1. Activity Reporting.

Activity 710-2014

Identification of gender equitable options for managing risks from climate shocks, enabling vulnerable coastal and riparian households to reduce potential production threats/losses and consumption volatility in Bangladesh. Explore Ecosystem Approach to Fisheries (EAF) and its potential for managing climate risk and building resilient livelihoods in Indonesia (Ind), Philippines (Php), Tanzania (Tz), and Solomon Islands (SI).

Status	Complete	Milestone	1.1.1 2014
Start date	2010 Apr	End date	2015 Jun

Description: The activity is being done to aid identification of gender equitable options for managing risks from climate shocks among poor farmers and fishers in flood-prone environments. This will be done via: (1) the participatory research project on 'Smart Farms' in Bangladesh; and (2) via the exploration of the utility of the Ecosystem Approach to Fisheries (EAF) to small scale fisheries management at sites in Indonesia (Ind), Philippines (Php), Tanzania (Tz), and Solomon Islands (SI). The outputs of the Activity will lead to outcomes enabling vulnerable coastal and riparian households to reduce potential production threats/losses and consumption volatility. An M&E framework tool will also be developed to assess the effectiveness of proposed measures. The Activity was rated as 'Highly Strategic' by both the Theme and Regional Program leaders.

Status: Complete. The climate smart farming methods were tested in south-west Bangladesh as part of the Climate Smart Farm project funded by CCAFS via IWMI, ie. the CCAFS South Asia program. The first 3 year phase of the project is now complete and the project has engaged with 1000s of farmers and extension officers through regular meetings and workshops over 3 years. These activities are described in detail in the following 2 reports drafted during 2014 (see also deliverables section):

https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/SmartFarmInterimReport2014.pdf
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/SmartFarm_Closing_Report_November_2014_F.pdf

The bilateral project funded by the European Union and entitled, 'Implementing an ecosystem approach to fisheries (EAF) in small-scale tropical marine fisheries' is nearing completion. The project was reviewed successfully by the donor during February 2014 and the relevant 'background conclusion sheets' can be found here (see also deliverables section): https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/ROM-EAFM-BCS-

146965%2001.pdf and here
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/ROM-EAFM-BCS-146965%2002.pdf.
The official end date of the project was 28 December 2014 but a 'no-cost extension' had to be negotiated due to elections in Solomon Islands which prevented the monitoring and evaluation survey from going ahead. The revised end-date is 28 February 2015. During the project integrated EAF implementation strategies were worked out for all our study sites in all four countries (Indonesia, Philippines, Solomon Islands, and Tanzania) and these have now been put into practice. The interventions are summarised here: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Copy%20of%20EAFM-2014-Activity-Plan.xlsx.

Gender Component: The CCAFS Climate Smart Farm Project in south west Bangladesh successfully fostered integrated farming systems which are better able to meet present and future income and food production needs in the face of climate change. The project built synergies with AAS and created robust networks among local researchers and implementation partners. The 'Smart Farm' Team already has much success to report; including strong community buy-in to the 'Fish Ring/Sanctuary' component of the project and significant evidence of female involvement (see http://www.worldfishcenter.org/news-events/blog-smartfarm-project-helps-communities-produce-more-fish).

Objectives:

1. To promote the adoption of climate smart aquatic agricultural interventions in Bangladesh
2. To improve food security of rural households trapped in cycles of poverty and vulnerability that are exacerbated by climate change.
3. To promote the adoption, by target communities in four countries, of the Ecosystem Approach to Fisheries Management. Improved fisheries management will result in more fish for poor consumers.
4. To deepen participatory, gender-sensitive, demonstration and evaluation of impacts of promising production systems in the face of climate variability in Bangladesh (fish sanctuaries, vertical gardens, climate smart house Khulna District) and the Chinyanja Triangle (both capture fisheries and aquaculture).

Deliverables:

Description	Type	Year	Status	Justification
Implement methods for equitable (gender-responsive) promotion, adoption, and scaling-up of climate-smart farming methods in AAS	Capacity	2014	Complete	
Review and recommend smart farm potential adaptation strategies in coastal and riparian homesteads	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	We had some difficulty locating the original data and hi resolution photographs when Melody Braun left.
Develop integrated EAF implementation strategies (including monitoring & evaluating components)	Capacity	2014	Complete	
Develop plan for EAF management beyond project time-line	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	

Description	Type	Year	Status	Justification
Build awareness of climate change among capture fisheries stakeholders in Cambodia.	Workshop	2014	Cancelled	This activity was not done for two main reasons. Firstly budget reductions made this impossible. Secondly, during 2014 we started to plan for the instigation of Climate Smart Villages in Cambodia. To that end staff at our office in Cambodia were busy with the CCAFS South East Asia program to select the villages and then conduct a baseline survey, the results of which are described below: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/WorldFish%20Progress%20Report%20for%20CSV%20Cambodia%20preparation.docx https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/WorldFish%20Progress%20Report%20for%20CSV%20Cambodia%20Nov2014-Jan2015.docx
The Climate Smart Farm Project tested a range of possible adaptations to climate variability and change in southwest Bangladesh. One such adaptation is a cyclone and flooding resistant home designed to reduce the loss of food and income in a storm's aftermath - stopping a natural hazard from becoming a natural disaster.	Articles for media or news (radio, TV, newspapers, newsletters ,etc.)	2014	Complete	
Peer reviewed paper investigating the importance of aquaculture for food production in the wake of Hurricane Sidr which hit Bangladesh in 2007.	Peer-reviewed journal articles	2014	Complete	

Description	Type	Year	Status	Justification
A trip to Bangladesh was conducted by Sari Blakely and Mélody Braun from IRI from October 12-24th, 2014, to train and assist WorldFish Bangladesh in conducting initial visits on index insurance in two of the three selected areas under the IFAD-funded project “Climate Risk Management in Agriculture”.	Workshop	2014	Complete	
This paper describes the application of the participatory diagnosis and adaptive management (PDAM) framework to analyze the governance of small-scale fisheries and the potential for adopting the Ecosystem Approach to Fisheries (EAF) in Misamis Occidental, Philippines	Peer-reviewed journal articles	2014	Complete	

Partners:

1- International Water Management Institute (IWMI):
Pramod Aggarwal <p.aggarwal@cgiar.org>

2- European Union (EU):
Maria Campo Perfecto <maria.campo-perfecto@ec.europa.eu>

3- Bogor Agriculture University:
Luky Adrianto <lukyadrianto@gmail.com>

4- Research Center for Marine and Fisheries Socio-economics (RCMFSE):
Heri Purnomo <a_heri_p@yahoo.com>

5- Southeast Asian Regional Center for Graduate Study (SEARCA):
Len Garces <l.garces@cgiar.org>

6- University of Dar es Salaam:
Rose Mwaipopo <ny_lila@yahoo.com>

7- Ministry of Agriculture, Forestry and Fisheries (MAFF):
Yumiko Kura <y.kura@cgiar.org>

Location(s):

Countries: Bangladesh, Cambodia, Indonesia, Philippines, Solomon Islands, Tanzania,

Activity 710-2014

Develop and implement climate change adaptations in Lake Chilwa, Malawi, 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	Complete	Milestone	2.1.3 2014
Start date	2010 Apr	End date	2015 Jun

Description: The activity is being done to deepen partcipatory, gender sensitive demonstration and evaluation of impacts of promising production systems in the face of climate variability in the Lake Chilwa Basin of Eastern African, and Khulna in South West Bangladesh. The Activity will support National Adaptation Plans in Bangladesh, Malawi, Mozambique and Zambia (Chinyanja Triangle). Lake Chilwa is particularly interesting as it is currently drying up forcing farmers and fishers to change livelihoods and the Activity was recognised as highly strategic by the CCAFs management team. This will be done via: (1) participatory research projects, ie. 'Cage & Pond Aquaculture' in Bangladesh; (2) via two bilaterally funded projects in East Africa (one that ended in December 2013, the other continuing until 2015) which will develop and implement basin-wide climate change adaptation strategies that will enhance the resilience of communities living around the Chinyanja Triangle. The outputs of the Activity will lead to outcomes enabling vulnerable coastal and riparian households to reduce potential production threats/losses and consumption volatility. The Activity was rated as 'Highly Strategic' by both the Theme and Regional Program leaders.

Status: Complete. The Cage & Pond Aquaculture project in Bangladesh has now finished. Dissemination of results in-country was delayed due to strikes and political unrest but the final external stakeholder workshop and a series of internal meetings originally planned for December 2013 took place in February 2014. A Policy Brief following the stakeholder workshop and can be found here: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report 2014/CCAFS%20AAS%20gender%20study%20brief_1.0.pdf together with a poster describing the gender barriers to adopting cage aquaculture technologies: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Technology%20Adoption_Poster.pdf
An official Worldfish Working Document on the project has also been prepared and is awaiting final approval:
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Gender-dimensions-cage-aquaculture-Working%20paper_2%20Oct.pdf
A draft journal paper from the project, ‘Amplifying outcomes through addressing inequality: The role of gender transformative approaches in agricultural research for development’ by Paula Kantor, Miranda Morgan, and Afrina Choudhury has also been prepared and can be found here:
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/POWB%201.5%28c%29%20Amplifying%20outcomes_for%20submission%20Dec%202014.pdf

The Cage Aquaculture project in Khulna has also given rise to the following blogs and presentations:
http://ccafs.cgiar.org/what-does-taking-gender-transformative-approach-really-mean#.VNG8amiUdqU
http://www.fao.org/climatechange/39933-0f92bc0046ff0e2cfc82f85b79b6d779e.pdf
http://www.fsnnetwork.org/inspiring-change-institutionalizing-gender-nutrition-and-agriculture-interventions-helen-keller
http://www.slideshare.net/worldfishcenter/gender-transformative-approaches-in-nutrition-and-aquatic-agricultural-interventions-by-afrina-choudhurypaula-kantor-and-miranda-morganworldfish

In East Africa the Chinyanja 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 was published the end of February 2014 and is available here:

The Lake Chilwa project is entering its last year. Major achievements during this quarter included the following: i) Gender Transformative Approaches (GTA) Training; ii) Drafting of the Lake Chilwa Fisheries Management Plans; iii) Monitoring of Village Savings and Loan training to women fish processors; iv) Fisheries and water monitoring; v) Routine monitoring of program activities, and vi) Planning and feedback sessions at Basin, District and community levels for the development of LCBCCAP second phase. The work is described in two reports available here:
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/LakeChilwaQ2Report.pdf
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/LCBCCAP%20progress%20Report%20Oct%202014.pdf
Dr J. Nagoli has also co-authored a scientific paper entitled, 'Nutritional Quality of Solar dried and Open Sun dried Matemba (Barbus paludinosus)' by Essau Chisale, Arthur Chimera, Davies Luhanga, Joseph Nagoli and Damiano Manda. It is currently in review but the draft is available here:
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Nutritional%20Quality%20of%20Solar%20dried%20and%20Open%20Sun%20dried%20matemba.docx

Gender Component: The CCAFs/AAS Cage and Pond Aquaculture project is investigating 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' fish technologies (fish cages and pond polyculture). The preliminary research findings show that gender norms, attitudes, relationships and practices influence the way women and men understand, use and benefit from these technologies. In particular, the way technologies are delivered and scaled-out (for whom and by whom) has significant gender-specific implications. The findings will be shared with internal and external stakeholders with the aim of improving the dissemination practices of these technologies to bring more sustained benefits to poor men and women alike, thus improving household outcomes as a whole. The key technologies being piloted in the Lake Chilwa project are aimed at lowering post-harvest losses. Female processing groups have been organized, trained and self-selected at three landing sites. All the groups have also been trained in solar fish drying, improved fish smoking using

energy saving stoves and in fish brining.

Objectives:

1. To promote the adoption of climate smart aquatic agricultural interventions in Bangladesh and Malawi
2. To improve food security of rural households trapped in cycles of poverty and vulnerability that are exacerbated by climate change.
3. To deepen participatory, gender-sensitive, demonstration and evaluation of impacts of promising production systems in the face of climate variability in Bangladesh (cage and pond aquaculture in Khulna District) and Lake Chilwa (reducing post-harvest losses in capture fisheries).

Deliverables:

Description	Type	Year	Status	Justification
Synthesize results, evidence and lessons learnt from participatory, gender-sensitive, evaluations of the most promising production systems in both Khulna District, Bangladesh and Lake Chilwa in Malawi;	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Share information from Lake Chilwa and Khulna through a CCAFs web-based knowledge management system	Articles for media or news (radio, TV, newspapers, newsletters ,etc.)	2014	Cancelled	This was never formalised as far as I know but much of the information is widely available on CCAFS' website etc.

Partners:

1- Ministry of Foreign Affairs:
Joseph Nagoli <j.nagoli@cgiar.org>

2- Department of Forestry:
Joseph Nagoli <j.nagoli@cgiar.org>

3- LEAD Pakistan:
Joseph Nagoli <j.nagoli@cgiar.org>

4- National Herbarium and Botanical Gardens of Malawi (NHBG):
Joseph Nagoli <j.nagoli@cgiar.org>

Location(s):

Countries: Bangladesh, Malawi,

Activity 876-2014

To identify and promote options for improving year-round nutritional quality and dietary diversity in AASs.

Status	Cancelled	Milestone	2.2.1 2014
Start date	2014 Jan	End date	2017 Dec

Description: This Activity builds on research that has shown that inconsistent seasonal variations in the nutritional quality of diets (often also termed hidden hunger seasons) can have a more important, and certainly more regular impact on households than natural disasters such as cyclones. This is of concern given the fundamental importance of year-round nutritional quality for maternal health, adolescent educational attainment, and infant mortality.
This activity is designed to address this issue by finding the effective ways for men and women to help prepare their families for fluctuating availability of foods high in micronutrients. To this end, the focus is on fish as an excellent source of nutrition, even in small amounts. WorldFish has expertise in aquaculture (eg. pond polyculture) and food preservation methods (e.g. powdered fish products successfully trialled in Zambia) are highly relevant. This project is innovative in the context of climate change research in developing countries because it also addresses the experiences of participatory action researchers who find that climate change can be a rather difficult discussion to have in many poor, coastal villages. People in such communities are more directly concerned within the immediate issues of finding enough food to eat and have scant resources available for either thinking about, or planning for, climate change. This issue is further complicated by the fact that future likely climate change impacts are so poorly understood by the scientific community. By focusing, therefore, on 'normal' seasonal fluctuations, which are the direct concern of everyone, project researchers will be able to initiate more meaningful debates about climate and weather at village and household level. This emphasis is important and will facilitate a much greater understanding among all stakeholders with respect to climate change preparedness, likely resilience and adaptations.

Status: Cancelled. This got into the system by accident. Originally it was based on a proposal submitted to GIZ which was never funded. By putting it into one of the old spreadsheets I'd hoped that it would stimulate interest and/or funding opportunities from CCAFS.

Gender Component: The field investigations into hunger seasons will be tackled using the innovative gender-specific 'Climate Analogue Approach' toolbox newly developed by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). This approach is designed to help communities explore options for adaptation by learning from the experiences of other, 'analogous' communities. The idea is to match communities likely to experience a change in climate conditions to a community that already experiences those climate conditions, thereby allowing the community facing the change to learn from the community already coping with those conditions. The approach is further strengthened by the incorporation of the concept of the 'Positive Deviant' which

recognizes that in any community there are people whose rare, but successful strategies enable them to find better solutions than their peers despite access to the same resources. Since the information collected during this process will capture all aspects of community life throughout the year, it will also form an important resource for scientific research in itself.

Objectives:

1. To identify and promote the best options for improving year-round nutritional quality and dietary diversity in Bangladesh

Deliverables:

Description	Type	Year	Status	Justification
Likely seasonal food and nutrition security threats determined under different climate change scenarios	Peer-reviewed journal articles	2014	Cancelled	The project/activity entered the system by mistake and was never actually funded.
Gendered framework for rapid assessment of vulnerability to seasonal change in nutritional quality and diet diversity	Articles for media or news (radio, TV, newspapers, newsletters ,etc.)	2014	Cancelled	This activity/deliverable entered the system by mistake and was never actually funded.

Partners:

Partners not defined

Location(s):

Countries: Bangladesh,

Activity 715-2014

Managing the expansion of Aquatic (AAS) food production in a future climate.

Status	Complete	Milestone	1.1.1 2014
Start date	2013 Jan	End date	2015 Dec

Description: This is a study with global ambitions which CCAFs rated as 'highly strategic'. Many of the global food production models neglect fisheries and aquaculture, and this is an opportunity to redress that imbalance. The Activity will improve governance and policy outcomes for AAS food production in a future climate. It will quantify the impacts of climate change (both positive and negative) for the poor and landless in AASs; It will model trade-offs/cost-benefits (eg. inVEST) in AASs. It will conduct ecosystem services 'stocktakes' in key river basins, deltas and coastal areas using, e.g. inVest. It will Analyse climate change impacts on food security for key river basins and deltas, lakes and coastal areas. It will promote, and improve the integration of freshwater capture fisheries and aquaculture into the CRPs, IFPRI's IMPACT, and IIASA's GLOBIOM models. It will extend the climate analogue approach to capture fisheries and aquaculture production in inland waters, deltas and coastal areas. It will map MPAs, mangroves and coral reefs in key CCAFs and AAS hubs. All data used will be stored and documented to ensure reprocibility of database queries. Finally a 'Heldesk Service will be set up to provide geospatial and other data.

Status: Complete. Progress on this activity has been disappointing due to budgetary and capacity constraints. The competitive phase of CCAFS was more onerous than we planned at the end of 2013 and more time was absorbed in, for example, planning in South East Asia. Nevertheless some progress has been made during 2014. Nhuong Tran and Shwu Jiau Teoh were trained in the use of the IMPACT model and a workshop on Futures/Foresight was organised in March 2014 and the report has been uploaded to the Deliverables section. The team continue to maintain and update relevant websites and databases including: http://www.reefbase.org/main.aspx; the Coral Triangle Atlas; http://ctatlas.reefbase.org/; and http://www.socmon.org/. Our reputation in this area also enabled us to leverage funds from the BoBLME network (FAO & GEF) to build a database of Marine Protected Areas in the Bay of Bengal http://boblme.reefbase.org/. We were also contracted by World Wildlife Fund (WWF) to build a spatially explicit database for the Sunda Banda Seascape area in Indonesia (http://sbsatlas.reefbase.org) and by the Asian Development Bank (ADB) to produce a range of maps in support of their climate change adaptation program.

The helpdesk service continues to provide top quality maps, graphics, and data for staff around Worldfish. Climate data is a particular specialty.

Gender Component: Not defined

Objectives:

1. To improve governance and policy outcomes for the effective management of aquaculture and capture fisheries in a future climate.
2. To model trade-offs/cost-benefits between different food production systems in past and future climates (eg. inVEST) in AASs
3. To conduct ecosystem services 'stocktakes' in key river basins, deltas and coastal areas using, e.g. inVest.
4. To analyse climate change impacts on food security for key river basins and deltas, lakes and coastal areas
5. To promote, and improve the integration of freshwater capture fisheries and aquaculture into the CRPs, IFPRI's IMPACT, and IIASA's GLOBIOM models;
6. To extend climate analogue approach to capture fisheries and aquaculture production in inland waters, deltas and coastal areas.
7. To map Marine Protected Areas, mangroves and coral reefs in key CCAFs and AAS hubs;.
8. To maintain AAS/CCAFS 'helpdesk service' to provide geospatial and other data;

Deliverables:

Description	Type	Year	Status	Justification
Decades of overfishing in the English Channel has resulted in the removal of many top predators from the sea and left fishermen having to farm increasing amounts of shellfish to make up their catch. Sharks, rays, cod, haddock and many other species at the head of the food chain are at historic lows with many removed from the area completely. These are some of the findings of a study led by marine biologists at Plymouth University, in association with international non-profit research organization, WorldFish, in which they analysed catches over the past 90 years, and found significant evidence of the practice of 'fishing down the food web'. The report, published in the PLOS ONE journal, used Official and Historical catch statistics from the International Council for the Exploration of the Seas to establish a 'mean trophic level' for catches – an average for how far up the food chain the fish are located. Professor Jason Hall Spencer, of the School of Marine Science and Engineering, and the Marine Institute, said: "It is clear from our analyses that fishing pressure has caused significant changes to food webs of the English Channel over the past 90 years. The mean Trophic Level of English Channel landings has fallen by 0.1 unit per decade, one of the fastest rates reported among other heavily fished regions of the world, providing yet more evidence that 'fishing down food webs is a worldwide phenomenon." Today, the UK and France land around 150,000 tonnes of finfish and invertebrates per year from the 75,000km2 Channel – a huge increase from the 9,000	Peer-reviewed journal articles	2014	Complete	

Description	Type	Year	Status	Justification
tonnes recorded in 1920 and the 51,000 in 1950. During that time, the composition of landings has altered dramatically, with sharks and rays declining from 34% of catch in 1920 to 6% in 2010. The contribution of 'cods, haddocks and hakes' similarly fell from 48% to just 4% over the same timeframe. Spurdogs, tope sharks, thornback rays, Atlantic cod, ling and European hake show the most remarkable decline, while flounders, halibut and soles have changed relatively little during the time-series. The falling levels of finfish has been counterbalanced in quota terms by increased landings of 'miscellaneous aquatic invertebrates', such as scallops and other shellfish, and squid, octopus and cuttlefish. This has in turn raised concerns over long-term sustainability, and the potential damage done to the marine environment as a result of trawling for these invertebrates. Researcher Carlotta Molfese said: "Fisheries typically remove top predators first and as a result their direct competitors and prey are able to prosper, affecting the overall productivity and ecological stability of the ecosystem. Severe declines in the populations of major predator species have now been reported around the world." "WorldFish research has shown that a decline of finfish species has been followed by an increase in their invertebrate prey and although new and economically viable fisheries have developed for these new target species, concerns have been raised about their long-term sustainability," added Doug Beare of WorldFish. "We promote a sustainable approach				

Description	Type	Year	Status	Justification
to fisheries that will help to protect our natural resources and ensure that fish stocks are available for future generations. Solid global and regional governance of these vital resources will ensure that we can produce enough fish for everyone.” The researchers say that far from being a modern phenomenon, overfishing can be traced as far back as the 19th century, with declining stocks reported in 1863. But geographic expansion into new fishing grounds and improved technology combined to maintain increased landings. The full report, Overfishing and the Replacement of Demersal Finfish by Shellfish: an Example from the English Channel can be viewed in PLOS ONE.				
Final report prepared for the provision of services relating to developing interactive online database portal on MPAs relevant to the Bay of Bengal	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Sunda Banda Seascape website and geo-spatial database.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	

Description	Type	Year	Status	Justification
Maps showing climate change vulnerability in Timor Leste, Solomon Islands, Papua New Guinea, Fiji and Vanuatu.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
An Integrated Online Spatial Database System for Improving Coral Reef Management	Peer-reviewed journal articles	2014	Complete	
The Coral Triangle Atlas: paper describing spatial data quality control	Peer-reviewed journal articles	2014	Complete	
Issues around the gazetting and management of Marine Protected Areas in the Coral Triangle.	Peer-reviewed journal articles	2014	Complete	
Report on Foresight/Futures Research	Workshop	2014	Complete	
Peer-reviewed paper exploring how considerations of righs can offer perspectives on adaptive capacity.	Peer-reviewed journal articles	2014	Complete	

Partners:

1- CGIAR Research Program on Aquatic Agricultural Systems (AAS):
Charles Crissman <c.crissman@cgiar.org>

2- Food and Agriculture Organization of the United Nations (FAO):
Rudolph Hermes <rudolf.hermes@boblme.org>

3- The Nature Conservancy (TNC):
Annick Cros <acros@tnc.org>

4- National Oceanic and Atmospheric Administration (NOAA):
Rusty Brainard <rusty.brainard@noaa.gov>

5- Bay of Bengal Large Marine Ecoystem Project (BoBLME):
Chris O Brien <chris o'brien <chris.obrien@boblme.org>>

Location(s):
Global

Activity 878-2014

Promoting socially responsible and climate resilient feed production in the global aquaculture industry

Status	Cancelled	Milestone	4.1.4 2014 (1)
Start date	2014 Jan	End date	2017 Dec

Description: This activity will create a mechanism that will encourage the aquaculture feed Industry to operate on a more environmentally sound and socially responsible basis. It will develop a globally applicable standard that sets out the requirements for achieving this aim in a measurable, science-based, objective and tested way. It will also deliver the means for certifying enterprises that want to demonstrate that they meet these requirements. The project will introduce a hitherto missing consistency into the way in which the industry has been asked to address sustainability and social responsibility issues concerning feed. The activity will be undertaken over three years and funded from a mix of CG and Bilateral funding.
Outputs of the activity will be: (i) improved understanding of fish and livestock feed ingredients and value chains, and the social, and environmental impacts of feed ingredient production and transport, including scrutiny of relationships between researchers and key public and private actors; (ii) a global feed standard for aquaculture feed production to demonstrate socially responsible, environmentally sound and climate resilient production processes; (iii) an Audit Manual to guide manufacturers and auditors during the assessment proces); (iv) field testing to ensure the Audit Manual delivers the necessary guidance; and (vi) training courses which auditors will have to pass before they can take part in the assessment process. Our target is that by 2017 some 8-12% of global total aquaculture feed production (6-8 million tonnes) will be certified to the Feed Standardsdeveloped. Benefits will emerge as feed is made in compliance with the new standards. Via better sourcing, development, and supply, aquaculture farmers will have their most important input (feed) available in a form that will positively impact society and the environment. According to CCAFs TOC for FS 4, ‘ global investment in climate smart agriculture (and aquaculture) could overcome some of the existing constraints that limit the adoption of climate-smart practices’. We assume that consumer preference and their buying power, influenced by quality assurance schemes, will drive these investments, leading to socially responsible and climate resilient value chains.

Status: Cancelled. This got into the system by accident. I put it in a spreadsheet hoping that this would somehow encourage the work to get funded but unfortunately it never happened.

Gender Component: The production system of all feed ingredients, from soy beans to capture fisheries, will be examined from social inclusion, gender equity and decent work perspectives. Results will incentivize private sector to change practices, creating an environment in which poor and marginalized groups have more and better opportunities to participate in, and benefit from, employment in the feed value chain. Trade offs between production for human and animal consumption will be examined, and strategies to balance food security and profit motives identified.

When feeds are certified we will be able to ‘work backwards’ and count the number of beneficiaries.

Objectives:

1. To improve the understanding of fish and livestock feed ingredients and value chains, and the social, and environmental impacts of feed ingredient production and transport, including scrutiny of relationships between researchers and key public and private actors;

Deliverables:

Description	Type	Year	Status	Justification
Improved understanding of global fish and livestock feed value chains using qualitative appraisals, economic data and analyses, plus food system models, e.g. IMPACT, relationship building to obtain buy in for the certification standard ;	Peer-reviewed journal articles	2014	Cancelled	This was never funded and got into the system by mistake.

Partners:

Partners not defined

Location(s):

Countries: Ghana, Bangladesh, India, Nepal, Burma, Cambodia, Laos, Malaysia, Thailand, Vietnam,

Activity 716-2014

Investigating the vulnerability of and exonomics of adapting agri- and aquaculture in aquatic agricultural systems to climate change.

Status	Complete	Milestone	4.3.3 2014
Start date	2012 Jan	End date	2015 Dec

Description: This study aims to develop a quantitative approach to assess vulnerability of agri- and aquaculture in Aquatic Agricultural Systems to climate variability, and change, based on a range of multi-disciplinary economic, environmental and social criteria.

Status: Complete. WorldFish researchers have made good progress in 2014 conceptualizing the analytical framework for assessing vulnerability of aquaculture to climate change impacts at the sub-national level; in particular for VietNam for which databases have been designed and populated.

Gender Component: Not defined

Objectives:

1. To maintain ongoing (2012-2015) fieldwork program in the Mekong Delta, data collection and storage etc.
2. To analyse resilience, adaptability, and transformability of aquatic agri- and aquacultural systems to climate change
3. To assess the social and economic impacts of climate change with the ultimate goal of mainstreaming climate change adaptation into agri- and aquaculture development policies, and spatial plans.
4. To identify distributions of locations of Aquatic Agricultural Systems across the globe.
5. To identify indicators (exploring ecological, human, socio-economic, technological and infrastructural dimensions) which can be used to measure exposure, sensitivity and adaptive capacity.
6. To develop a ‘vulnerability indices’ which are functions of 'exposure', 'sensitivity', and 'adaptive capacity' which corresponds to past, current, and likely future climates.

Deliverables:

Description	Type	Year	Status	Justification
Trade-offs between adaption options identified using range of tools	Peer-reviewed journal articles	2014	Complete	
Perceptions and attitudes of stakeholders towards climate change impact and adaptation analysed.	Peer-reviewed journal articles	2014	On going	The paper was rejected by Global Environmental Change and is now with Ecology and Society
Database of relevant geographic, environmental, and demographic data to develop vulnerability indices	Information outputs	2014	Complete	
Future climate scenaries developed from Global Circulation Models	Data	2014	Cancelled	Concept note writing took more time than expected in 2014 which prevented any satisfactory progress being made on this deliverable.
Maps of spatial patterns of vulnerability accross global AASs	Peer-reviewed journal articles	2015	Incomplete	
Analysis of the vulnerability of communities dependent on Aquatic Agricultural Systems to climate change.	Data	2016	Incomplete	

Description	Type	Year	Status	Justification
Fish aggregating devices, or FADs, are used widely in developing countries to concentrate pelagic fish, making them easier to catch. Nearshore FADs anchored close to the coast allow access for rural communities, but despite their popularity among policy makers, there is a dearth of empirical analysis of their contributions to the supply of fish and to fisheries management. In this paper we demonstrate that nearshore FADs increased the supply of fish to four communities in Solomon Islands. Estimated total annual fish catch ranged from 4300 to 12 000 kg across the study villages, with nearshore FADs contributing up to 45% of the catch. While it is clear that FADs increased the supply of fish, FAD catch rates were not consistently higher than other fishing grounds. Villages with limited access to diverse or productive fishing grounds seemingly utilized FADs to better effect. Villagers believed FADs increased household income and nutrition, as well as providing a source of fish for community events. FADs were also perceived to increase intra-household conflict and reduce fishers' participation in community activities. FADs need to be placed within a broader rural development context and treated as another component in the diversified livelihoods of rural people; as with other livelihood options they bring trade-offs and risks.	Peer-reviewed journal articles	2014	Complete	
The spatial pattern of vulnerability to climate change in Viet Nam.	Data	2014	Complete	

Description	Type	Year	Status	Justification
Workshop organised by Worldfish and partners in Ha Noi, Vietnam on 3 September 2014. The aim was to build on work done the previous September with our network of climate change, fisheries and aquaculture practitioners that we are developing in Viet Nam.	Workshop	2014	Complete	
Expert consultation worshop to Weight Indicators for Vulnerability Assessment	Capacity	2014	Complete	

Partners:

1- CGIAR Research Program on Aquatic Agricultural Systems (AAS):
Patrick Dugan <p.dugan@cgiar.org>

2- Vietnam Institute of Fisheries Economics and Planning (VIFEP):
Nhuong Tran <n.tran@cgiar.org>

Location(s):

Global

Activity 1015-2014

Intra-Household Impacts of Climate Hazards and Risk in Coastal Communities: A Cross Country Perspective

Status	Cancelled	Milestone	2.1.2 2014
Start date	Not defined	End date	Not defined

Description:

Status: Cancelled. This has entered the system by mistake and I do not know where it came from.

Gender Component: Not defined

Objectives:

Objectives not defined

Deliverables:

Partners:
Partners not defined

Location(s):
Not defined

Activity 1016-2014

Intra-Household Impacts of Climate Hazards and Risk in Coastal Communities: A Cross Country Perspective

Status	Cancelled	Milestone	2.1.2 2014
Start date	Not defined	End date	Not defined

Description:

Status: Cancelled. This activity has entered the system by mistake and I don't know where it came from.

Gender Component: Not defined

Objectives:
Objectives not defined

Deliverables:

Partners:
Partners not defined

Location(s):
Not defined

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

Output: 1.1.1

Summary: Worldfish focuses, in particular on the management of aquatic food production systems and how they integrate with agriculture. In Bangladesh, for example, the Climate Smart Farm project investigated simple interventions, many of which have proven successful. They were described in a blog article by Olek Kaminsky here http://ccafs.cgiar.org/blog/coping-climate-change-bangladeshi-farmers-boost-food-production-simple-interventions#.VNsuwi5i-pc. Also available at this site are a suite of 'Technology Briefs' which describe how to use these systems and their benefits in straightforward language. The bilateral EU funded project on the Ecosystem Approach to Fisheries Management directly addresses small-scale tropical fisheries management which is an important natural resource management issue, affecting the food security of millions. The project will be complete at the end of February and has improved fisheries management in four countries (Indonesia, Phlippines, Solomon Islands, and Tanzania). The Final Report is currently in preparation and will be shared with CCAFS when complete.

Output: 2.1.2

Summary: In 2013 WorldFish organised a workshop on Index-based Insurance (IBI) in Bangladesh which led to the creation of a 'Community of Practice' which is still thriving. Its original goals were 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, and build opportunities for collaboration, see http://ccafs.cgiar.org/blog/call-action-building-index-insurance-community-bangladesh#.UtZBboWW_fn). Having a space to discuss how index insurance might grow in Bangladesh led to some really interesting ideas and new collaborations.

In October 2014, IRI, IFAD, ICCDAD (International Center for Climate Change and Development) and the Climate Smart Farm team from Worldfish organised a further series of workshops and training sessions on IBI with farmers in south-west Bangladesh. The overall schedule and agenda for the trip is described here: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Bangladesh%20field%20visits_MB.docx and other information pertinent to the trip is available here:
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/workingdoc_indexdesign_bangladesh.pdf and here: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/IndexInsuranceInitialVisitBangladesh.pdf. During the Workshops the IRI team explored the use of 'Games' to help understand the potential role of IBI in Bangladesh and these are described here:
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/IndexInsuranceGamesBangladesh.pdf

Output: 2.1.3

Summary: Throughout Worldfish activities in Theme 2 (Theme 1) we developed and demonstrated the

feasibility, acceptability and potential impacts of innovative climate risk strategies. The Climate Smart Farm project explored 'climate smart housing' and a large range of different 'climate smart' agricultural practices, including index-based insurance and forms of landscape modification. Worldfish considered social differentiation in many contexts, e.g. the cage aquaculture project where Miranda Morgan and Paula Kantor explored the factors that prevent women from engaging in aquaculture. Our work on 'landscape modifications' in rice fields increased resilience (both ecosystems and communities) to current and likely 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). It remains difficult to confirm dramatic changes in seasonality (e.g. 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 data at higher resolutions. As a proof-of-concept we installed a weather monitoring station at Worldfish HQ in Penang which collects information at 5 minute intervals. The utility of having such data in discussed in various blog articles we published in 2014 (http://jason-doug-climate.blogspot.co.uk/2014/08/weather-station-at-worldfish-hq-goes.html)

Output: 2.2.1

Summary: The GiZ funded 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' is now complete and describes the construction of a tool built by the project to improve management of the food system in the face of climate fluctuation. The tool combined GIS databases, socio-economic farming analyses, climate change projections for 2080, and water resources assessments done between 2012 and 2014 to produce the Catchment Water Allocation Tool (CAWAT). CAWAT is a decision support system for scenarios assessment of land use change, cropping pattern shifts, storages development and water management practices at catchment level and field level pond water management strategies for integrated aquaculture and irrigation. The full report is available here: https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/BMZ_Chinyanja/BMZ%20Chinyanja_Final%20Report.pdf

Output: 4.1.4

Summary: The Worldfish Team have been contributing to this CCAFs output in a range of contexts. In Timor-Leste we worked to mainstream risk, adaptation and mitigation strategies into national policies, see https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/ADB%20Final%20report%20Sept%203%202014.pdf. As part of Activity 710, training products on fisheries management, developed by Worldfish and partners, 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 and CCAFS continue to strengthen the capacity of national aquaculture scientists and stakeholders in the area of climate change adaptation and planning. Worldfish organised a mini-conference in Ha Noi in September 2013 which generated an informal network which we continue to develop. For instance CCAFs SE Asia are co-finaning a

range of 2 climate change adaptation projects with the Vietnamese Government.

Output: 4.3.3

Summary: The databases maintained at Worldfish are particularly relevent in this context. Worldfish was one of the founding members of FishBase (http://www.fishbase.org/search.php) and is still involved in the Fisheries Information Network (FIN) based at IRRI HQ in Los Banos, The Philippines. It is an indispensable fisheries database, summarizing every scrap of information on every fish species in the world, receiving over 100,000 hits each day. Reefbase (http://www.reefbase.org/main.aspx) and the Coral Triangle Atlas (http://ctatlas.reefbase.org/) continue to be influential for managment and conservation of these important ecosystems and for understanding the risks posed by climate change. In the Asian Development Bank project, 'Generation of Geographic-Referenced Baseline data to Measure Outcome Attainment and Assess Climate Change Vulnerability of Coral Triangle Initiative (CTI) Countries + 2 (Fiji and Vanuatu)' https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/ADB-GIS_final_report_draft.pdf. Worldfish have been particularly influential in monitoring the effects of policy changes. We also hope that our work with the World Wildlife fund in the construction of the SundaBanda Seascape Atlas (http://sbsatlas.reefbase.org/) will lead to positive conservation and food security outcomes for millions, see https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/SBS%20Atlas%20December%202014%20Final%20Activity%20Report_20150109.pdf. Of note also here is the database of Marine Protected Areas (MPA) that we set up for the Bay of Bengal (http://boblme.reefbase.org) which is influencing their management. Improved management of MPAs is essential for marine conservation as well as for maintaining the food security of millions of impoverished coastal fishers, see https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/BOBLME%20Final%20report_July2014.pdf.

3. Communications.

Media Campaigns:

Response to paper on finfish being replaced by shellfish. This is interesting because for whatever reason shellfish tend to get a better price than finfish but they also tend to be at a lower trophic level. According to Worldfish Comms (d.shohet@cgiar.org) this got the second highest 'reach' of all Worldfish publications in 2014.
http://summitcountyvoice.com/2014/07/15/study-english-channel-all-fished-out/
http://www.thefishsite.com/fishnews/23629/fishermen-scraping-the-bottom-of-the-barrel-in-the-english-channel

Vertical agriculture has generated a lot of recent interest as a simple climate change adaptation technology. Even Scientific American has taken notice.
http://www.theindependentbd.com/index.php?option=com_content&view=article&id=247158%3Avertical-gardens-help-farmers-overcome-salty-soil&catid=95%3Anational&Itemid=141
http://www.voanews.com/content/vertical-gardens-help-bangladesh-farmers-overcome-salty-soil/2631540.html
http://www.worldfishcenter.org/content/fish-aggregating-devices-linked-food-security-and-livelihoods-new-study
http://www.scientificamerican.com/article/vertical-gardens-beat-soil-made-salty-by-climate-change/

Blogs:

http://jason-doug-climate.blogspot.co.uk/2014/11/trending-climate-related-keywords-with.html
http://ccafs.cgiar.org/blog/coping-climate-change-bangladeshi-farmers-boost-food-production-simple-interventions#.VNtJ3S5i-pc

Websites:

Sunda Banda Seascape website built by Worldfish in Collaboration with World Wildlife Fund. http://sbsatlas.reefbase.org/
Websites which are part of the Reefbase 'family'.
Bay of Bengal Large Marine Ecosystem Marine Protected Area. http://boblme.reefbase.org
ReefBase. http://www.reefbase.org/main.aspx
Coral Triangle Atlas. http://ctatlas.reefbase.org/
SocMon. http://www.socmon.org/
FishBase. http://www.fishbase.org/search.php

Social Media Campaigns:

Response to paper on finfish being replaced by shellfish. This is interesting because for whatever reason shellfish tend to get a better price than finfish but they also tend to be at a lower trophic level. According to Worldfish Comms (d.shohet@cgiar.org) this got the second highest 'reach' of all

Worldfish publications in 2014.
http://summitcountyvoice.com/2014/07/15/study-english-channel-all-fished-out/
http://www.thefishsite.com/fishnews/23629/fishermen-scraping-the-bottom-of-the-barrel-in-the-english-channel

Vertical agriculture has generated a lot of recent interest as a simple climate change adaptation technology. Even Scientific American has taken notice.
http://www.theindependentbd.com/index.php?option=com_content&view=article&id=247158%3Avertical-gardens-help-farmers-overcome-salty-soil&catid=95%3Anational&Itemid=141
http://www.voanews.com/content/vertical-gardens-help-bangladesh-farmers-overcome-salty-soil/2631540.html
http://www.worldfishcenter.org/content/fish-aggregating-devices-linked-food-security-and-livelihoods-new-study
http://www.scientificamerican.com/article/vertical-gardens-beat-soil-made-salty-by-climate-change/

Newsletters:
http://us4.campaign-archive1.com/?u=2008cf65a0e14eb21385a7e20&id=fdd7a671f9
http://us4.campaign-archive1.com/?u=2008cf65a0e14eb21385a7e20&id=81a00eb0d8

Events:
http://www.worldfishcenter.org/content/inland-fisheries-and-climate-change
http://www.worldfishcenter.org/content/strategies-adaptation-climate-change-timor-leste-importance-climate-thresholds
http://www.worldfishcenter.org/content/resilience-adaptability-and-transformability-coastal-aquaculture-systems-climate-change
http://www.worldfishcenter.org/content/generation-geographic-referenced-baseline-data-measure-outcome-attainment-and-assess-climate
http://www.worldfishcenter.org/content/infographic-climate-change-and-our-ailing-oceans
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Blue%20Solutions%20from%20the%20Asia%20and%20Pacific%20Regional%20Forum%202014.pdf

Videos and other Multimedia:
http://www.worldfishcenter.org/content/mapping-future-coral-triangle
http://www.worldfishcenter.org/content/climate-smart-farm-project-bangladesh
http://www.worldfishcenter.org/content/tackling-global-problem-dynamite-fishing
http://www.ctknetwork.org/videos/community-based-adaptation-to-climate-change-empowers-coastal-communities-in-timor-leste/

Other Communications and Outreach:
http://www.worldfishcenter.org/print/infographic-climate-change-and-our-ailing-oceans#.U4_ujy88Kc8

http://www.worldfishcenter.org/content/access-innovative-fish-processing-technology-empowers-women-malawi
http://www.worldfishcenter.org/content/road-recovery-after-typhoon-haiyan
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Blue%20Solutions%20from%20the%20Asia%20and%20Pacific%20Regional%20Forum%202014.pdf
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/28_May_Session_2_A_Ecosystem_approach_to_fisheries_Len_Garces_Maripaz_Perez.pdf
https://docs.google.com/a/cgxchange.org/file/d/0ByhDQxcsWecOY1pucWt4cERwVk0/edit?pli=1
https://docs.google.com/file/d/0B5_0eOPAfD-FR2kwQTh3el8zZW8/edit?pli=1
https://drive.google.com/file/d/0ByooNnBNswuXbHBucm0wVmpZTDg/edit?pli=1
https://drive.google.com/file/d/0ByooNnBNswuXT0FmUVp0M3FRS0k/edit?pli=1

4. Case studies.

Case Study #1

Title: Vertical horticulture as an adaptation to climate change and variability

Author: Doug Beare

Type: Participatory action research ;

Project Description:

Growing vegetables around homesteads in south-west Bangladesh is difficult due to water-logged and saline soils. Vegetables are an important component of a good diet and excess production can be sold; a source of income especially important for women. This project (a subset of the Climate Smart Farm project) aimed to explore the feasibility of a range of simple vertical agricultural options among farmers in Khulna. Options tested included growing vegetables in sacks, in large bamboo-framed, polythene pots or towers, and frames above ponds primarily purposed for aquaculture. Making a vertical garden is simple. Farmers simply fill some kind of container with 'good' soil and natural fertilizer and manure. The act of raising the containers off the ground improves water circulation, drainage and ultimately production. The project used participatory action research methods to promote and try to understand these technologies which are proving practical and popular, genuinely improving the nutritional security of communities.

Introduction / objectives:

The simple objective of this project was to research, together with farmers and householders, the overall production and economic feasibility of vertical agricultural/horticultural technologies in south-west Bangladesh.

Project Results:

WorldFish Center has trained about 200 villagers in southwest Bangladesh to make vertical gardens. Over the next two years, about 5,000 more people will be trained. WorldFish provides seeds and some materials to villagers in the first year. A single vegetable tower costs, for example, about 300 taka (3.85 USD) to build, but can produce 100kgs of vegetables annually (brinjal, spinach, tomatoes) worth 3000 taka (38.49 USD) per cycle, of which there can be three or four a year. There is also evidence that people not in the program have made their own vertical gardens after seeing their neighbors' designs.

Partners:

Practical Action.

Links / sources for further information:

http://ccafs.cgiar.org/blog/coping-climate-change-bangladeshi-farmers-boost-food-production-simple-interventions#.VNtJ3S5i-pc

A lot of recent press interest including an article in Scientific American.

http://www.voanews.com/content/vertical-gardens-help-bangladesh-farmers-overcome-salty-soil/2631540.html

http://www.theindependentbd.com/index.php?option=com_content&view=article&id=247158%3Avertical-gardens-help-farmers-overcome-salty-soil&catid=95%3Anational&Itemid=141

http://www.scientificamerican.com/article/vertical-gardens-beat-soil-made-salty-by-climate-change/

Case Study #2

Title: Habitat modification in seasonally flooded rice-field fisheries in Bangladesh: Technical feasibility and social acceptability of 'fish rings'.
Author: Alexander Kaminsky
Type: Capacity enhancement;

Project Description:

Although many farmers in Bangladesh enjoy increased seasonal rice yields, one benefit that is not readily recognized is the natural and regular occurrence of aquatic species migrations into the floodplains during the first floods of the monsoon. In recent years, the movement of aquatic species into floodplains has been hampered by: agricultural and industrial pollution; flood control measures; erratic rainfall (possibly as a result of climate change); overfishing and increasingly opportunistic fishing activity. The increasing irregularity of the monsoon season and changing rainfall variability means that many fish species are finding it more difficult to survive and spawn in rice fields.

In this project we installed cement tube wells in rice fields in rural Bangladesh. The wells were intended to provide an environmentally stable aquatic refuge throughout the monsoon period, allowing fish to remain in the field and breed. The project researched the biological and human factors surrounding the installation and subsequent management of the tube wells.

Introduction / objectives:

Rice-field fisheries are extremely important as source of food and income in Bangladesh. The objective of the current project was to explore whether the installation of fish rings had any substantial biological (increased productivity, less pests) or human (availability of fish for food, market, aquaculture stocking) benefits. Further the project studied the social acceptability of the fish rings within the complex system of land tenure in Bangladesh.

Project Results:

The project found that a high diversity and abundance of fish were colonizing the experimental fish wells, proving that they do indeed act as 'microhabitats' providing conditions (i.e. dissolved oxygen and temperature) enabling fish to feed, breed and take shelter. By maintaining a healthy stock of fish various ecological benefits such as less pests and less use of fertilizer were also realized. The fish wells also allowed farmers to harvest migratory fish at the end of the monsoon season which tend to have a higher value. The social acceptability of this intervention is affected by the complexity of land-tenure systems in Bangladesh, and we found that certain socio-cultural pre-conditions need to be in place before the fish-well system can be successfully managed by the community.

Partners:

Aquatic Agricultural Systems (AAS) and the International Water Management Institute (IWMI).

Links / sources for further information:

http://ccafs.cgiar.org/blog/coping-climate-change-bangladeshi-farmers-boost-food-production-simple-

interventions#.VNtJ3S5i-pc
https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Microhabitat%20Tech%20Brief.pdf

5. Outcomes.

7. Outcome indicators.

Outcome Indicator:

One to five flagship technical and/or institutional approaches identified and developed with farmers, key development and funding agencies (national and international), civil society organizations and private sector in three regions, which would directly enhance the adaptive capacity of the farming systems to the climate change conditions

Achievements:

The Smart Farm project has evaluated and demonstrated a range of risk management interventions in Khulna District, South West Bangladesh including: assessing the feasibility of Vertical Agriculture; Habitat Modifications for Fish; Index-Based insurance and a Climate Smart House.

Evidence:

Vertical agriculture has generated a lot of recent interest as a simple climate change adaptation technology. Even Scientific American has taken notice:

http://www.theindependentbd.com/index.php?option=com_content&view=article&id=247158%3Avertical-gardens-help-farmers-overcome-salty-soil&catid=95%3Anational&Itemid=141

http://www.voanews.com/content/vertical-gardens-help-bangladesh-farmers-overcome-salty-soil/2631540.html

http://www.worldfishcenter.org/content/fish-aggregating-devices-linked-food-security-and-livelihoods-new-study

http://www.scientificamerican.com/article/vertical-gardens-beat-soil-made-salty-by-climate-change/

Outcome Indicator:

Breeding strategies of regional and national crop breeding institutions in three target regions are coordinated, informed by CCAFS-led crop modeling approaches that are developed and evaluated for biotic and abiotic constraints for the period 2020 to 2050

Achievements:

In this context I would like to mention some work that was a bit ad hoc that we did on tilapia 'seed' disemmination in the Philippines. It is not particularly relevant to any other activities but somehow fits here. The work led to the preparation of a manuscript entitled, Utilizing visualization tools for understanding dissemination of genetically improved strains for aquaculture' which also conveniently and succinctly describes the project.

Evidence:

Link to the draft manuscript is here:

https://dl.dropboxusercontent.com/u/55911876/CCAFS-Technical-Report-2014/Dennis%20Dring%20-%20Tilapia%20Manuscript%20%28Draft%29.docx

Outcome Indicator:

Integrated adaptation strategies for agricultural and food systems inserted into policy and institutional frameworks at regional, national or sub--national level in 2 target regions. Policy makers and key

stakeholders use CCAFS research outputs - guidelines, tools and methods-- to support the development of NAPAS, sector specific adaptation plans, or germplasm benefit sharing policies.

Achievements:

Training materials on fisheries management (Ecosystem Approach to Fisheries Management) developed by Worldfish and partners adopted by Indonesian Government. 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 emplying 1000s of indivduals. These training sessions will eventually be done with stakeholders accross the entire country, improving fisheries, and food security for the poorest fishers. Remember that millions people of in Indonesia depend on the sea for their livelihood. 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.

Evidence:

The Indonesian Government and The Nature Conservancy are using the outputs.

8. Leveraged funds.

Leveraged funds #1

Title:

Development of an online atlas for the Sunda Banda Seascape

Partner Name: World Wildlife Fund

Budget: $19,090.00

Theme :4

Leveraged funds #2

Title:

Mola in the freshwaters of Bangladesh: understanding its genetic adaptation to climate change for improving food and nutritional security.

Partner Name: ILRI/Livestock and Fish

Budget: $98,200.00

Theme :1

Leveraged funds #3

Title:

Generation of Geographic-referenced Baseline Data to Measure Outcome Attainment and Assess Climate Change Vulnerability of Coral Triangle Initiative (CTI) Countries + 2 (Fiji and Vanuatu)

Partner Name: Asian Development Bank

Budget: $74,999.00

Theme :4

Leveraged funds #4

Title:

For the provision of services relating to developing interactive online database portal on MPAs relevant to the Bay of Bengal

Partner Name: Food and Agriculture Organisation of the United Nations

Budget: $39,424.00

Theme :4

9. Publications.