Meeting the Demands and Challenges of Globalization of Trade in Aquaculture: 
the Role of a Regional Inter-Governmental Body 

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Outline

• What is NACA

• Asian aquaculture in a nutshell

• Trade in aquaculture

• Challenges facing Asian aquaculture
  – What is being done
  – What has been achieved

• Future directions to meet global demand
About NACA

• Intergovernmental organization
  – 17 member countries (governments)
  – 1 associate member (SPC)

• Promotes rural development through sustainable aquaculture
  – Technical cooperation among members

• NACA members produce > 80% of world aquaculture production by volume
  – Members are:
    • Australia, Bangladesh, Cambodia, China, Hong Kong SAR, India, Indonesia, IR Iran, DPR Korea, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam
NACA:
17 Member Nations
21 Participating Nations
NACA Centres

• **Regional Lead Centres**
  – Freshwater Fisheries Research Centre, China
  – Central Institute for Freshwater Aquaculture, India
  – Inland Fisheries Research & Development Bureau, Thailand

• **Collaborating Centres**
  – Aquaculture Department of SEAFDEC

• **More than 30 participating centres throughout the region**
  – Collaborating in research
  – Sharing information and resources
  – Training and exchanging expertise
Asia-Pacific Marine Finfish Aquaculture Network

• Cooperative R&D programme to support development of sustainable marine fish farming
  – People-based network with institutional participation
  – Multi-sector participation:
    • Government Policy and R&D, Farmers Groups, Traders, Industry, NGOs
    – ACIAR, Skretting, CSIRO, QDPI, RIM-Gondol, RIA 1, Krabi CFRDC, BADC-Situbondo, AFCD-Hong Kong and more
  – Electronic e-magazine and e-newsletter
Shrimp Farming and the Environment

- Main partners are the World Bank, NACA, WWF, FAO, and UNEP.
- “To analyze and share experiences on better management of shrimp aquaculture in coastal areas”.

- Multi-sector participation:
  - Government Policy and R&D, Farmers Groups, Traders, Industry, NGOs
  - Collaborators from government, private sector, academia, and NGOs, totaling over 100 researchers in 20 countries.

- Development of an internationally agreed document adopted/endorsed by NACA and FAO
  - Globally accepted management principles for “responsible” shrimp aquaculture

- Guiding principles and guiding criteria

- Support to implementation ongoing, with special reference to small-scale farmers

- Developing market links for responsible BMP product

- Electronic Newsmagazine and newsletter
Aquatic Animal Health

- Reduce the risk of aquatic animal disease impacting on trade, environment & human health
  - Development of policy framework
  - Implementation of practical health management strategies at farm, local, national and regional levels
  - Regional surveillance system
  - Technical support through sharing of expertise and laboratory facilities
  - Participation of primary producers
  - Address emerging issues such as food safety and new disease (KHV, WTD, TS)
  - FAO, OIE, ACIAR, AusAID, SEAFDEC, AAHRI, DAF, MPEDA and more
Genetics & Biodiversity

• Support members to conserve aquatic biodiversity and genetic resources by:
  
  – Building capacity for national aquatic resource management programs
  
  – Coordinate cooperative R&D programs
  
  – Development of broodstock management programmes for economically important and newly emerging indigenous species
  
  – Contribute to conservation plans for endangered species
    • e.g. Mekong giant catfish
  
  – Kasetsart University, DOF Thailand, FAO, MRC, WFC, Deakin University, Malaysian Fisheries Society
Culture-based Fisheries

- Development of extensive, community-based aquaculture through:
  - Development of ‘best practice approaches’ to culture-based fisheries
  - Effective use of small water bodies for low cost fish production amongst rural communities
  - Application of co-management principles to culture-based fishery and stock enhancement activities
  - Dissemination of findings from completed projects in member countries
  - ACIAR, Deakin University, RIA 1(Vn), Laos PDR, Kelaniya University (SL), University of Stirling

Translated into Lao & Singhalese
Support to Regional Aquatic Resource Management

• Address rural development and poverty alleviation issues by promoting:
  - Improved understanding of the livelihoods of poor fishers and farmers
  - Institutions that better support the livelihoods objectives of poor fishers and farmers
  - Policy development that reflects the livelihoods objectives of the poor fishers and farmers
  - Improved communications among the poor, service providers, institutions & policy makers
  - AusAID, DFID, FAO, VSO, APEC
Special Programme in Response to the Tsunami

- Practical (needs-driven) assistance (direct) to affected farmers
  - Implementation is by community
  - Emphasis on self help
- Regional – CONSRN (BOB-IGO, FAO, NACA, SEAFDEC, WFC
- Thailand
  - Rehabilitation of cage culture (Rotary Int’, AmerFS)
  - Training in marine finfish culture (FAO, DOF)
  - Environmental education (Chiba, Japan civic group)
  - Support to DOF coordination
  - Microcosm hatchery pilot (NORAD and AQVAPLAN NIWA)
- Aceh Indonesia
  - Supporting local governments and communities in rehabilitation of the aquaculture sector (ETESP Grant, ADB);
  - Microcosm hatchery pilot (NORAD and AQVAPLAN-NIWA)
- Sri Lanka
  - Community participatory and livelihoods training (STREAM with FAO Grant)
Education, Training & Study tours

• Promote (capacity building,) human resource development and technical exchange
  
  – Participating centres share expertise
  
  – Short term courses, workshops, study visits
  
  – Training is coordinated by Secretariat
  
  – Customized training as requested
  
  – RLCC, DOF Thailand, CIFA India, Pulau Sayak Prawn Production Centre, Malaysia, GRIM and Situbondo Centres, Indonesia, many more
Communications

• Improve communication and information sharing between members through:
  – Portal website on aquaculture
    • News and events
    • Free download of all NACA publications (>700)
    • Discussion forums / online community
  – Training in digital publishing and website management
• Visit www.enaca.org
Want to know more?

• Contact us at:
  – PO Box 1040, Kasetsart University Post Office, Jatujak, Bangkok 10903, Thailand
  – Ph: +66 (0)2 561 1728
  – Fax: +66 (0)2 561 1727
  – Email: naca@enaca.org

• Or visit:
  – www.enaca.org
Asian aquaculture in a nutshell

• Asia is the largest global
  – aquaculture producer
  – exporter of aquaculture produce
  
  • Major exporters:
    – Thailand
    – India
    – PR China
    – Vietnam
  
  • Emerging exporters:
    – Myanmar
    – Bangladesh (to Middle East)
Asian aquaculture in a nutshell

• The great bulk of Asian aquaculture production
  – Is through small scale, individual holdings
  – Holdings clustered together
    • generate synergies
  – Easier for dissemination of
    • Technologies
    • best management practices

Cirata Reservoir, Indonesia
XinCun Bay, PR China
Shrimp farms in Thailand
The trends

- Increasing emphasis on mariculture
  - High valued species
  - Export
  - Increasing middle classes in PR China, India; upper level local markets

- Increasing awareness
  - of market needs
  - Environmental integrity

- Increasing adoption of BMPs;
  - Small scale farmers
    - E.g. Indian shrimp farmers

- Very dynamic: changes occur to suit market demands
  - E.g. the newest; Myanmar freshwater finfish aquaculture
    - Culture practices changed within a two year period
    - To meet the growing export market demand to the Middle-East
Aquaculture - trade

For developing countries aquaculture is becoming an increasingly important and significant traded commodity (ies):

- Income generation
- Increased livelihood opportunities
- Better nutrition
- Foreign exchange earnings

(From Kurien, 2005)
In Asia an overall increase in the predominance of the aquaculture sector: reflected in the trade of fishery products also
In almost all major ‘fish’ producing countries in Asia the dominance of aquaculture is increasing & hence in the trade of fishery products.
Aquaculture – trade: Increasing contribution to GDP

Increased dominance of aquaculture is reflected in the GDP of Asian nations

**Production value as percent GDP (data from RAPA, 2004)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Capture Fisheries</th>
<th>Aquaculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>1.884</td>
<td>2.688</td>
</tr>
<tr>
<td>PR China</td>
<td>1.132</td>
<td>2.618</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.350</td>
<td>1.662</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1.432</td>
<td>5.775</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1.128</td>
<td>0.366</td>
</tr>
<tr>
<td>Philippines</td>
<td>2.184</td>
<td>2.633</td>
</tr>
<tr>
<td>Thailand</td>
<td>2.044</td>
<td>2.071</td>
</tr>
<tr>
<td>Vietnam</td>
<td>3.702</td>
<td>3.497</td>
</tr>
</tbody>
</table>
Challenges (1)

• Promoting sustainable aquaculture
  – environmentally friendly
  – socially responsible
  – complies with international standards
    • meets food safety requirements
    • remain profitable
Challenges (1) - What has been achieved

- International shrimp principles
  - Development and promotion of BMPs for shrimp
    - India, Vietnam, Indonesia, others

- Development of BMPs for other aquaculture commodities
  - Catfish
  - Other major Asian aquaculture commodities in pipeline..

- Involvement of small-scale farmers
  - Clusters/ aqua-clubs/ societies
What is being done: Adoption of BMPs: the case of shrimp farming, India

Shrimp Farming & the Environment
- Support development & adoption of Better Management Practices
  - Focused on small-scale farmers
  - Increase productivity by reducing risk of shrimp health problems
  - Reduce impacts of farming on environment
  - Improve food safety & product quality
  - Improve social benefits of shrimp farming
  - Consortium with FAO, NACA, UNEP, World Bank, WWF
Adoption of BMPs: the case of shrimp farming, India

Shrimp Farming & the Environment

• NACA together with
  – FAO,
  – WWF,
  – World Bank
  – UNEP

• received the “Green Award” from the World Bank, 2006

Translated into Chinese; Spanish; French; Arabic; Portuguese; Myanmar language
MPEDA / NACA: Shrimp Health Management
Village Demonstration Programme: an initiative to put principles into practice among small-scale farmers in India
Outcomes include significant reduced shrimp disease prevalence

<table>
<thead>
<tr>
<th>Year</th>
<th>Demo ponds</th>
<th>Non demo</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>82%</td>
<td>89%</td>
<td>+ 7%</td>
</tr>
<tr>
<td>2004</td>
<td>37%</td>
<td>52%</td>
<td>+20%</td>
</tr>
<tr>
<td>2005</td>
<td>15%</td>
<td>42%</td>
<td>+27%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Demo</th>
<th>Non-Demo</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>100%</td>
<td>-</td>
</tr>
<tr>
<td>2004</td>
<td>71%</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>33%</td>
<td>46%</td>
</tr>
<tr>
<td>2006</td>
<td>0%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Good Crop, WG, AP

Karnataka

AP

Good Crop, WG, AP

Tamilnadu

Geraladibba, KR, AP

Gujarat
Progress in last 6 years

2001
Survey
365 ponds
Nellore
West God.
Risk factors
BMPs

2002
Farm level demonstration
5 farmers
10 ponds
7 Ha
4 tonnes

2003
Village level extension
1 Village
1 Aquacub
58 farmers
108 ponds
58 Ha
22 tonnes

2004
Creek level extension
6 Villages
7 Aquacubs
130 farmers
254 ponds
173 Ha
40 tonnes

2005
State level expansion
3 States
19 Aquacubs
736 farmers
1187 ponds
663 Ha
672 tonnes

2006
5 States
28 Aquacubs
730 farmers
1370 ponds
813 Ha
1000 t (exp)

2007+
National Centre for Sustainable Aquaculture
Challenges (2)

- Compliance to international standards
  - (e.g. WTO-SPS, Codex Alimentarius)
  - Awareness and capacity building activities
  - Project driven activities
    - strengthening aquatic animal health capacity
    - biosecurity in ASEAN
Challenges (3)

- Access to information
  - Regional resource base
  - Regional lead centers
  - Sharing of information and expertise
Challenge (4)

- Access to financial and technical services for sustainable aquaculture
  - Insurance
    - Workshop: bring together insurers, bankers & farmers
  - One-stop aquashop concept (STREAM). Improving servicing of the small-scale aquaculture sector
  - Credit to farmer groups
    - aquaclubs of India
Challenges (5)

- Responding to stringent market requirements
  - Development of BMPs along the supply chain
  - Piloting traceability systems
    - BMP project in India
  - Developing guidelines for aquaculture certification
  - Connecting the responsible small-scale producer to markets
Challenges (6)

- Risk of introduction and spread of aquatic animal diseases in Asian Aquaculture
  - Technical guidelines:
    - responsible movement of live aquatic animals
    - adopted by 21 governments
  - Surveillance/ regional quarterly aquatic animal disease reporting (QAAD) system
  - Capacity building
    - disease diagnosis
    - risk analysis
    - Surveillance
    - epidemiology, etc
  - Promoting responsible introductions
  - SOPs for responsible movement of live food finfish within ASEAN
Challenges (7)

• Harmonization of approaches for diagnosis and risk assessment
  – PCR calibration work
    • India and Indonesia
    • (Vietnam, Malaysia)
• India
  – One Voluntary WSSV PCR calibration exercise completed in June 2006 (37/49 labs returned results)
  – PCR calibration in Feb 2007 (33/51 labs returned results)
  – PCR laboratory accreditation program for India being developed (in conjunction with MPEDA)
• Indonesia
  – I PCR calibration completed in Indonesia in March 2007 (33/34 labs returned the results)
  – II PCR inter calibration planned in August 2007
• Lessons learnt
  – Assess the quality of results received by the shrimp farmers
  – Opportunity for the labs to evaluate their own performance and compare with other labs
  – Opportunity for labs to maintain confidentiality and seek technical assistance
  – Possibility of expanding the scope of the exercise to other countries e.g. Malaysia, Vietnam
ACIAR funded regional project
“Application of PCR for improved shrimp health management” (Jan 2005- Dec 2007)
Partners:
  - CSIRO (Australia), Mahidol U. (Thailand), MPEDA, CIBA, COF (India) and NACA
Purpose:
  - to prepare the labs for a future laboratory accreditation programme
The Process:
  - Preparation of samples (5 DNA+5 Tissue samples per lab)
  - Validation of results in 3 laboratories (CSIRO, CIBA, COF)
  - Seeking expression of interest from labs
    - Allotment of laboratory codes
    - Distribution of samples
    - Collation of results
  - Providing summary results back to all the participating labs
  - Providing technical assistance, where required
Certification of aquaculture produce: issues

• Universal agreement that responsible aquaculture programs need to be developed
  – Promote best practices
    • Ensures product safety,
    • Wholesome sea foods
    • Produced in a socially responsible manner
    • Supports profitable and economically viable aquaculture
Challenges (8):
Certification of aquaculture produce: issues

• Developments of certification processes should
  – Support and encourage sustainable aquaculture
  – And not be a barrier for entry into major markets
    • Impact on small scale farmer
      – Selling; cost of certification
    – Setting of market standards should not be done by a
      single group or through a coalition of companies/ retailers:
      • Anti-competitive

• Definition of boundaries between public regulations/
  private markets?
  • Public regulations: challengeable at the WTO
  • Private regulations?
Certification of aquaculture produce

• Challenge will be to ensure small-scale aquaculture sector is:
  – empowered
  – Supported
  • not disadvantaged in modern certified aquaculture product market chains
Certification of aquaculture produce

• Developing certifications is relatively easy
• But:
  – Certifications need to be relatively easily applicable/adoptable
    • Need to be pragmatic
    • Should be not “alien” to any in the value chain
    • Should be cost-effective
      – Very important for small scale producers
  – Needs compliance of
    • All stakeholders in the value chain
    • Governments
• Hence the consultative efforts
  • FAO, NACA, Thai Governments and others
Certification of aquaculture produce

INFLUENCE ON TRADE
STANDARD SETTING
STAKEHOLDERS
PRODUCER (80% small-scale farmers)
WHOLESALER
PROCESOR
MARKET
CONSUMER
DIALOGUE
MARKET COOPERATION
MUTUAL BENEFITS

RESTORING BALANCE
Certification of aquaculture produce

What could be done by us?

- Facilitate BMP adoption
  - Aquaclubs etc.
  - Capacity building
    - Results in safer product
- Facilitation of dissemination of market requirements
- Create market links between “good” farmers and the market
- Bring about harmonization between national regulations
  - Rationalized, regional approach to product safety
    - Facilitates purchasing
    - Cost saving
Conclusions

– Certification, ecolabelling, traceability;
  • Modern day requirements
  • Ensures food safety & quality

– It is equally important to safeguard the producer

– Certification best done:
  • Not through intermediary “organizations’ alien to the producer
  • But through organizations working at the coal face
    – Expects “big” trading houses to adopt such strategies

– Only the above will ensure
  • consumer safety
  • A fair deal to the producer
  • Sustainability of production practices
  • Fair play in global trade
Thank You All
Challenges: increasing production

- Effective utilization of natural resources
  - Culture based capture fisheries
    - $>5 \times 10^6$ ha of non-perennial water bodies
    - Utilize for fish production
  - Reservoir stocking policies
    - Policy developments
    - Strategies for increasing production
      - Minimizing impacts on biodiversity
      - Use of GIS techniques
  - Development of good practices