



Work plan 2015+

Livelihoods and food security for rural communities

Network of Aquaculture Centres in Asia-Pacific





Asian Aquaculture in Perspective

Vital to food security

Wild fisheries are now fully exploited. By 2025 the world will need another 40-60 million tonnes of fish just to maintain the per capita consumption at current levels.

This demand can only be met through responsible aquaculture. Aquaculture accounts for almost half of global food fish consumption, and this contribution is growing.

Fish is often the only affordable source of animal protein available to the poor in developing nations. Aquaculture plays an important role in human health and nutrition by providing low-cost animal protein and essential nutrients to nutritionally challenged people in the developing world.

Asia accounts for 88% of global aquaculture production

Global aquaculture production in 2012 was estimated at 66.6 million tonnes, valued at US\$137.7 billion. More than 88% of this was produced in Asia, by volume. Within the Asian region approximately 54.6% of all food fish came from farms rather than fishing.

Small-scale farms

Asian aquaculture is characterised by small-scale family-operated farms that are typically less than one hectare in area. The sector is a major source of income and employment for rural communities. In 2012, about 18.2 million people (both men and women) were directly employed.

The small-scale nature of the sector poses special challenges in confronting issues such as globalisation, international trade, maintaining environmental integrity and the looming threat of climate change.

► About NACA

What NACA is

The Network of Aquaculture Centres in Asia-Pacific is an intergovernmental organisation that promotes rural development through sustainable aquaculture and aquatic resources management. NACA seeks to improve the livelihoods of rural people, reduce poverty and increase food security. The ultimate beneficiaries of NACA are farmers and rural communities.

How it works

NACA implements development assistance projects in partnership with research centres, governments, development agencies, farmer associations and other organisations. NACA supports technical exchange, capacity building, institutional strengthening and policies for sustainable aquaculture development and aquatic resource management.

Organisational structure

The network is coordinated and administered by a Secretariat based in Bangkok. NACA policy is determined by its Governing Council, consisting of member government representatives, which meets annually to articulate needs and set



Employment for rural communities: Collecting giant freshwater prawn broodstock, Bangladesh.

priorities. The NACA work plan is developed by a Technical Advisory Committee, formed from independent technical experts. The work plan is implemented by a network of research centres in collaboration with governments, donor agencies, farmer associations and NGOs.

Membership

Government membership of NACA is via accession to the NACA Agreement, an international treaty. The agreement also provides for associate membership by intergovernmental organisations and donor agencies.

“NACA seeks to reduce poverty and improve the livelihoods and food security of rural communities”.

► Members and centres

Member governments

Current member governments of NACA are:

- Australia
- Bangladesh
- Cambodia
- China
- Hong Kong SAR, China
- India
- Indonesia
- Islamic Republic of Iran
- Democratic People's Republic of Korea
- Lao People's Democratic Republic
- Malaysia
- Maldives
- Myanmar
- Nepal
- Pakistan
- Philippines
- Sri Lanka
- Thailand
- Vietnam

Associate members

- Secretariat of the Pacific Community
- Network of Aquaculture Centres in Central and Eastern Europe
- Asia-Pacific Association of Agricultural Research Institutions

“Twenty-five years of operation has proven NACA to be a successful model for facilitating sustainable aquaculture development.”



The introduction of better management practices has improved shrimp harvests and reduced environmental impact, Aceh, Indonesia.

Participating centres

The core of NACA is a collaborative network of aquaculture research centres distributed throughout the region. Participating centres share their expertise and facilities for mutual benefit, to avoid duplication of effort and to maximise return on limited R&D resources.

The network is also underpinned by five Regional Lead Centres, which serve as support hubs for others in the network.

Research centres that wish to formalise their participation in the network may do so via MOU with the Secretariat. Please write to info@enaca.org for more information about the process.

► Key achievements

Human resource development

NACA's Training Programme has played a key role building regional capacity in aquaculture development. Since the early 80s, more than 2,500 people have participated in NACA's training activities. Many alumni are now leaders and senior officials in governments, development agencies, academia and industry.

Global policy development

NACA has been at the forefront of international aquaculture policy, convening milestone consultations on development such as the *Global Conference on Aquaculture 2010* and producing guidance on key transboundary issues, such as the *International Principles for Sustainable Shrimp Aquaculture* and the *Technical Guidelines on the Responsible Movement of Live Aquatic Animals*.

Aquatic animal health

NACA pioneered the development of a aquatic animal health network for the Asian region, drawing together governments and technical experts to share information on the detection, containment and management of disease. The network pools technical expertise and laboratory facilities.

“The key to NACA's success is its large network of collaborating research centres distributed throughout the region.”

Better management practices

NACA has been instrumental in the development of guidelines that small-scale farmers can follow to improve crop outcomes and reduce environmental impact. BMPs are available in key production systems for shrimp, striped catfish and culture-based fisheries.



Margarita Lizárraga Medal, awarded to NACA in 2011 by the Food and Agriculture Organization of the United Nations for distinction in application of the Code of Conduct for Responsible Fisheries.

► Work plan 2015+

Work programmes

The mandate of NACA is addressed through five interlinked thematic work programmes that support sustainable aquaculture and aquatic resource management, policy development and inter-governmental cooperation in the region. These are:

- Sustainable Farming Systems
- Aquatic Animal Health
- Genetics and Biodiversity
- Food Safety, Quality and Certification
- Emerging Global Issues

“The NACA work plan is revised to meet changing priorities biannually, on the advice of the Technical Advisory Committee.”

Three additional cross-cutting programmes facilitate and support implementation of the thematic work programmes:

- Education and Training
- Gender
- Information & Communications

Implementation

The work plan is implemented through the development of collaborative projects and activities by partners in the network, addressing issues of common or regional interest.

Individual projects draw heavily on the personnel and facilities of participating centres. Projects are essentially implemented by the centres with the Secretariat acting as a coordinating body.

NACA also works in close cooperation with FAO, international donor agencies and other regional and international organisations in implementing the work plan.

Harvesting a small pond in Mymensingh, Bangladesh. Fish accounts for 60-80% of the animal protein consumed by the population.



► Sustainable Farming Systems

Global population is forecast to reach around 9 billion by 2050. To feed the world, global agricultural output must increase by around 60% from present levels. This must be achieved against a background of increasing competition for natural resources such as water, feed ingredients and farming sites.

Maintaining environmental integrity while massively increasing food production will require farming systems to reduce their unit production environmental footprint. Many farming practices that are regarded as sustainable today will not be acceptable when scaled up.

Sustainable intensification of aquaculture means doing more with less. The Sustainable Farming Systems Programme aims to help aquaculture become a more efficient user of natural resources, both in terms of farm productivity and environmental efficiency.

The programme develops better management practices for major aquaculture farming systems, and promotes aquaculture as a secondary or additional use of water resources. The programme

“NACA has played a key role in developing small-scale marine finfish aquaculture technology and better management practices for shrimp aquaculture.”



Small-scale marine fish farming provides livelihoods for isolated communities, Koh Yao Noi island, Thailand.

focuses on practical interventions that can be directly achieved by small-scale farmers in a developing country context.

Key activities

- Development of better management practices for key aquaculture production systems
- Organising small-scale farmers into associations to facilitate cluster-based approaches to extension
- Development of culture-based fisheries as a secondary use of water bodies
- Development of strategic policy frameworks to guide governments and development agencies in promoting sustainable intensification of aquaculture

► Aquatic Animal Health

The Aquatic Animal Health Programme assists members to reduce the risks of aquatic animal disease impacting the livelihoods of farmers, national economies, trade, environment and human health by:

- Improving regional cooperation in aquatic animal health and welfare
- Developing and implementing national strategies on aquatic animal health
- Improving surveillance, reporting and response to disease emergencies
- Promoting harmonisation of diagnostic procedures and risk assessment
- Widespread promotion of better aquatic animal health management practices at the farm level

Key activities

- Coordinating the annual meeting of the Asia Regional Advisory Group on Aquatic Animal Health and bringing regional issues to the attention of global standard setting bodies such as the Office International des Epizooties



Simple changes in management practices have vastly improved crop outcomes for small-scale farmers.

- Establishment and expansion of a three tier shared regional resource base in aquatic animal health
- Development of farm-level health management tools for key aquaculture commodities
- Supporting regional disease surveillance and reporting
- Strengthening aquatic animal health capacity and biosecurity in the region
- Facilitating harmonisation in disease diagnostic techniques
- Developing resource material in support of disease diagnosis and surveillance

“Implementation of practical national aquatic animal health strategies will minimise the impact of disease and support development of sustainable aquaculture.”

► Genetics and Biodiversity

The Genetics and Biodiversity Programme supports member states to improve scientific knowledge of aquatic genetic resources and to guide strategic planning in their management. The programme addresses both the conservation aspects of genetic resources and their responsible usage in aquaculture to minimise impacts on biodiversity and wild strains and to assist members to meet their obligations under international treaties.

The programme promotes international linkages between member states, capacity building, research programs to develop improved strains of finfish and shellfish, genetic characterisation of existing strains, adoption of new genetic tools and technologies and consortia regional programmes to address common issues, species and strains of value from conservation and/or aquaculture perspectives.

Key activities

- Building capacity in aquatic genetic resource management and application of new molecular technologies, tools and strategies



Threatened mahseer. NACA developed the region's first comprehensive genetic management plan addressing both wild and captive stocks in Sarawak, Malaysia.

- Characterising aquatic genetic resources to discover species, stocks and valuable genomic resources
- Facilitating national and regional programs for domestication, genetic improvement and conservation
- Applying conservation aquaculture models to support diversification, fishery enhancement and in-situ conservation of indigenous fish species
- Facilitating responsible exchange of germplasm, safe propagation and access-benefit sharing

“Management of genetic resources is a particularly important issue for developing countries that are heavily dependent on their natural resource base.”

► Food Safety & Certification

Food safety is a key concern for international trade in fish products. The constantly changing regulatory environment and safety requirements of importing countries pose a special challenge to small-scale aquaculture producers.

The programme assists members to assure the safety and quality of aquaculture products through the adoption of science-based better management practices. Policy issues concerning aquaculture certification and activities in market access are also addressed.

The programme focuses on assisting small-scale farmers to adapt to the changing trade and safety environment. Cluster-based management approaches and formation of farmer societies are promoted as practical mechanisms for implementation of better management practices.



“Adoption of better management practices can significantly improve food safety and quality, and provide a basis for product certification.”

Key activities

- Evaluation of commodity-specific better management practices for meeting domestic and international food safety standards
- Facilitating establishment of national residue testing and monitoring programmes and sharing of information amongst member countries
- Improving access to markets by small-scale farmers
- Improving market development for low-cost aquaculture commodities
- Address biosecurity and associated human health issues regarding the consumption of fish and processed products
- Development of farmer groups and cluster-based certification concepts and methodologies

NACA is working to help address food safety through the entire market chain from hatchery to consumer.

► Emerging global issues

The Emerging Global Issues Programme provides policy guidance on key strategic and emerging issues such as climate change, energy efficiency and alternatives to use of fish meal in aquaculture feeds.

The programme endeavours to bring to public domain the positive aspects of aquaculture as a significant contributor to food security and the livelihoods of rural communities, and actively promotes south-south cooperation.

Key activities

- Development of projects and policy guidance on emerging issues of regional interest
- Contribute to the global dialogue on use of fish meal and oil in animal feeds and resource usage in the reduction industry



“NACA assists member governments to reach consensus and collaborate in addressing global issues of common interest.”

- Providing a regional platform for members to develop common policies and strategies to address emerging global issues
- Facilitating the development of an environmental monitoring system to strengthen fisheries and aquaculture resilience and to improve early warning in the lower Mekong Delta
- Evaluating the vulnerabilities of aquaculture systems to climate change
- Strengthening adaptive capacities of small-scale resource-poor farmers to the impacts of climate change
- Adaptive learning and management in community fish pond and school fish pond projects
- Playing a catalytic role in south-south cooperation in aquaculture development
- Communication of success stories in aquaculture

Climate change will affect aquaculture systems world wide. NACA has begun research that will help farmers prepare and adapt.

► Education and Training

The Education and Training Programme assists capacity building among NACA members through the exchange and sharing of knowledge and skills between members.

Activities may take the form of training courses, study visits and personnel exchange. The programme also supports the training components of the other thematic programmes and serves as an outreach arm of NACA.

Regular training activities include three to four courses each year on various topics of regional priority in aquaculture development, such as:

- Broodstock Management in Aquaculture
- Aquaculture Business Management
- Marine Finfish Seed Production
- Aquaculture Governance and Planning
- Management for Sustainable Aquaculture Development.

Building capacity in the use of molecular genetic tools for inland fisheries and aquaculture management, Kasetsart University, Thailand.

“Capacity building at all levels is an essential requirement for sustainable development.”

Key activities

- Identifying training needs for aquaculture development in NACA members
- Identifying and organising relevant expertise and capacities to meet the training needs
- Developing training modules and materials
- Facilitating routine education and training activities of NACA
- Facilitating and coordinating exchange programmes among members and with other regions



► Gender

The Gender Programme was established to ensure that NACA implements the action plans on gender mainstreaming within its activities. With a continued interest in embracing gender integration among relevant agencies, NACA aims to build up capacity of members in gender mainstreaming in all its undertakings, and motivate support and action globally.

Insufficient capacity for gender research and application among stakeholders is a hindrance to effectively implement programs integrating the gender dimensions in development. Adding a gender dimension in aquaculture value chains will give assurance to consumers that seafood has been produced sustainably.

Key activities

- Women, Youth and Aquaculture Development Programme
- Organising and supporting symposia on Gender in Aquaculture and Fisheries
- Capacity building on gender integration and mainstreaming

“Culture-based fisheries in small water bodies are an effective way to improve the food security and livelihoods of rural communities.”



Women play a key role in aquaculture value chains. Marketing fish from environmentally friendly wastewater fed aquaculture, Kolkata, India.

- Curriculum development on Gender in Aquaculture and Fisheries Education
- In-country gender assessment reports for policy, action and research
- Publication of case studies and success stories on gender in aquaculture value chains
- Coordinating the Regional Gender Practitioners' Network and Mentoring programmes
- Campaigns and policy advocacy for gender integration in aquaculture

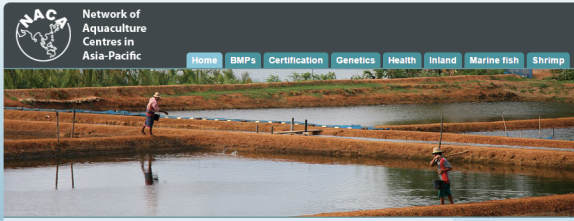
► Information & Communications

The Information & Communications Programme extends the outputs of the NACA work programmes to the aquaculture community at large and provides a platform for sharing information and experience. The major focus of the programme is on electronic publishing and extension. All NACA news and publications are made available for free download via the NACA website. The programme also assists partner organisations to build their own capacity in electronic publishing.

Key activities

- Communicating the outputs of the NACA thematic work programmes
- Supporting expertise-oriented networks and sharing of expertise between individuals, institutions and member states
- Strengthening cooperation and coordination among member government agencies, external partners and the private sector
- Building the capacity of partner organisations in website management and online publishing
- Producing audio and video podcasts of technical presentations given at regional aquaculture meetings
- Building a regional web-based GIS on Asian aquaculture
- Production of NACA's serial publications, including Aquaculture Asia Magazine and the NACA Newsletter

“Visit www.enaca.org for the latest aquaculture news, publications and projects in the region.”



Network of Aquaculture Centres in Asia-Pacific

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Sustainable aquaculture and aquatic resource management

2nd International Symposium on Aquaculture and Fisheries Education (ISAFE2)

The 2nd International Symposium on Aquaculture and Fisheries Education (ISAFE2) is jointly organised by the Asian Fisheries Society and Shanghai Ocean University. The symposium will be convened at the SHOU campus at in Shanghai from 22-24 April 2015.

ISAFE2 will bring educators, distinguished speakers and training agencies from across the aquaculture and fisheries industries, teaching institutions and education regulatory agencies to discuss many critical issues pertaining to the needs of the industry on the one hand and the issues confronting the training, academic and education regulatory agencies in ensuring a sustainable well-educated industry sector on the other in the Asia-Pacific (AP) region

Headlines

- Gender Assessment Synthesis Workshop (14/19/2014)
- Report on Sustainable Fisheries and Aquaculture for Food Security and Nutrition (17/8/2014)
- Job vacancy: Fish Viet Group, veterinarian (3/17/2014)
- Applications: Second Regional Training Course on Broodstock Management in Aquaculture, 10-17 October (3/17/2014)
- Call for Expressions of Interest (consultancy): Evaluation of FAO's work on genetic resources (25/7/2014)
- National Fish Day, Cambodia (9/7/2014)
- A new and improved PCR method for detection of AHPND bacteria (18/6/2014)
- Shrimp EUSARHPND – Special Session (2/15/2014)
- Inbreeding and disease in tropical shrimp aquaculture: a reappraisal and caution (13/5/2014)
- WAS Adelaide: Special Session on Regional Cooperation for Improved Biosecurity (8/5/2014)

New publications

- Aquaculture Asia Magazine, Vol. XXX No. 2, April-June 2014 (25/9/2014)
- Proceedings of the International Symposium on Small-scale Freshwater Aquaculture Extension (19/6/2014)
- Aquaculture Asia Magazine, Vol. XXX No. 1, January-March 2014 (25/7/2014)
- Acute Hepatopancreatic Necrosis Disease Cards (updated June 2014) (27/6/2014)
- Quarterly Aquatic Animal Disease Report Q4 2013 (6/5/2014)
- NACA Newsletter, April-June 2014 (23/4/2014)
- NACA Newsletter, January-March 2014 (2/4/2014)
- Aquaculture Asia Magazine, Vol. XVIII No. 4, October-December 2013 (20/9/2014)
- Report of the 12th Meeting of the Asia Regional Advisory Group on Aquatic Animal Health, 11-13 November 2013 (24/2/2014)
- Quarterly Aquatic Animal Disease Report Q3 2013 (16/2/2014)

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► Selected Publications

“All our publications are free. More than a million copies have been downloaded from the NACA website since 2004.”



Aquaculture Asia Magazine. Published quarterly by NACA, includes NACA Newsletter. ISSN 0859-600X.

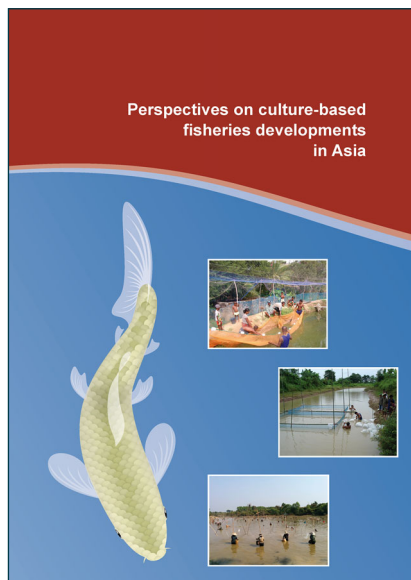
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FAO/NACA, 2012. Farming the Waters for People and Food. Subasinghe, R.P., Arthur, J.R., Bartley, D.M., De Silva, S.S., Halwart, M., Hishamunda, N., Mohan, C.V. and Sorgeloos, P.(eds.). *Proceedings of the Global Conference on Aquaculture 2010, Phuket, Thailand, 22-25 September 2010*. FAO, Rome and NACA, Bangkok, 896pp.

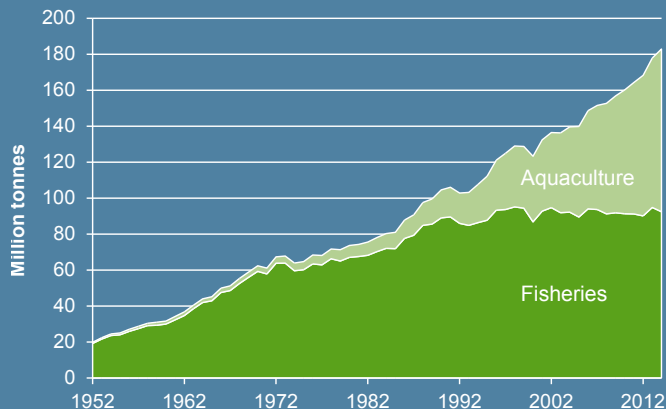
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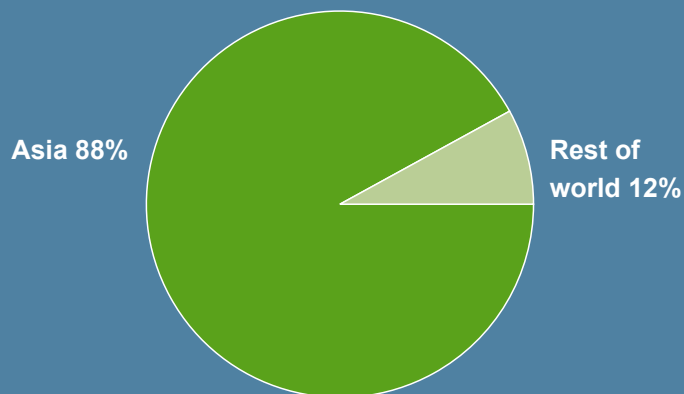
Nguyen, T.T.T., Hurwood, D., Mather, P., Na-Nakorn, U., Kamonrat, W., Bartley, D., 2007. *Manual on Application of Molecular Tools in Aquaculture and Inland Fisheries Management. Part 1. Conceptual Basis of Population Genetic Approaches*. 80 pp. ISBN: 978-974-88246-1-1; Part 2. Laboratory Protocols, Data Management and Analysis. 134 pp.



Relative contributions of fisheries and aquaculture to global fish production



Global aquaculture production volume by region 2012 (percent share)



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The NACA Secretariat

PO Box 1040
Kasetsart University Post Office
Ladyao, Jatujak
Bangkok 10903
Thailand

Phone: +66 2 561 1728
Fax: +66 2 561 1727
Email: info@enaca.org