



Network of Aquaculture Centres in Asia-Pacific

Aquaculture: With Special Reference to Developments in Asia.4 ***Challenges Facing Asian Aquaculture***

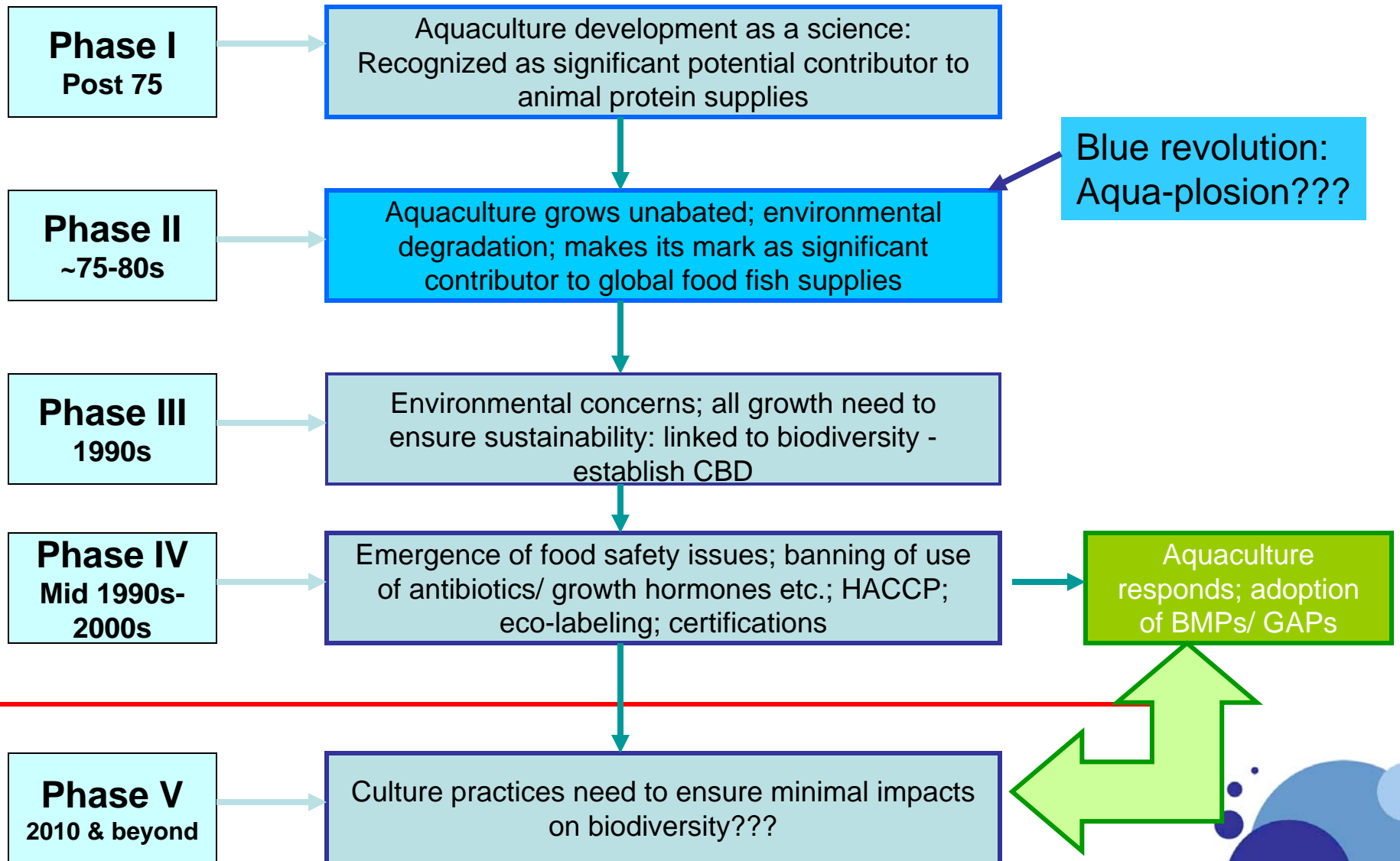
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and
School of Life and Environmental Sciences, Deakin University, Australia*





Growth phases of aquaculture





Aquaculture: Going through a number of phases

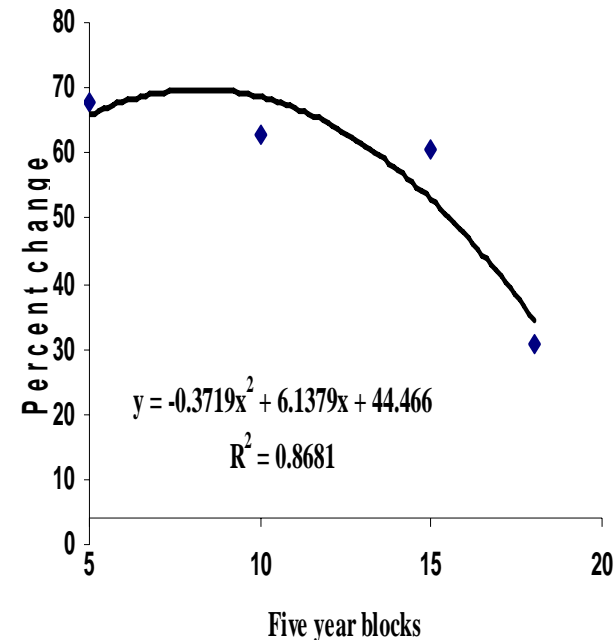
- These phases dictated by:
 - Public controversies and perceptions on aquaculture;
 - use of fish meal
 - mangrove destruction
 - alien species
 - General degradation of the habitats
 - Changes in consumer demands
 - Food health requirements
 - Globalization
 - Needs of sustainability and environmental integrity
 - Impacts on biodiversity
 - Alien species – often mooted as a major cause for loss of biodiversity
 - » Alien being often extended to be invasive
 - Evidence??





The biggest challenge: sustaining the growth

- Can the growth be sustained?
 - Already indications that the rate of growth is declining
 - Only S.America & Africa
 - The rate of growth is increasing
- For Asia sustaining the current production is a major concern





Sustaining the current production in Asia

- Production to be sustained through
 - Maintaining environmental integrity
 - Minimal impact on biodiversity
 - Efficiently and effectively competing/sharing of primary resources
 - Land
 - Water
 - Biological inputs
 - Human resources





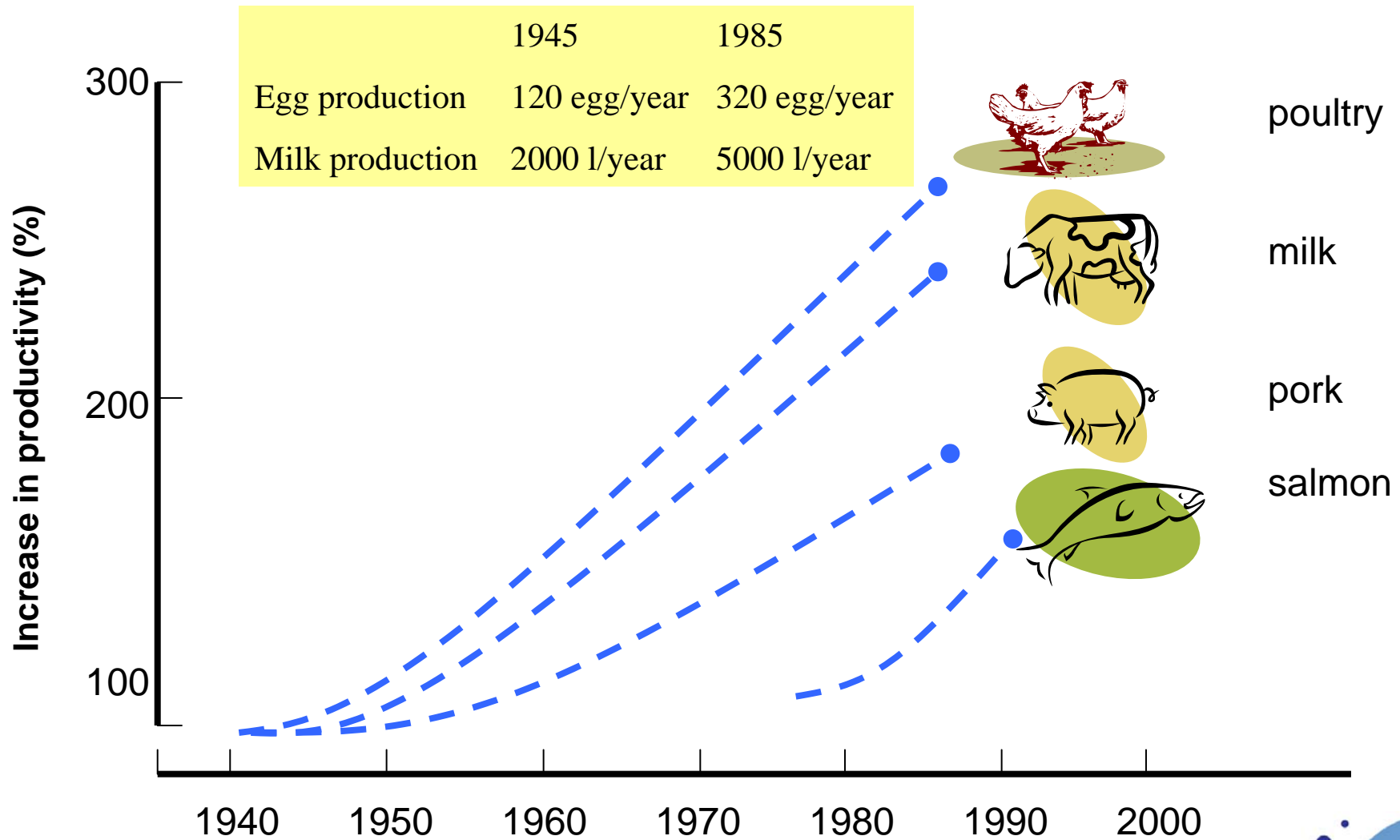
Sustaining the current production in Asia

- Avenues available:
 - Improved husbandry techniques
 - Use of less water
 - Use of less land
 - Genetic improvements in cultured species
 - Full genetic potential utilized only for few cultured aquatic species (e.g. salmonids, tilapias, some carp species etc.)
 - Bear in mind that >250 aquatic species are cultured
 - Less use of feeds based on animal proteins
 - Situation getting further exacerbated with
 - Use of cereals for mass production of biofuels





Genetic improvement

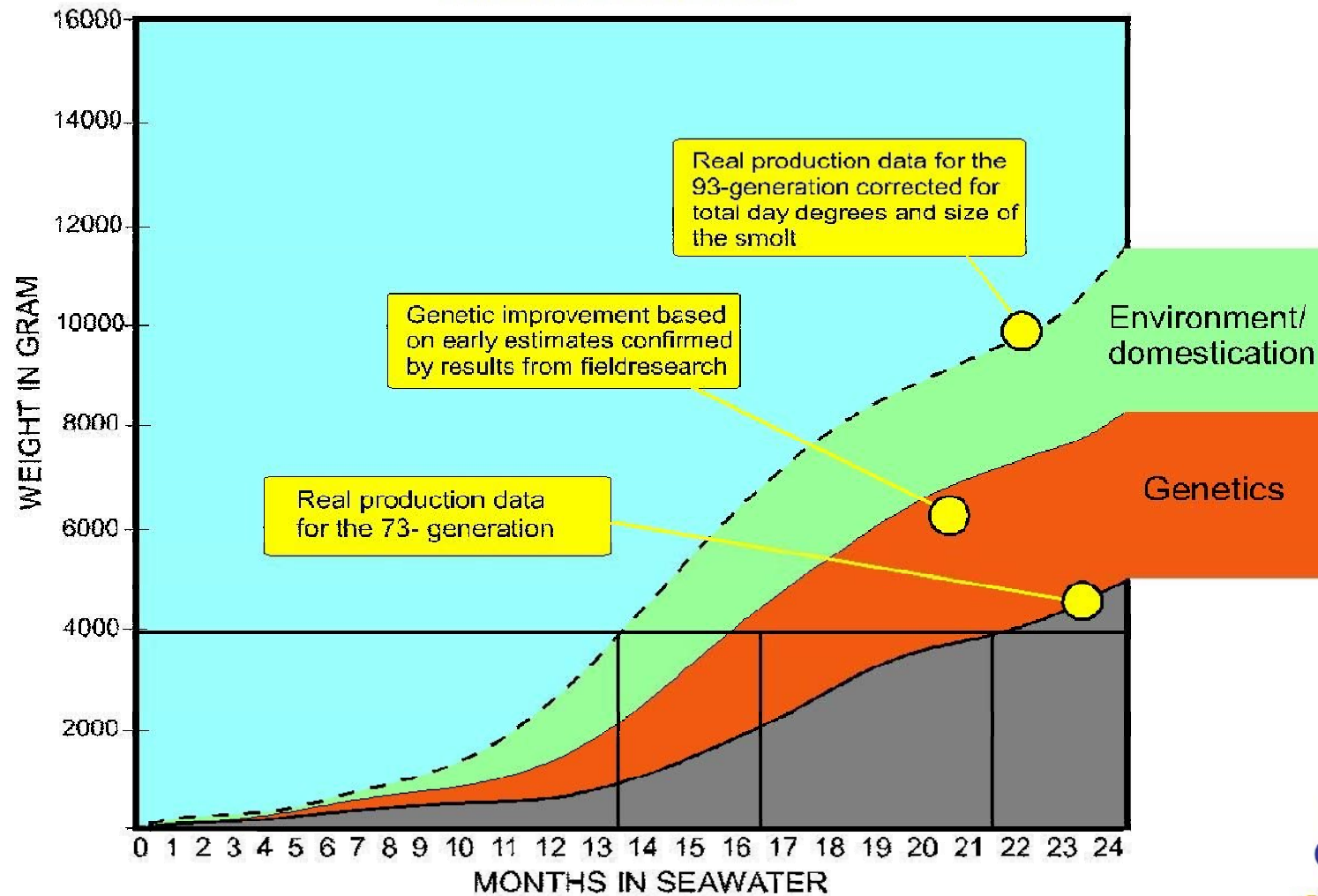


Adapted from Aquagen / Eknath *et al.*, 1999





Genetic Improvement 1973 - 1993 Atlantic Salmon





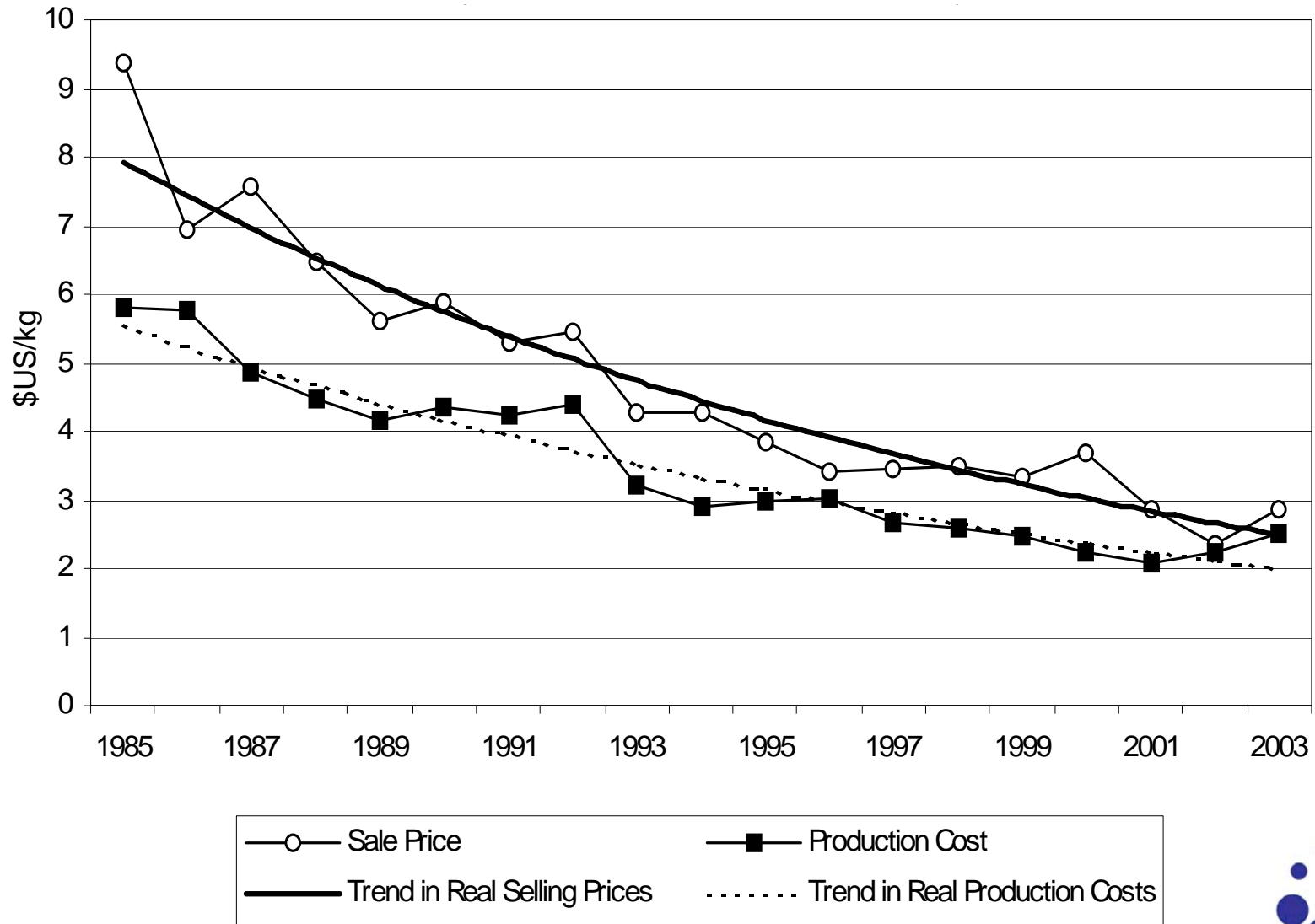
Sustaining the current production in Asia

- Production cost have to keep a breast with swindling (/) prices
 - Best example provided for by the salmon farming sector





Farmed Atlantic Salmon – Real Production Costs and Selling Prices (Sources: MLC International Ltd)





Sustaining the current production in Asia

New species?



Abalone, *Haliotis* spp



Babylon, *Babylonia areolata*



Sea squirt/ sea pineapple

New freshwater species for export

Indonesia — With the introduction of a new farmed fresh water species for export, the country has widened its product range in the export basket. The Marine and Fisheries Research Institute under the Department of Marine Affairs and Fisheries has introduced three new species including freshwater lobsters, *hana biru* and *hana Capit* and a *Pangassius* hybrid. The ministry expects that these new species will soon be added to the export basket. Among the new species is the *Pangassius* hybrid called *Pasupati*, a cross between *P hypothalamus* and *P jambal*. The institute indicated that the new hybrid has better resistance to withstand stress and disease than its parents and it is infertile, good to eat and with low fat content.

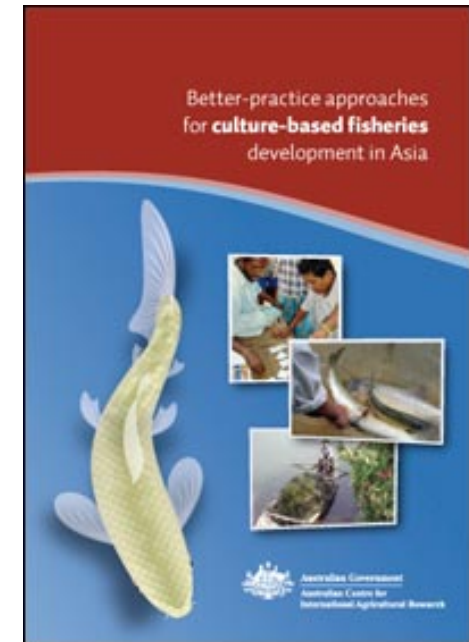




Sustaining the current production in Asia

Freshwaters limited: What is the way forward?

- Effective utilization of small water bodies for aquaculture
 - culture-based fisheries
 - A form of aquaculture
 - Communal, rural activity
 - Low inputs
 - Non-consumptive of primary resources
 - Generates synergies in the community (rural)



Vietnam



Lao PDR



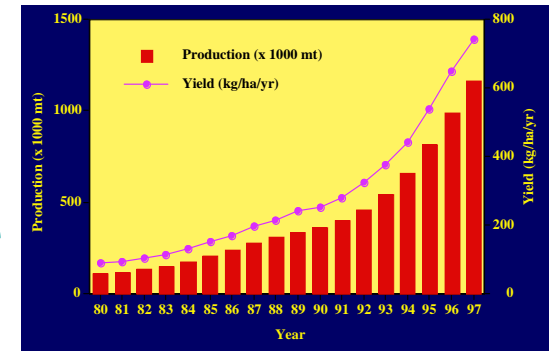
Myanmar





Culture-based fisheries

- 66,710,052 ha of non-perennial water bodies in Asia (FAO, 2004)
- 5% developed
 - 743 kg ha⁻¹ cycle⁻¹, as in the case
 - of Chinese practices
 - fish supplies in the rural areas in the Asian region will increase by 2.5 million t cycle⁻¹ (approximately 8 to 9 months in the year)
- There is an increasing need to, at least gradually, utilize more and more suitable indigenous fish species in CBF in the region (world)





Sustaining the current production in Asia

Mariculture developments

- Small scale; clustered
- New species (also for fw)
- New/ improved technologies



**"Green house" *P. vannamei* culture:
Guandong P., PR China: 3 cycles/ year**



Mariculture developments: the negative aspects

- High dependence on trash fish
 - Limited resource
 - Not efficient conversion (>6:1)
 - Environmental problems





Good example: Vietnam catfish sector

- US bans were counteracted by timely interventions of the Vn Government
 - Not able to go to the WTO
 - But developed other markets
 - Innovative
 - Still exports >85% of produce
 - In 2006 nearly 0.8 million tonnes of catfish produce



BIG FISH, LITTLE FISH: U.S. producers have successfully lobbied politicians for legislation which will hurt Vietnamese catfish exporters badly

Pangasius catfish needs a new name

UK — For Vietnamese farmed *pangasius* to make a name for itself on the European market, it may need a new name, said Hugh Taylor, *Young's Seafood* consumer insight controller.

Young's consumer research on the farmed whitefish found that the fish may need to be renamed in order to grow on the market, Taylor told delegates at the 2006 Value Added Seafood Conference in London.

Taylor further added that alternative names for *pangasius* were researched and *pangasius* isn't the winner.

Though he declined to disclose which name is most suitable in *Young's* research, he did say the leading name "also isn't Vietnamese catfish."

"Obviously, *pangasius* has got potential, but it needs marketing in a consumer-friendly way," he said.





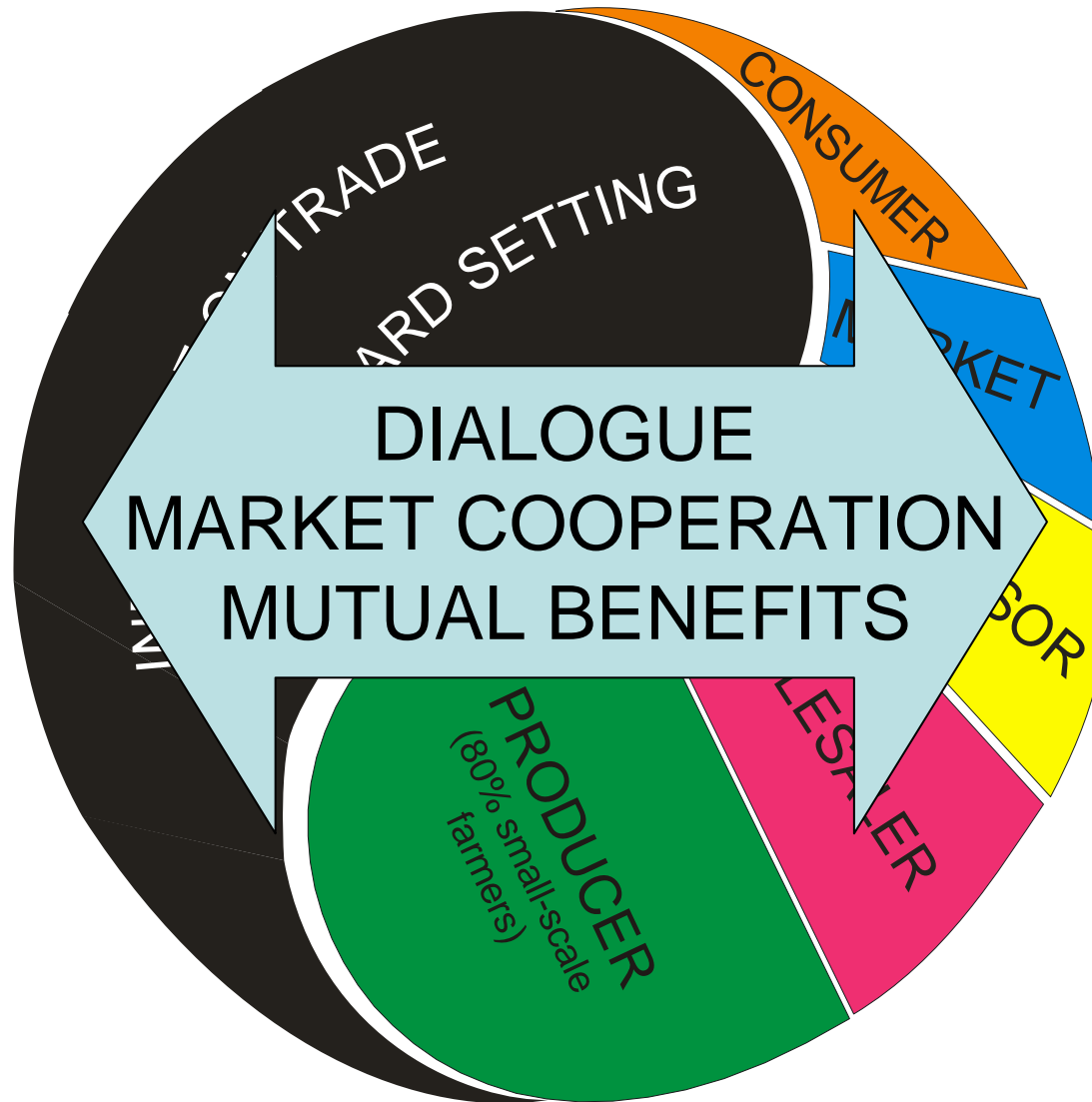
The way forward?

- Introduction of certification/ standards
 - Ensures quality
 - Contributes to directly and indirectly
 - environmental integrity
 - Conservation of biodiversity
 - Efficient use of primary resources
- Problems encountered
 - Certification procedures not uniform
 - Has become a “commercial” enterprise
 - Many agencies claiming to be “certifiers”
 - Overly market driven?
 - Producers least important “player” in the game





Certification of aquaculture produce: overly market driven?



RESTORING BALANCE





Certification: the way forward

- Consensus on certification procedures
 - Preferably & best done through
 - international body (ies)
 - Governments
 - » Steps being taken in this regard
- Standards be developed through the widest participation/consultation of all stakeholders
- Encourage adoption of Better Management Practices (BMPs)



Bangkok: May 2007



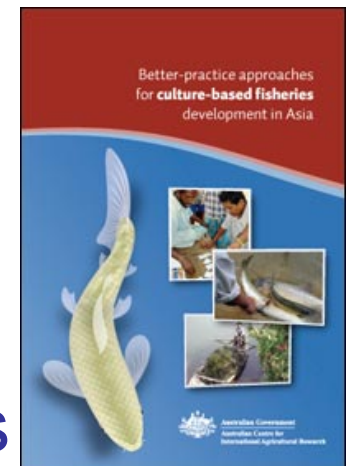
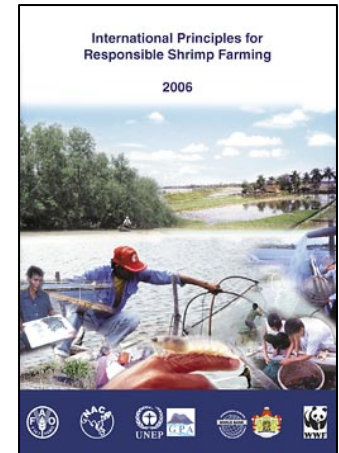
Brazil-August 2007





What are BMPs?

- Essentially includes improvements in culture practices
 - Pond/ facility sitings
 - Conservative/ improved management of water resources
 - Prudent use of physical & biological resources
- Takes in to consideration consumer needs
 - Use of banned chemicals
 - Minimal use of antibiotics
- Takes into consideration public perceptions
 - Minimal destruction of aquatic habitats
 - Minimal negative impacts on biodiversity





Summary of BMP Impacts

Adoption of BMPs offer all what insurers wish to have:

Risks	Positive impacts
<ul style="list-style-type: none">•• Disease• Food safety• Market access• Financial • Social • Environment	<ul style="list-style-type: none">Reduced disease incidence• Reduced chemical & antibiotic use• Increased opportunity for market access• Improved profits• Access to bank credit• Reduced risk to small-scale farmers• Increased communication and harmony among farmers• Reduced pollution• Increasing awareness on environment





Certification/ standards: the dilemma facing Asian aquaculture

- Asian aquaculture predominantly small scale
 - Difficulties in dissemination of BMPs
 - Difficulties (initial) in adoption of BMPs by small scale farmers
- However, experiences with shrimp farmers in India most encouraging
- The message is being spread to other commodities
- Small scale farmers are more adaptable contrary to the popular (outside) belief
 - It is their livelihood
 - They are the keenest to keep going





Conclusions

- Aquaculture is likely to be the main avenue for sea food supplies
- The sector is keeping pace with demands from globalization
- The nature of the operations of the sector in Asia will remain grossly unchanged
- The sector will increasingly comply to:
 - Social justice/ responsibility and equity
 - Develop means of reducing dependence on use of physical and biological resources
 - Will pay heed to maintaining environmental integrity
 - Will pay heed to minimizing impacts on biodiversity





Network of Aquaculture Centers in Asia-Pacific

Thank you all

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