



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



**WorldFish**  
**2013 technical report**

## 1. Activity Reporting

### Activity 710-2013 (Milestone 2.1.3 2013 (1).)

**Title:** To identify innovations for the management of climate-related risks.

**Status: Partially complete.** The Smart Farm project in Bangladesh has been underway for 2 years and their report, 'Climate-smart management of aquatic farm ecosystems in coastal regions of Bangladesh (SmartFarm) ' was submitted in December 2013 (see Deliverables). SmartFarm is being implemented in four villages of three districts in southern Bangladesh: A. Jagannathpur, in Jhalokati district, Rajapur upazila and Suktagarh union B. Gabgachia, in Bagerhat district, Morrelganj upazila and Daibgha union C. Chandipur, in Satkhira district, Shyamnagar upazila and Shyamnagar union, in replacement of Harikhali, in Khulna district, Paikgacha upazila and Soladana union D. Dumuria, in Satkhira district, Shyamnagar upazila and Gabura union Four project officers (two men and two women) are currently working in the four villages. The new project manager joined in September 2013, and a consultant plays a supporting role for the Farmer Field School (FFS) activities. The project manager is responsible for supervising the day-to-day activities of project officers from the Khulna office. The consultant developed the FFS curriculum and assists in the design and implementation of the participatory action research. The first season of the FFS ended in June 2013 with the organization in each village of a Farmer Field Day. The first FFS season was followed by an inter-season, from July to October, and the winter season started in November. Multifarious data have been collected on the fish sanctuary study, including a survey on catch and consumption, measurement of dissolved oxygen and temperature in nine selected rings, and observations on fish behavior observation made by school children in the same rings. The Institute of Water Modeling was hired to provide inundation maps, land elevation maps, and water level data. Several education initiatives have also taken place. A poster to explain the use of the fish sanctuaries to farmers was developed, as well as a drama performed by school children to raise awareness about the potential of the fish sanctuaries and the importance of community conservation. Three signboards reading, "Do not catch the indigenous small and egg-bearing fish from the beel or any other water body by net or other means for its smooth growth and reproduction" were requested by a local fisheries officer to be placed in the three different areas of the study side. The inter-program study on shaded ponds continued, with ponds being stocked and data collected and monitored. The construction of the climate-smart house is a real highlight. The handover of the house to the beneficiary was delayed by the political unrest but will now take place in early 2014. A participatory theory of change (ToC) was developed in two of the four villages (in saline and high saline areas) in order to develop a participatory monitoring and evaluation (M&E) system for SmartFarm, and to constitute an example of participatory theories of change that could potentially be replicated in other WorldFish projects. Finally, a national workshop on index-based insurance (IBI) was organized in Dhaka on September 8-9 2013, leading to the creation of a community of practice in Bangladesh and contributing to the creation of a CCAFS community of practice on IBI. The EU funded, 3 year duration, bilateral project on 'Implementing an ecosystem approach to fisheries (EAF) in small-scale tropical marine fisheries' is entering its final year. The target groups are members of coastal communities, including women, in focal sites who rely on coastal habitats as an important source of livelihood and nutrition, managers of marine protected areas (MPA) and fisheries non-governmental organizations, national and local government. The beneficiaries are members of these coastal communities.

Broader benefits will accrue to the regional and national economies of target countries through improved SSF management. The first year focused on 'diagnoses' with the selected fishing communities. Specific objectives are to:

- Assess existing institutional arrangements and understand how an EAFM can overcome barriers to effective small-scale fisheries management;
- Develop EAFM strategies and actions for small-scale fisheries management suitable for developing country contexts, and;
- Strengthen the capacity of local fishery stakeholders and government agencies to collaborate and work within an EAFM.

The project began on February 10th 2012. A second Executive Board Meeting was held in February 2013 in Penang, which was attended by representatives from all four countries involved. The main objective was to outline and discuss in-country implementation plans for 2013 and 2014, and to find ways to better harmonize the work taking place in what are (albeit all tropical) widely contrasting study sites. The most encouraging results of the activities so far in my opinion (DB) relate to the formation (precipitated by WorldFish staff and Partners) of 'management constituencies' between project staff and local stakeholders. In Lombok, for example, we are collaborating with the Wildlife Conservation Society to improve management of the Gili Matra National Marine Park. In the Philippines our work with the Iligan Bay Alliance has resulted in an investment of P 100,000 into the Ecosystem Approach to Fisheries Management by local government bodies. It is only by working carefully with national and local governments and all other relevant stakeholders that the current Project/Action can have any hope of improving fisheries management. The context in Tanzania and the Solomon Islands is slightly different in that opportunities for EAFM are more ad hoc (less integrated into changing government policy). In these cases, our focus has been on identifying and understanding existing management constituencies, which could take on the role of leading EAFM. In Tanzania the team are investigating the history of and relationships between different community-based organisations, which essentially represent management constituencies orientated around specific components of the social-ecological system, including Beach Management Units (fisheries co-management), Central Co-ordinating Committees (conservation) and Village Environment Committees. The output of science and communication products has been particularly encouraging. Two presentations, showcasing project activities were given at the International People and the Seas Conference in Amsterdam, Louisa Evans presented the project to interdisciplinary scientists at the ARC Centre of Excellence for Coral Reef Studies, James Cook University, Australia, all countries have produced brochures and posters, and the Solomon Islands team are writing a regular Newsletter on EAFM in LangaLanga lagoon. The Tanzanian team have helped WorldFish Communications Department to make a video and photo story describing the challenges and difficulties faced by fishing communities in the face of destructive and illegal fishing methods, e.g. dynamite fishing. Progress has also been made in the authorship of peer-reviewed scientific manuscripts, Len Garces from the Philippines having published two papers this year using data from the current project. Relevant reports, communications products, publications etc. are given elsewhere in the report.

### Gender component:

AAS' Transformative Gender Strategy is very thorough and has formed a core philosophy throughout the current activities. Every activity done during Smart Farm has been orchestrated through the Farmer Field Schools. In these both male and female groups have been formed within which discussions take place. These groups meet weekly, so the work is ongoing. These take into account perspectives from the different groups, viewing each issue through separate male and female lenses. Gender integration is context dependent and must be viewed in this way. In Bangladesh, for example, it is not culturally acceptable for most of the women to work in the fields. So this means that they cannot get directly involved in the fish sanctuary, microhabitat work unless the ponds

are really near their homesteads. Nevertheless women and men, both as family units, have been very much involved in all aspects of the project from promoting the idea among their peers, to collecting data etc. In fields/areas that are traditionally viewed as outside womens' sphere, we have found (Melody pers. comm.) that in order to promote change a good tactic/strategy is to engage women at the outset. Worldfish, for example, organised a workshop to explain the concept and the research around the fish sanctuary project. Typically inviting just men means that just men attend but by inviting women they tend to bring their family along which gives the ownership of the project and exemplifies the importance of participation in household decision making. Similarly the activities around vertical agriculture are all household based and women naturally become the most important participatory researchers. The Climate Smart House presents many unique difficulties and opportunities. It involves the donation of a massive capital asset, which will create problems in a small community. Again Worldfish opted, in conjunction with its partners, to give the house to a household; the selection of which was based on the level of involvement of a particular woman, and her willingness to take part in the research. The specific research activities around the house (gardening, fish farming) will most likely be the premise of the mistress of the house so this makes sense.

### Deliverables:

- Develop methods for equitable (gender-responsive) promotion, adoption, and scaling-up of climate-smart farming methods in AAS

These methods are embodied in the SmartFarm project, the report for which is uploaded in the Deliverables section. A participatory theory of change was also developed for the project and this has also been uploaded. by participatory we mean this was developed by and with the Farmers themselves. The report has also been uploaded.

- Pilot smart farm potential adaptation strategies in coastal and riparian homesteads

The piloting of the potential adaptation strategies is summarised in the report, 'Climate-smart management of aquatic farm ecosystems in coastal regions of Bangladesh (SmartFarm)'. The report has been uploaded to Deliverable 2 of Activity 710-2013. This work has received a very negative evaluation from the South Asia Programme Leader which has also been uploaded. The climate risk management agenda is apparently very weak, and the team is, therefore, currently investigating the root cause of the problem.

- Summarize experience with index-based insurance models used in Bangladesh;

The work started with a scoping report which was converted into the following working document which has been uploaded to the Sharepoint: "Scoping Report:Current status of index-based insurance in Bangladesh" and uploaded to Deliverable 3 of Activity 710-2013. The idea to the scoping report was to act as a precursor to the organisation of a workshop on Index based insurance which was held in Dhaka in September 2013. This workshop was incredibly successful and the report has also been uploaded to the Sharepoint. It has also led to blogs and a very active linkedIn project site which are described under the Communications tab.

- Document current weather prediction, fish prices at auction, sorjan farming, and forecasting systems in Bangladesh;

This report on weather prediction in Bangladesh, "Assessment of Capabilities, Needs of Communities, Opportunities and Limitations of Weather Forecasting for Coastal Regions of Bangladesh" was converted to a formal WorldFish Working Document, and uploaded as part of Deliverable 4 of Activity 710-2013. Similarly the report on Sorjan Farming, "Sorjan farming systems in South-Western Bangladesh: An exploration of the dynamics of the system, productivity and profitability" has also been uploaded.

- Develop integrated EAF implementation strategies (including monitoring & evaluating components)

These have been done, forming part of the 1st Interim Progress Report, "Implementing an ecosystem approach to fisheries (EAF) in small-scale tropical marine fisheries" and uploaded to Deliverable 5 of Activity 710-2013, together with the relevant Appendices.

- Brochures for Philippines, Indonesia, Solomons, and Tz describing EAFM and SSF.

These have been done and uploaded to Deliverable 6 of Activity 710-2013.

- Presentations on EAFM approach to small-scale fisheries at 'People and the Sea Conference (MARE) in Amsterdam in June 2013.

Two presentations were given. The first by Dedi Adhuri entitle Challenges and Opportunities for the Implementation of Ecosystem-based Fisheries Management: An experiment in Lombok Island, Indonesia'. The second entitled, 'Enhancing governance systems through and Ecosystem Approach to Small-Scale Tropical Fisheries: Bagamoyo coastal district, Tanzania' was given by Doug Beare on behalf of the Tanzania team who were unable to attend. Both presentations are uploaded to Deliverables.

#### Partners:

EU; Bogor Agriculture University; RCMFSE; SEARCA; AAS

#### Locations:

South Asia (SAs),South East Asia (SEA),Other,East Africa (EA)

### Activity 712-2013 (Milestone 2.1.3 2013 (2).)

**Title:** Develop and implement climate change adaptations in Lake Chilwa, Malawi, Cambodia and in Khulna District in Bangladesh in support of National Adaptation Plans (NAPAs) by enhancing the capacity of communities to adopt sustainable livelihood and natural resource management practices.

**Status: Partially complete.** The Cage & Pond Aquaculture project in Bangladesh has nearly now finished. A report and fieldwork guide have been uploaded to the Sharepoint but dissemination of results in-country has been delayed due to strikes and and political unrest. A final external stakeholder workshop and a series of internal meetings originally planned for December 2013, for example, will now take place in February 2014. A policy brief following the stakeholder workshop will be prepared following the stakeholder workshop. In East Africa the Chinjanja Triangle project, "Enhancing adaptive capacity to climate change impacts through well-managed water use for aquaculture integrated with small-scale irrigation in the Chinyanja Triangle in Africa (Malawi, Mozambique and Zambia)" has ended and the Final Report is due by the end of February 2014. When available it will be uploaded to the Deliverable section. The Lake Chilwa project is entering its penultimate year. In 2013 work focused on the process of drying fish using solar driers and the report, 'Processing and Economic Efficiency of Solar Driers' has been appended to the Deliverables list. Based on the results of the study, it can be concluded that the fish solar dryers are more efficient during the hot season, followed by cold season and the rainy season. On average, fish require 14 hours, 22 hours and 25 hours during hot season, cold season and rainy season respectively to attain the required 15% moisture content. The study however proved that, in comparison to open sun drying, solar fish driers were not as efficient (in terms of fish drying time). Fish dried in the open sun dried faster than the fish in solar dryers. This could be attributed to the roofing material that has been used in

the solar driers. However, the iron roofed solar dryers had the advantage of reducing post-harvest losses and improving quality in both seasons especially during rainy seasons. It would be important to consider changing the roofing material (iron roofs) to ultra-violet resistant plastic sheets to improve on drying time. It is envisaged that once the roofing material of the solar driers has been changed, the technology would be more efficient. The study has also shown that fish processors usually over dried the fish during processing regardless of the drying method. Fish from both solar driers and open sun when checked for their moisture content, they were all below the recommended 15% moisture content. This implied that more resources were unnecessarily invested in fish processing. The work promised for Cambodia was not done since it was based on the extra tranche of funding mid-2013 which failed, in the end, to materialise.

### **Gender component:**

The Cage and Pond Aquaculture project was specifically designed to investigate how gender inequality influences adaptation decisions in poor households in Bangladesh, through shaping women's and men's uptake and sustained usage of 'climate-smart' aquaculture technologies (fish cages and pond polyculture). The research explored how gender norms, attitudes and practices influence the way women and men assess the opportunities related to these technologies, and whether and how these gendered assessments create barriers to households being able or willing to sustain the activity. The findings reveal how social differences, including gender-specific differences, do indeed shape the entire process of technology dissemination (including identifying recipients, selection processes, modes of implementation, training and support, financial mechanisms, and more). This has significant implications for how individuals, households and communities currently use these technologies and how benefits and consequences are divided – with implications for if and how these technologies will continue to be used in future, among the target group and beyond. The aim is that these findings will improve technology dissemination processes, including targeting to women and households, and also contribute to understanding what technologies are appropriate for which individuals, households, communities and environments to enable scaling-up.

### **Deliverables:**

- Blog reflecting on gender norms (<http://www.worldfishcenter.org/news-events/shes-just-cleaning-lady-reflecting-gender-norms>)

This was written by Miranda Morgan and is also mentioned in the communications section. <http://www.worldfishcenter.org/news-events/shes-just-cleaning-lady-reflecting-gender-norms>)

- Presentation at UC Davis Climate Smart Conference on 'Challenges of Gender Mainstreaming in the Bangladesh Delta landscape'.

This deliverable was a Communication Product. The powerpoint has been uploaded to the Deliverables 2 but it is also on Slideshare (below) and inspired some commentary on both Worldfish and CCAFs websites. At the time I had good feedback from the presentation. <http://www.slideshare.net/worldfishcenter/challenges-of-gender-mainstreamed-analyses-and-development-interventions-in-the-bangladesh-delta-landscape> <http://www.worldfishcenter.org/news-events/challenges-gender-mainstreamed-analyses-and-development-interventions-bangladesh-delta> <http://ccafs.cgiar.org/es/gender-attitudes-and-practices-investigated-bangladesh#.Us-XB7RN-ul>

- Final Report from the BMZ funded Chinjanja Triangle project.

This is due on the end of February and will be uploaded to the Deliverables section then. I also include a presentation about the project given at UC Davis and a Worldfish Project Brief about the project.

- Report describing barriers to female participation in cage aquaculture in rural Bangladesh  
 Report completed and uploaded to Sharepoint. Fieldwork guide supporting the qualitative field research is also uploaded.

- Progress report for (Norwegian funded) the Lake Chilwa project;  
 This project is ongoing and the progress report has been uploaded.

- Training capacity building workshop in Cambodia.

This deliverable was based on the extra tranche of funding promised in June 2013, but which failed to materialise.

**Partners:**

IWMI; Federal Ministry for Economic Cooperation & Development; Ministry of Foreign Affairs

**Locations:**

East Africa (EA)

### **Activity 714-2013 (Milestone 4.1.4 2014 (1).)**

**Title:** Linking knowledge with action in Bangladesh, Solomon Islands, and Timor-Leste

**Status: Partially complete.** This activity was mostly supported by two bilaterally funded projects: (1) the Asian Development Bank (ADB) funded project, "Responding to climate change using an adaptation pathways and decision-making approach", and The ACIAR funded project, "Developing Timor-Leste's coastal economy: Assessing potential climate change impacts and adaptation options" which both worked in Coral Triangle Initiative (CTI) countries, eg. East Timor and Solomon Islands. Final reports of both projects have been appended to the deliverables.

**Gender component:**

WorldFish research in Timor-Leste and Solomon Islands integrated a gendered approach into the methods that were carried out in the field. In all activities, men and women were separated to gather information and assess the differences between male and female experience. Each activity with women was facilitated by a female member of the WorldFish team and attempts were made to include female translators when available. On average, the number of women who attended activities was minimal (see Participants for data per activity). The team experienced difficulties in eliciting information from the women's groups and individual participation was low. Over the course of the WorldFish's research trips, substantial efforts were made to adapt the approach of the activities to allow women's groups time for informal discussions prior to the activity beginning in order to build up trust. Family, community, and livelihood activities were discussed to begin each activity as an introduction to the group setting and to familiarize the women with team members. Time was also given to explain each activity in a smaller group setting, with the understanding that most women present would not have had prior experience with these types of activities. Although the approach had moderate success, and increased participation slightly, given the density of the activities undertaken, information received for the activities remained limited and in certain activities incomplete. In the ACIAR funded project in Timor-Leste a gendered approach to the network mapping activity in particular was abandoned as women who took part in the activity were unable, or unwilling, to provide information on relevant actors, the types of links that exist

between actors or levels of influence these actors have in achieving the specified goal. A decision was reached by the WorldFish team, based on the experience of carrying out nine separate activities over the course of the project field trips, that further gender differentiated groups would not be productive, and it would not be possible to compare women and men networks. This may be due to different involvement in fishing, as this was the focus of the network mapping activity. As an alternative, women continued to be invited to the subsequent activities to participate as one group of both males and females. This was more successful in some communities over others. For example, during the mapping exercise held in Pala, suco Biceli, 5 % were women, and very vocal and comfortable in the focus group setting. From the experience of this project, the team believes that future engagement with women needs to consider a different and separate approach than what has previously been developed and carried out in male groups. It may also require more time to determine what that method is and researchers should be cognisant of the fact that approaches for the same activity will likely have to differ in order to elicit results. It is the teams' understanding that women in Timor-Leste are often not involved in decision making or roles outside of the home, so focus group activities are an unfamiliar platform to engage with for women. This supposition is based on observation and reinforced by information received from communities via other activities, particularly identifying decision makers and network mapping. In each of these activities women were not cited as having decision making power, influence or engaged in any process thereof. Further research may be needed to understand more fully the gender situation in Timor-Leste and to develop appropriate methods for engaging women and capturing their experiences.

#### **Deliverables:**

- Methods manual aimed at guiding stakeholders through the development of a plan for implementing adaptation based on the pathways and decision-focused approach proposed by Wise et al., (in press); it came in the form of 8 brochures which have been uploaded to the Sharepoint. This was in response to feedback in the community.

- Project reports submitted to funding bodies;

These have been uploaded to the relevant location on the Sharepoint.

- ADB Policy Briefing aimed at communicating key findings to Pacific regional organisations and stakeholders; This is done and has been uploaded to the Sharepoint.

- Journal paper detailing the efficacy of the pathways and decision-focused approach applied to Timor Leste coast communities;

This paper has been submitted to Global Environmental Change, last quarter 2013, but will not be published until 2014.

- Specific review of coastal resource management in Timor Leste, to include the production of a vulnerability map, analysis of climate change adaptation and review of policy coherence and data collection for building a basis scenario

This work has been done and is described in the Final Report of the project which has been uploaded to Deliverable 5

- Input to CCAFS high level planning and processes (PaCFS);

Worldfish has not been active in 2013 due to budget and capacity constraints but has plans for more involvement in 2014.

- Participation in high level policy events as appropriate

Worldfish has not been active in 2013 due to budget and capacity constraints but has plans for more



involvement in 2014.

**Partners:**

ADB; AAS; UoD; ARCAB; BFRF

**Locations:**

South Asia (SAs),Other

## **Activity 715-2013 (Milestone 4.2.1 2015 (5).)**

**Title:** Managing the Expansion of Aquatic Food Production in a Future Climate.

**Status: Partially complete.** This work is ongoing. We've not achieved as much as we would like since the budget is so small (55K). We've started to build AAS-BASE, and have set up the geo-spatial help desk which has a variety of roles including providing climate data and projections to other projects. In 2013 we organised two workshops at Worldfish to explore how both aquaculture and capture fisheries (Fishing For a Future) will likely fit into the global food supply in future. Details from both workshops have been uploaded to the Sharepoint, see 715-2013, Deliverable 1 also here ([https://dl.dropboxusercontent.com/u/55911876/Day%201\\_Session%204\\_Setting%20the%20Stage%20%28Drivers%29.pdf](https://dl.dropboxusercontent.com/u/55911876/Day%201_Session%204_Setting%20the%20Stage%20%28Drivers%29.pdf);

[https://dl.dropboxusercontent.com/u/55911876/Day%201\\_Session%202\\_%20Initiative%20Overview%20Presentation%20%28SJH%29.pdf](https://dl.dropboxusercontent.com/u/55911876/Day%201_Session%202_%20Initiative%20Overview%20Presentation%20%28SJH%29.pdf)) Networks and information created during these meetings will greatly help our future researches. Marine Protected Areas, Mangroves and Coral Reefs have been mapped in key CCAFs and AAS hubs, see <http://boblme.reefbase.org>We have invested some time organising the International Comprehensive Ocean Atmosphere data set into AAS-BASE. AAS-BASE is a PostgreSQL database that can be interrogated easily to produce time-series analyses of marine climate variability and change over the last 300 years (e.g. <http://www.flickr.com/photos/theworldfishcenter/8470345660/in/photostream/>). The trends in sea-surface temperature and wind stress in coastal seas around the world are particularly interesting (and alarming). Analyses of these data have already appeared in many of our reports and will form a backdrop when we start investigating how these changes in climate have affected and may effect in future aquatic food production.

**Gender component:**

**Deliverables:**

- WorldFish Center engaged with multi-disciplinary team within CGIAR network

We have started to build the networks necessary. In November 2013, for example, a workshop was organised at WorldFish in November to examine, "Promising Aquaculture Technologies and the Future of Global Fish Supply". The Agenda for this meeting plus the Participant List has been uploaded to the Sharepoint.

- Databases (geo-referenced) for freshwater, delta and coastal ecosystems established (data included will be river flows, fish production, sea-level rise, historical and downscaled climate data and fish value chains; These data are available on two PostgreSQL servers enabled with PostGIS. The location is:<http://aasbase.worldfishcenter.org/phppgadmin/>Access to the server can be gained by contacting Doug Beare (d.beare@cgiar.org).

- Helpdesk for geospatial queries established at WorldFish HQ to aid regional offices and CG centers;

This was set up using Spiceworks <http://gis-support.cslive.org> and the Team responded to over 50 queries during 2013. The email to reach GIS support team is [gis-helpdesk@worldfishcenter.org](mailto:gis-helpdesk@worldfishcenter.org). A news article describing the launch of the site is here: <http://www.worldfishcenter.org/news-events/database-provide-tailored-geographic-data-modeling-solutions>.

- Ecosystems services 'stock-take' for key regions.

This work is ongoing.

**Partners:**

AAS; FAO; TNC; NOAA; BoBLME

**Locations:**

Global

### **Activity 716-2013 (Milestone 4.3.2 2013.)**

**Title:** Investigating the vulnerability of and economics of adapting aquaculture in Vietnam to climate change

**Status: Incomplete.** This Activity is proceeding satisfactorily. Dr Tran has successfully collaborated with Dr Kam, and Vietnamese colleagues (Dr Huang from IWMI & Dr Hien from Vietnamese Southern Water Resource Planning Institute) to complete a Book Chapter (citation given in Publications tab) for CABI (<http://www.cabi.org/>). He also organised a min-conference on climate change research in fisheries and aquaculture in Viet Nam. At this conference 12 papers were presented (see CCAFs sharepoint) which have been synthesised into a Book which is currently, in Press. This process has built invaluable networks between Worldfish and Vietnamese partners, which are already proving useful in the roll out of CCAFs activities in South East Asia. For example we are now going to be co-financing climate change adaptation projects, in the fisheries and aquaculture sectors, funded by the Vietnamese government. Clearly this is the best way for Worldfish, CCAFs and partners to influence development planning and policy in the country.

**Gender component:**

Viet Nam is interesting from a gender relations perspective. In our partner institute, VIFEP, two Vice Directors are female, while in the Research Institute for Aquaculture Number 1 the Director is female. This is unusual in South East Asia and represents an interesting opportunity for further study.

**Deliverables:**

- Technical workshop with NARES and stakeholders to discuss methodology refinement and present initial findings.

This workshop was held in Ha Noi, Viet Nam on 5th and 6th September 2013. All the presentations in English and the associated papers in Vietnamese, but with English titles and abstracts, have been uploaded to the Deliverables section. The papers were amalgamated into a Book which is also on the Sharepoint and available from the link below.

- Peer-reviewed paper on resilience, adaptability, and transformability submitted.

A report, 'Identifying factors Related to Resilience of Aquaculture Development in the Mekong Delta of Viet Nam' has been drafted and appended to the Deliverables section. It is currently in the process of being converted to the peer-reviewed paper promised which is scheduled for submission in 2014.

- Injecting scientific knowledge about climate change into aquaculture development plans

This work is ongoing. Via the mini-conference, publications, and our engagement with the Vietnamese government we hope that policy will be influenced. The book on Climate Change Research described above will be distributed to relevant government officials, researchers, and decision-makers during the Lunar New Year. This is a critical time to network in the Vietnamese calendar. Note : pond aquaculture in Solomon Islands work is relevant here.

**Partners:**

AAS; RIA; VIFEP

**Locations:**

South East Asia (SEA)

### Activity 717-2013 (Milestone 4.1.4 2013 (1.)) Commissioned

**Title:** Undertake regional engagement activities to build strategic partnership with multiple stakeholders that include civil society partners, FOs, government agencies

**Status: Incomplete.** The report is structured around the following TOR: 1. Increase potential for engagement of CCAFS and World Bank in S Asia; enhancing uptake of CGIAR research outputs (two way – getting them out & giving feedback to CCAFS on what is needed). Several activities: Crop yield data provided by CCAFS was published as part of the Bank’s analytical work to identify priorities for increasing agriculture productivity in India; ICRISAT – ABI was contracted to support agribusiness initiatives in the Bank’s flagship agriculture competitiveness and market reform work in India; contracted ILRI senior nutrition and environment specialist to join project supervision mission which included a focus on assessing options for reducing GHG; collaboration with ILRI and FAO to write paper on livestock issues and constraints which included a chapter on climate and environment related issues; feedback of World Bank initiatives related to climate change and food security provided to CCAFS Director (ongoing). 2. Resource mobilization in support of pilot projects addressing areas such as climate resilient agriculture. IFAD financing for best options and practices supporting climate smart agriculture (CSA)(given the priority IFAD gave to this it was financed through programmatic funds to CCAFS); project preparation for project with IFPRI to empower youth which includes training on climate smart agriculture (status, funding released pending project appraisal); secured funding for WorldFish project in Bangladesh which has relevance to building climate resilience for food and nutrition (status, project commenced June and to be complete March 2014); research funding identified for IFPRI to undertake analysis of farmer producer companies which are benefiting from adoption of CSA such as the system of rice intensification (status, funding to be released pending receipt of proposal). 3. Contribute to knowledge sharing of the work of CCAFS through briefs, blogs etc. Attended South Asia meeting focused on enhancing agriculture productivity in Bihar which includes a strong focus on climate smart agriculture and promoted CCAFS climate smart villages; circulate selective material from CCAFS newsletter to Bank colleagues; facilitated meetings between CGIAR and Bank colleagues; CSA examples compiled from participation at CCAFS events in 2012 (Bangkok – NARS partner meeting and to lesser extent Copenhagen as only 2 Centers could provide examples of CSA) were contributed to the FAO et al Sourcebook on Climate Smart Agriculture. 4. Further, given CCAFS reporting obligations to

stakeholders over the next 2-4 years time, to contribute to the achievement of at least 2 of the below or at least have them in sight(i) helping build a portfolio of research that is socially differentiated, and that has impacts on the poorest of the poor and women. This is supported by #1, #2 and #3. (ii) helping foster private sector connections for research and impact; under the Bank's first CSA focused project in India, development and acceptance of concept to move ahead with a soil carbon component to be financed through the Carbon Fund. It is anticipated that implementation would involve the CCAFS. (iii) helping build a strong regional engagement process for impact; relates to #1 and #2. (iv) enhancing capacity development. This relates to #1 and #2. References to publications contributed to or prepared during the reporting periodFAO. 2013. Climate Smart Agriculture Sourcebook. Food and Agriculture Organization, Rome, Italy 570 ppLeitch, H, V. Ahuja and M. Jabbar. India's Livestock Sector - Demand growth, food security and public investment: Issues and Options. In press. World Bank pp46

**Gender component:**

**Deliverables:**

**Partners:**

**Locations:**

## 2. Succinct summary of activities and deliverables by Output level

### Output: 2.1.3

#### Summary:

Throughout Worldfish activities in Theme 2 we have developed and demonstrated the feasibility, acceptability and potential impacts of innovative climate risk strategies. On the Smart Farm project we have explored 'climate smart housing' and a large range of different 'climate smart' agricultural practices, including index-based insurance and landscape modification. Worldfish has also taken social differentiation into account; particularly in the cage aquaculture project where Miranda Morgan and Paula Kantor explored the factors that prevent women from engaging in aquaculture. Further notes below: Our work on landscape modifications in rice fields are increasing resilience (by both ecosystems and communities) to the current and future climatic risks affecting the environment; in particular to changes in water level (including irregular and multiple flooding and drying events before, during and after the monsoon season). We have, as yet, been unable to confirm dramatic changes in the seasonality in, either precipitation or temperature for south-west Bangladesh which is surprising given the statements in much of the related literature. We suspect, however, that this is partly due to the coarse temporal resolution of the data available (typically monthly) which can obscure much of the detail, ie. knowing the number of consecutive dry days. We are working on ways to acquire daily data. It is important either way whether we are examining climate variability or climate change. The data we have collected on landscape modifications in rice fields show that the microhabitats are used by a variety of fish including not only beel residents, but also migratory species; at least from April until December. The high number of juveniles in the microhabitats suggests that they provide, not only a shelter when water level decreases and fish are trapped in the field, but also an appropriate breeding ground. In the context of a changing climate, with projections suggesting that there will be more variations in water level, and a current observed decrease of diversity and productivity of freshwater fish in Bangladesh, this provides the potential to increase seasonal fish productivity and diversity. Data also show that people from this area are not very involved in aquaculture. They only catch fish when available (meaning, when the water level is high enough), and are thus largely dependent on specific weather events, and on fish from the market. The fish species found in the microhabitats are, for the most part, the same species as the ones consumed (and preferred) by the communities. At present they are largely, either sourced from the market, or used to feed poultry. They can be stocked in ponds without harming the production of commercial fish (if any), thus providing a potential sustainable source of fish, independent of weather events, and fluctuations in water level, while also reducing the dependency on the market. We believe that this is an example of increased resilience to climate shocks. It should also be noted that homestead ponds are populated by small fish with high nutritional value. They are also managed by women, who are also in charge of household nutritional security thus demonstrating some concrete results and value-addition to climatic risk management due to the efforts of the Smart Farm Team.

**INDEX BASED INSURANCE**

Following the strong interest of CCAFs in index-based insurance (IBI) in Bangladesh, WorldFish organized, in partnership with ICCCAD and IRI/IFAD, a workshop on the lessons learned and best practices on index-based insurance in Bangladesh, gathering all stakeholders currently involved in the topic. Both Worldfish and CCAFs are promoting networks and partnerships with relevant organizations which strengthens collaboration and knowledge sharing, especially for topics relatively new to Worldfish and the CGIAR, such as index-based

insurance. ICCCAD has a strong and extended network of climate change researchers and practitioners in Bangladesh. It has been actively involved in work on 'loss and damage', directly linked to the field of index-based insurance, which makes it a natural platform for connecting people and sharing knowledge on IBI. IRI, also, already has an extensive knowledge and experience with IBI in other countries, and was thus able to lend useful experience and expertise to the participants; all very new to the field of IBI. IFAD also has money to invest through IRI in IBI in Bangladesh. We hope that this will allow the current initiative to be more than just a workshop but sustainable after SmartFarm (and its funding) comes to an end. We would like to highlight the success of the IBI workshop in the context of Output 2.1.3, which has already contributed to the creation of the international CCAFS 'community of practice'. See an extract from Helen Greatrex's email to CCAFS colleagues on 18th October below: "The CGIAR community of practice has been created because there are many of you working on index insurance across the CG system, with limited ways to find out about different schemes or learn from each other. The goals of the community of practice are therefore to: - share knowledge on index insurance - build a repository of current schemes - increase learning across CG centers - build awareness of what others are working on - advance research - build opportunities for collaboration This led from the successful Bangladesh community of practice described in a recent CCAFS blog here ([http://ccaafs.cgiar.org/blog/call-action-building-index-insurance-community-bangladesh#.UtZBboWW\\_fn](http://ccaafs.cgiar.org/blog/call-action-building-index-insurance-community-bangladesh#.UtZBboWW_fn)). Having a space to discuss how index insurance might grow in Bangladesh has led to some really interesting ideas and new collaborations, something we would like to replicate within CCAFS". CLIMATE SMART HOUSE It should be remembered that Bangladesh has been experiencing the most violent political unrest since the creation of the country in the mid-1970s. This has slowed down and complicated field work, causing many delays. The constant blockades, for example, made the routing of the building materials for the Climate Smart House very difficult. The house was completed in October 2013, but the official handover could not be done since then because of the complete inability to travel to the area.

- A team of WF scientists are currently working on the development of a comprehensive monitoring and evaluation system for the house, and data will start being collected as soon as the political situation allows.
- That being said, the Climate-Smart House is a housing system that:-
  - Has a design and a concrete frame making it resilient to cyclones;
  - Is on a raised platform protecting it from floods and water logging;
  - Collects rainwater to provide a source of both fresh drinking water and irrigation water to communities in a high saline area;
  - Is, unlike traditional cyclone resistant houses, integrating several livelihood components. These are all independent (modular) but also connected to each other. When fully operational the outputs of one livelihood (urea from fish culture) can act as an input to another one (fertilizer for vegetable production). It thus follows all the basic principles of 'good' ecological houses.
- The impacts of a cyclone or a flood include not only the loss of a house, but also the partial or complete loss of livelihood strategies and assets, pushing people into immediate distress and poverty leading to slow and long term recovery. In this context, the concept of the 'Climate-smart housing system' is to add an additional dimension to the existing cyclone-resistant house designs by providing not only a strong housing structure, but also livelihood components that can be removed, placed in safe place before a cyclone, and re-started easily during the recovery period. The resulting system, including the three pillars of sustainable development (economic, social, environmental), should thus offer not only a better resistance to the hazard, but also a faster recovery after, for a more comprehensive disaster risk reduction. HOMESTEAD POND CULTURE This was identified by the WorldFish/USAID funded "Cyclone Affected Aquaculture Rehabilitation Project 2" (CAARP2) project as a livelihood activity increasing resilience of poor households in face of disasters. Homestead ponds are not

affected by strong winds in time of cyclone, and their location right next to the house gives enough time to farmers to protect them easily from floods after warning, or during heavy rains, using saris or nets to prevent fish from escaping. Ponds that have either been damaged, or polluted during a cyclone can be harvested for consumption just after the cyclone, when households might have limited livelihood options available. However, despite their role of food provider, the resilience of small ponds to climate change and disasters, and their proximity to the house, homestead ponds are facing constraints related to optimal fish growth. Usually surrounded by trees, they are subject to oxygen deficiency due to leaves falling in them, poor penetration of sunlight and reduced phyto and zooplankton preventing optimal fish production using common aquaculture technologies". Addressing the issue thus allows us to improve and strengthen a livelihood strategy that is recognized as very resilient to disasters, and a fast-recovery option. The SmartFarm budget is only circa, 100,000 USD per year. Considering the multifarious and ambitious activities organized by The Worldfish SmartFarm team (e.g. IBI workshop , the construction of the Climate Smart House, high publication output) few could argue that CCAFs is not getting value for money? We hope that the link with climate risk management is clear?

#### **Output: 4.1.4**

##### **Summary:**

The Worldfish Team have been contributing to this CCAFs output in a range of contexts. At the beginning of 2013 we finished a report that aimed to investigate how climate change considerations might be 'mainstreamed' into the roll-out of CRP1.3 (AAS). This report is available here:<https://dl.dropboxusercontent.com/u/55911876/CC-Mainstreaming-AAS.docx> Our work in Timor-Leste has worked to mainstream risk, adaptation and mitigation strategies into national policies, see Activity 714 Deliverables 1, 2, 3, & 5. In Activity 710, training products on fisheries management have been adopted and will be used in all Indonesian national training programs. This could improve fisheries and ultimately improve food security for millions of coastal dwellers in the archipelago. In Viet Nam Worldfish has been strengthening capacity of national aquaculture scientists and stakeholders in the area of climate change adaptation and planning. We ran a mini-conference in Ha Noi (see Activity 716 Deliverable 1) in September which has generated an informal network which we will be able to exploit more in future. This network has already led to the co-financing by CCAFs SE Asia of 2 climate change adaptation projects initiated by the Vietnamese Government. The details of the proposal for this work is on the Sharepoint, also at 716, Deliverable 1.

#### **Output: 4.2.1**

##### **Summary:**

We host and maintain a range of relevant databases at WorldFish including: Reefbase (<http://www.reefbase.org/main.aspx>), Coral Triangle Atlas (<http://ctatlas.reefbase.org/>), and AAS-Base

(<http://aasbase.worldfishcenter.org/phppgadmin/>). The Coral Triangle Atlas is the official data storage and retrieval tool for the Coral Triangle Initiative (<http://www.coraltriangleinitiative.org/>); a core feature of which is the focus on food security. Ongoing Worldfish will help the CTI-SFF with monitoring and evaluation in spatial contexts. Here, for example, is an article on USAID website detailing the success of the the Coral Triangle Atlas ([http://www.usctsp.org/index.php?story\\_archive\\_detail=48](http://www.usctsp.org/index.php?story_archive_detail=48)). AAS-Base has helped many projects (Cage-Aquaculture, Smart-Farm and work in Timor-Leste and Solomon Islands put their participatory activities in the context of historical climate change and variability.

**Output: 4.3.2**

**Summary:**

These have been discussed and explored in a range of project outputs including Smart Farm and Cage Aquaculture in Bangladesh, the Adaptation work in Lake Chilwa, Malawi, the work in TL and Solomon Islands, and the work on the economics of adapting to climate change in the Mekong Delta.



### 3. Publications

#### Publication #1

**Type:** Journal papers

**CCAFS Themes:** Theme 4.3

**Citation:** Mark Dickey-Collas, Georg H Engelhard, Anna Rindorf, Kristina Raab, Sophie Smout, Geert Aarts, M van Deurs, Thomas Brunel, Ayoe Hoff, Rebecca AM Lauerburg, Stefan Garthe, K Haste Andersen, F Scott, T van Kooten, D Beare, Myron A Peck. (2013). Ecosystem-based management objectives for the North Sea: riding the forage fish rollercoaster. ICES Journal of Marine Science: Journal du Conseil.

#### Publication #2

**Type:** Journal papers

**CCAFS Themes:** Theme 4.2

**Citation:** Beare D, McQuatters-Gollop A, van der Hammen T, Machiels M, Teoh SJ, et al. (2013) Long-Term Trends in Calcifying Plankton and pH in the North Sea. PLoS ONE 8(5): e61175. doi:10.1371/journal.pone.0061175

#### Publication #3

**Type:** Journal papers

**CCAFS Themes:** Theme 4.1

**Citation:** Doug Beare, Adriaan D. Rijnsdorp, Mette Blaesberg, Ulrich Damm, Josefine Egekvist, Heino Fock, Matthias Kloppmann, Christine Röckmann, Alexander Schroeder, Torsten Schulze, Ingrid Tulp, Clara Ulrich, Ralf van Hal, Tobias van Kooten, Marieke Verweij, Evaluating the effect of fishery closures: Lessons learnt from the Plaice Box, Journal of Sea Research, Volume 84, November 2013, Pages 49-60, ISSN 1385-1101,

#### Publication #4

**Type:** Journal papers

**CCAFS Themes:** Theme 1

**Citation:** Cost-effective methods for accurate determination of sea level rise vulnerability: A Solomon Islands example. Albert, S.; Abernethy, K.; Gibbes, B.; Grinham, A.; Tooler, N.; Aswani, S. ( 2013 )Weather Climate and Society, 5(4): 285-292.

## Publication #5

**Type:** Other

**CCAFS Themes:** Theme 2, Theme 4.2

**Citation:** Decision support for water management for integrating aquaculture in small-scale irrigation systems: A case for the Chingale catchment in Malawi. Kam, S.P.; Cai, X.; Sood, A.; Hoanh, C.T.; Yen, B.T.; Nagoli, J.; Chijere, A. ( 2013 ) WorldFish, Penang, Malaysia. Project Brief: 2013-40.

## Publication #6

**Type:** Working papers

**CCAFS Themes:** Theme 2

**Citation:** Scoping report: Current status of index-based insurance in Bangladesh. Ahmed, T. ( 2013 ) WorldFish. Penang, Malaysia. Project Report: 2013-38. Funded by CCAFS, AAS and IFAD. (Publication Type: Project Report)

## Publication #7

**Type:** Working papers

**CCAFS Themes:** Theme 2

**Citation:** SmartFarm monitoring and evaluation framework and strategy white paper. Faulkner, L. ( 2013 ) WorldFish. Penang, Malaysia. White Paper: 2013-47. (Publication Type: White Paper)

## Publication #8

**Type:** Working papers

**CCAFS Themes:** Theme 4.1

**Citation:** White Paper: Shifting the goal post - from high impact journals to high impact data. Gassner, Anja; Alvare, Luz Marina; Bamba, Zoumana; Beare, Douglas; Bernardo, Marichu; Biradar, Chandrashekhar; van Brakel, Martin; Chapman, Robert; Dileepkumar, Guntuku; Dieng, Ibnou; Erlita, Sufiet; Fulss, Richard; Poole, Jane; Kshatriya, Mrigesh; Reinhard Simon, Guvener Selim; Prasai, Nilam; Garruccio, Maria; Staiger Rivas, Simone; Rajasekharan, Maya; Chukka, Srinivasa Rao

## Publication #9

**Type:** Journal papers

**CCAFS Themes:** Theme 4.3

**Citation:** Governance of Global Value Chains in Response to Food Safety and Certification Standards: The Case of Shrimp from Vietnam N Tran, C Bailey, N Wilson, M Phillips - World Development, 2013

## Publication #10

**Type:** Policy briefs

**CCAFS Themes:** Theme 4.1

**Citation:** Kam, S.P., Cai, X., Sood, A., Hoanh, C.T., Yen, B.T., Nagoli, J., Chijere, A.(2013). Decision support for water management for integrating aquaculture in small-scale irrigation systems: a case for the Chingale catchment in Malawi. WorldFish, Penang, Malaysia. Project Brief: 2013-40.

## Publication #11

**Type:** Other

**CCAFS Themes:** Theme 2

**Citation:** Albert, J.A., Beare, D. and Andrew, N. (2013) Nearshore FADs in Solomon Islands: Monitoring their effectiveness and cost-benefit. Report submitted to the Ministry of Fisheries and Marine Resources. WorldFish

## Publication #12

**Type:** Other

**CCAFS Themes:** Theme 2

**Citation:** Mills, D.J., Abernethy, K.A., King, J., Hoddy, E.T., Teoh, S.J., Larocca, P., Gonsalves, D., Fernandes, A., and Park, S.E. 2013. Developing Timor-Leste's coastal economy: Assessing potential climate change impacts and adaptation options. Final report to the Australian Government Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security National Initiative. WorldFish, Penang, Malaysia. 142 pp.

## Publication #13

**Type:** Working papers

**CCAFS Themes:** Theme 2

**Citation:** Ahmed, T., Hasemann, A. (2013). Weather Index Insurance: Lessons Learned and Best Practices for Bangladesh Workshop Report, 8-9 September 2013, Dhaka, Bangladesh. WorldFish, Penang, Malaysia. Workshop Report: 2013-66.

**Publication #14**

**Type:** Books

**CCAFS Themes:** Theme 4.1

**Citation:** Tran, N. and Nguyen.T (Eds.). 2013. PHƯƠNG PHÁP VÀ KINH NGHIỆM NGHIÊN CỨU ĐÁNH GIÁ BIẾN ĐỔI KHÍ HẬU TRONG NGÀNH THỦY SẢN (METHODS AND EXPERIENCES IN CLIMATE CHANGE RESEARCH AND ASSESSMENTS IN FISHERIES AND AQUACULTURE). Hanoi National University Publishing House. 156p.

**Publication #15**

**Type:** Journal papers

**CCAFS Themes:** Theme 2

**Citation:** R.M. Wise, I. Fazey, M. Stafford Smith, S.E. Park, H.C. Eakin, E.R.M. Archer Van Garderen, B. Campbell Reconceptualising adaptation to climate change as part of pathways of change and response ☆ Global Environmental Change, Available online 11 January 2014

**Publication #16**

**Type:** Books

**CCAFS Themes:** Theme 4.1

**Citation:** S.P. Kam, N. Tran, C. T. Hoanh and N. X. Hien. Aquaculture adaptation to climate change in Vietnam. Chapter 8 In: C.T. Hoanh, V. Smakhtin and R. Johnston (Editors). Climate change and agricultural water management in developing countries. CABI Climate Change Series. CABI Publishing, UK (in press)

## 4. Communications

### Media campaigns:

NA

### Blogs:

<http://www.worldfishcenter.org/news-events/blog-reflections-un-climate-change-negotiations>

<http://www.worldfishcenter.org/news-events/blog-smartfarm-project-helps-communities-produce-more-fish>

<http://www.worldfishcenter.org/news-events/shes-just-cleaning-lady-reflecting-gender-norms>

<http://ccafs.cgiar.org/es/gender-attitudes-and-practices-investigated-bangladesh#.Us-UCrRN-ul>

International Community of Practice has been based on the Workshop organised by WorldFish in Dhaka.

<http://ccafs.cgiar.org/blog/call-action-building-index-insurance-community-bangladesh#.UtzBlrQZ7mg>

### Websites:

<http://ctatlas.reefbase.org/>

<http://www.reefbase.org/main.aspx>

<http://boblme.reefbase.org>

<http://centers.iub.edu.bd/icccad/index.php/component/content/article/86-research-initiatives/256-index-based-insurance>

### Social media campaigns:

Following the Index Based Insurance Workshop on 8th and 9th September, "The Bangladesh Index Insurance Community of Practice" was formed. This group takes the form of meetings, a website and an internet forum and is continuing the discussions started in the workshop. The social media campaign takes the form of a website, created to bring together information relevant to Index Based Insurance in Bangladesh. Currently on the website is information on reports, presentations and a brief write up of the workshop and a link to the community forum. See: <http://centers.iub.edu.bd/icccad/index.php/component/content/article/86-research-initiatives/256-index-based-insurance>

Another important component of this campaign is an internet forum, which allows easy communication between everyone in the group. This is being hosted on LinkedIn

[http://www.linkedin.com/groups?trk=groups\\_management\\_participants-h-dsc&goback=.gsm\\_5168352\\_1\\_\\*2\\_\\*2\\_\\*2\\_Ina\\_PENDING\\_\\*2&gid=5168352](http://www.linkedin.com/groups?trk=groups_management_participants-h-dsc&goback=.gsm_5168352_1_*2_*2_*2_Ina_PENDING_*2&gid=5168352)

Further information is available from:

Tajbee

International Centre for Climate Change and Development (ICCCAD)

98 Park Road, Dhaka 1212

Mobile: 017 4643 6783

Email: [tajbee@gmail.com](mailto:tajbee@gmail.com)  
[www.icccad.org](http://www.icccad.org)

### Newsletters:

Asafu Chijere contributed an article based on the Chinyanja Triangle project to the Africa Adaptation Newsletter Issue 3 (Sep 2013). A digital version of the newsletter is available here: <http://aaknet.org/index.php/component/k2/item/138-aaknet-newsletter-issue-3>

### Events:

<http://www.worldfishcenter.org/news-events/climate-change-water-management-and-aquaculture-malawi>

<http://www.worldfishcenter.org/news-events/timor-leste-coastal-communities-adapt-climate-change>

<http://www.worldfishcenter.org/news-events/worldfish-provides-overview-marine-protected-area-management-malaysia>

<http://www.worldfishcenter.org/news-events/database-provide-tailored-geographic-data-modeling-solutions>

<http://www.worldfishcenter.org/news-events/childs-perspective-health-oceans-climate-change-and-global-fisheries>

<http://www.worldfishcenter.org/news-events/challenges-gender-mainstreamed-analyses-and-development-interventions-bangladesh-delta>

### Videos and other multimedia:

ADB has produced a video.

EAFM project has also made a video and photostory

### Other communications and outreach:

Talk given by Doug at UC Davis :

<http://www.slideshare.net/worldfishcenter/challenges-of-gender-mainstreamed-analyses-and-development-interventions-in-the-bandladesh-delta-landscape>

Stories of change from CT-Atlas project:

<http://www.worldfishcenter.org/our-research/outcomes/stories-of-change/ct-atlas-maps-tell-coral-triangle-story>

This is an article on USAID website detailing the success of the the Coral Triangle Atlas:

[http://www.usctsp.org/index.php?story\\_archive\\_detail=48](http://www.usctsp.org/index.php?story_archive_detail=48)

Dissemination from the Chinyanja Triangle project.

Joseph Nagoli attended a National dissemination workshop, between 29-30 Aug, 2013 in Mangochi, Malawi to discuss project outputs and feedback from stakeholders. WorldBank linked the program to the Shire River Basin Management Program.

Joseph Nagoli attended the Shire River Basin Management Program Annual Conference between 20-21 Nov, 2013 in Blantyre, Malawi. He presented, "CaWAT, a decision support tool for managing sub-catchment water use in the Shire River Basin". A result was that WorldFish was appointed to the Stakeholders forum taskforce and

CaWAT is seen as a possible tool for use in the Shire River Basin Management Program. Discussions are underway on possible entry points, see <http://www.worldbank.org/projects/P117617/malawi-shire-river-basin-management-project?lang=en>

Joseph attended a NEPAD Think Tank conference on science and policy dialogue on climate change and Fisheries in Africa between 27-29 Nov, 2013 in Mangochi, Malawi where he presented, "Enhancing adaptive capacity to climate change impacts through well-managed water use for aquaculture integrated with small-scale irrigation in the Chinyanja Triangle in Africa". An outcome was that NEPAD promised to upscale the CaWAT in its climate change program, see <http://www.nepad.org/conferences/science-and-policy-dialogue-climate-change-and-fisheries-africa-think-tank-event>

A Scoping visit by the WLE CRP to the Chinyanja Triangle was hosted by Worldfish between 13-15 Dec, 2013. The objective was to 'harvest' ideas from regional experts (with wide stakeholder input) on ways forward for WLE research

work in the Triangle while building on the existent body of knowledge in the area. An 'outcome' is higher likelihood of success for WLE initiatives in the Triangle because of local presence of numerous partners and CG initiatives, including the dryland systems (CRP 1.1), WorldFish, IITA, ICRISAT and IWMI. See <http://wle.cgiar.org/>

## 5. Case studies

### Case Study #1

**Title:** The Climate Smart Housing System: Concept

**Author:** Melody Braun, Emdad Hossain, Nurun Nabi, and Kevin Kamp

**Type:** Social differentiation and gender, Capacity enhancement, Participatory action research

#### Project description:

The Climate Smart House has been built, despite the difficult political situation by Worldfish and partners in South West Bangladesh. It is a sustainable and climate resilient system consisting of a cyclone-resistant housing structure with integrated and inter-dependent livelihood components. The Climate Smart House concept is strongly based on the three pillars of sustainable development, ie. it is environmentally smart, economically smart and socially smart. It has a concrete frame making it resilient to cyclones. It is on a raised platform protecting it from floods and water logging. Its integrated livelihood components are modular, but also connected. When fully operational the outputs of one livelihood activity (urea from fish culture) are recycled to act as the inputs to another one (fertilizer for vegetable production).

#### Introduction / objectives:

The objective of the 'Climate-smart housing system' is to add to the existing cyclone-resistant house designs in Bangladesh by providing a strong housing structure with diverse livelihood components that can be removed, placed in a safe place before a cyclone, and re-started easily afterwards.

#### Project results:

The completion of the house and the selection of its lucky occupant, now a co-researcher, is an amazing result in itself. Bangladesh has been experiencing the most serious political unrest since the creation of the country in the mid-1970s. This caused delays in its construction: the constant blockades, for example, made the routing of building materials very difficult. The house was, however, completed in October 2013, due to the dedication of the Worldfish Team. The official handover has not yet been effected because of our complete inability to travel to the project site. A team of Worldfish scientists are currently working on the development of a comprehensive monitoring and evaluation system for the house, and data will start being collected as soon as the political situation allows. The data will allow us to track the progress of a Bangladeshi family as they move into the house and fire up the new livelihood options that will open up to them. What an opportunity for CCAFs!!

#### Partners:

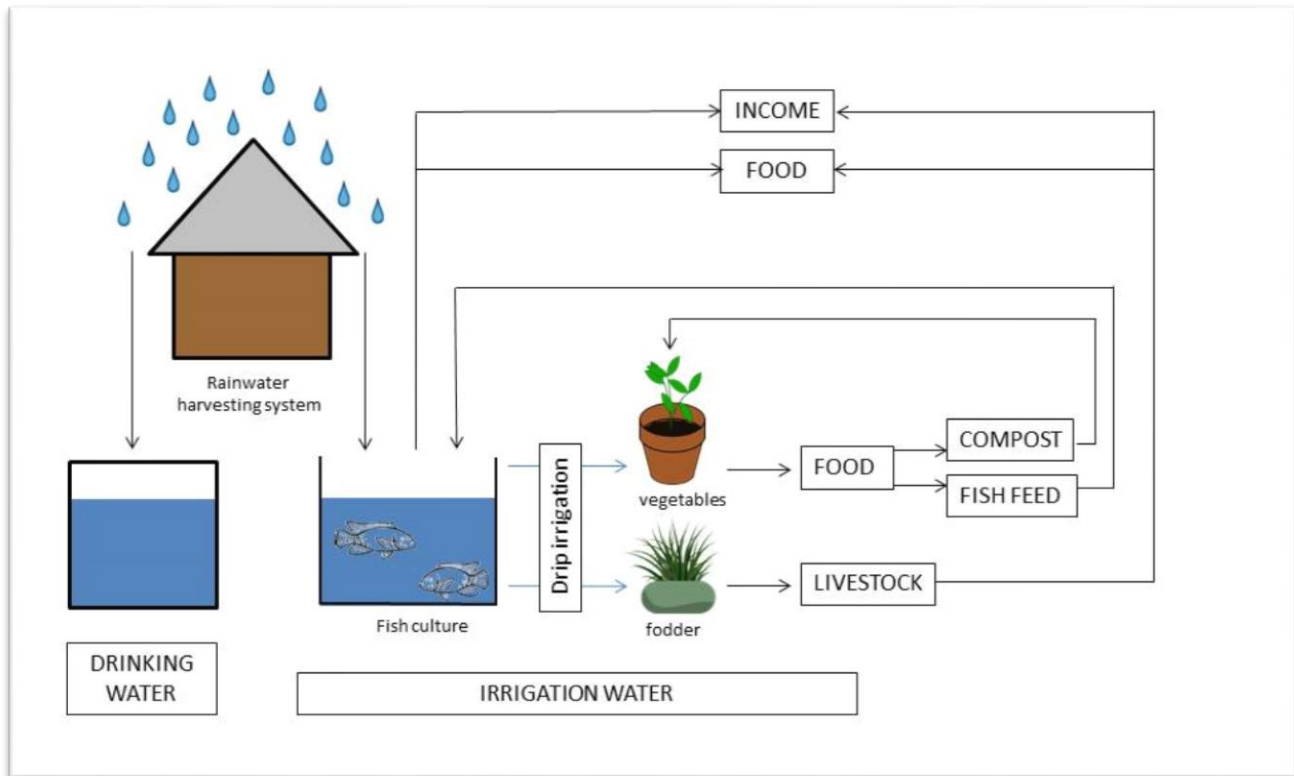
Practical Action

#### Links/sources for further information:

The report on the climate smart house can be accessed on the Sharepoint under Activity 710-2013, Deliverable 1



and our response to a negative evaluation of the project under Deliverable 2.



## Case Study #2

**Title:** TECHNICAL WORKSHOP ON METHODS AND EXPERIENCES IN CLIMATE CHANGE RESEARCH AND ASSESSMENTS IN FISHERIES AND AQUACULTURE

**Author:** Nhung Tran

**Type:** Successful communications, Capacity enhancement, Policy engagement

### Project description:

This Case Study is part of Activity 716-2013, "Investigating the vulnerability of and economics of adapting aquaculture in Vietnam to climate change". Viet Nam has particularly important capture fisheries and aquaculture sectors, both of which are working at the margins of economic profitability. Each of these sectors will face severe, context dependent, environmental and economic challenges in the next 50 years. The geography of Viet Nam means it is particularly vulnerable to climate change. The Vietnamese Government, therefore, must find ways to mainstream climate change issues into its planning and policy development. Problems in capture fisheries arise due mainly to habitat loss and overexploitation, while aquaculture suffers from pollution, poor governance and narrow profit margins. In order to understand these sectors and the link to climate change, we need to build effective partnerships and networks with the relevant, industrial, civil service

and government organisations in Viet Nam. This is not an easy task given language barriers, and cultural differences.

### **Introduction / objectives:**

The objective was to build networks among scientists and other stakeholders working on climate change in fisheries and aquaculture in Viet Nam. To do this we organised a mini-conference in Ha Noi inviting presentations from relevant researchers.

### **Project results:**

Eleven presentations were given at the conference. These have all now been converted to manuscripts and form part of a book (cover design) on climate change research in the Vietnamese fisheries and aquaculture sectors. The papers themselves are written in Vietnamese but have English Titles and Abstracts. In the new year, the best papers will be translated to English and submitted to international peer-reviewed journals. These activities have raised the profile of CCAFs and Worldfish in Viet Nam and we are now being invited to work with local authorities on a range of relevant climate change projects. The activity is also nurturing and developing scientific talent in Viet Nam which is already considerable.

### **Partners:**

Viet Nam Institute for Fisheries Economics and Planning, Department of Capture Fisheries and Resources Protection, Research Institute for Aquaculture Number 1, and 2., Ha Noi National University.

### **Links/sources for further information:**

The presentations, the manuscripts and the book that arose from the conference have all been uploaded to the CCAFs Sharepoint (Activity 716-2016), Deliverable 3. The book is here :


<https://dl.dropboxusercontent.com/u/5591187/MethodsExperienceClimateChangeResarchVietNam.pdf>



**PHƯƠNG PHÁP VÀ KINH NGHIỆM  
NGHIÊN CỨU ĐÁNH GIÁ BIẾN ĐỔI KHÍ HẬU  
TRONG NGÀNH THỦY SẢN**

METHODS AND EXPERIENCES IN CLIMATE CHANGE RESEARCH  
AND ASSESSMENTS IN FISHERIES AND AQUACULTURE



 NHÀ XUẤT BẢN ĐẠI HỌC QUỐC GIA HÀ NỘI  
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PHƯƠNG PHÁP VÀ KINH NGHIỆM NGHIÊN CỨU ĐÁNH GIÁ BIẾN ĐỔI KHÍ HẬU TRONG NGÀNH THỦY SẢN



**PHƯƠNG PHÁP VÀ KINH NGHIỆM  
NGHIÊN CỨU ĐÁNH GIÁ BIẾN ĐỔI KHÍ HẬU  
TRONG NGÀNH THỦY SẢN**

METHODS AND EXPERIENCES IN CLIMATE CHANGE RESEARCH  
AND ASSESSMENTS IN FISHERIES AND AQUACULTURE

Sách chuyên khảo



 NHÀ XUẤT BẢN ĐẠI HỌC QUỐC GIA HÀ NỘI  
Hanoi National University Publishing House

## 6. Outcomes

### Outcomes #1

#### Title:

Training materials on fisheries management (Ecosystem Approach to Fisheries Management) developed by Worldfish and partners adopted by Indonesian Government

#### What is the outcome of the research (i.e. use of research results by non-research partners)?

The outcome is the adoption and use of the research (e.g. training materials described below) in all EAFM training sessions, coordinated by the Indonesian Marine and Fisheries Agency: a vast organisation employing 1000s of individuals. These training sessions will eventually be done with stakeholders across the entire country, improving fisheries, and food security for the poorest fishers. Remember that millions of people in Indonesia depend on the sea for their livelihood.

#### What outputs produced in the three preceding years resulted in this outcome?

The output of the research is the development of training materials for fisheries management that have been built up through trial and error over the last 3 years. The training materials focus on the definition of EAFM, why it is needed/useful, and how it should be implemented. Note: The fisheries management system is known as the Ecosystem Approach to Fisheries Management (EAFM) which is a holistic approach that involves the entire socio-biotic system. The FAO definition is “...an ecosystem approach to fisheries (EAF) strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties of biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.” Note: an ecosystem approach is different from the way fisheries have been managed historically where the focus is usually on a single species.

#### What partners helped in producing the outcome?

The Center for Coastal and Marine Resources Studies, Bogor Agricultural University and Research Center for Marine and Fisheries Socio-Economics, Ministry of Marine Affairs and Fisheries helped in producing the outcome.

#### Who used the output?

Do you mean, 'who used the output'? In that case it was the Indonesian Government and The Nature Conservancy.

#### How was the output used?

Again outcomes are 'users using outputs'. So this presumably should be, 'how was the output used?' In that case the outputs developed by us have been, and will be in future, used to train 1000s of Indonesian and fisheries stakeholders. This improved training and education could benefit millions..

**What is the evidence for this outcome? Specifically, what kind of study was conducted to show the connection between the research and the outcome? Who conducted it? Please provide a reference or source.**

No official study. I'm trying to track down an email which can confirm this.

## 7. Outcome indicators

### Outcome indicator #1

#### Outcome indicator:

One to five flagship risk management interventions evaluated and demonstrated by farmers and agencies at benchmark locations in three regions

#### Achievements:

The Smart Farm project has evaluated and demonstrated a range of risk management interventions in Khulna District, South West Bangladesh from Index-based insurance to the actual construction of a Climate Smart House.

#### Evidence:

<https://dl.dropboxusercontent.com/u/55911876/SmartFarmBanglaReportEnd2013.docxhttps://dl.dropboxusercontent.com/u/55911876/2013-38%20Project%20Report%20Bangladesh%20Insurance%20rnd4%20FA%20lowres.pdf>

### Outcome indicator #2

#### Outcome indicator:

Global database and set of tools for climate-smart agriculture established and used by key international and regional agencies

#### Achievements:

Worldfish and partners have built <http://ctatlas.reefbase.org/> which stores and serves data for the coral triangle region. The coral triangle is particularly difficult to manage because it falls under the remit of six national jurisdictions and many more sub-national jurisdictions and governance processes. In recognising this problem, the leaders of all six countries in the Coral Triangle (CT6) region came together to form the Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security (CTI-CFF). Its express purpose being to safeguard the livelihoods of the communities that depend on its coastal resources: a key component of which is how to manage the exploitation of these resources sustainably. The CTI-CFF, which was originally promoted by the President of Indonesia, Susilo Bambang Yudhoyono, is clearly an important step towards more effective management and conservation of the Coral Triangle area. The CTI-CFF is an inter-governmental Agreement among the six Coral Triangle countries that is based on a Regional Plan of Action (RPOA), which has been agreed to by all six countries, and National Plans of Action (NPOAs) that align with the RPOA, but at the same time reflecting varying national priorities. The CTI-CFF Agreement covers an area of 5.7million km<sup>2</sup> that was

originally biogeographically delineated by high coral diversity. Since the CTI-CFF declaration, however, it has changed also into a political agreement that covers the full exclusive economic zones of all six countries. This high-level political commitment to the CTI –CFF began when the leaders of the six countries met in Manado, Indonesia in 2009 to sign ‘The Declaration of the Regional Plan of Action’ (CTI-CFF 2009). In its earliest stages, the CTI-CFF recognised the importance of regional planning in future management of the Coral Triangle area. For this to happen it was viewed as critical that government officials, managers and scientist should be able to access and visualize information and data that span national boundaries to enable national and sub-national management interventions that would have regional conservation and sustainable management impacts. The leaders of the CT6 recognized that up-to-date spatial information is required to enable a dynamic decision making process, and to contribute to tracking progress towards RPOA and NPOA objectives. In response to these needs, the development of the CT Atlas (<http://ctatlas.reefbase.org>) was started in 2009 with primary funding from the US Agency for International Development through its Coral Triangle Support Partnership (CTSP) and latterly by CCAFs. The CT Atlas is now recognized as the key tool for supporting the CTI-CFF governments and the six CTI-CFF technical working groups (TWGs). In 2012, the CT Atlas was designated by the Council of Ministers as the official database for the data storage, retrieval, and visualisation needs of the CTI-CFF.

**Evidence:**

Stories of change from CT-Atlas project:

<http://www.worldfishcenter.org/our-research/outcomes/stories-of-change/ct-atlas-maps-tell-coral-triangle-story> This is an article on USAID website detailing the success of the the Coral Triangle Atlas:

[http://www.usctsp.org/index.php?story\\_archive\\_detail=48](http://www.usctsp.org/index.php?story_archive_detail=48)

## 8. Leveraged funds

**Title:**

In the Philippines LGUs have pledged to contribute at least P100,000 each for the operational expenses of the Iligan Bay Alliance for Misamis Occidental (IBAMO). BFAR pledged however that it will match the funds that the LGUS will be able to raise on a 1

**Partner name:** Local Government Units

**Budget:** \$100000

**Theme:** T2