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**PROGRESSIVE MANAGEMENT PATHWAY FOR IMPROVING
AQUACULTURE BIOSECURITY (PMP/AB): FIRST TECHNICAL WORKING
GROUP MEETING**

Rome, 20–22 March 2019

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PREPARATION OF THIS DOCUMENT

This document presents the *Report of the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB): First Technical Working Group Meeting*, which was held at FAO Headquarters, Rome, Italy from 20–22 March 2019. The report was initially prepared by Drs Melba B. Reantaso (FAO, Rome), Brett MacKinnon (FAO Consultant, Rome), Bin Hao (FAO, Rome) and J. Richard Arthur (FAO Consultant, Canada) with contributions from key participants of the consultation.

ABSTRACT

This report presents the results of a Technical Working Group (TWG) meeting, where experts from competent authorities, intergovernmental organizations, the aquaculture industry, academe, and research institutions examined the two previous consultations on the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB) and clarified issues and concerns raised during these two consultations.

A consensus was reached on the definition of the PMP/AB as a *pathway* that builds on existing *frameworks*, supported by appropriate *tools* (via the “PMP/AB toolkit”). The PMP/AB focuses on aquaculture biosecurity, which includes health management and reduction of antimicrobial resistance (AMR). The PMP/AB will not directly focus on food safety; however, it will promote sustainable aquaculture production with good husbandry practices, environmental practices, and prudent treatment or antimicrobial use.

The PMP/AB follows the principles of being risk-based, progressive and collaborative. The PMP/AB is expected to result in (1) sustainable reduction of burden of disease; (2) improvement of health at farm and national levels; (3) minimization of global spread of diseases; (4) optimization of socio-economic benefits from aquaculture; (5) attraction of investment opportunities into aquaculture; and (6) achievement of One Health goals.

The definition of biosecurity in the context of the PMP/AB was proposed as “*the cost-effective management of risks posed by infectious agents to aquaculture through a strategic approach at enterprise, national and international levels with shared public-private responsibilities*”.

The TWG finalised the stage descriptions of the PMP/AB as:

- PMP/AB Stage 1: *Biosecurity risks defined*
- PMP/AB Stage 2: *Biosecurity systems implemented*
- PMP/AB Stage 3: *Enhanced biosecurity and preparedness*
- PMP/AB Stage 4: *Sustainable biosecurity & health management systems established*

Further activities include the development of the technical aspects of the PMP/AB, wider consensus building, initial application and refinement, and resource mobilization. Guidance documents including PMP/AB toolkits and resources for advocacy and training will be needed to facilitate adoption at the national level.

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L. Falcone and N. Perisse of the FAO Aquaculture Branch (NFIA), led by Matthias Halwart, is gratefully acknowledged for operational and logistics support during the preparation and implementation of the event. M. Reantaso, also of NFIA, and Lead Technical Officer of the project, provided overall technical oversight to all the events and completion of the documents. Special thanks are also due to M. Guyonnet of the Statistics and Information Branch for assistance in the finalization of this document.

ABBREVIATIONS AND ACRONYMS

AAHIS	Aquatic animal health information system
AMR	Antimicrobial resistance
BAPs	Biosecurity action plans
CA	Competent Authority
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CFIA	Canadian Food Inspection Agency
FAO	Food and Agriculture Organization of the United Nations
FMD	Foot and mouth disease
GAP	Good aquaculture practices
GCRF	Global Challenge Research Fund
HACCP	Hazard analysis and critical control point
ICAR	Indian Council of Agricultural Research
MSU	Mississippi State University
NAPs	National action plans
NGO	Non-governmental organization
NORAD	Norwegian Agency for Development
NPL	National pathogen list
NSAAH	National Strategy for Aquatic Animal Health
NVI	Norwegian Veterinary Institute
OIE	World Organisation for Animal Health (formerly Office International des Épizooties)
PCP	Progressive control pathway
PCP-FMD	Progressive Control Pathway for Foot-and-Mouth Disease
PMP/AB	Progressive Management Pathway for Improving Aquaculture Biosecurity
PMP/AB1	The First Multi-Stakeholder Consultation on a Progressive Management Pathway to Improve Aquaculture Biosecurity (PMP/AB)
PMP/AB2	The Second Multi-Stakeholder Consultation on the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB)
PVS	Performance of Veterinary Services (OIE)
SOPs	Standard operating procedures
TiLV	Tilapia lake virus
TWG1	PMP/AB: The First Technical Working Group meeting
WAHIS	World Animal Health Information System (of the OIE)
WB	World Bank
YSFRI	Yellow Sea Fisheries Research Institute

1. BACKGROUND

1.1. Introduction

1. The First Multi-Stakeholder Consultation on a Progressive Management Pathway to Improve Aquaculture Biosecurity (PMP/AB1) was held at the World Bank (WB) Headquarters in Washington, D.C. on 10–12 April 2018 and is detailed in the *Report of the FAO/MSU/WB Stakeholder Consultation on a Progressive Management Pathway to Improve Aquaculture Biosecurity (PMP/AB)* (FAO, 2019). PMP/AB1 was a milestone event and the consensus reached provided a great impetus to continue the joint efforts towards addressing the enormous biosecurity challenges facing the aquaculture sector.

2. The Second Multi-Stakeholder Consultation on the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB2) was held at the headquarters of the World Organisation for Animal Health (OIE) in Paris, France from 29 to 31 January 2019 and is detailed in the Report of the Second Multi-Stakeholder Consultation on the PMP/AB (FAO, 2020). The PMP/AB2 consultation sought feedback from stakeholders on the application of the proposed PMP/AB, its adaptability to the diversity of aquaculture production systems across countries and regions, and its potential to make a significant difference in reducing the emergence and/or re-emergence of diseases that threaten sustainable aquaculture production. This consultation continued the advocacy and awareness of the PMP/AB concepts, principles and application. Draft stage descriptions, draft indicators, checklists and guidelines for rolling out the PMP/AB were presented and deliberated. The risk assessment concept of Stage 1 of the PMP/AB was also deliberated in detail.

3. The PMP/AB: First Technical Working Group Meeting (TWG1) was held at the Headquarters of the Food and Agriculture Organization (FAO), Rome, Italy from 20 to 22 March 2019. This report presents the outcomes of this event.

1.2. Purpose

4. The general objectives of TWG1 were to further discuss the overall concept, background documents, and roll-out of the PMP/AB in pilot countries and regions.

5. The objectives of TWG1 were to:

- discuss and agree on some of the issues and concerns raised during PMP/AB2 (e.g. whether PMP/AB is a framework, a pathway as the name suggests, a tool, a road map; whether the approach will be step-wise or parallel/matrix or a combination of both, etc.);
- build on the PMP/AB background document (checklist of requirements, indicators, etc.) and discussions in Paris; discuss and agree on the final form and main contents of the Guidelines of Application of PMP/AB;
- draw a tentative plan (timetable for the initial application and testing of PMP/AB), including preliminary reporting of outcomes; and
- determine the next steps.

1.3. Process

6. The working group meeting ran for three days, with three main agendas, as outlined below (see Appendix 1 for the detailed programme). Since some experts were only available on Day 2, the proposed schedule was changed so that Agenda 1 could be discussed on Day 2.

Opening

- Welcome
- Self-introduction of delegates
- Introduction to the meeting agenda
- Adoption of the agenda

Agenda 2

- Discuss where a country would start if interested to roll out the PMP/AB
 - Use four scenarios to facilitate discussion
- Building on the background document (checklist of requirements, indicators, etc.) and discussions in PMP/AB2
- Agree on the final form and main contents of the Guidelines of Application of the PMP/AB
- Review the working group findings of PMP/AB2

Agenda 3

- Draw a tentative plan (timetable for the initial application and testing of PMP/AB) including preliminary reporting of outcomes

Closing

- Reporting of Day 2 outcomes and discussion
- Conclusions and next steps

1.4. Participation

7. A total of 13 participants representing government, intergovernmental organizations, industry, academe, and FAO attended the meeting. The list of participants and group photograph can be found in Appendices 2 and 3, respectively.

1.5. Products

8. The main product of TWG1 is this technical report, which presents a narrative of the meeting, the major highlights of discussions, and a summary of the decisions that were reached. The expected outcomes for the three agendas were:

1. agreement on whether the PMP/AB is a framework, pathway, tool, or road map;
2. agreement on whether the PMP/AB approach will be stepwise, parallel/matrix, or a combination of both, etc.;
3. agreement on the final form and main contents of the Guidelines of Application of the PMP/AB; and
4. determine a tentative plan (with timetable) for the initial application and pilot-testing of the PMP/AB, including preliminary reporting of outcomes.

2. SUMMARY OF PLENARY DISCUSSIONS ON PMP/AB**2.1. Welcome remarks**

9. Welcoming statements were presented by Dr Melba B. Reantaso (FAO Headquarters, Rome) and participants introduced themselves. Dr Reantaso presented the objectives of the meeting and proposed agenda. Participants were requested to discuss the three main agenda points, based on the draft PMP/AB background documents shared during PMP/AB2, and issues and concerns raised during that meeting. Participants were also asked to develop a tentative plan for the piloting of the PMP/AB.

2.2. Agenda 1

2.2.1. *The PMP/AB concept*

10. Discussions during PMP/AB2 revealed that the objectives of the PMP/AB were not clear. There were also concerns regarding the concept of the PMP/AB and whether it was a pathway, tool, programme or framework.

11. A roundtable discussion was held and there was consensus that the PMP/AB is a *pathway* that builds on existing *frameworks*, supported by appropriate *tools* (via the “PMP/AB toolkit”). The PMP/AB focuses on aquaculture biosecurity, which includes health management and reduction of antimicrobial resistance (AMR). The PMP/AB will not directly focus on food safety; however, it promotes sustainable aquaculture production with good husbandry practices, environmental practices, and prudent treatment or antimicrobial use.

12. The overall objective of the PMP/AB is enhancing aquaculture biosecurity capacity by: (1) building on existing frameworks, capacity and appropriate tools; (2) using risk-based approaches; and (3) forming public-private partnerships. The PMP/AB results in: (1) sustainable reduction of burden of disease; (2) improvement of health at farm and national levels; (3) minimization of global spread of diseases; (4) optimization of socio-economic benefits from aquaculture; (5) attraction of investment opportunities into aquaculture; and (6) achievement of One Health goals.

2.3. Agenda 2

2.3.1. *Country scenario discussion*

13. The scenario approach was used to facilitate the discussion as to where a country would start if it is interested to roll out the PMP/AB. The following four scenarios were discussed:

1. *Country does not have a strategy on aquatic animal health or biosecurity; the country has limited aquaculture. Example:*

- Ghana
 - Likely in Stage 1 of the PMP/AB
 - Will remain in Stage 1 for the time being
 - Stage 1 fits well for countries trying to build capacity and confidence in aquaculture biosecurity and aquatic animal health

2. *Country has a NSAAH or biosecurity strategy developed from other projects or other initiatives but not within the context of the PMP/AB and lacking implementation or systematic implementation; how can these be used, built on, revised/expanded to fit the context of PMP/AB? Example:*

- People’s Republic of China
 - Likely in Stage 2 of the PMP/AB
 - Fulfils most indicators of Stage 1, but needs improvement
 - There are some biosecurity measures being implemented
 - Needs enhancement of monitoring/assessing effectiveness
 - Needs enhanced surveillance

3. *Country has advanced aquatic animal health or biosecurity strategies but not within the context of the PMP/AB; how can these be used, built on, revised/expanded to fit the context of PMP/AB? What bottlenecks/lessons and good practices can be used, built on to fit the context of PMP/AB? Examples:*

- Kingdom of Saudi Arabia
 - Likely in Stage 4 of the PMP/AB
 - Has small and large-scale producers
 - Small-scale farms are monitored (support from government and aquaculture societies)
 - All farms are under the national surveillance and audit program
 - Shrimp, tilapia (2 species) – no tilapia lake virus (TiLV) (all inland farming of tilapia), seabream, bass, sea cucumber, barramundi
 - All sectors, including small-scale, are in Stage 4 (except tilapia is in research and development stage, so not as advanced)
 - Solid inland tilapia aquaculture ongoing for several decades now; no rivers in KSA; borehole water used; no importations allowed
 - Surveillance and production data collected and published within the industry
 - If new pathogen suspected and published (from anywhere in the world), it will be included in the national pathogen list
 - Enzootic and emerging pathogens are tested, depending on the facility and species
- Norway
 - Likely in Stage 4 of the PMP/AB
- Canada
 - The Atlantic salmon sector is likely in Stage 4 of the PMP/AB
 - Other sectors may be in lower stages

4. Countries sharing watersheds or regions with regional biosecurity strategies

- Kingdom of Saudi Arabia
 - Would like to start to cooperate with other countries/regions to help them improve their biosecurity, and has financial support to do this
 - The country wants to be recognized as a reference centre for the region

2.3.2. Glossary

14. A key issue expressed during PMP/AB2 in Paris was the need for defining certain terms used within the PMP/AB, including “biosecurity”, “risk”, “value-chain”, “risk hotspot”, “national strategy”, “sector/enterprise”, “hazard”, “vulnerabilities” and “risk assessment”.

15. The definition of biosecurity in the context of the PMP/AB was developed via a roundtable discussion. Different definitions of biosecurity were first discussed, which varied depending on the source. The World Organisation for Animal Health (OIE) defines biosecurity as “a set of management and physical measures designed to reduce the risk of introduction, establishment and spread of pathogenic agents to, from and within an aquatic animal population” (OIE, 2019). According to FAO, biosecurity is “a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) for analysing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment” (FAO, 2003).

16. The definition of biosecurity in the context of the PMP/AB was proposed as *the cost-effective management of risks posed by infectious agents to aquaculture through a strategic approach at enterprise, national and international levels with shared public-private responsibilities.*

17. It was agreed that the remainder of the terms mentioned above would need to be defined within the main guidelines document of the PMP/AB.

2.3.3. Stage objectives

18. One of the main concerns raised by participants of PMP/AB2 was whether the approach of the PMP/AB should be stepwise, parallel/matrix, or a combination of both. There was a consensus that the stepwise approach would be best, but both sector-level and national-level biosecurity strategies should be developed in Stage 1 of the PMP/AB, be implemented in Stage 2, and continue to be developed in Stage 3. It was agreed that a Stage 0 was not necessary for the PMP/AB. Countries may start in Stage 1 of the PMP/AB prior to self-assessment. Additionally, there were concerns raised as to whether different sectors can advance through the PMP/AB stages independently, because certain sectors are more advanced than others in a country (e.g. at different levels of development).

19. Based on comments raised during PMP/AB2, it was concluded that the PMP/AB should target each sector independently, with the focus being on the most important sectors to a country. The overall objectives of each stage of the PMP/AB were revised as follows:

- Stage 1: Risk analysis
 - Gateway pass: development of draft national and sector-level biosecurity strategies
- Stage 2: Biosecurity
 - Gateway pass: strategies are enhanced and revised (based on evidence)
- Stage 3: Enhanced biosecurity and preparedness
 - Gateway pass: demonstrated commitment from public and private stakeholders
- Stage 4: Sustainability
 - Gateway pass: national and international stakeholder confidence

20. The titles of each of the PMP/AB stages were initially established during PMP/AB1 (FAO, 2019). After the change in objectives for each stage, the stage titles were revised during a roundtable discussion, as highlighted below (see Figure 1):

PMP/AB Stage 1

- Original: “Risk assessment”
- Revised: “*Biosecurity risks defined*”

PMP/AB Stage 2

- Original: “Biosecurity managed in specific sectors”
- Revised: “*Biosecurity systems implemented*”

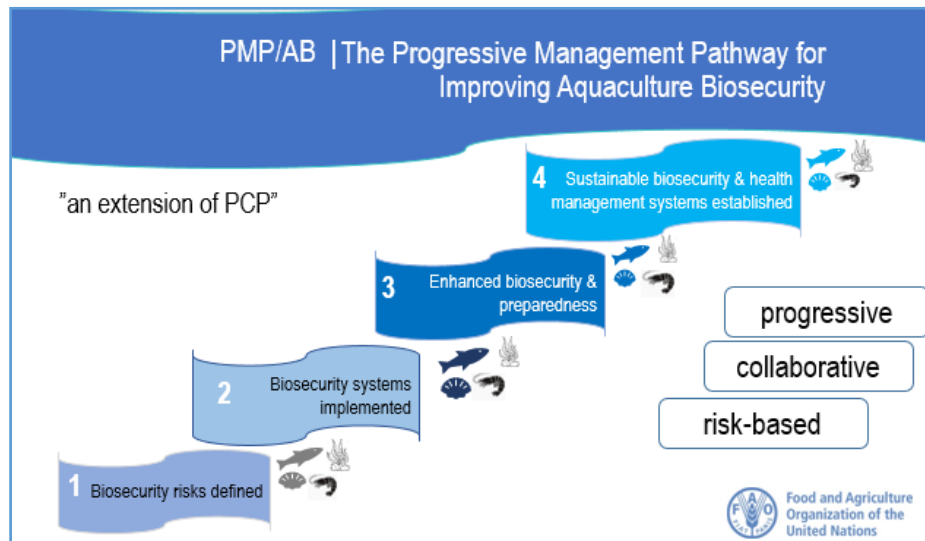
PMP/AB Stage 3

- Original: “National biosecurity management system”
- Revised: “*Enhanced biosecurity and preparedness*”

PMP/AB Stage 4

- Original: “Sustainable national aquaculture system”
- Revised: “*Sustainable biosecurity & health management systems established*”

Figure 1. Four stages of the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB) (source: Aquaculture Branch).



2.3.4. Key outcomes and typical activities

21. Proposed revisions to the key outcomes and typical activities of the four PMP/AB stages were developed during a roundtable discussion in response to the change in the objectives of the PMP/AB stages presented during PMP/AB2 (see Section 2.3.3). Dr Melba B. Reantaso proposed that basic capacity in emergency preparedness be included in Stage 1 of the PMP/AB, including mass mortality contingency plans and focusing on known threats. Countries can build on this emergency response and by Stage 3, the emergency preparedness capacity should be enhanced. These revisions are presented below in Table 1.

Table 1. Proposed revisions to the draft Key Outcomes (or typical activities) of the four PMP/AB stages that were presented at PMP/AB2.

	Original	Proposed revisions
Stage 1	<p><i>Risk assessment</i></p> <ul style="list-style-type: none"> • Production chain mapping • Threats and vulnerabilities identified, and situation described as known • Risk hotspots identified to mitigate key threats/vulnerabilities • Enabling environment: identify Competent Authority (CA) and draft national pathogen list (NPL) • Sector-level biosecurity action plans (BAPs) 	<p><i>Biosecurity risks defined</i></p> <ul style="list-style-type: none"> • Value chain (production chain) mapping • Biosecurity threats and vulnerabilities identified, and situation described as known (at national and farm level) • Risk hotspots and critical control points identified to mitigate key threats/vulnerabilities • Enabling environment: identify CA, draft pathogen list (criteria identified), public-private PMP taskforce, legislative review, basic capacity in emergency management • National and sector-level biosecurity strategies

	Original	Proposed revisions
Stage 2	<p><i>Biosecurity managed in specific sectors</i></p> <ul style="list-style-type: none"> • BAPs implemented • Monitor impact and implementation • Evidence that impact of hazards is reduced • Enabling environment: legal framework strengthened, NPL adopted, lab capacity to support surveillance, aquatic animal health information system (AAHIS) • Development of national strategy 	<p><i>Biosecurity systems implemented</i></p> <ul style="list-style-type: none"> • Biosecurity measures implemented • Monitor/assess effectiveness of biosecurity management (audits & certification) • Surveillance: existing, exotic and emerging pathogens • Enabling environment: laboratory capacity to support surveillance, Aquatic Animal Health Information System, Aquatic Biosecurity Information System, strengthen legislation, NPL adopted, aquatic animal health professionals trained/qualified, regional information sharing and cooperating especially with countries sharing waterbodies • National strategy revised and strengthened <ul style="list-style-type: none"> ○ strong port/border controls ○ rapid detection and response
Stage 3	<p><i>National biosecurity management system</i></p> <ul style="list-style-type: none"> • National strategy implemented • Enzootic, exotic and emerging hazards under continuous surveillance • Reduced incidence of diseases • Enabling environment: national multi-agency taskforce, legislation allows full implementation of strategy and enforcement of policies, laboratory capacity for rapid detection • Evidence of stakeholder commitment 	<p><i>Enhanced biosecurity and preparedness</i></p> <ul style="list-style-type: none"> • Revised strategy and policies implemented • Efficient, effective outbreak management • Existing, exotic and emerging hazards under continuous surveillance <ul style="list-style-type: none"> ○ Early detection and response • Disease incidence and impact reduced • Enabling environment: cost-benefit analysis, national multi-agency taskforce, legislation allows full implementation of strategy and enforcement of policies, laboratory capacity for rapid detection, emergency preparedness and response audit, evidence-based decision making, access to research capacity and infrastructure for emerging pathogens • Commitment, including investment, from public and private stakeholders to safeguard progress including investors
Stage 4	<p><i>Sustainable national aquaculture system</i></p> <ul style="list-style-type: none"> • Activities sustained and improved by learning through experience • Enabling environment: legislation reviewed and updated, zones/compartments recognized by OIE (if applicable), support other countries in biosecurity development • Robust socio-economic situation for all (incl. small-scale producers, food security and safe trade) • National and international stakeholders have confidence in the national aquaculture and ecosystem health 	<p><i>Sustainable biosecurity and health management systems established</i></p> <ul style="list-style-type: none"> • Activities sustained and evidence-based improvement • Enabling environment: legislation reviewed and updated, zones/compartments recognized by OIE (if applicable), support other countries in biosecurity development • Robust socio-economic situation for all (incl. small-scale producers, food security) • National and international stakeholders have confidence in the national aquaculture and ecosystem health <ul style="list-style-type: none"> ○ Safe trade, transparency

2.3.5. PMP/AB toolkit

22. During a roundtable discussion, the following potential guidance documents and/or training courses for implementation of the PMP/AB (as part of the “PMP/AB toolkit”), with potential lead entities/partners were listed. It was agreed that these documents be very practical and have an objective, introduction, and steps that are easy for non-specialists to follow. Some of these documents and/or

courses are already developed or currently in development but should be revised to fit the context of the PMP/AB. Leads were assigned for the preparation and/or revision of each.

- **PMP/AB guidelines**
 - Guidelines of Application for the PMP/AB
 - Includes overall concept and objectives of the PMP/AB, terminology, introduced self-assessment checklist (with instructions), lists guidance documents available, and instructions on how to apply it
 - Stage descriptions and indicators
 - Draft was prepared and shared at the Paris meeting
 - For each stage, need title, objectives, scope, entry points (minimum requirements), and available tools
 - These should be further developed after testing in pilot countries
 - General instructions on following the PMP/AB pathway
 - Instructions for using the PMP/AB self-assessment checklist
 - Draft templates of national and sectoral level strategies
 - *Lead: FAO and PMP/AB Technical Working Group*
- **PMP/AB self-assessment checklist**
 - *Lead: FAO and Canadian Food Inspection Agency (CFIA)*
- **Guidance for risk analysis (or risk profiling) in the context of the PMP/AB**
 - Value-chain risk analysis (Stage 1)
 - Hazard analysis and critical control point (HACCP) approach (Stage 1)
 - Industry-led risk analysis (Stage 1)
 - Import risk analysis (Stage 3)
 - *Lead: Canadian Food Inspection Agency (CFIA), Norwegian Veterinary Institute (NVI), and Nite University*
- **Guidance for a socio-economic assessment**
 - *Lead: FAO and NVI*
- **Guidance for conducting a baseline assessment**
 - Guidance for performing a situational analysis in the country
 - Can use FAO's self-assessment questionnaire on aquatic animal health and biosecurity to assist with this
 - Self-assessment questionnaire on aquatic animal health and biosecurity
 - This questionnaire has already been developed but needs to be adapted to fit within the context of the PMP/AB
 - *Lead: FAO and NVI*
- **Roll-out (i.e. PMP/AB advocacy/communications, training, governance)**
 - A training course on implementation of the PMP/AB should be included
 - Should include guidance for countries to ensure compliance
 - Governance of the PMP/AB needs to be established, considering incentives
 - *Lead: FAO, NVI, Kingdom of Saudi Arabia, CFIA, Indian Council of Agricultural Research (ICAR)*
- **Guidance for active surveillance**
 - Currently in the development by FAO and NVI
 - *Lead: FAO and NVI*
- **Guidance for emergency preparedness/management**
 - Working group needed
 - *Lead: FAO and NVI*

- **Guidance for developing a national strategy on aquatic animal health (NSAAH)**
 - This has already been developed by FAO but should be adapted to fit within the context of the PMP/AB
 - *Lead: FAO and CFIA*
- **Guidance for the identification of the competent authority (CA) for aquatic animal health and/or aquaculture biosecurity**
 - *Lead: FAO and Centre for Environment, Fisheries and Aquaculture Science (Cefas)*
- **Guidance for legislation review**
 - *Lead: NVI and Dr Victoria Alday-Sanz*
- **Guidance for developing a national aquatic pathogen list (based on risk)**
 - This has already been developed by FAO but should be adapted to fit within the context of the PMP/AB
- **OIE aquatic performance of veterinary services (PVS) tool (to assess enabling environment in PMP/AB)**
 - Can either be used as a separate over-arching tool or as part of the PMP/AB checklist during the self-assessment stage
 - Can potentially be used as a self-evaluation tool to assess gaps
 - Should not have a requirement for the OIE PVS tool, but can have it as an option for countries if there are overlaps with PMP/AB checklist – need to find out where there is overlap
 - Some countries prefer an external evaluator
- **Guidance for laboratory diagnostics development**
 - *Lead: Mississippi State University (MSU), Yellow Sea Fisheries Research Institute (YSFRI), and Nitte University*
- **Guidance for farm-level biosecurity plans and standard operating procedures (SOPs) for farmers**
 - Dr Jie Huang has developed draft guidelines for this in the context of shrimp infectious diseases in P.R. China, which was presented during the Paris meeting (titled: “Steps to set up biosecurity system against shrimp infectious diseases, from farm to country level in China”)
 - Include farm-level diagnosis-based treatment, surveillance-based prevention, and risk analysis (critical control points)
 - *Lead: YSFRI, Dr Alday-Sanz, and NVI*
- **Guidance on aquatic animal health**
 - FAO has many manuals/papers published
 - E-learning or training courses should be offered – develop new or use existing
 - Basic fish health, epidemiology, pathology, diagnostics, surveillance etc.
 - American Fisheries Society – Fish Health Section certification is a possibility
 - *Lead: MSU*
- **Good aquaculture practices (GAPs)**
 - Assess what already exists and potentially adapt to the PMP/AB

23. Dr Melissa McLaws presented on the Progressive Control Pathway for Foot-and-Mouth Disease (PCP-FMD) self-assessment tool, which was agreed to be a possible way to develop the PMP/AB self-assessment checklist. The PCP-FMD self-assessment tool is electronic and users can visualize the progress made within a Stage over time. There are five components for each stage (e.g.

veterinary services, epidemiology, and socio-economics) and each component contains multiple categories. There is a built-in glossary that gives short explanations and links to references. The user can compute the percentage of completion for all Stages simultaneously and view completed and pending activities (listed by priority).

2.4. Agenda 3

24. It was agreed that for PMP/AB implementation, the following was required:

- Preliminary guidance for the PMP/AB
 - Develop guidelines of application of the PMP/AB
 - Revise stage descriptions and indicators
 - Develop self-assessment tool
- Roll-out in volunteer countries
- Sharing of pilot experiences
 - Use this information to revise and further develop the PMP/AB and its supporting tools – the PMP/AB will be a “living document”
- Establishment of PMP/AB governance
 - This should involve standardized, non-biased assessment
 - Self-governing? Involve OIE or another governing body?
 - Should consider government incentive

3. PLENARY DISCUSSIONS ON FOLLOW-UP WORK

3.1. Recommendations of PMP/AB2 (Paris, January 2019)

25. The recommendations arising from PMP/AB2 include the following:

- The purpose of the PMP/AB is to develop or enhance a biosecurity system in a country. The incursion of a new pathogen should not result in the downgrade in PMP/AB stage.
- For a PMP/AB risk-based approach, focus should be on the key drivers and biosecurity vulnerabilities.
- The seaweed sector prioritizes biosecurity and should be considered during PMP/AB development.
- There are several risk assessment frameworks that may be useful for the PMP/AB. A systematic approach should be used.
- For the PMP/AB assessment process, a third party or international body coordinated assessment may provide incentive to participate.
- Initiation of the PMP/AB must be flexible and should be done as a joint effort (sector, national, and enterprise levels).
- Incentives need to be identified at both the national and enterprise levels, and must be ongoing in order to sustain efforts.
- A “road map” is needed to move forward. It begins with further development of a pilot phase. FAO as coordinator and leader of the pilot phase is appropriate, because of the organization’s obligation to improve food security.

- Projects and funding should be long-term: support from the WB may be possible? Need to explore existing international mechanisms.
- A training plan will be needed and should include training at the international, national and farm levels. There should be training of trainers.
- Multidisciplinary expertise will be needed and should be available via multiple modalities (e.g. e-learning, workshops etc.).

26. The following needs to be further defined and/or developed in the PMP/AB:

- The concept of the PMP/AB – it is not clear whether it is a programme, tool, or framework
- The main objectives of the PMP/AB and its expected results
- The approach of the PMP/AB – should it be stepwise or pillar, or a combination of both (matrix approach)? Should the approach be national, or sectoral, or pathogen based? At what point should a national strategy be developed?
- Terminology such as “biosecurity”, “risk hotspot”, “national strategy”, “sector/enterprise”, and “risk assessment” should have definitions available in a glossary

3.2. Recommendations of TWG1

27. The recommendations arising from TWG1 include the following:

- A guidelines of application document needs to be created for the PMP/AB that includes:
 - an introduction with the overall concept and objectives of the PMP/AB
 - instructions for applying the PMP/AB and its self-assessment checklist
 - a list of available guidance tools
 - a glossary for terminology used in the PMP/AB, including:
 - Biosecurity
 - Value/production chain
 - Hazard
 - Risk analysis (and risk assessment)
 - Vulnerabilities
 - Risk hotspot
 - National biosecurity strategy
 - Sector-level biosecurity strategy
 - Sector/enterprise
- The PMP/AB stage description/indicators document should be revised according to roundtable discussions; each stage should have:
 - a title
 - clear objectives
 - a scope
 - entry points (minimum requirements)
 - available tools (existing or new specific to the PMP/AB)
 - requirements/indicators
 - lead/partners (i.e. Competent Authority, private sector or combination)
 - oversight (governance)
- Guidance documents and/or training courses should be prioritized and developed (or revised in the context of the PMP/AB) to support PMP/AB implementation in pilot countries.

- These documents should be very practical and not contain too much theory. They should have an objective, introduction, and easy steps to follow, since they will target non-specialists. They will be living documents that can be improved during roll-out.
- After roll-out, there should be technical consultations with governments to reach consensus on the outcome of the PMP/AB. This outcome should be reported after 2 years and presented.
- Other partnerships for funding of the PMP/AB should be explored.

4. SESSION 7: CONCLUSIONS, THE WAY FORWARD AND CLOSING

4.1. Conclusions

28. The objectives of the meeting were achieved.

29. A main objective of the meeting was to discuss and agree upon the feedback generated from the PMP/AB2. This included elucidating the overall objective and approach of the PMP/AB, which will provide better direction during future development of the pathway and supporting tools. The four stages outlined in the PMP/AB background document were revised based on comments and concerns raised during the multi-stakeholder consultation. It also became apparent that each stage should have more clearly defined objectives and guidance.

30. Another objective of the meeting was to discuss and agree upon the main contents of the guidelines of application of the PMP/AB. Guidance documents, manuals, and/or training courses that may be required for the implementation of the PMP/AB (as part of the “PMP/AB toolkit”) were agreed upon; development of the PMP/AB toolkit will be ongoing.

31. Finally, the last objective of the meeting was to discuss plans for initial application and testing of the PMP/AB. Roll-out will include technical discussions with the relevant authorities. Guidance and training will be living documents and improved upon based on feedback received after rolling out in participating countries. Governance of the PMP/AB is an important aspect of implementation and was highlighted during the meeting; further discussions will be required.

32. The PMP/AB: First Technical Working Group meeting led to improved clarity regarding the PMP/AB and highlighted the steps needed to further its development.

33. A consensus was reached on the definition of the PMP/AB as a *pathway* that builds on existing *frameworks*, supported by appropriate *tools* (via the “PMP/AB toolkit”). The PMP/AB focuses on aquaculture biosecurity, which includes health management and reduction of antimicrobial resistance (AMR). The PMP/AB will not directly focus on food safety; however, it will promote sustainable aquaculture production with good husbandry practices, environmental practices, and prudent treatment or antimicrobial use.

34. In the context of PMP/AB, aquaculture biosecurity refers to the cost-effective management of risks posed by pathogenic agents to aquaculture through a strategic approach at enterprise, national and international levels with shared public-private responsibilities.

35. The overall objective of the PMP/AB is enhancing aquaculture biosecurity capacity by: (1) building on existing frameworks, capacity and appropriate tools; (2) using risk-based approaches; and (3) forming public-private partnerships. The PMP/AB results in: (1) sustainable reduction of burden of disease; (2) improvement of health at farm and national levels; (3) minimization of global spread of diseases; (4) optimization of socio-economic benefits from aquaculture; (5) attraction of investment opportunities into aquaculture; and (6) achievement of One Health goals.

36. The four stages of PMP/AB are:

Stage 1: “*Biosecurity risks defined*”

Stage 2: “*Biosecurity systems implemented*”

Stage 3: “*Enhanced biosecurity and preparedness*”

Stage 4: “*Sustainable biosecurity & health management systems established*”

4.2. The way forward

37. The next steps required to move the development and implementation of the PMP/AB forward are (current target dates are given in parentheses):

- Follow-up technical working group meeting to further development of the PMP/AB, including guidance of application, stage descriptions, indicators, self-assessment tool, governance, and other guidance documents and/or tools necessary (date to be determined)
- Roll-out PMP/AB in voluntary pilot countries (date to be determined)
- Presentation of the PMP/AB to the FAO COFI Sub-Committee on Aquaculture 10th Session for endorsement (scheduled in August 2019)

4.3. Closing

38. Remarks closing TWG1 were given by Dr Melba B. Reantaso on behalf of FAO. She thanked the participants for their efforts in the further development of the PMP/AB.

39. A number of the participants then expressed their deep appreciation to the organizers of the consultation and their strong support for future activities.

5. REFERENCES

FAO. 2003. *Introduction to Biosecurity* [online]. <http://www.fao.org/biosecurity/>

FAO. 2018. *Consensus reached by multistakeholders to support a risk-based, progressive and collaborative pathway/tool to improve aquaculture biosecurity* [online]. <http://www.fao.org/fishery/nems/41063/en>

FAO. 2019. *Report of the FAO/MSU/WB First Multi-Stakeholder Consultation on a Progressive Management Pathway to Improve Aquaculture Biosecurity (PMP/AB), Washington, D.C., United States of America, 10–12 April 2018*. Rome, FAO Fisheries and Aquaculture Report No. 1254. 76 pp. (also available at <http://www.fao.org/documents/card/en/c/ca4891en/>).

OIE. 2019. *Aquatic Animal Health Code* [online]. <https://www.oie.int/standard-setting/aquatic-code/access-online/>

Programme

Date	Activities
20 March 2019 (Wed)	Day 1
09.00–09.30	<ul style="list-style-type: none"> • Welcome • Self-introduction of delegates • Introduction to the PMP/AB Technical Working Group Meeting agenda: adoption of agenda (M. Reantaso)
<p>Annotation: <u>Proposed agenda:</u></p> <ol style="list-style-type: none"> 1. discuss and agree on some of the issues and concerns raised during the PMP/AB Paris meeting (e.g. whether PMP/AB is a framework, a pathway as the name suggest, a tool, a road map; whether the approach will be step-wise or parallel/matrix or a combination of both, etc.) 2. building on the background document (checklist of requirements, indicators, etc.) and discussions in Paris, discuss and agree on the final form and main contents of the Guidelines of Application of PMP/AB 3. draw a tentative plan (timetable for the initial application and testing of PMP/AB) including preliminary reporting of outcomes 4. next steps <p>The proposed agenda will be adopted by participants; any additions on other issues for discussion is welcome.</p>	
09.30–10.00	Agenda 2 (part)
<p>Annotation: Since some experts (Victoria, Mark) will only be available on Day 2, it is suggested that Agenda 1 be discussed on Day 2.</p> <p>It is suggested that in order to drive the discussions on the issue (part of Agenda 2) as to where would a country start if it is interested to roll out PMP/AB, the scenario approach can be used. This will enable us to understand what is the status of the country (assessment) and what will be the requirements needed by a country depending on the scenario, e.g.:</p> <ul style="list-style-type: none"> • <u>Scenario 1:</u> Country X does not have any strategy on AAH nor biosecurity • <u>Scenario 2:</u> Country Y has NSAAH or biosecurity strategy developed from other projects or initiatives but not within the context of PMP/AB and lacking implementation or no systematic implementation. How can such NSAAH be used or built upon or revised so that it becomes relevant within the context of PMP/AB • <u>Scenario 3:</u> Country Z is implementing advanced AAH/Biosecurity strategies, again, developed not within the context of PMP/AB. How can such advanced strategies be used or built upon or revised so that it becomes relevant within the context of PMP/AB • <u>Scenario 4:</u> 	
10.00–10.30	Coffee break
10.30–12.15	Agenda 2 (part): Discussion of scenarios (continued)
12.15–13.30	Lunch break
13.30–15.30	Agenda 2 (part): building on the background document (checklist of requirements, indicators, etc.) and discussions in Paris, agree on the final form and main contents of the Guidelines of Application of PMP/AB Review of the working groups findings of PMP/AB Paris meeting
15.30–16.00	Coffee Break

Date	Activities
16.00–16.45	Agenda 2 (continued)
16.45–17.00	Wrap-up and tasks for Day 2 (M. Reantaso)
21 March 2019 (Thu)	Day 2
09.00–09.30	Reporting of Day 1 achievements and discussions
09.30–10.00	Agenda 1: discuss and agree on some of the issues and concerns raised during the PMP/AB Paris meeting (e.g. whether PMP/AB is a framework, a pathway as the name suggest, a tool, a road map; whether the approach will be step-wise or parallel/matrix or a combination of both, etc.)
10.00–10.30	Coffee break and group photo
10.30–12.15	Agenda 1 (continued)
12.15–13.15	Lunch break
13.15–15.30	Agenda 2: final form and main contents of the Guidelines of Application of PMP/AB
15.30–16.00	Coffee Break
16.00–17.30	Agenda 3: draw a tentative plan (timetable for the initial application and testing of PMP/AB) including preliminary reporting of outcomes
22 March 2019 (Fri)	Day 3
09.00–10.00	Reporting of Day 2 outcomes and discussion
10.00–10.30	Coffee break
10.30–11.30	Conclusions and next steps
12.15–13.15	Lunch break
	Departure of participants

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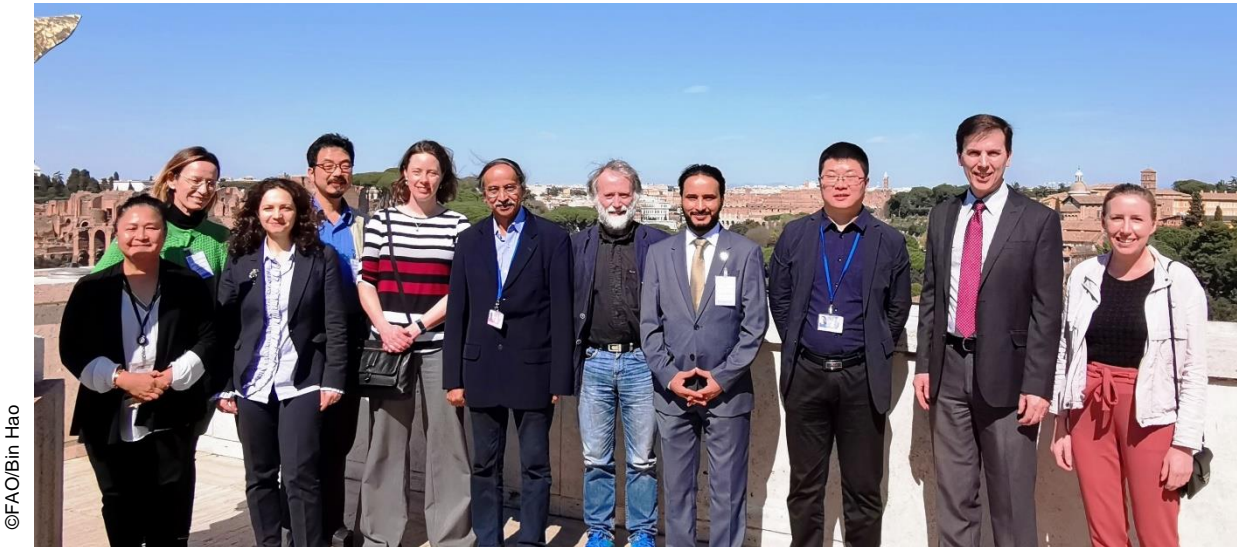
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Group photographs



Group photos: The Technical Working Group meeting was attended by 13 participants representing government and intergovernmental organizations, industry, academe, and FAO officers.

The first Technical Working Group (TWG1) meeting on the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB) was held at the Headquarters of the Food and Agriculture Organization of the United Nations (FAO), from 20 to 22 March 2019 in Rome, where experts from competent authorities, intergovernmental organizations, the aquaculture industry, academe, and research institutions examined the two previous consultations on PMP/AB and clarified issues and concerns raised during these two consultations. During the TWG1, a consensus was reached on the definition of the PMP/AB as a *pathway* that builds on existing *frameworks*, supported by appropriate *tools* (via the “PMP/AB toolkit”). The PMP/AB focuses on aquaculture biosecurity, which includes health management and reduction of antimicrobial resistance (AMR). The PMP/AB will not directly focus on food safety; however, it will promote sustainable aquaculture production with good husbandry practices, environmental practices, and prudent treatment or antimicrobial use.

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