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## **Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN (AADCP-RPS 370-021)**

**Technical Mission to Myanmar  
3-9 September 2006**

**Final Report**

## **1. Background**

AusAid, under the ASEAN-Australia Development Cooperation Program's Regional Partnership Scheme (AADCP-RPS) is supporting two aquatic animal health projects: (a) Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN (370-021) and (b) Operationalise Guidelines on Responsible Movement of Live Food Finfish in ASEAN (370-018). NACA and AusVet Animal Health Services are implementing these two projects in partnership with the ASEAN Secretariat; ASEAN Sectoral Working Group on Fisheries; NACA National Coordinators; Department of Agriculture, Fisheries and Forestry (DAFF) Australia; Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries, Thailand; and the ASEAN governments.

Under the project, 4 policy workshops, 2 training programmes and technical missions to 4 ASEAN countries (Lao, Cambodia, Vietnam and Myanmar) will be completed. Implementation of these two projects commenced in January 2006 and will be running concurrently until June 2007. The first set of 2 policy workshops and one training programme were completed recently.

Six government nominated delegates from Myanmar participated in the above activities:

1. First Policy workshop (project 370-021) from 3-6 April 2006 at Bangkok, Thailand was participated by **Ms May Thanda Wint** and **Ms Ohn Mar Moe**, Department of Fisheries
2. First Policy workshop (project 370-018) from 10-12 April 2006 by **Mr Saw Lah Pah Wah** and **Ms Mar Lar Win**, Department of Fisheries
3. First training workshop (project 370-021) from 7-13 May 2006 at Singapore by **Ms Nu Nu Ye** and **Ms Win Win Han**, Department of Fisheries

The technical mission to Myanmar was undertaken from 3<sup>rd</sup> to 9<sup>th</sup> September 2006 with the intention of supporting the development and implementation National strategies on aquatic animal health. Specifically this was a follow up activity to the first set of 2 policy workshops and one training workshop, to provide further assistance to the 6 workshop and training participants and to follow up on the identified country specific action plans. A team of 2 experts undertook the technical missions and accomplished the activities identified in the agenda.

## **2. Members of the Technical Mission**

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### **3. Objectives of the Technical Mission**

Myanmar faces several challenges in the practical implementation of health management strategies, specifically in the areas of:

- Disease diagnosis;
- Surveillance and reporting;
- Quarantine and certification;
- Emergency preparedness;
- Risk analysis; and
- Resources (trained manpower, infrastructure)

Developing simple and practical national aquatic animal health management strategies that suit the needs of the country and at the same time utilize the existing resources (e.g. Myanmar Fisheries Federation) effectively, should be the way forward. Such an approach should focus on:

- Awareness and capacity building;
- Networking;
- Sharing of resources;
- Promoting cooperation; and
- Giving ownership to all stakeholders concerned

The objectives of the Technical mission was to work closely with National Authorities (DOF, Department of Livestock and Breeding, Universities, Myanmar Fisheries Federation, National Coordinator, OIE Aquatic Focal point, ASWGFi member, AADCP-RPS project participants (6) and other relevant stakeholders) to support development of a framework for national strategies on aquatic animal health management and identify gaps and develop short and long term plans.

Specifically the TOR of the Technical Mission included:

- Identification of key national issues concerning aquatic animal health
- Identifying national priorities for aquatic animal health management
- Identifying institutions and their responsibilities
- Drafting a framework for National aquatic animal health advisory committee
- Drafting a framework for national strategies on aquatic animal health
- Developing a National list of diseases
- Evaluating capacity for national list of diseases
- Developing a framework for passive surveillance and reporting
- Developing a framework for contingency planning, and

- Supporting participants of the workshops and training programme to follow up on some of the identified country action plans

#### **4. Approach adopted by the Technical Mission**

The meeting sessions were conducted as per the agenda (Annex 1). The opening session was attended by the Deputy Director General of the Department of Fisheries (DOF), who emphasized the need for development of national strategies for aquatic animal health and highlighted the importance of the technical mission. He informed the meeting, the various steps taken by the DOF to support implementation of the National strategies, including the recent formation of a national aquatic animal health committee. About 45 national delegates participated in the meetings very enthusiastically (Annex 2). In brief, the meeting involved presentations by national delegates and technical mission team members followed by facilitated discussions and development of outputs. Throughout the sessions, translations were provided where necessary. A very informal meeting structure was adopted to encourage active participation of national delegates. Outputs were developed taking into account the existing national frameworks and facilities so that the national aquatic animal health strategies developed are practical and at the same time could be implemented with the existing resources. All the outputs developed during the mission were based on the inputs received from the national delegates. On the last day of the mission, a wrap-up session provided a feed back to the participants on the salient outcomes and identified timelines for each of the activities.

#### **5. Development of a framework for National Strategy on aquatic animal health**

The purpose of a national strategy on aquatic animal health is to reduce risks of aquatic animal disease impacting on livelihoods of aquaculture farmers, national economy, trade and human health. The essential components of such a strategy should include:

- Identification of key issues in relation to aquatic animal health management;
- Identification of national priorities concerning aquatic animal health;
- Identification of key Institutions and responsibilities;
- Formation of a national committee on aquatic animal health;
- Developing a National list of aquatic animal diseases;
- Developing Disease diagnosis support;
- Capacity building and resources;
- Surveillance and reporting;
- Quarantine and health certification;
- Emergency preparedness and contingency planning; and
- Risk analysis.

Development and implementation of National strategies would have several benefits to a country. Important ones include the following:

- It identifies the action plans of a country to implement the various elements contained in the National strategy;
- It will ensure responsible health management; and

- It provides the road map for phased implementation based on national priorities and available resources.

## **6. Identification of Key National issues concerning aquatic animal health**

The meeting identified several issues concerning the aquatic animal health management. Some of the key issues included the following:

1. The main cultured species in Myanmar are; Shrimp (*P.monodon* and *P.vannamei*), freshwater prawn, Indian carps (rohu, mrigal,), Chinese carps (common carp, grass carp), puntius, tilapia, pugasius, seabass, grouper, crab (only fattening). Other potential culture species include, Sea weeds, local bivalves and pearl culture
2. Some of the major diseases encountered are white spot and taura syndrome in cultured shrimp, EUS in cultured and wild freshwater fishes, disease of unknown etiology in cultured tilapia
3. Fish seed requirement for the country is mainly met from local production. Only seeds of *P. vannamei* (Thailand, China) and to some extent Tilapia are imported from outside,
4. Under the stock enhancement programs, locally produced seeds of about 16 freshwater species are released annually into freshwater bodies
5. Myanmar does not export fish seed to any country, however, some small quantities of freshwater prawn seed are exported to Taiwan;
6. Myanmar has level I capacity for some of the important diseases, level III capacity (only PCR) for some of the shrimp viruses. There is no level II capacity, especially for histopathology;
7. Trained human capacity for histopathology (level II) is absent in DOF and Universities. Laboratory facility for histopathology and microbiology is available in the department of Livestock and breeding;
8. Level II (Microbiology) capacity for isolation and identification of microbial pathogens (*Aeromonas*, *Pseudomonas*, *Flexibacter*) to species level is available. However, there are difficulties with the diagnosis of infections caused by *Mycobacterium*, *Nocardia*, *Streptococcus*, etc;
9. Level I capacity for identification of ectoparasitic diseases caused by parasites like *Lernaea*, *Argulus*, *Trichodina*, *Oodinium*, *Ichthyophthirius*, etc and EUS like lesions are available;
10. Myanmar has only two laboratories under the DOF (Yangon and Mandalay) for aquatic animal health related work. There are good laboratory facilities in the department of Livestock and Breeding, but aquatic animal health work is not normally undertaken;

11. Even though large numbers of DOF and University staff have received training, limited staff have received specialized training in aquatic animal health (e.g. histopathology, surveillance, disease diagnosis, outbreak investigations, epidemiology);
12. A structure/framework exists for live stock disease surveillance. However, this framework is not used for aquatic animal disease surveillance programs;
13. Myanmar does not have biosecure quarantine holding facilities within either the government or private sector;

## **7. Identification of National Priorities for Aquatic animal health management in Myanmar**

Following national presentations and discussions, the meeting identified the following as the key national priorities to progress aquatic animal health management in Myanmar:

- Identification of roles and responsibilities of different institutions for aquatic animal health management;
- Development of guidelines and TOR for the National committee on aquatic animal health;
- Development of a national strategy framework for aquatic animal health;
- Development of national list of important aquatic animal diseases;
- Capacity building in level I diagnosis for field and divisional fishery officers;
- Capacity building in level II diagnosis for laboratory staff;
- Awareness building on fish disease recognition and reporting to farmers, seed producing units, extension workers, district and town level fishery officers;
- Developing resource materials (e.g. disease cards and brochures in local languages) to support capacity building activities;
- Development of a process for issuing and requesting appropriate health certificates;
- Development of a framework for passive surveillance based on level I diagnosis
- Establishment of a National database on aquatic animal health
- Establishing a plan for disease emergency preparedness

## **8. Identification of key Institutions and responsibilities concerning aquatic animal health in Myanmar**

The meeting identified the following key institutions and their responsibilities concerning aquatic animal health management:

	Name of Institutions	Responsibilities
	<b>National Level</b>	
1	DOF	Policy, guidelines, regulations, capacity building, Competent authority, R&D, Risk analysis, Health Certificate for live animals, teaching at universities,

1a	Aquaculture division (DOF)	Quality seed production, aquaculture planning and development, extension, stock enhancement, resources management, health management, quarantine,
1b	Research and Development Division	Marine fisheries resources, surveys section, environment protection section, foreign relation and joint ventures, institutes of fishery technology (2 training schools)
1c	DOF owned hatcheries for fish (26) and shrimp (12)	Seed production, point for training farmers, extension
1d	Aquatic Animal health and disease control section (DOF)	Disease diagnosis, surveillance, training on level I diagnosis, production of extension material, national database on disease information ( 2 labs)
1e	Fish inspection and quality control division (DOF)	Certificate for Food safety purposes, antibiotic residues (1 national and 3 regional labs)
2	Ministry of Health	Check imported frozen and canned products (food safety)
3	Ministry of Commerce	Export/import permit (Information provided by DOF)
4	Ministry of Mines	Pearl culture and Artemia culture
5	Livestock Breeding and Veterinary Department	Surveillance for livestock, OIE reporting, aquatic report endorsement by CVO
6	Private shrimp (12) and fish (>50) hatcheries, pearl hatcheries (8)	Seed production, extension,
7	Myanmar Fisheries Federation (MFF)	Seminars, workshops, training, disease lab, diagnostic service (2 lab), technology transfer (4000 members)
7a	Shrimp Association (MFF)	
7b	Fish Farmer Association (MFF)	
7c	Processor and exporter association (MFF)	
7d	Crab association (MFF)	
7e	Feed processors association (MFF)	
7f	Freshwater fisheries association (MFF)	
7g	Eel Association	
8	Veterinary University	Teaching fish disease subjects to Veterinary students, Research,
9	Other Universities	Teaching, Research, parasitic disease diagnosis (no diagnostic service to the industry)
9a	University Yangon	
9b	University Mandalay	
9c	University of Maubin	
9d	University of Mawlamyaing	

9e	University of Patheingyi	
9f	University of Myeik	
<b>State and Division level</b>		
10	State and divisional level Fisheries Officer (DOF)	Extension, monitoring, licensing, training, issuing of movement certificate,
11	Divisional Fisheries Federation (MFF)	Dissemination of information, meetings, workshops,
<b>District Level</b>		
12	District fishery officers	Extension, Aquatic animal movement document (different from health certificate)
13	District Level Fishery federation (MFF)	Dissemination of information, meetings, workshops,
<b>Township Level</b>		
14	Township level fishery officers	Extension, monitoring, production statistics (aquaculture, capture fisheries)
15	Fishery federation for township level (MFF)-farmers themselves	Dissemination of information, meetings, workshops (Voluntary)
16	Township level Veterinary officers	Livestock health monitoring

## **9. National Aquatic Animal Health Committee**

The objective of establishing a national aquatic animal health committee is to provide a formal mechanism to drive the process of national strategy development and implementation. Members of such a committee should have a broad understanding of the concept of health management. They should be also aware of the negative consequences of not having a national strategy on national economies, trade and livelihood of fish farmers. The members need not always be aquatic animal health experts. Among others, the benefits of having national committee include:

- It highlights the importance a country places on aquatic animal health;
- It provides a formal framework and process to drive the development and implementation of national strategy;
- It identifies roles and responsibilities of different stakeholders;
- It ensures some degree of implementation of AAH programmes
- It provides for wider participation and ownership to different institutions

Myanmar has recently constituted a national committee to guide the process of national strategy development and implementation. The structure of the national committee is as follows:

	Name of Institutions	Representation (Number)
<b>National Level</b>		
1	DOF	2
1a	Aquaculture division (DOF)	2



1b	Aquatic Animal health and disease controlling section (DOF)	3
1c	Fish inspection and quality control division (DOF)	4
1d	Research and Development Division	1
2	Ministry of Health	
3	Ministry of Commerce	
4	Livestock Breeding and Veterinary Department	1
5	Myanmar Fisheries Federation (MFF)	2
6	University of Veterinary Science	
7	Universities	2

Immediate Actions Required:

- Terms of Reference for the committee have to be developed (NACA can assist, TOR of the Australian national committee were provided at the meeting);
- Should organize an inception meeting of the tentative committee members and develop a program of work;
- The committee should guide the process of national strategy development and implementation
- The committee should constitute small working groups to accomplish specific tasks
- The committee should consider providing more representation to the industry, including hatcheries
- NACA will facilitate sharing of experiences from other countries (Vietnam, Thailand, Australia, Indonesia)

**10. Developing a tentative National List of important diseases for Myanmar**

By having a national list of priority diseases, the process of national strategy development could be initially built around these diseases. The meeting developed a tentative list of important diseases considering the following key criteria:

- Cultured and traded species;
- Diseases present in neighboring countries in view of shared water sheds and porous land borders;
- Economic impact of diseases on farmers and national economy;
- Existing international (OIE) and regional (QAAD) disease lists; and
- List of diseases considered important by the ASEAN countries.

Sl.No	Name of the Disease	Justification	Exotic/Endemic
	<b>Finfish</b>		
1	EUS	Affects wild and cultured fisheries, (snakeheads, puntius,	Endemic

		carps, catfishes)	
2	KHV	Common carp and koi carp culture present	Exotic?
3	VNN	Grouper and seabass farming initiated	Exotic?
4	Grouper iridoviral disease	Marine fin fish culture initiated in Myanmar	Exotic?
5	<i>Streptococcus</i> infection	Suspected problems in Tilapia and carps,	Endemic?
6	<i>Flexibacter</i>	Suspected in Tilapia and carp culture	
7	<i>Enteric septaemia of catfish</i>	Future expansion of pungasid culture	
8	BNP (Bacillary Necrosis in Pangasius)	Future expansion of Pungasid culture, disease present in Vietnam	
9	<i>Aeromonas</i> and <i>pseudomonas</i>	Economic loss in carps	
	<i>Nocardia</i> and <i>Mycobacterium</i>	Human health significance, problem in ornamental fish and tilapia	
10	<i>Lernaea</i>	Poly-culture of carps, pungasid and tilapia,	Endemic
11	<i>Argulus</i>	Carps, ornamental fish	Endemic
12	<i>Myxosporideans</i>	Carps, tilapia	Endemic
13	<i>Dactylogyrus</i>	Carp in ponds, hatcheries	
14	<i>Trichodina</i>	Catfish culture, carps, hatcheries	
15	<i>Epitehliocystis</i>	Tilapia culture	Exotic?
16	Tilapia red spot (etiology?)	Tilapia (pond/cage), no market, large scale mortality, grow out problem,	Endemic
17	??	Eel (live trade with China)	
	<b>Crustaceans</b>		
1	Luminiscent <i>Vibriosis</i>	Prawn and shrimp	Endemic
2	White spot (WSSV)	<i>P.monodon</i> culture	Endemic
3	MBV	<i>P.monodon</i>	endemic
4	IHHNV	<i>P.monodon</i> and <i>P.vannamei</i> culture	endemic
5	TSV	<i>P.vannamei</i> and <i>P.monodon</i> culture,	Endemic
6	YHV	<i>P.monodon</i> culture	exotic
7	IMNV	Present in the region, problem in <i>P.vannamei</i>	exotic
8	GAV	Present in the region, problem in <i>P.monodon</i>	exotic

9	MSGS (Monodon slow growth syndrome)	Monodon culture, present in the region, suspected in Myanmar	No information
10	Red gill in Monodon spawners (etiology?)	Experienced in hatcheries,	No information
11	White tail disease (MrNV and XSV)	Problem in <i>Macrobrachium</i> hatcheries, present in Thailand, Vietnam, India, China	Exotic?
12	Isopods	Mortality in broodstock of <i>Macrobrachium</i>	
13	????	Soft shell crab culture	
	<b><i>Mollusc</i></b>		
1	Akoya oyster disease	Possibility of mollusk culture? (pearl oysters)	Exotic?
2	Abalone viral mortality	One big company, Problem in China, Taiwan,	Exotic?
3	???	Babylonia culture (death in the wild)	
	<b><i>Others</i></b>		
1	???	Seaweed culture	

### **11. Evaluation of capacity and resources in Myanmar for national list of aquatic animal diseases**

Following the identification of important diseases of concern, the meeting assessed the capacity and resources available in Myanmar to support diagnosis and management of these priority diseases.

Sl.No	Name of the Disease	Laboratory	Personnel	Information
1	EUS	I	I	brochures
2	KHV	Level III	Level I	Brochures
3	VNN	Level III	Level I and III	No
4	Grouper iridoviral disease	No	No	No
5	<i>Streptococcus</i> infection	No	No	No
6	<i>Flexibacter</i>	Level II (bac)	Level II (bacteriology)	No
7	Enteric septaemia of catfish	No	No	No
8	BNP (Bacillary Necrosis in <i>Pangasius</i> )	No	No	No
9	<i>Aeromonas</i> and <i>Pseudomonas</i>	Level II	Level II	Brochures

10	<i>Nocardia, Mycobacterium</i>	No	No	No
10	<i>Lernaea</i>	Level I	Level I	Yes
11	<i>Argulus</i>	Level I	Level I	Yes
12	Myxosporideans	Level II (univ)	Level II	Yes
13	<i>Dactylogyrus</i>	Level I	Level I	Yes
14	<i>Trichodina</i>	Level I	Level I	Yes
15	<i>Epitehliocystis</i>	No	No	No
16	Tilapia red spot (etiology?)	No	No	No
17	?? eel problems			
	<b>Crustaceans</b>			
1	Luminiscent <i>Vibriosis</i>	Level II	Level II	yes
2	White spot(WSSV)	Level I and III	Level I and III	yes
3	MBV	Level I	Level I	yes
4	IHHNV	Level I and III	Level I and III	yes
5	TSV	Level I and III	Level I and III	
6	YHV	Level I and III	Level I and III	
7	IMNV	No	No	
8	GAV	No	No	
9	MSGs (Monodon slow growth syndrome)	No	No	
10	Red gill in Monodon spawners (etiology?)	No	No	
11	White tail disease (MrNV and XSV)	No	No	
12	Isopods	Level I	Level I	
13	????soft shell crab			
	<b>Mollusc</b>			
1	Akoya oyster disease	No	No	
2	Abalone viral mortality	No	No	
3	???Babylonia problems	No	No	
	<b>Others</b>			
1	???seaweed problems			

LEVEL	SITE	ACTIVITY
I	Field	Observation of animal and the environment Clinical examination

II	Laboratory	Parasitology (microscopy) Bacteriology Mycology Histopathology
III	Laboratory	Virology Electron microscopy Molecular biology (PCR) Immunology

The meeting discussed the information provided in some of the disease cards and brochures already available in Myanmar and came to the following agreements:

- The level of information provided is appropriate for laboratory and technical staff
- These should be revised by providing pictures of gross lesions and important clinical signs to make them appropriate for training of field officers and farmers (NACA can assist in the process)
- Disease cards should also include information on contact details of field/district officers for the purpose of reporting

## **12. Personnel Trained in aquatic animal health**

Over the years, several officers from DOF, and Universities have received training in aquatic animal health from AAHRI, SEAFDEC, NACA and other project related programs. As there was no process for a structured capacity building exercise, many of those trained have moved away to take up other responsibilities within the DOF. In view of this there is limited trained man power. The meeting agreed that by compiling a list of all the trained officers, an informal network of aquatic animal health personnel in Myanmar could be established.

The TM recommends that the DOF may consider reallocating some of the AAH trained staff to the required departments. This could help to drive the process of national strategy development and implementation

Sl.No	Names	Number of training events attended	Institutions
1	<b>National Level</b>		
2	Dr Si Si Hla Bu		University of Yangon
3	Dr Moe Kyi Han		University of Mandalay
	Dr Kyu Kyu Win		University of Sittwe
4	Dr Kyaw Sunn		Livestock breeding and Veterinary Department
5	Mr Soe Tun		MFF
6	Dr Myint Swe		MFF
7	Ms Khin Htwe Myint		Aquaculture Division
8	Ms Aye Aye Kyu		Aquaculture division
9	Mr U Tin Myo Zaw		Left the Department
10	Ms Thandar Minn		Aquaculture Division

11	Ms May Thanda Wint		Disease section
12	Ms Nwe Ni Aye		R&D (DOF)
13	Ms Aye Aye Thin		Aquaculture Division
14	Ms Khine Khine Mra		Aquaculture Division
15	Ms Myat Myat Htwe		Aquaculture Division
16	Ms Ohn Mar Moe		Disease Section
17	Mr Myint Thein		Aquaculture Division
18	Mr Yan Linn		Planning and statistics
19	Ms Saw Mya Lin		Disease Section
20	Ms Myat Khine Mar		Disease Section
21	Ms Shoon Lai Ko Ko		Disease Section
22	Ms Yi Yi Cho		Disease Section
23	Ms Nu Nu Yi		FIQC
24	Ms Win Win Han		FIQC
25	Ms Kyawt Kyawt Nyein		Disease Section

**Immediate Actions Required:**

- Form a network of these trained staff (collect email and form a network)
- Offer a refresher course, if necessary
- Make use of the trained staff for implementation of national strategy implementation action plans

**13. Framework for Passive surveillance using level I diagnosis**

Surveillance is defined as a systematic series of investigations of a given population of aquatic animals to detect the occurrence of disease for control purposes, and which may involve testing samples of a population. General (passive) surveillance is the ongoing work, which maintains a continuous watch over the disease profile of a population so that unexpected and /or unpredicted changes can be recognized. It includes all the routine disease investigation activities that may be undertaken in a country/state such as field investigations of disease incidents and results of laboratory testing. It is important that passive surveillance is undertaken on a continuous basis throughout a country/state and that the disease information produced is effectively captured, analyzed and used for mounting an early response.

Active surveillance collects specific information about a defined disease or condition so that its level in a defined population can be measured or its absence reliably substantiated.

Practical and effective surveillance systems coupled with early warning and early response, are critical to the effective management of disease emergencies. Disease surveillance should be an integral and key component of all national/state aquatic animal health services. This is important for early warning of diseases, planning and monitoring of disease control programs, provision of sound aquatic animal health advice to farmers, certification of exports, international reporting and verification of

freedom from diseases. It is particularly vital for animal disease emergency preparedness.

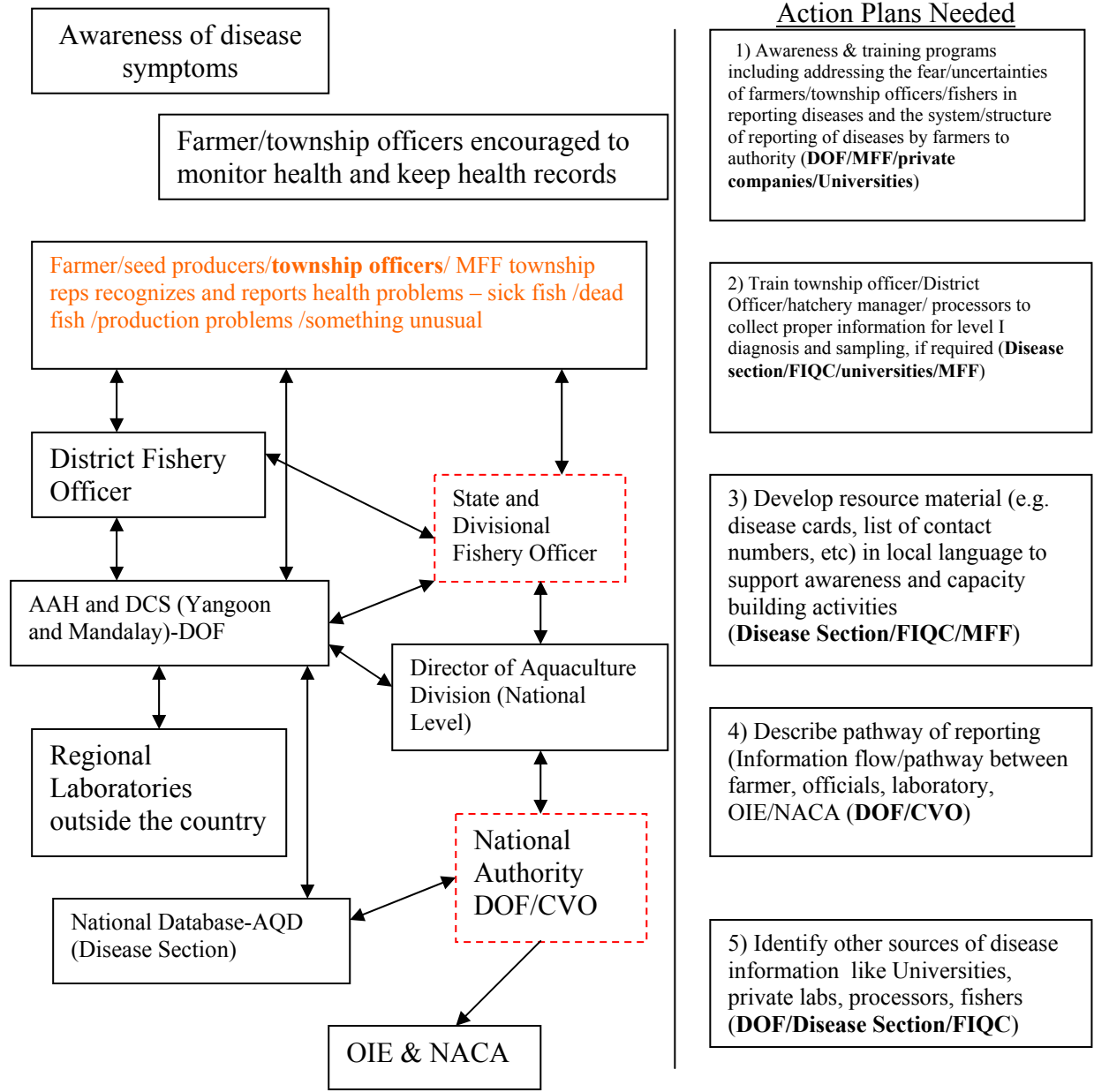
Implementation of a practical surveillance and early response systems will directly and indirectly contribute to improved disease diagnosis, better research collaborations, reliable advice to primary producers, capacity building at the level of extension workers and primary producers, development of an early warning and emergency preparedness system. A good surveillance system has several benefits:

- Forms the basis for all national disease control programs
- Helps to meet regional and international reporting requirements
- Helps to meet trade requirements (e.g. health certificates)
- Helps to initiate development of capacity, infrastructure and resource material

The Department of livestock and breeding has established a good framework for disease surveillance, international reporting and emergency notification for livestock diseases. The experience of livestock department could guide the process of aquatic animal health disease surveillance and reporting. In addition, the existing laboratory facilities (e.g. microbiology, histopathology) of the livestock department could be very easily used for some of the aquatic animal health diagnostic work. Experts from livestock department could also assist in capacity building activities by offering training to DOF staff working in disease control division.

The meeting developed the following flow chat for piloting surveillance in Myanmar using level I diagnosis.

**13a. Flowchart of surveillance (Passive) for Myanmar using level I diagnosis**





**13b. Model data format for collecting information for the purpose of surveillance for any disease event/outbreak**

The aim should be to gather basic information which will help in arriving at diagnosis (either presumptive or confirmatory). The meeting developed a very simple format for gathering information for any disease event. Some of the key information that could be considered include the following:

1. Case code/Identification code (06CC0001)-year, species, case number
2. Name of the farmer
3. Location
4. Date (Time/season)
5. Name of the affected species or host
6. Size (cm or g) of the affected species
7. Wild or Cultured?
8. Nature of mortality (low/medium/high)
9. Duration of mortality (one time/daily)
10. Nature of spread (one pond/several ponds)
11. Type of culture system (Pond/cage/pen)
12. Mono or poly-culture?
13. Type of feed used (fresh trash fish/pellet)
14. Water condition (use of test kits)
15. External Clinical signs (Gross pictures, if possible)
- 16. Presumptive diagnosis (Level I Diagnosis)-Can stop here**
  
17. Whether sample collected for laboratory investigation? Yes/No
18. If Yes, Sample code (06CC0001-1,2,3,4,5)
19. Results of Microscopy based on fresh smear examinations
20. Results of Microbiology
21. Results of histopathology
22. Results of Molecular biology
- 23. Confirmative diagnosis**

#### **14. Contingency planning/Emergency Preparedness**

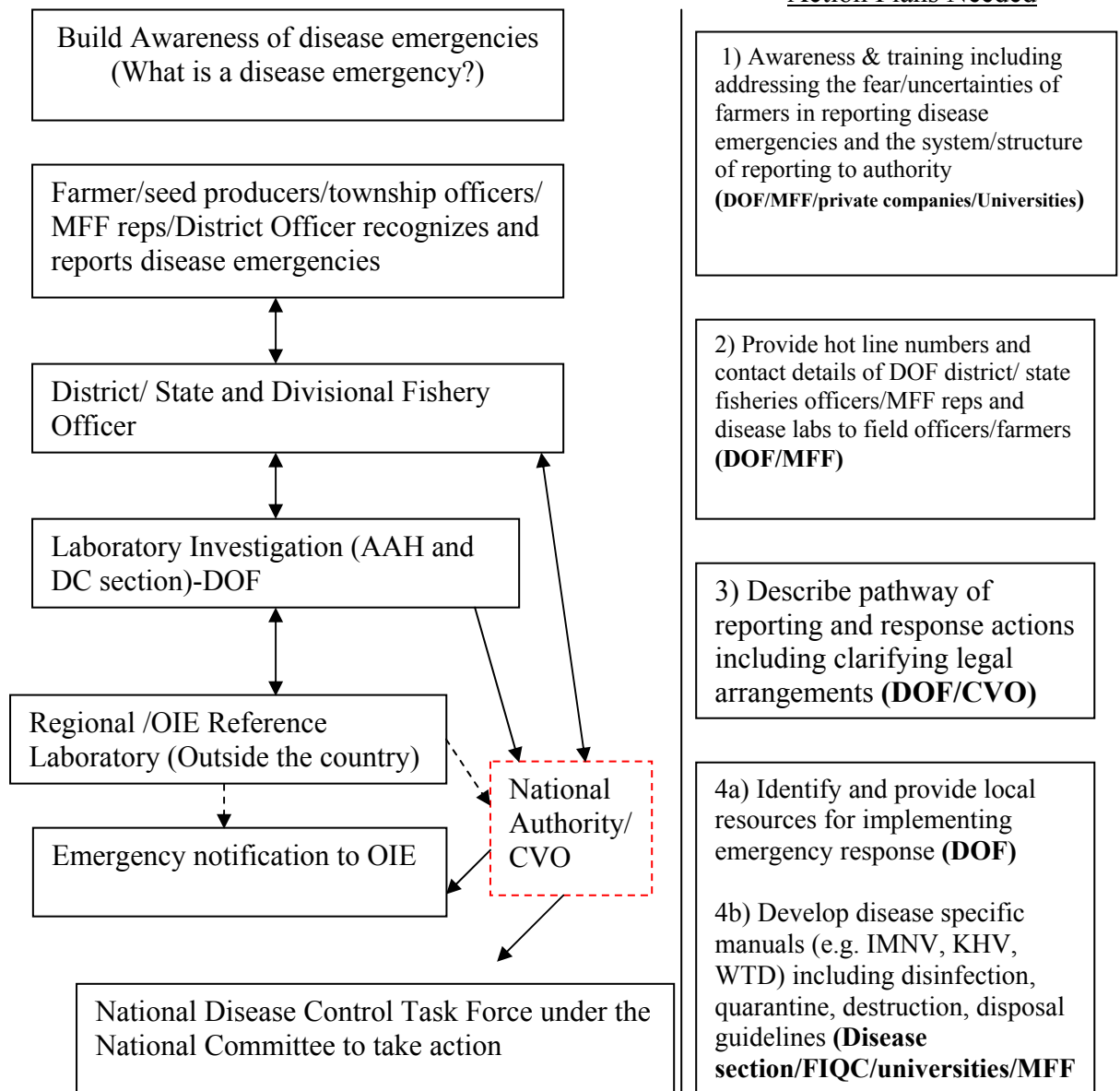
A disease emergency exists when a population of aquatic animals is recognized as undergoing severe mortality events, or there is otherwise an emerging disease threat where urgent action is required. Infectious disease emergencies may arise in a number of ways, for example: introductions of known exotic diseases, sudden changes in the pattern of existing endemic diseases or the appearance of previously unrecognized diseases.

Contingency planning is an agreed management plan and set of operational procedures that would be adopted in the event of an aquatic animal disease emergency. Everyone in the framework knows their responsibilities and actions to be taken. Some of the important components of a contingency plan include: technical plans (e.g. manuals on disease strategy, general procedures); support plans (e.g. financial, resource); and operational plans (e.g. management manual, diagnostic resources, training resources), all with clearly designated responsibilities.

Through a well-documented contingency action plan agreed upon by all major stakeholders, it should be possible to minimize the impact of an aquatic animal disease emergency. Contingency planning, early warning and early response are critical to the effective management of disease emergencies. The aim of early warning is to rapidly detect the introduction of an exotic pathogen or a sudden increase in the incidence of any disease. Emergency response is identified as all actions that would be targeted at rapid and effective eradication/containment/mitigation of an emergency disease outbreak.

The meeting developed the following flow chart for initiating the development of an emergency/contingency plan for Myanmar.

**14a. Flowchart for Contingency planning/Emergency preparedness for Myanmar**



## **15. Draft Project Proposal: Piloting passive surveillance in three divisions in Myanmar (For submission to potential funding agencies)**

### **15a. Background to the Project**

AusAid, under the ASEAN-Australia Development Cooperation Program's Regional Partnership Scheme (AADCP-RPS) is supporting two aquatic animal health projects: (a) Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN (370-021) and (b) Operationalise Guidelines on Responsible Movement of Live Food Finfish in ASEAN (370-018).

The goal of 370-021 is to enhance the capability of ASEAN member countries to implement ASEAN harmonized national aquatic animal health strategies to manage risks to the biosecurity of fisheries industries particularly those related to trade and impacting on the poor. The project has the following objectives:

1. Development of harmonized approaches to aquatic animal health management and biosecurity in ASEAN.
2. Improving capacity to implement ASEAN harmonized national aquatic animal health and biosecurity strategies

The goal of 370-018 is to enhance the biosecurity of food finfish industries in ASEAN Member Countries by reducing the risk of international spread of specific fish pathogens with the purpose to enable the development by ASEAN of harmonized standard operating procedures for health certification and quarantine measures for transboundary movement of live food finfish. The project has the following objectives:

1. To develop an inventory of ASEAN Member Countries' health certification and quarantine procedures for live food finfish and finalize the ASEAN model to specify the scope of Standard Operating Procedures
2. To develop a set of ASEAN Standard Operating Procedures for health certification and quarantine measures for international trade in live food finfish.
3. To raise awareness of and provide training in the use of the Aquatic Animal Pathogen and Quarantine Information System (AAPQIS)

NACA and AusVet Animal Health Services are implementing these two projects in partnership with the ASEAN Secretariat; ASEAN Sectoral Working Group on Fisheries; NACA National Coordinators; Department of Agriculture, Fisheries and Forestry (DAFF) Australia; Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries, Thailand; and the ASEAN governments. Under the project, 4 policy workshops, 2 training programmes and technical missions to 4 ASEAN countries (Lao, Cambodia, Vietnam and Myanmar) will be completed over the next 18 months. Implementation of these two projects commenced in January 2006 and will be running concurrently until June 2007. The first set of 2 policy workshops, one training programme and one technical mission to Myanmar were completed recently

The technical mission to Myanmar was undertaken from 3<sup>rd</sup> to 8<sup>th</sup> September 2006 with the intention of supporting the development and implementation National strategies on aquatic animal health. Specifically this was a follow up activity to the

first set of 2 policy workshops, to provide further assistance to the 6 workshop and training participants, to follow up on the identified country specific action plans

### **15b. Justification for the Project**

Myanmar faces significant challenges in the practical implementation of health management strategies, specifically in the areas of disease diagnosis, surveillance and reporting, quarantine and certification, emergency preparedness, risk analysis and resources (trained manpower, infrastructure). Developing simple and practical national aquatic animal health management strategies that suit the needs of the country and at the same time utilize the existing resources effectively, should be the way forward

The technical mission working closely with National Authorities developed a simple and practical framework for national strategies on aquatic animal health management in Myanmar (please refer to TM report for details). The mission also identified following national priorities:

- Identifying responsibilities for different institutions;
- Establishing a National committee on aquatic animal health;
- Developing a national strategy framework for aquatic animal health;
- Developing a national list of diseases
- Capacity building in level I diagnosis for field and provincial officers;
- Capacity building in level II diagnosis for laboratory staff;
- Awareness building on fish disease recognition and reporting to farmers, seed producing units, township fishery officers and extension workers;
- Developing resource materials (e.g. disease cards and brochures in local languages) to support capacity building activities;
- Developing a process for issuing and requesting appropriate health certificates;
- Developing a framework for passive surveillance based on level I diagnosis
- Establishing a National database on aquatic animal health
- Establishing a plan for disease emergency preparedness

This project proposal is developed in response to some of the identified national priorities for submission to potential funding agencies (e.g. JICA, MRC, FAO)

### **15c. Purpose**

Support aquatic animal health management in Myanmar

### **15d. Objectives**

1. To pilot passive surveillance system in 3 divisions (Yangon-fish, Bago-fish, and Ayeyawady-shrimp and prawn) as per the passive surveillance flow chart developed during the AADCP-RPS project Technical Mission in September 2006
2. To build awareness of farmers and township fishery officers, MFF representatives, in disease recognition and reporting to township/district level officers, MFF representatives and hatchery managers

3. To train township and division fishery officers, MFF representatives and hatchery managers in disease recognition, gathering basic disease related information and reporting
4. To build a national database on aquatic animal health

### **15e. Expected Outcomes**

- Passive surveillance system piloted in three divisions
- Increased awareness and capacity of relevant stakeholders
- National database established

### **15f. Indicative Activities**

Objective 1: To pilot passive surveillance system in selected division (e.g. Yangon, Bago, and Ayeyawady as per the passive surveillance flow chart developed during the TM

- Developing a list of people and responsibilities as per the passive surveillance flow chart
- Gain understanding of the existing awareness in the divisions
- Develop detailed flow chart and structure for information flow from the selected provinces

Objective 2: To build awareness of farmers in disease recognition and reporting to field level officers and/or hatchery managers

- Develop awareness material in local language (e.g. posters, brochures with information on the importance of disease, need for reporting, need for record keeping, who to contact, etc)
- Organize awareness programs in consultation with the ongoing DOF and MFF activities
- Develop list of field officers with contact numbers and provide to farmer leaders/farmer associations/hatchery managers

Objective 3: To train township and district fishery officers, MFF representatives and hatchery managers in disease recognition, gathering basic disease related information and reporting

- Develop awareness material in local language (e.g. posters, brochures, disease cards)
- Develop training modules in local languages
- Implement training programs in consultation with MFF and ongoing DOF activities
- Develop reporting forms in local language and circulate to field officers and hatchery managers

Objective 4: To build a national database on aquatic animal health

- Create a data format consistent with the reporting forms
- Coding and entering data received from field and lab
- Analyse and inform to national authority
- Support the national authority in completing the OIE and QAAD reporting forms

### **15g. Projected expenses**

Production and printing of training and awareness material, office supplies, translation services, organization of training and awareness programs, transportation cost, data entry and analysis service, cost of report communication, incentives for project personnel? (to be worked out by national delegates)

### **15h. Duration**

2 years

### **15i. Project Partners**

- DOF
- MFF
- Universities
- Department of livestock and breeding
- NACA
- SEAFDEC
- DAFF

## **16. Tentative timelines for key identified activities in Myanmar**

Sl.No	Activity	Date
1	Formal submission of the Technical Mission Report	20 <sup>th</sup> September 2006
2	Identification of national priorities	Completed during Technical Mission (TM)
3	Identification of institutions and responsibilities	Completed during TM
4	Tentative National Committee on aquatic animal health	Completed before the TM
	Development of TOR and workplan for the National Committee	November 2006
5	First formal meeting of the National Committee (responsibility of DOF)	January 2007
6	Endorsement of the TOR of the National Committee	Jan 2007
7	Revise/Endorsement of a framework for national strategies	Jan 2007
8	Development of tentative national list of diseases	Completed during TM
9	Revise/Endorsement of national list of priority diseases	Jan 2007
10	Development of a framework for passive surveillance	Completed during TM
11	Revise/Endorsement of framework for passive surveillance	Jan 2007
12	Development of a framework for contingency plan	Completed during TM
13	Endorsement of framework for emergency plan	Jan 2007
14	Evaluation of capacity for national list of diseases	Completed during TM
15	Identification of national staff trained in Aquatic animal health	Completed during TM
16	Networking of national staff (DOF, Universities, AQD, FIQC, livestock) trained on aquatic animal health	September 2006
17	Development of a concept proposal for piloting surveillance (NACA)	Completed during TM
19	Finalization and formal submission of pilot surveillance project to donors by the National Committee	December 2006
20	Collation of resource material for awareness and training	October 2006
21	Translation and Production of awareness material	December 2006
22	Translation and Production of training material	December 2006
23	Conduct of the first awareness and training program	Jan 2007
24	Completion of the draft version of the reporting form template	Completed during TM
25	Completion of reporting form template in local Language	December 2006
26	Completion of data entry format template for the national database	Feb 2007
27	Initiate a national database	April 2007

## **17. Resources to Support National Strategy development and implementation**

There are considerable resources available to support the process of national strategy development and implementation. NACA through the regional mechanism assists member countries to access the resources. Some of the important institutions, international, regional and national documents are listed below:



#### 17a. Institutions:

- FAO and OIE
- NACA
- DAFF
- AAHRI (ASEAN Disease Centre)
- SEAFDEC
- ASEC
- NACA three tier regional resource base (Regional resource experts, resource centres and reference laboratories)
- NACA Asia Regional Advisory Group

#### 17b. International and Regional documents

- OIE Manual of Diagnostic tests for aquatic animals, fifth edition, 2006-[www.oie.int](http://www.oie.int)
- OIE Aquatic animal health code, ninth edition, 2006-[www.oie.int](http://www.oie.int)
- OIE Risk analysis in aquatic animal health 2000-[www.oie.int](http://www.oie.int)
- Manual on risk analysis for the safe movement of aquatic animals-APEC 2004
- Surveillance and zoning for aquatic animal diseases FAO-2004-[www.fao.org](http://www.fao.org)
- Regional Workshop on Preparedness and Response to Aquatic Animal Health Emergencies in Asia. FAO. 2005 – [www.fao.org](http://www.fao.org)
- FAO/NACA Asia regional Technical Guidelines on health management for the responsible movement of live aquatic animals and the Beijing consensus and implementation strategy - [www.enaca.org](http://www.enaca.org)
- FAO/NACA Manual of procedures for the implementation of the Technical guidelines - [www.enaca.org](http://www.enaca.org)
- FAO/NACA Asia Diagnostic guide to aquatic animal diseases - [www.enaca.org](http://www.enaca.org)
- Asia-Pacific disease identification field guide (DAFF/NACA 2006)
- QAAD Reports (1999-2006)-[www.enaca.org](http://www.enaca.org)

#### 17c. National Documents

- AQUAPLAN from Australia
- AQUAVETPLAN - emergency preparedness plan from Australia
- Disease identification Field Guide from Australia
- National Strategy Documents from Thailand,
- National strategy document from Indonesia
- National strategy document from Vietnam

<b>Annex 1.</b>	<b>DRAFT Technical Mission Work plan - Myanmar</b>	
Day/Date	Topic/Meeting	Participants
<b>Sunday 3<sup>rd</sup> Sept 2006</b>	<b>Arrival</b>	
AM	Mohan (M)/Supranee (S)/Karina (K)/Celia (C) arrive in Yangoon	
<b>Monday 4<sup>th</sup> Sept 2006</b>	<b>National Priorities and Organizational Setup</b>	
AM	Formal Introductions and Greetings	
AM	National Priorities, aquaculture and aquatic animal health issues, compliance to international obligations, domestic and international trade problems	DG /DDG of Department of Fisheries (DOF), National Coordinator(NC), OIE Aquatic focal Point, workshop attendees
AM	Organizational structure and the existing system of aquatic animal health management	DOF and National Coordinator (NC)
AM	Present status of National Strategy and progress made to date	NC and OIE Aquatic Focal Point
AM	Objectives of the Technical Mission and expected outcomes	M/S/K/C
	<b>Framework for National Aquatic Animal Health Strategies</b>	
PM	Background and developments in the region	M
PM	Australia's AQUAPLAN	K
PM	Thailand's National Strategy	S
PM	Contribution of SEAFDEC towards National Strategy development in ASEAN	C
PM	Discussions on national priorities and what can be done with the existing resources, identification of areas which need strengthening in the short and long term	M/S/K/C with DOF Officers, Workshop attendees (WA) and other key stakeholders (KS)
PM	Drafting a frame work for developing national strategies and setting a time table	M/S/K DOF/WA/KS
PM	Identification of people, institutions and responsibilities	M/S/K DLF/WA/KS
<b>Tuesday 5<sup>th</sup> Sept 2006</b>	<b>National aquatic animal health Advisory Committee</b>	
AM	Background and developments in the region	M
AM	How it is working in Australia	K
AM	How it is working in Thailand	S
AM	How it is working in Philippines	C

PM	Discussing possibilities for establishing such a committee in Myanmar	M/S/K/C DOF/WA/KS
PM	Drafting guidelines, developing TOR and setting a time frame	M/S/K/C DOF/WA/KS
<b>Wednesday 6<sup>th</sup> Sept 2006</b>	<b>National disease list and diagnostic resources</b>	
AM	Importance of international (OIE) and regional disease lists (QAAD)	M
AM	How national lists are developed in Australia	K
AM	How national lists are developed in Thailand	S
AM	How national lists are developed in Philippines	C
AM	Discussion on development of national list for Myanmar (would include defining aim of list, triggers, diseases to be listed, reporting mechanisms, reporting regions, integration with international systems (OIE WAHIS, NACA)	M/S/K/C DOF/WA/KS
PM	Collation/ review of existing disease information (?) Developing a draft national list	M/S/K/C DOF/WA/KS
PM	Evaluating diagnostic resources (available within national and regional framework) to support the national list	M/S/K/C DOF/WA/KS
PM	Preparing a draft plan/proposal for funding to support capacity building in the short and long term	M/S/K/C DOF/WA/KS
<b>Thursday 7<sup>th</sup> Sept 2006</b>	<b>Framework for Surveillance and Reporting</b>	
AM	Importance of surveillance and reporting from national perspective, regional and international trade	M
AM	Process of surveillance and reporting in Australia	K
AM	Process of surveillance and reporting in Thailand	S
AM	Supporting surveillance in ASEAN	C
AM	Existing system for surveillance and disease reporting in Myanmar	DOF, NC and OIE aquatic Focal point
PM	Developing a framework for better surveillance and improved reporting in Myanmar	M/S/K/C DOF/WA/KS
PM	Evaluating available resources and identifying gaps	M/S/K/C DOF/WA/KS
PM	Drafting plans to make better use of level I diagnosis	M/S/K/C DOF/WA/KS
<b>Friday 8<sup>th</sup> Sept 2006</b>	<b>Emergency preparedness and contingency planning</b>	
AM	Importance and present status in the region	M
AM	AQUAVET Plan of Australia	K

AM	Contingency plans in Thailand	S
AM	Existing mechanisms in Myanmar	DOF and NC
AM	Discussions: Where can we start in Myanmar?	M/S/K/C DOF/WA/KS
AM	Draft a flow chart for emergency notification and Draft a framework (if possible) for early response	M/S/K/C DOF/WA/KS
	<b>Way Forward for Myanmar</b>	
PM	Discussions on ASEAN commitments and priorities for harmonization and trade	M/S/K/C DOF/WA/KS
PM	Discussions on implementing some of the identified action plans	M/S/K/C DOF/WA/KS
PM	Closing formalities	M/S/K/C DOF/WA/KS
<b>Saturday 9<sup>th</sup> Sept 2006</b>	Mohan/Supraneer /Karina /Celia leave for Bangkok	

**Annex 2. List of Participants attending the Technical Mission meetings from 4-8<sup>th</sup> September 2006**

<b>Sl.No</b>	<b>Name</b>	<b>Organization</b>
1	U.Khin Ko Lay	Department of Fisheries
2	U Khin Maung Soe	Department of Fisheries
3	U Saw Lah Paw Wah	Department of Fisheries
4	U Than Win	Department of Fisheries
5	U Aung Soe Win	Department of Fisheries
6	U Tint Wai	Department of Fisheries
7	U Tin Tun Lin	Department of Fisheries
8	Daw Myat Myat Htwe	Department of Fisheries
9	Daw May Thandar Wint	Department of Fisheries
10	Daw Kyawt Kyawt Nyein	Department of Fisheries
11	Daw Ohn Mar Moe	Department of Fisheries
12	Daw Yi Yi Cho	Department of Fisheries
13	Daw Khine Khine Mya	Department of Fisheries
14	Daw Nyo Nyo Thein	Department of Fisheries
15	Daw Shoon Lai Ko Ko	Department of Fisheries
16	Daw Htet Moe Win	Department of Fisheries
17	Daw Nu Nu Yi	Department of Fisheries
18	Daw Mar Lar Win	Department of Fisheries
19	Daw Win Win Han	Department of Fisheries
20	Daw Yin Pa Pa Tun	Department of Fisheries
21	Daw Maw Maw Myint	Department of Fisheries
22	U Aung Hlain Win	Department of Fisheries
23	U Ngwe Min Tun	Department of Fisheries
24	Dr Kyaw Sunn	Livestock Breeding and Veterinary Department
25	Dr Cho Cho Su Mon	Livestock Breeding and Veterinary Department
26	Daw Thi Thi Taw	Yangon University
27	Dr Moe Kyi Han	Mandalay University
28	Daw Soe Soe Oo	Maubin University
29	U Soe Tun	Myanmar Shrimp Association
30	Dr Myint Swe	Myanmar Fish Farmer Association
31	U One Tin	Myanmar Fish Farmer Association
32	U Nyan Wai Tun	Myanmar Fish Farmer Association
33	Daw Moe Thidar Oo	Myanmar Fish Farmer Association
34	U Aye Ko	Myanmar Fish Farmer Association
35	U Saw Wonderful	Myanmar Fish Farmer Association
36	Dr Ohn Kywe	Myanmar Fish Farmer Association
37	Dr Aung Win	Myanmar Fish Farmer Association

38	Dr San Aung	Myanmar Academy of Agriculture, Forestry, Livestock and Fishery Science
39	U Han Tun	Myanmar Fisheries Federation
40	U Kyee Ngwe	Myanmar Fisheries Federation
41	Daw Toe Nandar Tin	Myanmar Fisheries Product Processor and Exporter Association
42	U Lokin Sai	
43	Ms Karina Scott	DAFF, Australia
44	Dr CV Mohan	NACA, Thailand