Minimizing the Food Safety Concerns with Aquaculture Products in Indonesia:

How Best to Train and Educate Farmers

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OUTLINE

- **Overview of Current Aquaculture Business in Indonesia**
- **Aquaculture Policy in Indonesia**
- **Efforts to Train and Educate Farmers**

Overview of Current Aquaculture Business in Indonesia

Small-scale Enterprises Predominate:

- 89% Brackish-water farms < 10 Ha
- 86% Fresh-water pond farms < 0,5 Ha

→ Numerous suppliers

Key Characteristics :

- Under capitalized → cannot fulfill market quotas (demand)
- Low technical skills/knowledge → low productivity/quality
- Poorly managed → weak bargaining position

Challenge for implementing food safety on aquaculture product

Overview of Current Aquaculture Business (Cont..)

Key Strengths :

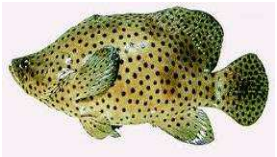
- Resilient to economic fluctuations;
- High capacity to provide employment;
- No use/limited use of chemical and biological substances and pharmaceuticals

POTENTIAL SPESIES

Shrimp

Seaweed

Gouramy



Grouper

Milkfish

Catfish

Tilapia

Abalone

Sea bass

Pangasius

Ornamental fish

Total Aquaculture Production Area in 2008 (Ha)

Marine Culture	87,792
Brackishwater ponds	613,175
Freshwater ponds	241,891
Cages	207
Floating cage net	736
Paddy field	127,944
T O T A L	1,071,745

Indonesian Aquaculture production, 2004-2009

Unit: ton

No.	Commodity	2004	2005	2006	2007	2008	2009 *)	Annual Growth Rate %	
								2004-2009	2008-2009
Total		1.468.610	2.163.674	2.682.596	3.193.565	3.855.200	4.780.100	27,014	23,99
1	Seaweed	410.570	910.636	1.374.462	1.728.475	2.145.060	2.574.000	48,517	20,00
2	Shrimp	238.857	280.629	327.610	358.925	409.590	348.100	8,578	-15,01
3	Tilapia	97.116	148.249	169.390	206.904	291.037	378.300	31,941	29,98
4	Milkfish	241.438	254.067	212.883	263.139	277.471	291.300	4,612	4,98
5	Common Crap	192.462	216.920	247.633	264.349	242.322	254.400	6,054	4,98
6	Catfish	51.271	69.386	77.272	91.735	114.371	200.000	32,992	74,87
7	Pangasius	23.962	32.575	31.490	36.755	102.021	132.600	51,375	29,97
8	Gurame	23.758	25.442	28.710	35.708	36.636	38.500	10,399	5,09
9	Grouper	6.552	6.493	4.021	8.035	5.005	5.300	5,808	5,89
10	Seabass	4.663	2.935	2.183	4.418	4.371	4.600	8,776	5,24
11	Others	177.961	216.342	206.942	195.122	227.317	553.000	34,257	143,27

**). Estimated value*

Production Target on Aquaculture, 2010 - 2014

Unit : ton

No.	Commodity	2010	2011	2012	2013	2014	Annual Growth rate (%) 2009-2014	Growth Rate from 2009 to 2014 (%)
	Total	5.376.200	6.847.500	9.415.700	13.020.800	16.891.000	29	353
		12	27	38	38	30		
1	Seaweed	2.672.800	3.504.200	5.100.000	7.500.000	10.000.000	32	389
2	Catfish	495.600	749.000	1.146.000	1.777.000	2.783.000		
	- Pangasius	225.000	383.000	651.000	1.107.000	1.883.000	70	1.420
	- *Clarias sp*	270.600	366.000	495.000	670.000	900.000	35	450
3	Tilapia	491.800	639.300	850.000	1.105.000	1.242.900	27	329
4	Milkfish	349.600	419.000	503.400	604.000	700.000	19	240
5	Shrimp	400.300	460.000	529.000	608.000	699.000	15	201
	- Tiger prawn	109.140	115.720	128.700	148.500	188.000	13	182
	- Vannamei	291.160	344.280	400.300	459.500	511.000	16	209
6	Common carp	267.100	280.400	300.000	325.000	350.000	7	138
7	Gurame	40.300	42.300	44.400	46.600	48.900	5	127
8	Seabass	5.000	5.500	6.500	7.500	8.500	13	185
9	Grouper	7.000	9.000	11.000	15.000	20.000	31	377
10	Others	646.700	738.800	925.400	1.032.700	1.038.700	14	188

Ket : *) estimated value

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Export volume and value of fisheries product 2004-2008

Volume/Value	2004	2005	2006	2007	2008	%/year
Volume	907.970	857.922	926.478	854.328	911.674	0,35
- Shrimp	142.135	153.906	169.329	157.545	170.583	4,90
- Tuna/Skipjack	94.221	91.631	91.822	121.316	130.056	9,20
- Other fish (including freshwater fish)	515.834	428.395	493.540	393.679	424.401	(3,54)
- Crab	20.903	18.593	17.905	21.510	20.713	0,42
- others	134.877	165.397	153.881	160.279	165.923	5,84
Value (1.000 US$)	1.784.010	1.913.305	2.103.471	2.258.920	2.699.683	11,02
- Shrimp	892.479	948.130	1.115.963	1.029.935	1.165.293	7,34
- Tuna/Skipjack	243.938	246.303	250.567	304.348	347.189	9,56
- Other fish (including freshwater fish)	357.022	366.414	449.812	568.420	734.392	20,24
- Crab	14.355	130.905	134.825	179.189	214.319	216,85
- others	156.216	221.553	152.305	177.028	238.490	15,38

VISION

REALIZING INDONESIA AS THE BIGGEST MARINE AND FISHERIES PRODUCT PRODUCER 2015

THROUGH ADVANCE, COMPETITIVE, SUSTAINABLE , AND EQUITABLE AQUACULTURE

MISSION

PROSPERING MARINE AND FISHERIES COMMUNITY THROUGH :

- PROVIDING FISH BASED FOOD FOR COMMUNITIES IN ORDER TO SUPPORT NATIONAL FOOD SECURITY
- DEVELOPING MULTI BUSSINESS SCALE AQUACULTURE THAT PROFITABLE, EFFICIENT AND ENVIRONMENTALLY – FRIENDLY
- CREATING AQUACULTURE THAT OPEN BUSSINES OPPORTUNITY, ABSORBING WORK FORCE, AND PRODUCING FISH MATCHING WITH MARKET DEMAND, FOOD AND INDUSTRY NEEDS

GOALS

- TO INCREASE COMMUNITY NUTRITION THROUGH CONSUMING AQUACULTURE PRODUCT
- TO PROTECT, REHABILITATE, AND CONSERVE AQUACULTURE RESOURCE
- TO INCREASE FOREIGN EXCHANGE EARNING, INCOME, AND CREATE JOB OPPORTUNITY AS WELL AS BUSINESS OPPORTUNITY

Efforts to Train and Educate Farmers on Quality and Safety Assurance for Aquaculture Products

1. **Increase the fish farmers awareness on quality assurance and food safety**
   - Providing information on the important of quality assurance and food safety as well as the government program on that issues
2. **Improve capacity building for officials (TOT) and fish farmers**
   - Training and educating farmers; classroom, demonstration farms, mentoring
3. **Enforce regulations on quality control and safety assurance towards all stakeholders throughout Indonesia**
   - Imposing temporary ban of exporting proct which is non compliance

Efforts to Train and Educate Farmers on Quality and Safety Assurance for Aquaculture Products (Cont..)

4. Implement aquaculture certification program

- Establish a Competent Authority (CA) for certification in fisheries and a Quality System Certification Institution for certification in aquaculture
- Good Hatchery Practices Certification : 52 Certified Hatchery
- Good Aquaculture Practices Certification on Farms : 290 Certified Fish Farms

5. Enforce to Use the registered fish drugs and feed

- Registration of veterinary drugs : 150 registered drugs
- Registration of feed : 281 registered brands

Efforts to Train and Educate Farmers on Quality and Safety Assurance for Aquaculture Products (Cont..)

6. **Optimizing Directorate General of Aquaculture's laboratories capability**
   - Laboratory accreditation based on ISO. 17025: 5 laboratories
   - Laboratory accreditation based on ISO. 17021: 2 laboratories
7. **Optimizing the Residue Monitoring Program (RMP), particularly on heavy metal and antibiotic residue**
   - National Residue Control Plan (NRCP)
   - Immediate Inspections (no prior notification inspection)

Minimum Requirement for Certification

The Indonesian Certification system has been fulfilled the minimum requirement from the FAO guidelines for aquaculture certification, comprising:

- Food safety & traceability
- Environment integrity
- Social-economic aspect
- Animal health and welfare

Certification assessment

The Indonesian certification assessment including:

- Risk prevention in every production steps, including site selection, farm preparation, water management, feed and feeding, drugs and chemical usage;
- Sanitation fulfillment
- Data availability and updating
- Capacity building for fish farmers (training needs assessment survey conducted prior to identify the needs of farmers)

Regulation on quality and food safety for aquaculture product in harmonize with the international standard

1. **Minister MAF Regulation No : PER. 01/MEN/2007 regarding Quality Control and Food Safety Systems for Fishery Products**

2. **Minister MAF Regulation No : PER.02/MEN/2007 regarding the Monitoring of Drug, Chemicals, Biological Residues on Aquaculture Practices**

3. **Minister MAF Regulation No: KEP.01/MEN/2007 regarding Regulations for Quality Control and Food Safety of Fishery Products during Production, Processing and Distribution**

4. **Ministerial Decree No: KEP.02/MEN/2007 regarding Good Aquaculture Practices**

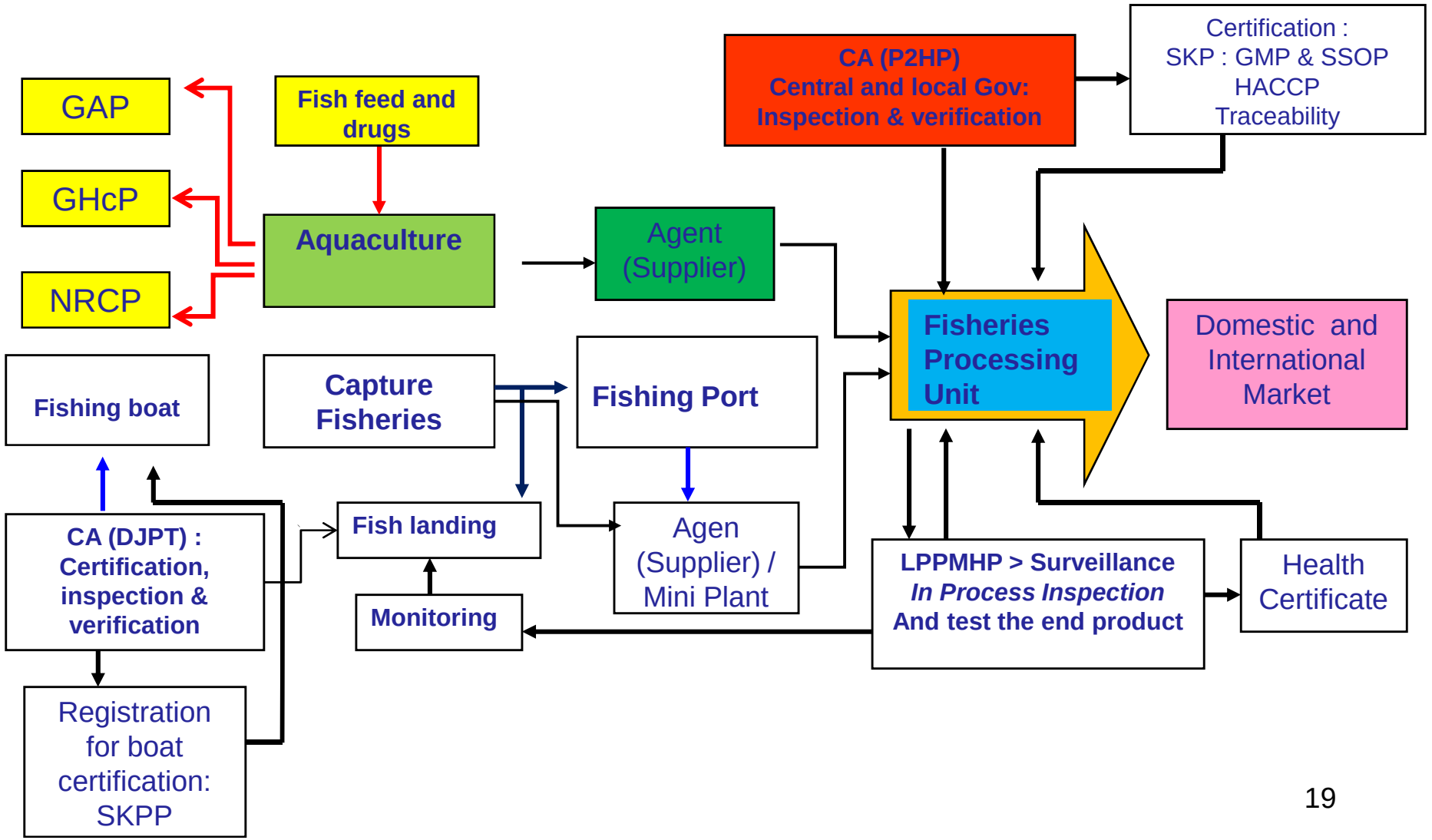
Regulation on quality and food safety for aquaculture product in harmonize with the international standard (Cont..)

5. **Decree of the Director General of Aquaculture No: 116/DPB/HK.150.D4/I/2007 regarding Directives for the Monitoring of Residues, Chemical Substances, Biological Substances and Pollution in Aquaculture**

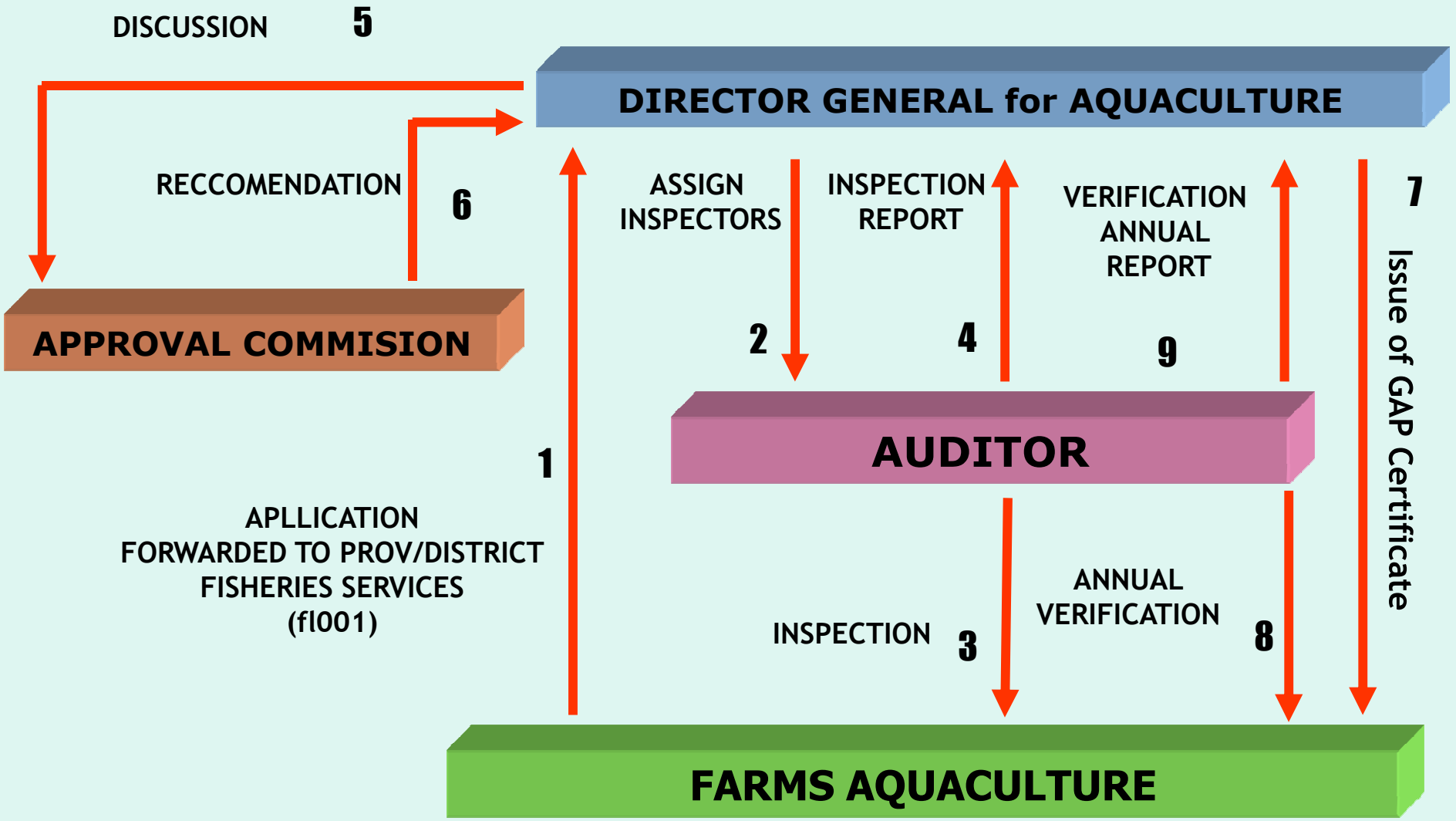
6. **Decree of the Director General of Aquaculture No: 1/DPB/HK.150.D4/I/2007 regarding Directives and Forms for Good Aquaculture Practices Certification**

7. **Minister MAF No. PER.02/MEN/2010 regarding regulation on Feed Procurement and Distribution**

QUALITY ASSURANCE AND FOOD SAFETY SYSTEM IN INDONESIAN AQUACULTURE PRODUCT



GAP CERTIFICATION PROCEDURES



IMPLEMENTATION OF THE FISH DRUG RESIDUE MONITORING PROGRAM

1. Mapping and Plotting of aquaculture areas
2. Field Observations and sampling
3. Immediate Inspections (no prior notification)
4. Laboratory testing of samples
5. Reporting of monitoring results
6. Evaluation, Surveillance and Follow-up Measures

A Vehicle used for mobile laboratory

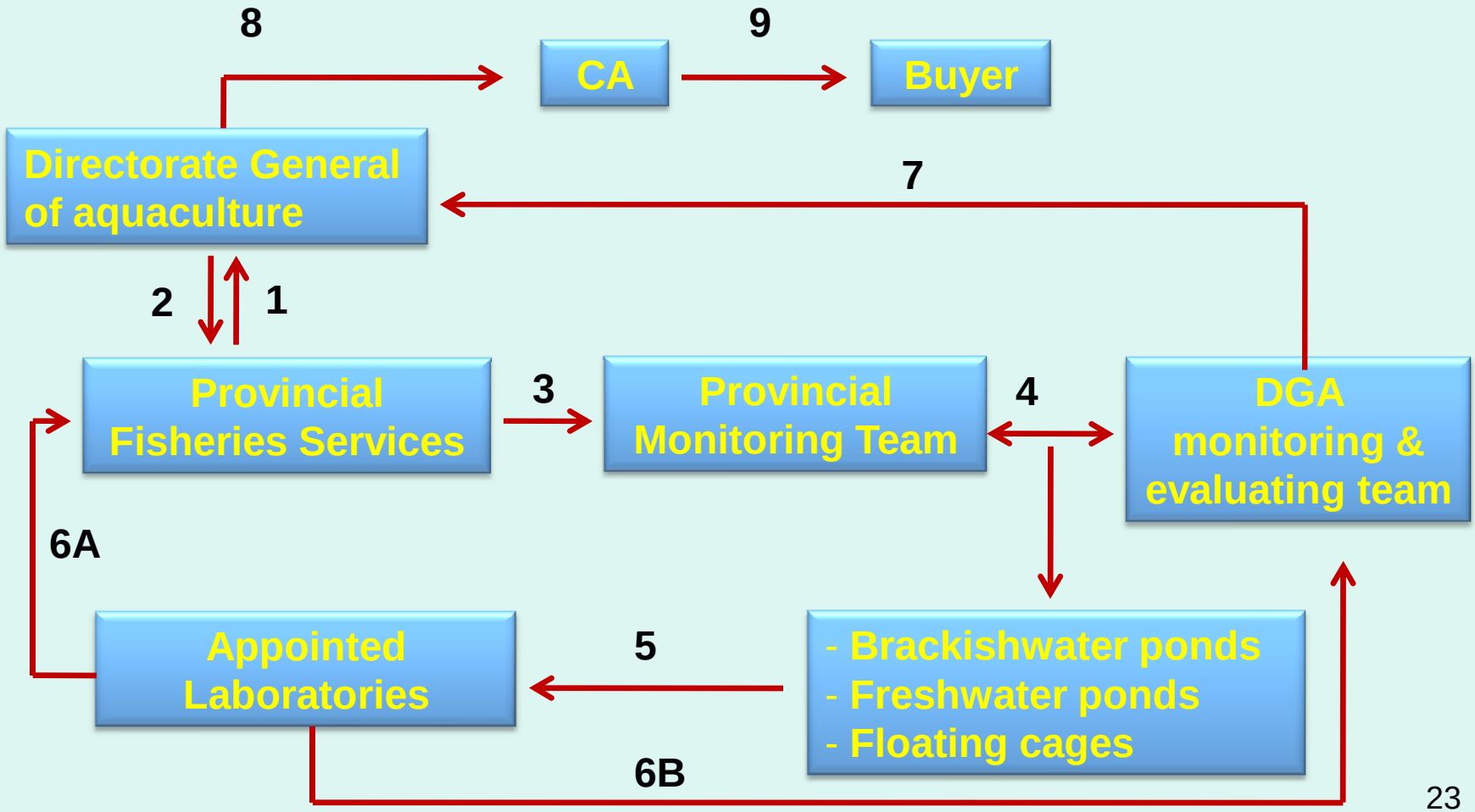
SUPPORTING FISH DRUG RESIDU MONITORING PROGRAM

a. Increasing the facilities available in central technical implementation unit (TIU) laboratories

b. Increasing the facilities available in provincial/district environmental laboratories

c. Improving co-operation with other laboratories

FLOW CHART OF THE PROCESS FOR MONITORING (SAMPLING) AND TESTING RESIDUES AND CONTAMINANTS



WAYS OF DELIVERING INFORMATION

- CLASSROOM
- DEMONSTRATION FARMS
- MENTORING (EMPLOYING EXTENTION WORKERS)

Training and Educating Farmers through Classroom

- Limited participation due to farmers value their time higher in their farms than in the classroom sitting for training.
- Poor transferring knowledge process from expert (scientist) to the farmers due to low farmers education level.
- Communication constraints due to limitation on understanding formal academia and technical term commonly used in classroom.

Training and Educating Farmers through Classroom (Continued...)

- Classroom situation tend to be formal for the farmers and makes them shy to ask questions.
- The farmers should be from relatively similar scale of business so each other feels confortable in sharing ideas during training.
- Easily covering various topics in a relatively tight schedule supported by proper audio visual aid.

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Training and Educating Farmers through Demonstration Farms

- Demonstration farms are more effective than the classroom method because they help farmers to have faster and better understanding on the training material.
- Even though some farmers might not understand the academia and technical terms properly, phisychal demonstration help them to understand the training material easily.

Training and Educating Farmers through Demonstration Farms (Continued...)

- If the demonstration farms construction is highly expensive, however, farmers are reluctant to implement their knowlege gained from their training due to limited capital.
- Farmers tend to be voluntary to participate and have easy feeling to ask questions.

Training and Educating Farmers through Mentoring

- It has been implemented for a long time through employing extention workers.
- Mentoring is conducted through individual or small group basis.
- The effectiveness of message transfer is influent by how good the knowledge of the extension workers and how good the relationship built between the farmers and the extention workers.

SUMMARY

❖To minimize food Safety Concern with Aquaculture Products in Indonesia:

- Delivering information on existing regulatory system to the farmers.
- Training and educating farmers through: classroom, demonstration farms and mentoring.

Recommendation

- To achieve high effectiveness in training and educating farmers it is necessary to conduct earlier needs assessment survey in order to identify the needs of farmers.
- The three ways of delivering information to the farmers are good to implement depending on training material, geographic condition and budget allocation.

Kementerian Kelautan dan Perikanan Republik
Ministry of Marine Affairs and Fisheries Republic of Indonesia

Thank for Your Attention