



# THE **AQUACULTURE** ROUNDTABLESERIES® 2013

A shared vision for aquaculture in Asia



## **FINFISH AQUACULTURE: INDUSTRIALISATION AND SUSTAINABILITY**

21-22 August 2013, Holiday Inn Atrium, Singapore

### **TARS 2013 DRAWS ATTENTION TO FINFISH AQUACULTURE**

For the 181 industry stakeholders attending the third Aquaculture Roundtable Series (TARS 2013), be it for the first, second or third time, the gathering presented an invaluable opportunity to network and share views on how to collectively move Asia's finfish industry forward. Designed as a series of roundtable sessions, the first TARS focused on aquaculture feeds and feeding, while the second on the value chain of the shrimp aquaculture industry. This year, the finfish aquaculture sector took its turn from 21 to 22 August in Singapore with the theme: **Industrialisation and Sustainability**.

There is a large range in production styles in Asia for the major commodity species such as the tilapia, pangasius catfish, Asian seabass, and for the niche market species such as groupers, snappers and pompano that vary, both geographically and species-wise. The challenge for Asian producers lies in taking it to the next level, i.e., industrialised fish farming to meet the future challenges of global markets, while at the same time, ensuring the sustainability of the industry from the economic, social and environmental perspectives. This was the premise behind TARS 2013's focus on finfish aquaculture.

The meeting attracted participants from the academia, public and private sectors, comprising chief executives and managers of leading integrators, farms and hatcheries in Indonesia, Singapore, Malaysia, Thailand and Vietnam, and senior managers and nutritionists from feed and additive companies from the Asia Pacific region. A majority of government personnel and academia from Singapore were in attendance following a recent aquaculture dialogue that was held in the country. Currently, an aquaculture-training program is being initiated at Singapore's Republic Polytechnic.

As with the last two successful roundtable series, TARS has become the industry's foremost opinion-leading aquaculture event in Asia. A host of international speakers from Belgium, Italy, France, Norway, Greece, Australia, Indonesia, Singapore, Taiwan, Hong Kong, and China facilitated the plenary and breakout sessions - which are hallmarks of this critical series. The 17 speakers, all experts in their relevant fields, presented updates on genetics, intensification and controlled hatchery operations in Asia and Europe, as well as health management, production models, health and environment, feed and feeding and marketing and sustainability.

The plenary session set the stage for the breakout group discussions, namely: *Breeding and Hatchery Management; Production, Health and Environment; Feeds and Feeding; and Marketing and Sustainability*. During the interactive breakout sessions, participants who were grouped according to their areas of interest, analyzed both immediate and emerging challenges impacting the finfish aquaculture sector, and identified priority areas and strategies to address industry concerns.

The meeting follows the general *modus operandi* for TARS. The first day and a third of the second day are devoted to the current 'state of the industry' with presentations from experts and industry leaders providing overviews. This forms the starting point for the breakout session which occupies the rest of the second day. Group leaders and facilitators lead discussions at each roundtable and the results from each industry group are then consolidated and deliberated in an interactive panel discussion that is open to all participants to encourage cross fertilisation and determine what is required to 'move the industry forward'.

This concept was jointly developed by Aqua Research and Corporate Media Services, organizers of The Aquaculture Roundtable Series (TARS). Sponsors for TARS 2013 included Nutriad, Inve Aquaculture, Aquativ, DSM, Lallemand, Allech and Biomar. It was supported by the Agri-Food and Veterinary Authority of Singapore (AVA).

***The consolidated output that resulted from the 4 breakout sessions (including challenges and recommendations) is summarized below (see pages 2-9) of this report.***

***(More information on the full meeting will be reported in the September/October 2013 issue of Aqua Culture Asia Pacific magazine and subsequent issues).***

## BREAKOUT SESSION REPORTS

**BREAKOUT GROUP** : **BREEDING AND HATCHERY MANAGEMENT REPORT**  
**GROUP LEADER** : **Morten Rye**  
**GROUP FACILITATORS** : **Jim Collins, Levy Manalac**

KEY CHALLENGES & PRIORITY AREAS	RECOMMENDED STRATEGIES
<p><b>Genetic Selection</b></p> <ol style="list-style-type: none"> <li>1. Resource intensive an difficult</li> <li>2. Biosecure sources &amp; systems</li> <li>3. Skills and knowledge deficit</li> <li>4. Awareness</li> </ol>	<ol style="list-style-type: none"> <li>1. Collaboration, Sector wide support in R&amp;D               <ol style="list-style-type: none"> <li>1.1. Government or Extra-governmental Initiation and support is needed (sector level) for collaborative effort in selective breeding</li> <li>1.2. Study industry development models across other species, regions, and conditions</li> <li>1.3. Joint sector focus required – long term sustainability of entire sector dependent on getting appropriate domestication and selection system in place</li> </ol> </li> <li>2. Focus resources on a limited number of key species for better coordination and collaborative efforts, e.g. institutional, governmental, and private sector research on genetic improvement</li> <li>3. Screening and management systems are needed</li> <li>4. Need more training and technology transfer               <ol style="list-style-type: none"> <li>4.1. Establishment of domestication and breeding programs</li> <li>4.2. Universities &amp; industry professionals</li> <li>4.3. Outsourcing of breeding programs</li> </ol> </li> <li>5. Inform producers on the benefits of selective breeding</li> </ol>
<p><b>Breeding</b></p> <ol style="list-style-type: none"> <li>1. Skills and knowledge needed</li> <li>2. Understanding nutritional needs</li> <li>3. Awareness of key issues</li> </ol>	<ol style="list-style-type: none"> <li>1. Government and industry education and dissemination to producers needed</li> <li>2. Technology transfer               <ol style="list-style-type: none"> <li>2.1. Live feeds production</li> <li>2.2. Oxygen injection systems</li> <li>2.3. Functional enrichments</li> <li>2.4. Biosecurity</li> <li>2.5. Best management practices</li> </ol> </li> <li>3. Species specific nutritional demands</li> <li>4. SPF broodstock feeds</li> </ol>
<p><b>Live Feeds vs. Compound Feeds</b></p> <ol style="list-style-type: none"> <li>1. Biosecurity Issues</li> <li>2. Need for more understanding about the species specific needs</li> <li>3. Need for production technologies</li> <li>4. Develop feed efficiency in compound feeds in key species</li> <li>4. Future safety and availability of fresh feeds for broodstock of and larviculture</li> </ol>	<ol style="list-style-type: none"> <li>1. Biosecurity               <ol style="list-style-type: none"> <li>1.1. Screening</li> <li>1.2. Need proper systems for live feeds culture</li> </ol> </li> <li>2. Develop understanding through R&amp;D               <ol style="list-style-type: none"> <li>2.1. Key species-specific optimal nutrition</li> <li>2.2. Maximizing feed efficiency</li> </ol> </li> <li>3. Technology transfer               <ol style="list-style-type: none"> <li>3.1. Understanding of enrichments</li> <li>3.2. Government &amp; industry involvement is important for:                   <ol style="list-style-type: none"> <li>i. Awareness</li> <li>ii. Training &amp; Demonstration</li> </ol> </li> </ol> </li> <li>4. Continue to develop functional feeds &amp; alternatives               <ol style="list-style-type: none"> <li>b. SPF breeder foods                   <ol style="list-style-type: none"> <li>a. Artemia</li> </ol> </li> </ol> </li> </ol>

## Group Report and Discussion: Breeding and Hatchery Management

In **genetic selection**, the group agreed that the focus should be on a few species and named the sea bass, tilapia and selected groupers as candidates. They also noted that biosecure resources (brood stock) are going to be critical in the next few years and that Asia can learn a great deal from more advanced fish culture systems, such as those associated with the salmon industry in Norway, as it enters into what will surely be an era of industrialization for fish culture in Asia. Proper systems to realize genetic improvement will require significant investment, but will be essential to industrialization. Screening for specific pathogens and SPF certification for seed stocks and breeders will need to be implemented along with the establishment of good management procedures.

Government support for monitoring and/or legislating cross border movement of brood stock and accreditation of brood stock is required. In selective breeding, it is essential for the industry to start with basic models and work its way up to more sophisticated techniques, as often times, the tendency is leave out some fundamental aspects.

There should be a strong role for governments and private-public partnerships in developing expertise in selection program establishment for the future needs of industry. For example in India, ICAR & Akvaforsk worked on selection breeding for the Rohu and this provided a sustainable basis for the commercial aquaculture of Rohu in India. Both government and industry should share work on selective breeding and inform the industry on the benefits. There are also companies that provide these services and that should be relied upon to provide assistance. It was stressed that although public funding is critical in early stages of domestication and selection work, the main responsibility for ensuring the implementation of appropriate and economically viable programs lies with the private sector itself.

In the **breeding** session, the consensus was that considerable improvements in technology are required. The fact that industry is not aware of the importance of oxygen instead of air stone aeration is an eye opener. There is a critical need for skills training in breeding and hatchery management as often the operations start with only one key person. Biosecurity of hatchery systems will be important in terms of sustainability for the industry and help will be required to establish a minimum standard of biosecurity across the industry. At present many operations are not so intensive or hi-tech but as we progress to a higher level and increase output, we will encounter major hurdles such as diseases. We need to have robust systems in place.

In the discussion on **live versus compounds feeds**, there seems to be one size fits all in terms of compound feeds. There is a need for research on species-specific requirements and optimize feeds focused on the few key species, especially because of high prices of raw materials and limited availability of artemia in the foreseeable future. In live feeds, biosecurity issues were raised as well as better knowledge on systems for growth and enrichment of live feeds. There should be a better understanding of enrichment needs and techniques and post-production handling in our tropical conditions. Both live and compound feeds are likely to play central roles in the near term and there should be a balance between nutrition from these feeds, to optimize nutrition, maximize fry quality, and increase production efficiency.

The group identified the deficit of skills and knowledge in two areas - understanding fundamentals of selection programs and hatchery management and live feeds production. Government and academia support is required in collaboration with the aquaculture sector in general, and particularly with key fish species in order to meet anticipated rise in demand.

**BREAKOUT GROUP** : **PRODUCTION, HEALTH AND ENVIRONMENT REPORT**  
**GROUP LEADER** : **Dan Fegan**  
**GROUP FACILITATORS** : **Peter Coutteau, Man Heng Soo, Fuci Guo, Ooi Ei-Lin**

KEY CHALLENGES & PRIORITY AREAS	RECOMMENDED STRATEGIES
<p><b>Health</b></p> <ol style="list-style-type: none"> <li>1. Poor understanding of emerging diseases</li> <li>2. Limited health management resources</li> <li>3. Poor and inconsistent survival rates</li> <li>4. Lack of understanding of relationships between feed formulation and gut health</li> </ol>	<ol style="list-style-type: none"> <li>1. Promote wider use of vaccination</li> <li>2. Faster development and certification of vaccines</li> <li>3. More research into pathogen-host interactions and role of gut microflora</li> <li>4. Better use of preventative measures</li> <li>5. Access to trained technicians and laboratories</li> <li>6. Improved government infrastructure and support for health management</li> <li>7. Better availability of public/private veterinary services</li> <li>8. Availability of epidemiological expertise to support health management strategies</li> <li>9. Develop better biosecurity systems</li> <li>10. Improved education and communication across government and industry</li> <li>11. Access to better quality breeders and fry (pre-vaccinated)</li> <li>12. Develop traceability systems for live animal transfers</li> <li>13. Development of early warning systems for disease outbreaks (government/OIE)</li> </ol>
<p><b>Economics and Finance</b></p> <ol style="list-style-type: none"> <li>1. Diminishing returns</li> <li>2. High risk for investment</li> </ol>	<ol style="list-style-type: none"> <li>1. Focus on increased production efficiency</li> <li>2. Explore mechanisms to get higher prices and better bargaining positions</li> <li>3. Reduce risks affecting production efficiency and economics</li> <li>4. Explore other sources of funds to develop industry-wide measures (Levies – exports? Feeds? Other?)</li> <li>5. Find ways to communicate and manage production to make aquaculture more attractive to institutions</li> </ol>
<p><b>Government Support</b></p> <ol style="list-style-type: none"> <li>1. Complex registration</li> <li>2. Lack of knowledge</li> <li>3. Farmer perception of government regulations</li> </ol>	<ol style="list-style-type: none"> <li>1. Separate regulation of aquaculture from fisheries and manage as an agribusiness.</li> <li>2. Better organization of industry players to increase representation</li> </ol>
<p><b>Environment issues</b></p> <ol style="list-style-type: none"> <li>1. Site availability</li> <li>2. Control of expansion and intensification</li> <li>3. Environmental impact of cage farming</li> <li>4. Impact of feeds</li> </ol>	<ol style="list-style-type: none"> <li>1. Enforce appropriate regulations, licensing and zoning to manage growth and intensification of industry</li> <li>2. Use Certification and codes of conduct to maintain standards</li> <li>3. Enforcement of legislation</li> <li>4. Use RAS as a way to manage fish health and reduce environmental impacts</li> <li>5. Switch to floating feeds in open water systems</li> <li>6. Better feed delivery systems</li> <li>7. Improve feed quality and feeding efficiency</li> </ol>
<p><b>Small Scale Farming</b></p> <ol style="list-style-type: none"> <li>1. Knowledge level (low)</li> <li>2. Too high risk of disease</li> <li>3. Too many farms</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch to larger, more consolidated farms or farm groups (how to manage transition)</li> <li>2. Increase barriers to entry</li> <li>3. Licensing and registration of farms</li> <li>4. Improved vocational education</li> <li>5. Provide extension and training through public/private sector activities</li> </ol>
<p><b>Communication</b></p> <ol style="list-style-type: none"> <li>1. Poor communication between stakeholders (government, farmers, industry)</li> </ol>	<ol style="list-style-type: none"> <li>1. Better use of social networks/media to reach farmers</li> <li>2. Encourage farmer organizations and trade associations</li> <li>3. More direct interactions between science and industry to develop appropriate and timely solutions</li> </ol>

## Group Report and Discussion: Production, Health and Environment

In **Health**, the general understanding on emerging diseases has been difficult and the lag time before a disease is realized can range from 1-2 years. Most of the time, resources available for health, be it public or private, is generally poor and we can observe this at all stages of the production chain. It is clear that there is a general lack of understanding of nutrition and gut health.

Vaccination is identified as an important strategy when available, but if this is used over a wide part of the population, it exposes itself to a lot of risk from the rest and maintains a reservoir of diseases. There is interest in the pre-vaccination approach and should this be prerequisite against endemic diseases? Nevertheless, governments should fast track development and certification of vaccines as well as legislation to allow vaccines to be more widely used. Traceability systems such as the one in Thailand with movement documents were proposed. To track disease, a warning system for disease outbreaks was suggested. Usually farms do not inform neighbours of any outbreak and this 'stigma' of not telling each other should be removed for industry to take the step to deal with its problems.

Access to trained veterinarians at public and private laboratories is essential. The absence of epidemiological focus to diseases is clear as the focus is usually on pathology of diseases and the route of entry and infection is not defined. In the same neighbourhood, there could be good and weak fish and better biosecurity is required.

In **Economics and Finance**, the reality is that governments do not have much money and if they do, they will not spend on aquaculture. In the era of diminishing returns, with low prices and high costs, the focus is to increase production efficiency. Banks see aquaculture as 'rollercoaster' businesses but if aquaculture is to be a candidate for equity funding, then it needs to share information and work together and be transparent. It needs to show a model that will convince financial analysts to justify the risks. In Norway, from the 1990s, the legislation changed and fish and licence are collateral for farm mortgages of 50% to run farms. Equipment such as nets, platforms etc can be leased. However, banks require that insurance should be in place. In the Norwegian example levies are used to support generic marketing.

On the key challenge of **Government Support**, the fact that aquaculture is recognized as part of fisheries that is a 'hunting' activity rather than an agribusiness was raised. We have more in common with the livestock industry and being part of the latter will provide access to veterinarians and other resources to deal with issues that we face such as trade and health management. If an industry of the future is to be built, fisheries will need to take a step back. Industry itself needs to be better organized and work together to look at non-competitive issues such as health and environment. There should be cooperation among some companies to work on breeding programs such as on seabass as usually farms are too small to do this on their own and requires large resources.

On **Environmental Issues**, the control of the expansion is important but this usually happens after a problem has occurred such as Lake Cirata (Indonesia) and Lake Taal (Philippines). In Norway, there is no such model for the salmon; development was driven by driven by innovation. The smaller farms of 3,000 tonnes have marketing coops to purchase feeds, etc. Industry in Norway, Scotland and North America worked together (owned by Norwegian companies) to benefit.

Among the academia, farmers and industry there is poor **Communication**. To improve the knowledge base, direct interactions with science and industry is required. However, we will need to translate science to the small farmers. Industry is not in competition with government in extension services but is complimentary. More integration and collaboration is essential to avoid problems such as the recent shift of shrimp farmers to farm seabass and seabass to tilapia.

**BREAKOUT GROUP** : **FEEDS AND FEEDING REPORT**  
**GROUP LEADER** : **Brett Glencross**  
**GROUP FACILITATORS** : **Philippe Sourd, Jacques Gabaudan, Karthik Masagounder, Pedro Encarnacao, Thomas Wilson, Ng Wing Keong**

KEY CHALLENGES & PRIORITY AREAS	RECOMMENDED STRATEGIES
<p><b>Raw Materials</b></p> <ol style="list-style-type: none"> <li>1. Characterization of RM</li> <li>2. Understanding the nutritional value</li> <li>3. Understanding the contaminants and anti-nutritional factors</li> <li>4. Information exchange</li> <li>5. Development of new raw materials</li> <li>6. Increasing value of existing raw materials</li> </ol>	<ol style="list-style-type: none"> <li>1. Standardization of methods of assessment <ul style="list-style-type: none"> <li>- characterization (origin, species, processing, etc)</li> <li>- chemical analysis</li> <li>- biological/nutritional analysis</li> <li>- processing analysis</li> </ul> </li> <li>2. Increased exchange of information <ul style="list-style-type: none"> <li>- Between feed producers and fish farmer</li> <li>- Between regulators and feed producers and fish farmers</li> <li>- Between academia and feed producer and fish farmers and regulators</li> </ul> </li> <li>3. Increased exchange of information <ul style="list-style-type: none"> <li>- Between feed producers and fish farmer</li> <li>- Between regulators and feed producers and fish farmers</li> <li>- Between academia and feed producer and fish farmers and regulators</li> </ul> </li> <li>4. Directing focus of research to common issues</li> <li>5. Increased localized R&amp;D on local RM</li> <li>6. Use of (bio)technology to develop new products and new processing methods</li> <li>7. Development of new crop products with improved characteristics for use in feed <ul style="list-style-type: none"> <li>- Eg. Canola meal, Omega 3 canola meal</li> </ul> </li> <li>8. Increased knowledge of the economic, environmental and social values of RM (LCA analysis) to underpin sustainable management options</li> </ol>
<p><b>Communication</b></p> <ol style="list-style-type: none"> <li>1. More integrated dialogue between stakeholders <ul style="list-style-type: none"> <li>- feed companies, government, regulators, academia</li> </ul> </li> <li>2. Education of fish farmers on basic feed management and feed technology <ul style="list-style-type: none"> <li>- Eg. Low cost x High FCR = High Cost x Low FCR</li> </ul> </li> <li>3. Broader communication about regulation of feed standards <ul style="list-style-type: none"> <li>- Eg. Cross border issues, common standards, presenting a united position to regulators from the industry's perspective</li> </ul> </li> <li>4. Targeted education of industry personnel <ul style="list-style-type: none"> <li>- Eg. Better connection between academia and industry in terms of training requirements</li> </ul> </li> <li>5. Education on sustainability and environmental issues</li> </ol>	<ol style="list-style-type: none"> <li>1. More roundtables and open dialogue</li> <li>2. Centralized information databases</li> <li>3. Standardization of R&amp;D methods</li> <li>4. Closer cooperation by academia and industry</li> <li>5. Development of feed sector representation</li> <li>6. Development of common funding levies</li> <li>7. Improve the educational standards to better represent industry needs</li> </ol>

<p><b>Functional Feeds</b></p> <ol style="list-style-type: none"> <li>1. Development of functional feeds targeting: <ul style="list-style-type: none"> <li>- immune response</li> <li>- environmental tolerance</li> <li>- reducing stress</li> <li>- improving fish quality</li> <li>- improving use of alternative RM</li> </ul> </li> <li>2. Understanding the cost/benefit of the different functional feeds</li> </ol>	<ol style="list-style-type: none"> <li>1. Standardization of methods of assessment: <ul style="list-style-type: none"> <li>- Understanding the mode of action under laboratory conditions</li> <li>- Application in the field</li> </ul> </li> <li>2. Better communication between feed and fish producers on benefits</li> <li>3. Directing focus of research to common issues</li> </ol>
<p><b>Technical Demands</b></p> <ol style="list-style-type: none"> <li>1. Optimizing performance by: <ul style="list-style-type: none"> <li>- species</li> <li>- life stage</li> <li>- genotype</li> <li>- production system</li> </ul> </li> <li>2. Feed processing technology</li> <li>3. Improving knowledge on: <ul style="list-style-type: none"> <li>- essential nutrients</li> <li>- energy</li> <li>- anti-nutritional factors</li> <li>- contaminants</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. Standardization of methods of assessment</li> <li>2. Sharing of knowledge</li> <li>3. Prioritization of issues for public R&amp;D</li> <li>4. Pooling of resources and capabilities</li> <li>5. Generating shared priorities between academia and industry</li> <li>6. Focusing on fewer aquaculture species</li> </ol>

## Group Report and Discussion: Feeds and Feeding

The key challenges are in four areas that most of us have in common. With raw materials, we are in agreement that characterization of the raw materials is a key challenge. We believe that we are usually not talking about the same thing as, for example, not all fish meals and soybean meals are the same. Unless we are communicating on the same thing, it will be difficult to make progress towards a common understanding. In terms of nutritional value, we see that the issue is how well can the animal use the raw materials. There is a need to understand more on contaminants such as heavy metals and PCBs as well as anti-nutritional factors. There is a massive amount of information out there but actually the information flow is not well managed. There needs to be an increase the exchange of information. Improved information exchange will help in developing new raw materials or even improving the utility of existing ones, there is actually more that can be done to make most raw materials more useful and more valuable.

To progress these initiatives, there needs to be more coordination. This can start with the characterization of SBM for example, looking deeper into details of its processing history and genotype and then make this information available from a centrally managed database. In chemical analysis, although there are existing standards, there is still some disparity and not all labs are analyzing samples to the same standards. As we look at the biological needs of the animal we need to be able to standardize the way we design diets. In processing analysis, to give value to our work, and increase its relevance researchers should use advance processing like feed extrusion technology and not just simple laboratory level processing equipment. There is actually a lot of corporate and academic information that can benefit the community.

Processing of raw materials that will lead to more advanced products and new crop varieties will be the new step or game changers for the industry. There is a need to increase our knowledge and on a broader range of parameters of raw materials, such as their economic, environmental and social values such as those determined using LCA analysis. Such communications are important. Under a participation in the SEAT program, feed producers in Asia can address concerns on the environmental impact to seafood buyers in Europe and that seafood from Asia is not as it is being portrayed.

On communication, the group conveyed the need for sharing of information among all the stakeholders; feed companies, academia, raw material and additive suppliers and governments as each have a role to play. It is still perceived that there is a real communication gap between farmers and formulators. The high cost of feeds and relevance of FCRs is a contentious subject that still needs considerable explanation to the farmers. Regionally, regulations on feed specifications vary without any apparent scientific basis. There needs to be standardized minimum specification criteria to a common standard that allows trade across borders within the region. In targeted education, the team recommended that the academia link up better with industry and move towards what they (industry) needs rather than pursue academic publication outcomes. Governments need to be aware of what is happening in industry and academia needs to improve the relevance of the training they provide and assist in giving out relevant information to support the sector.

Functional feeds clearly have a role in the industry in Asia but again there is need to communicate to the users on the benefits, be it reducing stress or environmental emissions. The recommendation to assist the progression of functional feeds in the region is to develop a common standardized method of assessment using a common experimental format. Trials on functional feeds should, appropriately, begin with experiments in the laboratory but at later stages need to move into the field. Communication is essential to help the farmers to understand the value of the functional feed when they can obtain best value from them.

On technical aspects, there is still a need to optimize performance of tilapia, seabass, cobia and better understand what the animal needs at each of its life stages. With progress in the selective breeding of a range of species we need to work closer with multidisciplinary teams to realize the link between genetics and nutrition more effectively.

There is so much research being done throughout the region and the world, but there is an absence of a unified direction on those major issues facing the sector. It is recognized that business factors may not allow access to all information, but there are still considerable resources that can be accessed and made publicly available. Public funds should be better used to address issues, which affect all stakeholders, and this should provide an opportunity to pool resources and foci. Having a focus on the top 12 important species would allow the development of a database on both nutritional requirements and also raw material evaluation. Introduction of a levy system on feed sales to generate a research funds pool could be used to help support that work which addresses some of those identified larger issues.

**BREAKOUT GROUP** : **Marketing and Sustainability Report**  
**GROUP LEADER** : **Christelle Vigot**  
**GROUP FACILITATOR** : **Han Han**

KEY CHALLENGES & PRIORITY AREAS	RECOMMENDED STRATEGIES
<b>Make profits for private companies</b> - sell better and more (building image) - production efficiency and costs	Improve global and local governance. Government must support industry by structuring market with fundamental legislation and regulation
<b>Improve environment and social sustainability</b>	National level fund with a national aquaculture association to do marketing campaign
<b>Working together (industry is fragmented)</b>	Communication needed with different stakeholders (e.g., government, NGOs, consumers, farmers, fishermen, processors, distributors) to increase industry awareness

### Group Report and Discussion: Marketing and Sustainability

A key challenge is to be **better and profitable** but alongside this, is building a good image and improving efficiency of production. Environmental and social responsibility should be part of the long-term commitment to the sector.

It is clear that the industry requires government support. This is in the implementation of regulations and investing in marketing such as generic marketing. The former is important to prevent the worst environmental situation from happening. Should industry wait for the government to provide the support or should industry initiate and approach governments for support?

Government support will help development as in the case of Singapore, where the government is investing in studies and for a company like Barramundi Asia (seabass producer); it is an advantage to have a farm in Singapore. Such support will attract producers to set farms in a specific country.

Support was also suggested for **global marketing** of farmed fish from Asia. But the question is should marketing be for the industry as a whole or for just a product? When we speak to consumers, there is the perception that farmed fish is not as good as white fish from fisheries. Whereas in many cases, farmed fish can be equal or better. Support is also required to push local consumption of fish.

At the moment, **sustainability** is not a demand in local markets. It is affordability and taste. However, in China, Indonesia, Vietnam, more and more consumers are becoming aware of food safety and in a few years we can expect some specification on food safety in local markets. Currently there are some private brands for high value markets. But in general, branding is not essential until supply is higher than demand.

In most countries, it is also possible to distinguish between suppliers. There are usually two groups – one for export and the other for domestic markets. The former will go through the process of traceability and certifications and standards such as Global GAP, ISO, etc. However, the price differentiation between the two markets is narrowing and the export group will start selling locally but still use the same specifications as for the export market.

There is a need for better **communication** among stakeholders. Although fish farmers and fisherman sell into the same market, there is usually little interaction. This should be encouraged for both to understand their markets and problems facing all stakeholders. Similarly, there should be more communication between processors and fish farmers, so that each group can understand the problems and constraints and build long-term partnerships.

As the industry is fragmented, it is time to work together as one. It is important to realise that the competitor to farmed fish is pork, beef and chicken. In the latter two, species do not matter but in the case of fish, marketing is sometimes concentrated on whether it is salmon, sea bass or tilapia. This requires a change in mindset.