com
Nguyen Thanh	Hang	CIRAD	epivietnam.cirad@gmail.com
Luu Quynh	Huong	NIVR	lqhuongvet@yahoo.com
Bui Nghia	Vuong	NIVR	buinghiavuong@gmail.com
Nguyen Thi	Phuong	VNUA	ntphuongcngc@gmail.com
Nguyen Van	Tien	VNUA	ndtien.hd@gmail.com
Thi Thanh Pham	Hoa	CIRAD	hoacirad@gmail.com
Le Thi Thanh	Huyen	NIAS	lehuyen1973@yahoo.com
Pham Quoc	Bao	My An Co., Ltd	sales1@myanco.net
Dang Thi Thanh	Son	NIVR	chienson2006@yahoo.com
Nguyen	Nga	VNUA	nguyennga11097@gmail.com
Pham Thi	Ngoc	NIVR	minhngoc27169@gmail.com
Nguyen	Duy	VNUA	nvduy.hua@gmail.com

3.3 India

First name	Last name	Email	Organisation
Raman	Muthusamy	raman.tanuvason@gmail.com	Tamil Nadu Veterinary and Animal Sciences University
PVK	Sasidhar	pvksasidhar@ignou.ac.in	IGNOU
H	PALEJA	hpaleja@yahoo.com	AAU
Vijayashanthi	Ramalingam	vijayashanthi.ram@gmail.com	TANUVAS, India
Ramya	Kalaivanan	ramyasankar83@gmail.com	Tamil Nadu Veterinary & Animal Sciences University
Bhaves	Modi	bhavmod@yahoo.com	Health Department, Government of Gujarat
Halak	Joshi	halakjoshi@gmail.com	GBRC
Ketankumar	Panchal	ketan9589@gmail.com	Anand Agricultural University
Gowthaman	Vasudevan	vetgowth@yahoo.co.uk	Tamil Nadu Veterinary and Animal Sciences University
Madhvi	Joshi	madhvimicrobio@gmail.com	GBRC

C G	Joshi	dir-gbrc@gujarat.gov.in	GBRC
Ankit	Hinsu	ankit4035hinsu@gmail.com	Anand Agricultural University
Pallavi	Mishra	pallavimishra.research@gmail.com	Jawaharlal Nehru University
Subhash	Jakhesara	drsubhash81@gmail.com	Anand Agricultural University
Prakash	Koringa	prakashkoringa@gmail.com	Anand Agricultural University
Sitara	Ajjampur	sitararao@cmcvellore.ac.in	CMC
kavita	yadav	kavitarekha@gmail.com	JNU
DHARAMSH IBHAI	N.RANK	dnrank@gmail.com	Anand Agricultural University
Shilpi	Das	drdasshilpi@gmail.com	ADRA India
Dr Arun	Kumar Rawat	akr8@rediffmail.com	DBT
Halak	Joshi	halakjoshi@gmail.com	GBRC
SURAJIT	BAKSI	surajit.baksi@hester.in	Hester Biosciences Limited
Rajib	Dasgupta	rajibdasgupta.research@gmail.com	Jawaharlal Nehru University
Pankaj	Sutariya	phsutariya@gmail.com	GoG AH Dept
Vijay	Chaudhari	vijaychaudhary35@gmail.com	IPDB, MAKARBA, AHMEDABAD
Dr Harshad	Patel	dr.hgp15971@gmail.com	IPDB MAKARBA AHMEDABAD
Amit	Kanani	amit_kanani@hotmail.com	Department of animal husbandry
Dr. Kishorbhai	Gediya	dr_kvgediya@yahoo.in	Intensive Poultry Development Block, Makarba, Ahmedabad
Rashmin	Patel	rashmin.patel@hester.in	HESTER BIOSCINECES LIMITED
PANKAJ	PATEL	drpkptl@gmail.com	GOVERNMENT OF GUJARAT
SANJAY	GOSWAMI	lpdb-ah-vad@gujarat.gov.in	GOVT OF GUJARAT
Ghanshyam	Vora	ghanshyamvora123@gmail.com	Government of Gujarat

3.4 Sri Lanka

First name	Last name	Email
Nimesha	Dassanayake	nimeshanavo123@gmail.com
Niromi	Jayasekera	niromikj@yahoo.com
Chamari	Kannangara	

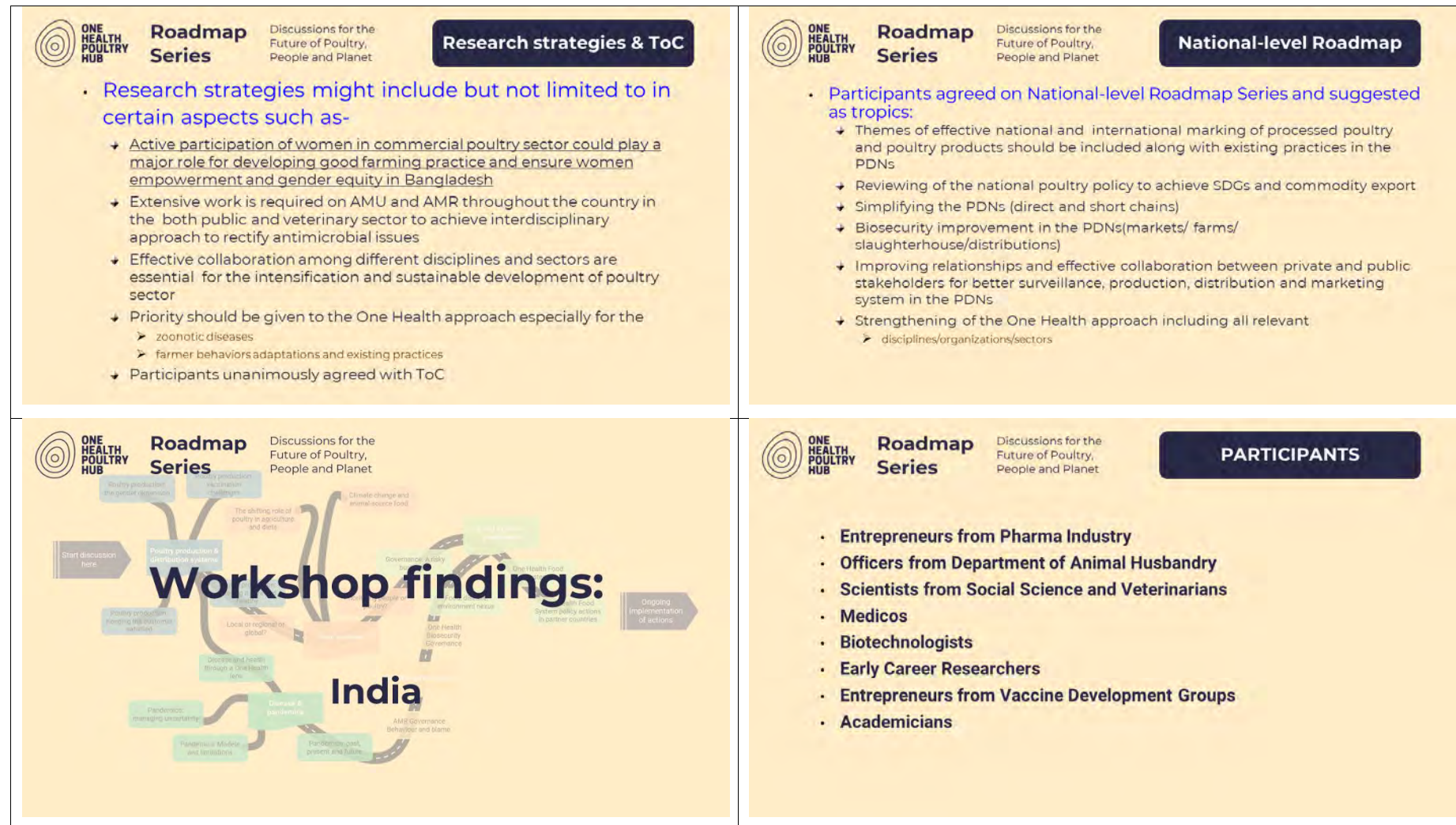
Neshma	Kumudinie	neshmadliyanage@gmail.com
Madura	Munasinghe	maduravet87@gmail.com
Sanjika	Perera	sanjikaperera@gmail.com
Dinethri	Wijekoon	dinethriewijekoon@gmail.com
Hasanthi	Gamage Wickramapathirana	hasanthigamage@gmail.com
Zahrah	Imtiaz	zahrah@asian-agribiz.com
Nimal	Jayaweera	mdnjayaweera@yahoo.com
Thilini	Nisansala	thilini.ns90@gmail.com
Lakmali	Ranatunga	lakmalirana@gmail.com
Dilan	Satharasinghe	satha4@yahoo.com
Poornika	Seelagama	poorniseelagama@gmail.com
Indraje	de Zoysa	indrajeedez@yahoo.com
Palika	Fernando	palikas@yahoo.com
Yasodhara	Gunasekara	yadeegunasekara@gmail.com
Ruwani	Kalupahana	ruwanikalupahana@yahoo.com
Roshan	Madalagama	madalagamaroshan@gmail.com
Shamali	Pabasara	shamali19950@gmail.com
Sriyani	Satharasingha	poultryvswp@gmail.com

3.5 Non-DAC / global

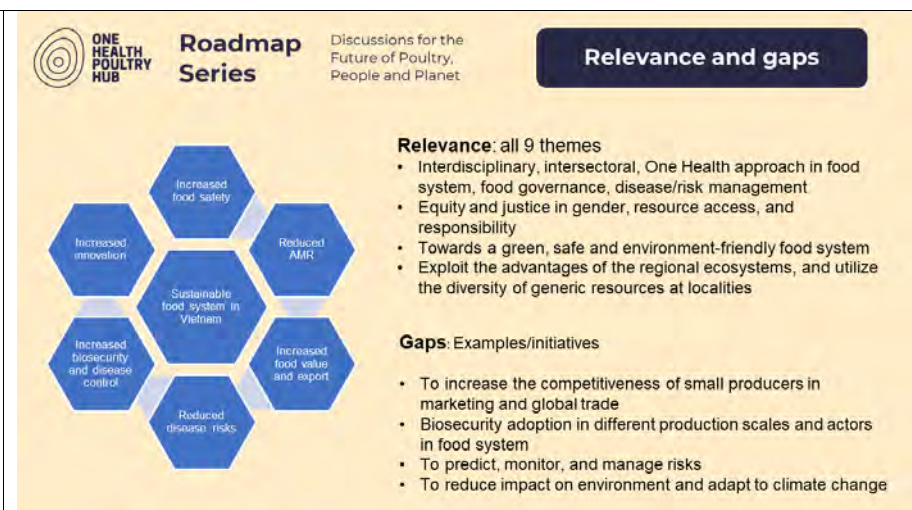
First name	Last name	Organisation	Email
Ivo	Syndicus	RVC	isyndicus@rvc.ac.uk
Onn	Ben-David		bendavidonn@gmail.com
Andrea	Britton	Burnet Institute -PNG	andrea.britton@burnet.edu.au
Judy	Bettridge	University of Greenwich	J.M.Bettridge@greenwich.ac.uk
Melanie	Hay	RVC	melanie.c.hay@gmail.com
Jim	McGrane		jimmcgrane@yahoo.com
Yolanda	Fernandez Diez	Scotland's Rural College (SRUC)	YolandaFernandez.Diez@sruc.ac.uk
Jane	Gibbens		janey.gibbens@gmail.com

Annex 4. Closing workshop slides

[illegible]



<div data-bbox="219 209 342 272"></div> <div data-bbox="360 212 492 268">Roadmap Series</div> <div data-bbox="512 212 651 268">Discussions for the Future of Poultry, People and Planet</div> <div data-bbox="763 225 1008 252">Relevance and gaps</div> <ul style="list-style-type: none"> • IMPORTANT THEMES IN INDIA <ul style="list-style-type: none"> ✓ One Health governance and implementation is the future ✓ Antimicrobial stewardship requires interdisciplinary and intersectoral approaches ✓ Effective science communication and education are essential ✓ Interdisciplinary and intersectoral actions for risk management and animal welfare ✓ Robust and relevant data sets required for analysis and decision making ✓ Nature-based food systems are essential to sustainable development ✓ Cultural aspects of traditional poultry production systems are important ✓ Local perspectives and priorities key to sustainable food systems and health security ✓ <i>Equity and livelihoods for sustainable and safe food and poultry production systems</i> 	<div data-bbox="1137 209 1261 272"></div> <div data-bbox="1279 212 1411 268">Roadmap Series</div> <div data-bbox="1431 212 1570 268">Discussions for the Future of Poultry, People and Planet</div> <div data-bbox="1644 225 1962 252">Research strategies & ToC</div> <ul style="list-style-type: none"> • The findings of the roadmap series were equally applicable to Poultry Development in India. <ul style="list-style-type: none"> ➢ Govt should strengthen poultry disease surveillance and reporting system in India ➢ Create awareness among farmers through programmes by Government (Radio, TV) on important poultry aspects like farm biosecurity, the importance of clean meat production. ➢ Stringent government policies to curtail foodborne pathogen transmission at field level. ➢ It is very pertinent to include one health concept and subject from the school level. ➢ Brand ambassador for wider dissemination of one health strategies to the common public of various states of India. ➢ Provision of training and awareness to live bird shop butchers for hygienic poultry handling and processing. ➢ Nature-based product for replacement of antibiotics to tackle AMR. ➢ AMR should be the focus area in India for the Roadmap series. ➢ Government should encourage farms to produce AM free chicken farming (subsidies) OR Separate market for AM free chicken to have economically viable business
<div data-bbox="219 732 342 796"></div> <div data-bbox="360 735 492 791">Roadmap Series</div> <div data-bbox="512 735 651 791">Discussions for the Future of Poultry, People and Planet</div> <div data-bbox="730 748 1048 775">Research strategies & ToC</div> <ul style="list-style-type: none"> ➢ Promote investment for AMR activities, research and innovations ➢ Diversity in terms of tradition, culture and language needs to be considered while addressing the stakeholders. ➢ The local, regional and national coordination between stakeholders is lacking. ➢ Data set strengthening is required for the backyard poultry production system. ➢ Accreditation for model biosecurity poultry farm. ➢ The marketing is not very well organized even in commercial broiler poultry production. ➢ Need to encourage women entrepreneurs in the poultry farming business. ➢ Protective wares and its importance in poultry farming. ➢ Personal hygiene during farm operation. 	<div data-bbox="1137 732 1261 796"></div> <div data-bbox="1279 735 1411 791">Roadmap Series</div> <div data-bbox="1431 735 1570 791">Discussions for the Future of Poultry, People and Planet</div> <div data-bbox="1655 748 1951 775">National-level Roadmap</div> <ul style="list-style-type: none"> ➢ Awareness about healthcare management in backyard poultry production ➢ Vaccine technology for backyard poultry production system ➢ AMR understanding and awareness





**ONE
HEALTH
POULTRY
HUB**

Roadmap Series

Discussions for the
Future of Poultry,
People and Planet

National-level Roadmap

- It will be very useful and can be organized at National/regional/provincial levels (online or offline) with co-organizers from MARD/Research Institutions/Agricultural Universities
- Research outputs and/or practical stories linked to the discussion topics should be presented
- Colleagues from MOH, MARD, Ministry of Resources and Environment, research Institutions, state management organizations, media, private sectors (actors in food system) can be invited by sending invitation letter via email/post/phone, by promotion via traditional/social media
- Human (designers, editors, panelists) and financial resources are required
- Possibility to collaborate with other projects/organizations such as ILRI, FAO, VOHUN

<p>Workshop findings:</p> <p>Sri Lanka</p>	<p>Relevance and gaps</p> <p>1. a. Are all 9 Roadmap thematic findings relevant to Sri Lanka? Yes, 09 Thematic findings under 06 areas</p> <p>b. What is relevant and why? All the themes are relevant Help to promote <u>intensification</u> of the poultry sector Improve the <u>quality</u> of the end product Help the <u>socio-economic wellbeing</u> who are involved</p> <p>Where are the gaps?</p> <ol style="list-style-type: none"> 1. <u>Environmental impacts</u> due to poultry production 2. Importance of <u>Vaccine development</u> 3. <u>Partnerships</u> are not addressed 4. Issues associated with <u>gender</u>
<p>Research strategies & ToC</p> <p>2.a. How might the Roadmap themes inform One Health research strategies and policies in Sri Lanka?</p> <p>The only document available in Sri Lanka is the “<u>National Livestock Development Policy and Strategies</u>”. <u>There is no specific policy for poultry.</u> And no policy for the <u>usage and monitoring antimicrobials</u> as well</p> <p>b. Are some or all Roadmap thematic areas relevant to successful implementation of the Hub Theory of Change?</p> <p>Yes It aligns Our Goal is : Sustainable pathways of intensification of poultry production whilst reducing risks to health and welfare All 09 themes <u>give inputs</u> to achieve this goal</p>	<p>National-level Roadmap</p> <p>3.a. Would an in-country Roadmap Series be beneficial to engage key stakeholders in Sri Lanka? Yes, very much beneficial.</p> <p>b. If yes, would you like to propose an outline for the series?</p> <ol style="list-style-type: none"> 1. <u>Export Market</u> Orientation 2. <u>Barriers</u> to improve product quality/food quality standards and biosecurity 3. <u>Risk factors</u> for disease transmission and product quality. 4. <u>Improvement</u> of the quality of poultry products 5. <u>Financial arrangements</u> between actors/ Investment methods 6. <u>Awareness</u> programs to small scale producers about <u>bio-security risks</u> and <u>health systems</u> and to get them into the system.

[illegible]