



Network of Aquaculture Centres in Asia-Pacific

**Report of the Inaugural Inception Workshop of the Project,
“Strengthening Adaptive Capacities to the Impacts of Climate Change in Resource-
poor Small-scale Aquaculture and Aquatic Resources-dependent Sector in the
South and South-east Asian Region’**

**19th-20th March 2009-03-20 NACA Secretariat,
Bangkok, Thailand**

1 Background:

1.1 Project initiation

The project, ***“Strengthening Adaptive Capacities to the Impacts of Climate Change in Resource-poor Small-scale Aquaculture and Aquatic Resources-dependent Sector in the South and South-east Asian Region”***, developed through the Network of Aquaculture Centres in Asia-Pacific (NACA), in consultation with Akvaplan-Niva (Akvaplan), Norway, Bioforsk, the Norwegian Institute for Agricultural and Environmental Research, Norway, Kasetsart University (KU), Thailand, and participating country partners was formally submitted by NACA to the Norwegian funding Agency, Norad, through the Royal Norwegian Embassy in Thailand on 28th September, 2008.

The project was formally approved by Norad, and a funding agreement between NACA and Norad was signed off by both parties on 25th December 2008. In accordance with the above agreement a total of 9,561,200 Norwegian Kroner (Nkr), equivalent to 1,187,727 Euros (based on the exchange rate prevalent at that time) will be made available for executing the project activities over a period of three years, to be coordinated by NACA.

2 Workshop

The inaugural inception was the first activity of the project, and was scheduled for the 19/20th March 2009, in consultation with the prospective project partners.

2.1 Pre- workshop activities

As a pre-requisite for the project NACA proceeded to liaise with the project partners, Akvaplan, Bioforsk and KU, as well with NACA Country focal points to finalize the proposed schedule as well as obtain nominations for country participants. NACA in view of its informal consultations with Fisheries, Victoria, Department of Primary Industries, Victoria, Australia, on potential collaboration in project activities, also extended an invitation to Fisheries, Victoria.

On completion of the above formalities a Tentative Agenda for the Workshop as a as well as a potential Participant List was circulated, and feedback obtained, and the former amended accordingly, followed by a Prospectus, which included an Introduction to the project, objectives and deliverables, revised agenda and a potential participant list.

2.2 Workshop

2.2.1 General aspects

NACA (SSDeS) welcomed all the participants (Annex I) and introduced the project and clarified the role of NACA in this project as well as its overall involvement in Climate Change Impacts on Aquaculture, which is pursued under the new work programme, “Emerging Global Issues”.

NACA also explained that it has proceeded to negotiate with Fisheries, Victoria, Department of Primary Industries, Victoria, Australia, of the possibilities of collaboration and supporting the project through providing assistance to NACA in project management.

NACA also informed the workshop that it has succeeded in negotiating with Wageningen University, The Netherlands for providing a “sandwich” PhD scholarship to Mr. Nguyen Lam Anh in which his research will be on the modelling on flooding and salinity intrusion in the Mekong Delta, which are likely to impact on many of the aquatic farming activities in the Delta.

The Agenda followed at the workshop is given in Annex II, and on the first day of a total of 17 presentations were made that conformed to three major themes:

- Institutional Profiles,
- Aspects on General Methodologies of potential applicability in the project, and
- Country Profiles.

The relevant power points of the presentations made are reproduced in “read only” format in Attachment 1.

Each of the presentations was followed up by a discussion when participants sought clarification on various issues, with special emphasis been laid on clarifications, the need to define, as far as possible the climatic impact variables that were to be addresses in each of the country work packages, and some of the definitions that were included in the presentations.

All in all, the presentations permitted participants to recognise some of the key issues that were relevant to each of the countries, and the manner that these could be addressed and tackled in the course of the execution of the project.

2.2.2 Definitions

The main definitions that were agreed upon for the broad framework of execution of the project are as :

2.2.2.1 Vulnerability and adaptability

Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity” (IPCC 2001, p.995).

Vulnerability can thus be defined as a function of exposure, sensitivity, and adaptive capacity, or:

$$\text{Vulnerability} = f(\text{exposure, sensitivity, adaptive capacity})$$

In the IPCC report, exposure is defined as “the nature and degree to which a system is exposed to

significant climatic variations”; sensitivity is defined as “the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli¹”; and adaptive capacity is defined as “the ability of a system to adjust to climate change (including climate variability and extremes), to moderate the potential damage from it, to take advantage of its opportunities, or to cope with its consequences”.

2.2.2.2 Climatic change impacts time frame

For purposes of the project, and to make it meaningful and comprehensible, and pragmatic, from the point of view of the farming communities it was decided that the projections, where relevant, should be up to year 2050, but most preferably for the next 20 years.

2.2.3 The overall project objective

Consensus was reached that the overall project objective was to select suitable and appropriate aquatic farming systems, which provide livelihoods to small scale farmers, in each of the countries that are likely to be impacted and or subjected to different elements of climate change impacts (e.g. sea level rise, flooding, extended drought periods) and to determine/ assess the degree of vulnerability of each system, and to provide guidelines on suitable adaptive measures, ranked according to relevant criteria (e.g. economic, social, etc.) for consideration for adaptation by the communities / policy makers and so forth.

2.2.4 Expected outcomes

Consensus was reached that the expected outcomes of the project will be:

- Sustainable production systems in the wake of CC impacts
 - That would:
 - Secure livelihoods for small scale producers
 - Contribute to regional economies and growth
 - Reduce GG & reduce environmental degradation
 - Contribute to healthy aquatic environments
 - Increased capability to manage change/ impacts
 - Empowers farming communities and increase resilience and well being

2.2.5 Expected deliverables

The expected deliverables from the project are likely to be:

- A knowledge on different scenarios on impacts of climate change impacts, for farming systems and countries
- The impacts of extreme events on aquatic farming systems
- Range of adaptation measures to different climatic change elements

¹ The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise).

- Suggested improvements to practices and or introduction of new practices to maintain livelihoods of aquatic farming systems
- Capacity building measures
- Policy guidelines and tools for development
- A series of publications and reports and associated dissemination materials targeted at different audiences, and of likely value to communities, countries and regionally and that could be useful in policy development and mitigation measures

2.2.6 End users

The workshop of the view the final users of the project findings will include:

- Farmers
- Policy makers
- Managers
- Regional organizations
- Academia\
- NGOs

2.2.7 Choice of country work components/ packages

The workshop reached consensus on the country work packages, except for Nepal and Indonesia, which are to be decided upon in the very near future.

The guidelines that were followed in deciding on country packages were:

- Significance of the farming systems and commodities to the countries/ region
- Some degree of consideration of NACA's previous involvement in each of the countries, and the regional relevance of the choices
- Apparent discernible elements of climatic change impacts on the farming systems
- A cross section of farming systems and commodities farmed

Accordingly, the following Table summarises the farming systems that are to studied in each of the countries, and a brief justifications for each of the choices made.

Table 1. Summary of farming systems and the CC impact elements and the brief reasons for selection		
Country/ Systems/ commodities	CC Impact elements	Justification
Vietnam		
Catfish farming/Mekong Delta	Reduced river flow, sea level intrusion	Extremely important sector; export income; high degree of vulnerability
Shrimp farming/ Mekong Delta	Flooding; extended droughts	Extremely important sector; export income; high degree of vulnerability
India		
Synthesis ; all systems	Extreme climatic events	India appears to have good information on impacts on extreme events on ; as synthesis to be used as a model for all; extended study
Shrimp farming; east coast	Extended droughts	Link to BMP work
The Philippines		
Milk fish farming	Tide surges; flooding	Extremely important sector; high degree of

		vulnerability; applicability elsewhere
Indonesia		
(seaweed and or milkfish farming in tambaks in Aceh)	Extreme weather conditions	New commodity; also linked to previous Aceh work
Nepal		
Reservoir cage culture	To be determined	Livelihood importance; high vulnerability

2.2.8 Country work-plans

The agreed country work plans, for the first 15 months of the project are as follows:

2.2.8.1 Vietnam

In Vietnam it was agreed that the most appropriate farming systems to be considered would be those within the Mekong Delta, the 'food basket' of Vietnam, which is of significance both from a production (volume and economic) and livelihood view points, and equally thought to be much vulnerable due to CC impacts.

- **Farming systems:**
 - *Shrimp farming (on-going MRC project) (Soctrang)*
 - *Cat fish farming (Cantho , Angiang, Vinhlong, Dong Thap)*
- **CC scenarios determination**
 - *Secondary data (rainfall, water level rise, sea water intrusion)*
 - *climatic data- (Patrick)*
 - *possible training programme on use of data bases*
- **Assessment of potential impacts (1 yr)**
- **Socio-economic vulnerability assessment**
- **Work plan development**
 - *Primary data collection (pilot surveys)/ analyses*
 - *Re-assessment of methodologies*
- **Duration- 6 - 8 months**

2.2.8.2 Philippines

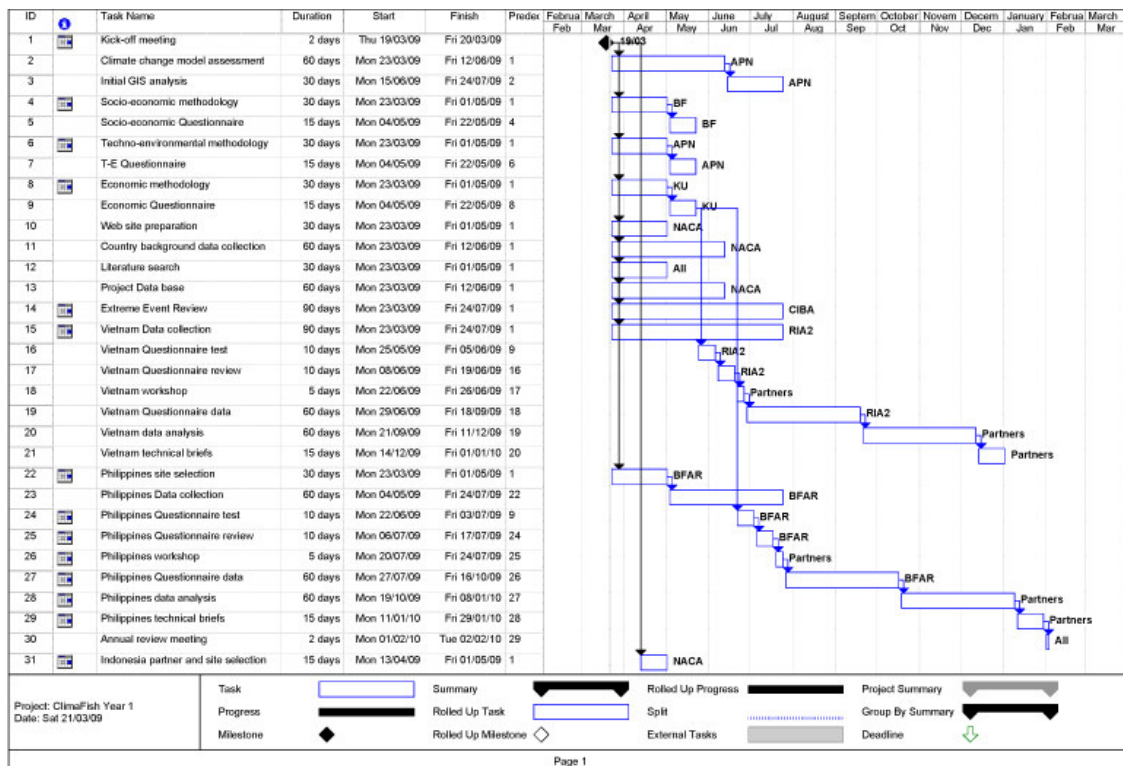
- **Locations**
 - *Brackish water milk fish farming (Pam Panga/ Iloilo/ Bicol)*
 - *Fry collection*
- **BFAR to nominate a focal person and prepare a budget**
- **CC scenarios determination**
 - *Secondary data (rainfall, typhoons, water level rise & inundation)*
 - *climatic data- (Patrick)/ data analyses*
 - *possible training programme on use of data bases*
- **Work starts 2 months after Vietnam**
- **Assessment of potential impacts (1 yr)**
- **Socio-economic vulnerability assessment**

2.2.8.3 India

- **Locations**
 - *Shrimp farming (Andra Pradesh, Kakinada)*
- **CC scenarios determination**
 - *Secondary data (rainfall, monsoon pattern changes, water level rise & inundation)*
 - *climatic data- (Patrick)/ data analyses*
 - *possible training programme on use of data bases*
- **Past information on “extreme events” and impacts on aquaculture, response of stakeholders**
 - *Synthesis*
- **New area- shrimp farming- Andra**
 - *Collaboration of CIBA/ NACSA*
 - *Duration- 6-8 months*
- **Assessment of potential impacts (1 yr)**
- **Socio-economic vulnerability assessment**

2.2.9 Country work plans- summary time lines

It was agreed that it is most realistic to plan for 12 to 15 months of activities for the time being, and be assessed at suitable intervals. The summary of time-lines for each of the activities are given below (kindly prepared by Akvaplan- Patrick White):



2.2.10 Other matters

2.2.10.1 Collation of software

It was agreed that Akvaplan (Patrick White) will collate information on relevant software packages and global data bases related to CC Impacts that are accessible by the public and send to NACA in order to disseminate/ distribute to project partners.

2.2.10.2 Communications

It was agreed that we should avoid global e mails, as much as possible, and that communications be only directed to specific project personnel with a copy to NACA. In this regard NACA is to set up a mail box.

(The mail box has been set up and the address is: fishcc@enaca.org)

2.2.10.3 Literature

A firm decision was not taken with regard to collation and distribution of literature pertaining to CC Impacts, although there was consensus that there should be a depository for this purpose.

(NACA is willing to perform this task and accordingly all participants are expected to send pdf files of relevant publications to fishcc@enaca.org, when an update will be made on a monthly basis and disseminated to all project partners; if not agreeable / any reservations on this arrangements please inform NACA)

2.2.11 Australian inputs

It was most pleasing that Australia, Fisheries Victoria, reckons a close link between the current project and its own initiatives that are being undertaken. In the above context it was agreed that for all intents and purposes Fisheries, Victoria will be project partner, and will immediately contribute to the project through the provision of A\$40,000 per year for appointing a person for project management to be based at NACA.

Annex I

PARTICIPANT LIST

AUSTRALIA	
Frank Greenhalgh Investment Manager, Fisheries Victoria Department of Primary Industries 1 Spring Street, Melbourne 3001, Australia	Tel No: +61-3-9658-4876 Fax No: +61-3-9658-4380 E mail: frank.greenhalgh@dpi.vic.gov.au
Ingrid Holliday Manager Strategic Initiatives Program Leader – Climate Change Program Fisheries & Aquaculture, Department of Primary Industries Victoria, Australia	Tel No: +61 3 9658 4344 Fax No: + Email: Ingrid.L.Holliday@dpi.vic.gov.au
INDIA	
M. Muralidhar Senior Scientist Central Institute of Brackishwater Aquaculture (CIBA) No 75 Santhome High Road, Raja Annamalai Puram Chennai, Tamil Nadu 600 028, India	Tel No: +91 44 2461 8811 +91-984 036 8856 Fax No: 91 44 2461 0311 E mail: muralichintu@ciba.res.in
INDONESIA	
Ir. Tri Hariyanto Director of Fish Health and Environment, Directorate General of Aquaculture Ministry of Marine Affairs and Fisheries Jl Harsono Rm No 3, Gedung B Lt IV Ragunan, Jakarta 12550, Indonesia	Tel/Fax: +62-21 782 7844 E mail: hariyanto003@yahoo.com
NEPAL	
Jay Kishore Mandal Senior Fisheries Development Officer Fisheries Development Center Dhangadhi, Kailali, Nepal	Tel No: +977 984 154 5735 Tel No: +977 091 575 037 Email: jaykishorem@yahoo.com
PHILIPPINES	
Gil Adora Assistant Director for Technical Services, Bureau for Fisheries and Aquatic Resources, PCA Building, Elliptical Road, Diliman, Quezon City, Philippines	Tel No: +63 2 426 6589 +63 917 306 4111 Fax No: +63 2 Email: gi_adora@yahoo.com
THAILAND	
Varunthat Dulyapurk Asst Professor, Faculty of Fisheries, Kasetsart University Ladyao, Jatujak, Bangkok 10900, Thailand	Tel No: + Fax No: + Email: ffsivtd@ku.ac.th
Wara Taparhudee Asst Professor, Faculty of Fisheries, Kasetsart University Ladyao, Jatujak, Bangkok 10900, Thailand	Tel No: + Fax No: + Email: ffsiwrt@ku.ac.th
Methee Kaewnern Asst Professor, Faculty of Fisheries, Kasetsart University Ladyao, Jatujak, Bangkok 10900, Thailand	Tel No: + Fax No: + Email: ffsimtk@ku.ac.th
Sirisuda Jumnongsong Lecturer, Faculty of Fisheries, Kasetsart University Ladyao, Jatujak, Bangkok 10900, Thailand	Tel No: + Fax No: + Email: ffsisdj@ku.ac.th

VIETNAM	
Nguyen Van Hao Director, Research Institute for Aquaculture No 2 116 Nguyen Dinh Chieu – District 1 Ho Chih Minh City, Vietnam	Tel No: +84 8 829 9592 Fax No: +84 8 822 6807 Email: haoria2@hcm.vnn.vn
Nguyen Phuong Thanh Dean, College of Aquaculture and Fisheries CanTho University 3-2 Street, Cantho, Vietnam	Tel No: +84 710 383 2660 Fax No: +84 710 383 8474 Email: ntphuong@ctu.edu.vn
Nguyen Lam Anh Lecturer, Faculty of Fisheries Nha Trang University, Nha Trang 02 Nguyen Dinh Chieu Street Khanh Hoa Province, Vietnam	Tel No: +84 58 471 377 Fax No: + Email: lamanhng202@yahoo.com; anhnl@ntu.edu.vn
Regional/ International Partner Organizations	
AKVAPLAN-NIVA AS	
Patrick White Senior Aquaculture Consultant - AKVAPLAN-NIVA AS Polarmiljøsentret, N-9296 Tromsø, Norway	Tel No: +47 77 75 03 00 +53 475 768 014 Fax No: ++47 77 75 03 01 Email: pw@akvaplan.niva.no
Jocelyn M. Hernandez-Palerud Aquaculture Consultant, AKVAPLAN-NIVA Asst Professor I, University of the Philippines Los Banos, Laguna, Philippines	Tel No: +63 49 536 2557 +63 920 908 2414 Email: jmhernandez@uplb.edu.ph jughernandez@gmail.com
BIOFORSK	
Nils Vagstad Research Director, Bioforsk Norwegian Institute for Agriculture & Environmental Research Fr.A. Dahls Vei 20, 1432 Ås, Norway	Tel No: +47 9075 4241 Fax No: +47 6494 8110 Email: nils.vagstad@bioforsk.no
Udaya Sekhar Nagothu Senior Researcher, Bioforsk Norwegian Institute for Agriculture & Environmental Research Fr.A. Dahls Vei 20, 1432 Ås, Norway	Tel No: +47 9901 5621 Email: Nagothu.udaya.sekhar@bioforsk.no
Per Stalnacke Senior Researcher, Bioforsk Norwegian Institute for Agriculture & Environmental Research Fr.A. Dahls Vei 20, 1432 Ås, Norway	Tel No: +47 9320 2520 Fax No: + Email: per.stalnacke@bioforsk.no
Food and Agriculture Organization (FAO)	
Miao Weimin Aquaculture Officer FAO Regional Office for Asia and the Pacific Maliwan Mansion, 39 Phra Atit Rd Bangkok 10200, Thailand	Tel No: +66-2 697 4000 Fax No: +66 2 697 4445 Email: Weimin.miao@fao.org
International Institute for Sustainable Development	
F Brian Davy Senior Fellow, International Institute for Sustainable Development (IISD) Ottawa, Ontario, Canada	Tel No: +1 613 738 4629 Fax No: +1 613 238 8515 Email: bdavy@iisd.ca

Royal Norwegian Embassy	
Chatri Moonstan Senior Program Officer (Development Cooperation) Royal Norwegian Embassy, Bangkok, Thailand	Tel No: +66 2 204 6533 Fax No: + Email:
Network of Aquaculture Centres in Asia-Pacific	
Sena S De Silva Director General Network of Aquaculture Centres in Asia-Pacific (NACA) PO Box 1040, Kasetsart Post Office, Bangkok 10903, Thailand	Tel No: +66 2 561 1728 Fax No: +66 2 561 1727 Email: sena.desilva@enaca.org
CV Mohan R & D Manager Network of Aquaculture Centres in Asia-Pacific (NACA) PO Box 1040, Kasetsart Post Office, Bangkok 10903, Thailand	Tel No: +66 2 561 1728 Fax No: +66 2 561 1727 Email: mohan@enaca.org

Agenda

Day 1: 19th March 2009

0830-0930	Welcome ; Getting to know each other	
	NACA & CC Impact Initiatives of NACA	Sena S De Silva
0915-1030	Institutional profiles (+ involvement in other CC studies; Introduction to methodologies)	
	Introduction to the NACA Work Program	C.V. Mohan
1030-1100	Tea/ Coffee Break	
1100-1230	Akvaplan-niva ÅS, Tromso, Norway	Patrick White
	Role of Akvaplan-niva and proposed methodology	
	Bioforsk - the Norwegian Institute for Agricultural and Environmental Research, Ås, Norway	Nilds Vagstad
	Tasks, Proposed Methodology and Approach	Udaya Sekhar Nagothu
1230-1330	Lunch Break	
1330-1500	Faculty of Fisheries, Kasetsart University	Varunthat Dulyapurk
	Fisheries Victoria, Australia: Institutional Profile & Climate Change Initiatives	Frank Greenhalgh Ingrid Holliday
1500-1530	Coffee/ Tea Break	
1530-1730	Country Profiles	
	The Philippines	Gil A. Adora
	Philippine Case study Component	Jocelyn Hernandez
	Vietnam: Mekong Delta- Catfish Farming	Nuguyen Phuong
	Vietnam (2); Propose Work Plan for PhD Study	Nguyen Lam Anh
	Indonesia	Tri Hariyanto
	Nepal	Jay Kishore Mandal
	India	Muralidhar
	Dinner Hosted by NACA	
	Day 2 : 20th March	
0830-0900	Climate Change : Norad Interests and inputs	Chatri Moonstan

0900-1000	Summary of Proceedings ; Main points for Discussion; Development of Works Plan	Sena De Silva
1000-1030	Coffee / Tea Break	
1030-1230	General Discussion; moving forward; country inputs	
1230-1330	Lunch	Sena De Silva
1430-1530	Finalization of country work packages; Discussion of Administration of the Project; Country Responsibilities; Institutional responsibilities; Reporting Mechanisms	
1530-1600	Potential Fisheries Victoria inputs into the Project Report Closure	Frank Greenhalgh