Technical consultation
"Soil carbon sequestration coefficient and capacity building scenario planning under CSA project"

May 21-24, 2013 FAO HQ Rome, Italy

Final Report

FAO EPIC
ECONOMICS & POLICY INNOVATIONS FOR CLIMATE-SMART AGRICULTURE

CONTENT

INTRODUCTION

The Agricultural Development Economics division (ESA) of the FAO established in 2011 the Economic and Policy Innovations for Climate-Smart Agriculture (CSA) programme (EPIC). The EPIC programme aims at identifying and implementing climate-smart agricultural policies, analyzing and identifying impacts, effects, costs and benefits as well as incentives and barriers to the adoption of climate-smart agricultural practices. The ultimate objective of the programme is to support developing and in-transition countries to formulate agricultural investment proposals to increase resilience to climate change and promote CSA. EPIC seeks to bridge the gap between field research, policy making and financial investments in agriculture.[1]

Within the project *Climate Smart Agriculture: Capturing the synergies between Adaptation, Mitigation and Food Security (GCP/INT/139/EC),* the EPIC team organized a Technical Consultation on "Soil carbon sequestration coefficient and capacity building scenario planning", which was held at FAO Headquarters in Rome between 22nd and 24th May 2013. The Consultation was attended by representatives from FAO, universities, other international organizations and governments (See Annex 1 for the list of participants).

The meeting specifically aimed to strengthen the capacities of the participants in two main areas:

1. Measure the carbon mitigation potential in each of the three partner countries;
2. Use participatory scenario building to better link researchers and policy-makers and to inform the development of CSA strategic frameworks and investment plans.

The consultation also provided an opportunity for FAO and partner countries to discuss ways forward in the CSA project and agree on next steps.

[1] For further information on EPIC, visit the website www.fao.org/climatechange/epic

TUESDAY, 21 MAY 2013

OPENING

The meeting was officially opened by Kostas Stamoulis, Director of the Agricultural Development Economics Division of the FAO. Mr. Stamoulis welcomed all participants and stressed the importance of the meeting, especially at a time when FAO is renewing its Strategic Framework. He provided a brief introduction to the **Economic and Policy Innovations for Climate-Smart Agriculture** (EPIC) programme which is being implemented by ESA stressing that, despite the fact that the division is leading the project, this should be seen as a corporate initiative. Reducing hunger is, indeed, a common goal and countries have to take the lead in eradicating hunger. In fact, FAO could not work towards this objective without the cooperation of the countries. Investing in agriculture is a must to reduce hunger and malnutrition and to ensure food security.

The EPIC programme is aimed at assisting partner countries in identifying a implementing agricultural strategies that capture the synergies among adaptation, mitigation and food security. ESA started this programme of work two years ago in a bid to fill in the gap of the thin knowledge available on CSA and with the purpose of supporting partner countries in developing a sound and solid base of evidence on which investment proposals sourcing on existing and new funds of climate finance could be built.

Climate-Smart Agriculture

*FAO acknowledges that if agriculture is to feed the world in a way that can ensure sustainable rural development, it must become 'climate-smart'. A '**climate smart agriculture'** is agriculture that increases productivity and the returns to agriculture in a sustainable manner. An agriculture which ensures food security and economic growth objectives, but that explicitly considers the projected impacts of climate change and need for adaptation, as well as the potential to capture mitigation co-benefits.*

One of the greatest challenges facing the world today is the eradication of hunger and extreme poverty and facing this challenge is the main mission of FAO. At the same time, however, countries have to confront the impact of climate change, which is a "multiplier" of risks and challenges in achieving sustainable development in both the short as well as the long run. Transitioning to climate smart agricultural systems is thus key. Agricultural growth is the most effective way of reducing food insecurity and poverty, but agriculture is also one of the most vulnerable sectors to climate change. In addition, the sector is a significant contributor to greenhouse gas emissions and therefore it can and must be also an important source of mitigation.

Recent studies and experiences on different Climate Smart Agricultural practices and approaches show that there are no one-size-fits-all solutions. Better climate-smart agricultural practices need to respond to different local conditions, to geography, weather, markets, institutions and to the impacts of climate change. This is why the work of this project is so important: to build the evidence base in Viet Nam, Malawi and Zambia and use it to develop strategic plans and investment proposals.

Mr Stamoulis concluded his intervention with a call for partnership. The work Malawi , Viet Nam and Zambia are engaged in will provide models for other countries to follow.

SESSION 1 – THE COOL FARM TOOL

***Facilitators**: Dr Jon Hillier and Dr Sylvia Helga, University of Aberdeen*

Overview:

The first session of the consultation provided an overview of the Cool Farm Tool (CFT). CFT is a greenhouse gas calculator that is freely accessible to help measure the carbon footprint of crop and livestock products. It was originally developed by Unilever and researchers at the University of Aberdeen to help growers measure and understand on-farm greenhouse gas emissions. The tool is designed to be simple to use, but scientifically robust in the complex arena of carbon accounting. The CFT has been tested and adopted by a range of multinational companies who are using it to work with their suppliers to measure, manage, and reduce greenhouse gas emissions in the effort to mitigate global climate change. For more information about CFT: visit http://www.coolfarmtool.org/

Summary of the discussion:

- CFT is an Excel file with various drop down options and numerical coefficient and data;
- It is sub-structured in 8 topic modules (site data, crop management, sequestration, livestock, energy, primary processing, transport, results);
- The tools is product-focused and it provides results calculated on annual basis;
- Data needs: soil data, fertilizer application (types and rates), crop rotation and management, pesticide application (types and rates), energy records, livestock management (animal breeds, feed mixes, quantities),etc.

Detailed look to the data entry:

- *Key information:* (Descriptive only: Location, year), yield, size of production area, climate (only two options: temperate vs tropical), metric or US system (besides others specifying the emissions intensity of electricity);
- *Crop mgmt:* Specifying soil texture (sand, silt, loam, clay, coarse, medium, fine), SOM content, soil humidity: dry or moist during the growing period, soil drainage: good vs poor, soil ph;
    - Fertilizer: drop down list for 15-20 fertilizer types (specifying nutrient concentrations), application rate and method;
    - Number of applications of pesticides, crop residue mgmt type (leaved on field, burned, exported to other system), straw incorporation of rice;

One main issue was raised with regard to the impossibility of taking into account data coming from intercropping two different crops within the same plot and their interaction (the only exception being represented for livestock manure vs cropland interaction). Also, moisture content coming from rainfall is not taken into account by the software.

- For soil measurement and soil characteristics, the CFT takes into account the top 30 cm, whereas
- For fertilizers, rather significant through their nitrogen cycle for GHG, a number of different nutrient concentrations are included and others can also be added. However, it is unclear on whether the calculation includes the effect of nitrogen fixing from legumes, moreover it was raised that increasing fertilizer use efficiency could also take into account the efficiency coming from an expanding fertilizer industry within country;
- Different crops are only taken into account differently if crop biomass is specified;
- The tool does not directly allow to estimate the GHG effects of changes in mgmt practices;
- On the Sequestration Module: Land Use Change (LUC), Management changes (tillage, cover cropping, compost, manure, crop residue), biomass in trees and bushes (specifying selected tree type and density) are considered. The latter ones could represent a rudimentary way to include agroforestry.

Comments raised with regard to the sequestration module included the inexistence of a separate module which focuses on forest in itself. The tree species are few in CBT (few sub-differentiation of allometric equations) and for the purpose of estimating mitigation potential from their biomass a useful reference is provided from an existing database of 850 allometric equations (Mathie Henry);
The various beneficial management practices and their positive sequestration aspects are added to to account for the total benefits by the CFT, which is an issue that has raise a lot of controversy in during the discussion since the the IPCC advices to only account for the strongest (i.e. the one that has the highest sequestration potential) rather than adding up the various sequestering elements.

- Livestock: the livestock module is only relevant for meat, dairy and animal products (but not for livestock kept for other purposes); need to specify livestock herds, lifespan, feed management approach and manure management system

This session was followed by practical exercises with the Cool Farm tool and discussion.

SESSION 2: The EX-ACT TOOL

***Facilitators**: Dr Martial Bernoux, IRD and Dr Louis Bockel, FAO*

Overview

EX-ACT (Ex Ante Appraisal Carbon-balance Tool) is a tool developed to provide ex-ante estimations of the impact of agriculture and forestry development projects on GHG emissions and carbon sequestration, indicating its effects on the carbon balance. It was jointly developed by three FAO divisions[2] following a request for a tool with transparency, simple practical, cost effective, upgradable over time. In 2008 a concept note was formalized, in 2009 tool designed and piloted, and finally Version 1 with technical guidelines and peer review was released in 2010. Version 2 was released in 2011 and tested by several actors (WB, IFAD, MICCA…)[3].

What is EX-ACT? Ex-Act consists in an Excel spreadsheet (23 linked sheets, no macros) usable on all computers. The tool is able to analyze land use change (change of land use categories according to IPCC, e.g. deforestation, af/re-forestation, other land use like grassland to cropland) and to address land-use remaining same land-use (e.g. forest remaining a forest as opposed to forest degradation forest degradation, annual crop like rainfed rice, grassland, rice, perennial crops) taking into account organic soil, livestock, inputs and other investments. For all these project components the software runs calculation on **carbon stock variation.**

The tool always compares two different situations: 1) baseline (i.e. without project) to a 2) scenario situation (i.e. with project scenario):

We START (present time) and compare → 1) what will happen if no project
to → 2) what will happen with the project

For more information on EX-Act, visit: http://www.fao.org/tc/exact/en/

Summary of the discussion:

The discussion following the overview of Ex-Act focused on the importance of including environmental issues in project evaluation: for the CSA project we do not have to choose a tool but make a case on why a specific tool can work in a specific context. Of key importance is how to define the baseline scenario: what is the most plausible without project scenario is of great concern at the international level. The key discussion should, thus, focus on what is the most reasonable scenario.

Moreover, the discussion highlighted that CFT and Ex-Act are not mutually exclusive. In fact, there are possible complementarities between the two tools and both can be used in the next phases of the CSA project. To this regard, countries' representatives were invited to discuss possible use and appropriateness of the two tools in country-specific contexts.

[2] Policy and Programme Development Support Division (TCS), Investment Centre Division (TCI) and Agricultural Development Economics Division (ESA)

[3] The current Version 4 is available at: http://www.fao.org/fileadmin/templates/ex_act/excel/Version_EX-ACT/EX-ACT_v4.0_-_August_2012_-_EN.xls

WEDNESDAY, 22 MAY 2013

SESSION 3: INVESTMENTS

***Facilitators**: Dr Martial Bernoux, IRD and Dr Louis Bockel, FAO*

Following the overview of Ex-Act, this Session provided the participants with a practical training on Ex-Act tool. During the first half of this Session, participants were provided with a practical application of the tool and debated about the different modules, in particular in relation to the application of the tool in Conservation Agriculture projects.

During the second half of the session, the discussion focused on the use of Ex-Act and CFT tools in the framework of investment proposals.

Leslie Lipper, leader of the EPIC programme in FAO, highlighted that for the project it is very important to estimate the benefits of CSA in the three partner countries and to have feedback, from country representatives' attending the workshop, on the tools presented and their possible utilization and application in their respective countries. It was thus suggested the idea of having a separate session for partner countries to discuss the topic, taking into account the different financing options at country level. To this extent, Leslie provided an overview of some of the most relevant sources of funding starting from GEF funds, which represent a good example for climate financing and whereby GHG mitigation potential is an important element to take into consideration, to the Green Climate Fund (GCF) which is another good example of funding sources although yet to be fully operative. In preparing application for funding, proof of mitigation has also to be considered.

Bjorn Conrad, FAO – TCIO, provided a brief overview of financing options and investment proposals stressing that project sustainability has to be guaranteed in the longer period also from a financial perspective. A wide spectrum of possible options exists in this regard. The first step should be to lay down ideas, to define priorities and actions and eventually to check options that fit the scheme. Actual needs and objectives have to be clearly identified and outlined, criteria have to be assessed and funding sources identified. Prioritization is essential for the subsequent workflow; eventually project fine tuning may follow. After the definition of clear and uncompromised objectives, financing resources may be sought together with the definition of the strategy to reach them.

Different funding options depend from the country itself, i.e. they may be country specific. Eligibility criteria have to be taken into proper consideration. Various parameters exist for different financing options: numerous tools are used for monitoring and measurement as diverse assessment criteria. There are challenges and difficulties in the funding mechanisms but it is a unique moment in time: major funding mechanisms are in place and there is a current shift in attention toward agriculture. Co-financing is a viable option to explore. The first submission of a project always requires an upfront investment, with a sort of chicken/egg dilemma. No funding option requires a predefined tool but the choice may be eventually driven by the circumstances and the project characteristics.

Martial Bernoux, IRD, described an example of Ex-Act utilization in investment proposals with GEF: an adaptation project in Uruguay and a mitigation project in Turkey. In particular, the tool was used to provide evidence of project outcomes in terms of biodiversity or mitigation. Martial highlighted that the Project Identification Form (PIF) is crucial for GEF submissions, as well as the linkage with the agency supporting the country.

Giacomo Branca suggested that whereas a tool can be selected and chosen among various different options, it can then be adopted and adapted as long as it meets the project minimum requirements. In our case, CFT and Ex-Act may be both used and possibly together since some complementarities

exist between them. For example CFT may be applied to estimate coefficients at plot or farm level and coefficients can subsequently be utilized to feed into Ex-Act.

Jon Hillier from the University of Aberdeen, introduced the long list among which mitigation options can be evaluated, suggesting that the selection of the long list requires a transparent and scientifically sound process aimed at assessing agricultural management practices with mitigation potential. As a consequence, whereas useful tools and outputs are to be selected and fine-tuned, the option list should be reduced using a clear criteria for the assessment.
Generic agronomic practices have different mitigating effect in terms of estimated $tCO_2e/ha/yr$ sequestration in dry as opposed to wet zones. The availability and accessibility of supporting data for region specific mitigation practices may be eventually checked. The most appropriate tool for Tier 2 mitigation practices has to be identified.

Giacomo Branca, FAO-EPIC, The proposal is to estimate the benefit for targeted technologies but through a wide range of options. Numerous options prove to be helpful and actually they could be not limited to the long list that has been already defined. The objective of keeping a long list or a short one should be clarified.

Martial Bernoux, IRD, Attention must be paid not to reinvent existing procedures: the list already exists still social aspects should also be taken into consideration, e.g. the no-tillage option is not possible in Madagascar without taking into account socio-economic aspects. Local knowledge must be taken into proper consideration in the choice of parameters.

We are already out of time and the process should be expedited. Data availability and appropriateness have to be assessed but the reduction from the long list to a shorter one has to be transparent.

The CSA team clarified that in effect the CSA practices that the project is interested in measuring have already been defined through a negotiation and interaction process with the key stakeholders in each of the partner countries and it has been one of the inception workshop's main objectives. As a consequence, since the project has already identified a shortlist of practices that are already being used for the Cost Benefit Analysis as well as for the policy analysis and stocktaking review, the mitigation measurement should start from the same list both to be consistent with the rest of the project activities but also not to re-start the selection process again.

SESSION 4: PRECISION ON PROCESS FOR ASSESSING LONG LIST

***Facilitators**: Dr Martial Bernoux, IRD and Dr Louis Bockel, FAO*

Andrea Cattaneo, FAO-EPIC programme, highlighted the need to identify the exact requirements from each of the partner countries and the person in charge of taking necessary steps for moving forward on this project activity in the country. To this extent he introduced the breakout groups discussion.

Three groups representing Malawi, Viet Nam and Zambia discussed what data are available for each country within the 4 environmental criteria directly related to mitigation:

1. Change in soil organic carbon (SOC)
2. Change in above ground biomass (persists for more than 1 year) – which species?
3. Change in Nitrous oxide emissions
4. Change in Methane emissions

+ (5.) Change in yield/productivity [economic criteria]

The objectives of the breakout discussion were to:

1. Go through the list of practices
2. Define data availability: is data available on these factors for the priority activities in your country?
3. Identify barriers of data availability: if no data are available identify possible options to get the data?

Groups reported as follows:

ZAMBIA

a) <u>Conservation Agriculture</u>

- Soil carbon: missing data, not adequate. Maybe possible to link data collection to CSA and consultant. ZARI can collect data needed;
- Above ground biomass: some data are available but need to better determine the data already available and those needed. If not adequate, MSc students may collect data to complement what is alredy available. If an adequate data set is collected, data can be compared using both CFT and Ex-Act;
- Nitrous oxide emission: data are not available but perhaps UNZA and ZARI can provide data or help with MSc student collecting necessary data;
- Methane emissions: same as above;

b) <u>Agroforestry</u>

- Biomass: some Data for specific species are available but the vast majority are missing. ICRAF did a lot of work for specific project but there is a need to look at the data available, then compare and use them as input in both CFT and EX-Act. Zambia can provide information on species to CFT (but not sure they can utilize them).
- SOC: can apply the same method used for CA for data collection

c) <u>Conventional crop/livestock</u>

- SOC, above ground biomass and Nitrogen: data are missing with some exception for specific crop and livestock.

MALAWI

a) <u>Conservation Agriculture</u> (Malawi has been implementing CA for over 10 years, but data are still limited and site/project specific);

- SOC: data are not available with the exception of data coming from experiments (trails) which are not representative of the country. Recommend to initiate soil sampling and

analysis as soon as possible. In this process they can help and it is also possible to involve MSc students.

- Above ground biomass: same as SOC
- Emissions of Methane: almost nothing available and no research done in the country. If it is possible to provide an instrument to measure it, they need to build the capacity to collect this data.

b) Agro-forestry

- SOC: data available are only those coming from experiments, not from farmers themselves
- Biomass: no data and information available

Recommendations: facilitate the collection of this data as soon as possible

c) Soil and Water conservation structures: Structures exist in Malawi, but no data are available
d) Livestock Improved feeding systems: systems and pasture lands, but no data related to Carbon, emissions, etc.
e) Conventional Agriculture No data available

General comments concerning the tools:

- CFT:
    - Malawi is missing from the list of countries;
    - The tool focuses on monocropping, but intercropping is much more common in Malawi;
    - The tree species listed need to be more specific to Malawian context.
    - The Tool cannot be used in Malawi at the moment and it needs to be suited.

  Need more training on climate change modules. To this regard Jon Hillier, University of Aberdeen, stressed that CFT is limited due to the lack of data availability, especially related to tree species.
- Ex-Act tool is more applicable to Malawian context.

VIET NAM

a) Conservation Agriculture

- SOC and Above ground biomass and Nitrate ox: few research activities undertaken and data are specific to those researches therefore in general no data is available;
- It is important to incentivize some modules of CA NMR sloping lands,
- On Paddy rice: Viet Nam is promoting different techniques of sustainable rice production (i.e. by adopting the IPM approach);
- No data collection or analysis specifically undertaken but some secondary data available on Methane, Nitrate, above the ground biomass;

b) Agroforestry (promotion of mulch and intercropping)

- No data available with the esception of some data on biomass for agroforestry.
- Crop/Livestock there is a very popular production system which integrates crop and livestock in the NMR. It is called VAC and it includes Gardening, Aquaculture and Animal husbandry, however, no data is available with relation to this system and its GHG emission

c) Conventional Agriculture

- Not much applied at the moment (most farmers utilize improved systems) and related data are available in control sites only.

Proposed NEXT STEPS:

1. Starting point: decide where a project would be and identify broad outlines of CSA project(s);
2. Build scenarios
3. Conduct Ex Act analysis to identify areas for further analysis
4. Tier 2 analysis -> CFT (or more refined tool)
5. Back into Ex Act tool for more refined analysis for financing (i.e. GEF)

These next steps are substantially driven by the lack of data available in partner countries for mitigation, and a consequent proposal made by Martial Bernaux to use Ex-Act as a simulation to define areas for further work and analysis in response to the vacuum of how to move forward. The result was that we need to start quickly from the identification of where there is the higher potential for mitigation. Although we will not do an in-depth analysis of mitigation potential of all potential practices, it was decided that a dialogue on tree species would start as soon as possible because it is where the likely mitigation potential is. These all steps and options will need to be put in the context of the collaboration with the University of Aberdeen.

Proposed dates for next steps are:

1. University of Aberdeen to provide information to countries:
   a) provide IPCC default values - by mid-June
   b) requests for tree data => relative scale of impacts – by mid-June
   c) do detailed analysis of mitigation potential for selected practices [based on Based on Ex-Act scenarios?]

2. Countries

Provide existing in-country studies on mitigation potential survey data and feedback to University of Aberdeen – by mid-July

3. FAO

Aslihan/Solomon to provide work done by intern on mitigation in Malawi and Zambia – by mid-June
Identify broad outlines of CSA project(s) in countries: location, scope, scale – by end of July

How we proceed beyond this timeframe will depend on the workplan and strategy that the university of Aberdeen will propose.

A detailed summary of dates and next steps is available on pag. 18 of this report.

THURSDAY, 23 MAY 2013

SESSION 5 – PARTICIPATORY SCENARIO BUILDING (part 1)

***Facilitators**: Dr Joost Veervort and Dr Rathana peou van den Heuvel, CIAT/CCAFS*

Overview of participatory scenarios

Scenarios can be defined as different *"what-if"* accounts of the future, told in words, numbers, images, maps and/or interactive learning tools. Scenarios are not meant to be predictive, but instead help partners acknowledge future uncertainty and explore their strategies and policies in the context of the dynamics of widely different but plausible future worlds. The use and development of multi-stakeholder scenarios provides a powerful way to bring key actors together to explore future uncertainty. Scenarios help rethinking and re-organizing current structures to create more robust policies and strategies.

Participatory scenario building is a two-step process. The first phase consists in capturing key socio-economic uncertainties identified by stakeholders and quantified with IMPACT (IFPRI), GLOBIOM (IIASA) and FAO data with climate change scenarios. The results form the basis for plausible alternate futures that are explored through qualitative means (storylines, system maps) and then quantified in a global context. Each scenario represents a different future world in which stakeholders aim for their goals, with its own specific challenges, limitations and opportunities. They help stakeholders explore what strategies and policies are needed to deal with future challenges in terms of socio-economic and political change interacting with climate change. In the second phase of the process scenarios are used to guide policies. In this phase pathways to achieve common goals and objectives are developed and fed into different scenarios developed previously.

For more information about scenarios work, visit: http://ccafs.cgiar.org/scenarios

Example of CCAFS scenarios work in East Africa[4]

In East Africa, civil society and private sector actors conceptualize how they might arrive at a shared vision of the future given a variety of potential scenarios. The "*industrious ant*" scenario involves working with a cooperative, unified government that plans ahead for adaptation. The *"herd of zebras"* is unified, but reactive. "*Lone leopards"* are proactive, but fragmented, while *"sleeping lions"* are completely individualistic and concerned with the status quo, making them the most difficult to work with. Stakeholders must come up with a way to achieve their future vision under any one of these possible scenarios.

1. System maps. System maps chart the key outcomes for each scenario, the key drivers that impact these outcomes and the nature of the relationship between outcomes and drivers. This approach allows the participants to chart crucial relationships and feedbacks that make each scenario distinct. Scenario 3 provides an example of long-term priorities and non-state actors dominant.

2. Semi-quantitative and quantitative assessment. Once regional stakeholders have developed qualitative framework, these scenarios are modeled to allow quantification of key outcomes and indicators. The scenarios are then quantified to inform the model drivers based on semi-quantitative assessments from stakeholders. Quantifying inputs requires data on: GDP, farmer's inputs use, land changes etc. Once we have a number of indicators, we report the changes in the years and explains the reasons of the change. It's also important to assess how confident you are with the estimation of the changes and if there is agreement on these numbers. At this point whether expertise's help is needed can be determined.

[4] See also CAAFS Video https://www.youtube.com/watch?v=6zDTLfYKcf4

3. Results across scenarios. FAO data and results from two models, IMPACT and GLOBIOM, are used. Both models simulate global market dynamics with production and demand interacting.

In the example presented the main results coming from IMPACT and GLOBIOM were showed. The difference in output is very big across two models, it depends on the hypothesis of the model. For example drivers of demand for food were identified as being growing population and urbanization under both models, with difference in magnitude rather high. Models used also showed that foreign investments can damage or transform food security, an issue which raised some debate since not all workshop participants agreed with the assertion. Another example provided showed that regional policies prioritize food security over environmental issues. Etc.

5. Using scenarios to guide policy and action. After obtaining results and general guidelines, you can go to policy makers and provide some policy advice which is generally not listened to unless policy makers are involved in the whole process and planning. After having involved stakeholders, planning workshop for non-state actors and policy advisors are to be organized.

6. GIS-enabled agroforestry for smallholder farmers' resilience to climate change; environmental wellbeing The goal is in the right part of the slide and in the left side the different strategies across scenarios are showed. In each scenario, lone leopards, industrious ants, etc. represent different strategies to be adopted under the various scenarios.

The CCAFS strategic futures process links research and policy and across system levels through five types interactions:

1. The development of regional scenarios with actors across sectors;
2. The quantification of the regional scenarios through research formalized in models that link stakeholder assumptions and their effects on food security and environmental changes;
3. The use of scenarios as decision context supporting governance at regional level;
4. The use of scenarios at local level;
5. The use of the regional scenarios process as a case study to link to global strategic futures.

Group work: Participatory scenario building

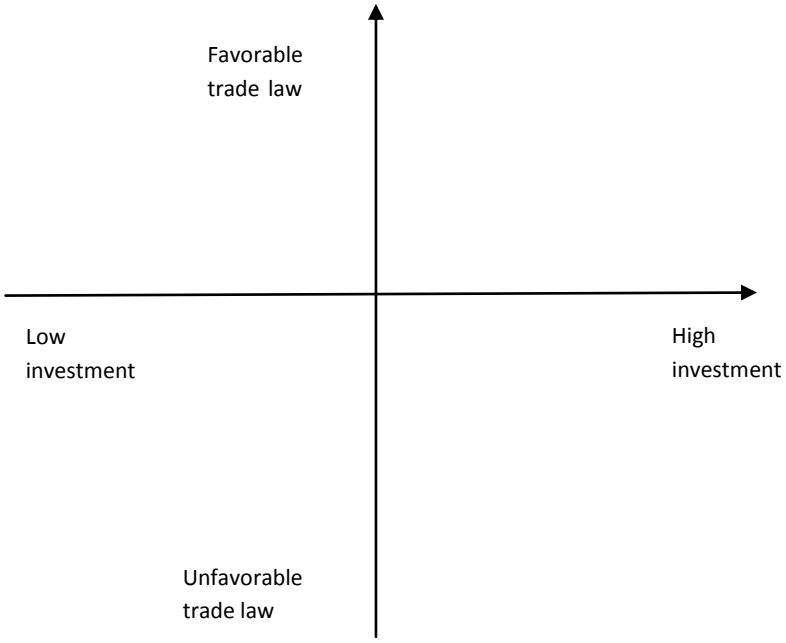
Following the review of CCAFS experience in East Africa, participants were split up in three break out groups focusing on three countries: Malawi, Vietnam and Zambia in order to:

1. Determine the time, the scope and the key decision variables;
2. Determine the stakeholders and actors important for the scope;
3. Analyze the most relevant drivers, make a list;
4. Drivers which are considered certain;
5. Drivers which are considered uncertain;
6. Determine interactions between drivers;
7. Make a list of top uncertain relevant drivers;
8. Determine if resulting scenarios are plausible or relevant for decision makers;
9. Describe directions for key decision variables

Reports from the groups:

Zambia

- The main CSA to prioritize should be promoting agro-forestry;
- Drivers: population increase, higher population, higher impact on reactivity we see a shift from rural area to urban area, access to credit would be relevant, foreign investment
- The following diagram was presented;



Malawi

- To improve Agriculture for food security it is important to take capital and income available at household level into account;
- Key Drivers are: climate change and population growth
- Capital In-flows and fertilizers are key aspects to take into account.

Vietnam

- Decision variables: food production, poverty rate, household income, GDP
- Stakeholders
- Drives: ICT, human resources, population growth, infrastructure, competitiveness of agriculture market
- Interaction: increasing in competitiveness of agriculture market decreases poverty

FRIDAY, 24 MAY 2013

SESSION 6 - PARTICIPATORY SCENARIO BUILDING (part 2)

***Facilitators**: Dr Joost Veervort and Tanja Hichert, CIAT/CCAFS*

The final session of the technical consultation was aimed at contextualizing the participatory scenario development exercise within the CSA project and agree on ways forward. The discussion highlighted the benefits of developing scenarios, especially for this project which seeks to link field based research with policies and institutions. In fact this exercise (scenario, back-casting, qualitative and quantitative analysis, holistic vision etc.) helps to refrain thinking and contribute to decision-making process in agreement with stakeholders. Scenarios may also be useful in stress testing already established policies and frameworks.

During the session, the process for achieving success for the project was defined as follow:

→ policy analysis and econometrics inform scenario
→ quantification of scenario analysis with general equilibrium models (IMPACT)
→ crop-budget analysis will inform investment proposal in terms of project feasibility

Steps to take in VIETNAM

- Scenarios for Vietnam will be contextualized within the ongoing CCAFS scenarios for South-East Asia (Vietnam, Laos, Cambodia)
- Institutional and policy analysis by 10 July 2013
- Stakeholders engagement (i.e. private sector, donors and financing agencies, etc.) in June
- First scenario workshop (socio-economic scenarios) by end-September 2013
- Quantification of scenarios by end November 2013
- Econometric and risk simulations by 24 December 2013
- Second scenario workshop (policy analysis and proposals): March 2014
- Operationalizing policies and investment
- Reporting and connection with UNFCCC November 2014
- CCAFS Focal point – Rathana

Steps to take in ZAMBIA

- Institutional and policy analysis end-July/August
- Stakeholders engagement (i.e. private sector, donors and financing agencies, etc.) in June
- First scenario workshop (socio-economic scenarios) mid-October (2 and ½ days workshop)
- Organizing on line feedback consultation of econometric findings by workshop participants to feed into scenario analysis – first draft by 1st Nov, 2013
- Face to face meeting in countries to share evidence base results
- First draft end of November 2013 and quantification of socio-economic scenarios by December 2013
- Reporting and connection with UNFCCC November 2014
- CCAFS Focal point – Tanja Hichert

Steps to take in MALAWI

- Institutional and policy analysis end-July/August
- Workshop 1: Malawi socio-economic scenarios informed by stakeholder analysis end-October
- Global socio-economic and climate scenarios from IFPRI by 15 November 2013
- Quantification of socio-economic scenarios at the local to national level by the end of December 2013, first draft at the end of November 2013
- Round of feedback: start with project core team
- Workshop 2: Policy analysis and proposals workshop for Malawi by end of February 2014
- Quantification of back-casting results by April 30 2014
- Investment proposals (meeting on June 2014)
- Reporting and connection with UNFCCC November 2014
- CCAFS Focal point – Tanja Hichert

MAIN OUTCOMES OF THE CONSULTATION

The meeting stimulated exchange views and ideas among country focal points and FAO officers involved in the CSA project. Information was shared on emerging evidence from the research activities carried out in Malawi, Viet Nam and Zambia and the policy processes in each country. Hands on trainings on CFT and Ex-Act achieved positive results and increased the capacity of participants on the two tools. A practical overview of scenario development was provided.

One of the main outcomes of the consultation was to discuss and agree with country focal points and technical coordinators follow-up activities.

The following table summarizes the agreed ways forward for mitigation work and participatory scenario development:

	ACTIVITY	RESPONSIBILITY	COUNTRY	DATE
MITIGATION	Data exchange	Jon Hillier, University of Aberdeen, to send default data IPCCC and data needs for above the ground biomass	Malawi Zambia Vietnam	by 14 June
	Country focal points to provide data	• Stalin SICHINGA, Zambia • Ivy SICHINGA LIGOWE, Malawi • VU Hoang Lam, Vietnam	Malawi Zambia Vietnam	by mid-July
	Identify broad outline CSA project	FAO to provide guidance. Country focal points: • Jonh Mussa, Malawi • Stephen Chikwanda, Zambia • Le Hoang Anh - Vietnam • Nguyen Van Linh - Vietnam	Malawi Zambia Vietnam	end-July
	Ex-Act measurement simulation	FAO	Malawi Zambia Vietnam	
	Tier 2 analysis	Jon Hillier, University of Aberdeen		tbd
	Back to Ex-Act	FAO, Ex-Act		tbd

	ACTIVITY	RESPONSIBILITY	COUNTRY	DATE
PARTICIPATORY SCENARIOS	Stakeholders list - criteria definition	• CCAFS (to provide preliminary criteria) • FAO/CCAFS		beginning-June
	Stakeholders list - Identification	• Mutie Katchulu – Malawi • Misael Kokwe- Zambia • NGUYEN Van Linh - Vietnam • LE Dai Nghia - Vietnam		mid-June
	Institutional and policy analysis	FAO CCAFS (SEA region)	Malawi Zambia Vietnam SEA region	Tbd Tbd by 15 July by 30 July
	Workshop 1: socio-economic scenarios	CCAFS / FAO	Malawi Zambia Vietnam/SEA	28-30 Oct 14-16 Oct 24-25 Sept
	Global/regional socio-economic and climate scenarios	CCAFS/IFPRI/IIASA	Malawi Zambia Vietnam/SEA	15 Nov 2013 15 Nov 2013 24 December 2013
	Quantification of socio-economic scenarios at the local to national level (econometric simulation and risk simulations): *feedback on first draft results*	FAO/CCAFS	Malawi Zambia Vietnam	30 November 2013
	Quantification of socio-economic scenarios at the local to national level (econometric simulation and risk simulations): *final results*	FAO/CCAFS	Malawi Zambia Vietnam	24 December 2013
	Workshop 2: Policy analysis and proposals	CCAFS / FAO	Malawi Zambia Vietnam	Begin Feb 2014 End Feb 2014 Mar 2014
	Quantification of back-casting results	FAO/CCAFS	Malawi Zambia Vietnam	30 April 2014
	Workshop + reporting UNFCCC	FAO/CCAFS	All together	Beginning of June 2014
	Workshop 3: Investment proposals	CCAFS / FAO	Malawi Zambia Vietnam	30 June 2014

ANNEX I - List of participants

MALAWI

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CSA Technical Coordinator Malawi

Mr Misael KOKWE
CSA Technical Coordinator Zambia

Mr LE Dai Nghia
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Mr NGUYEN Van Linh
CSA Technical Coordinator Viet Nam

Ms Adriana PAOLANTONIO
Economist

Ms Janie RIOUX
Capacity Development Consultant

Mr Alessandro SPAIRANI
Project Officer

ANNNEX II - Agenda

TUESDAY, 21 MAY 2013	
09.00 - 09.30	**Opening session: overview of CSA project, objectives scope and purpose of the workshop.**
09.30 - 11.00	**Overview of the Cool Farm Tool**
11.00 - 11.30	*Coffee break*
11.30 - 13.00	**Training on the Cool Farm Tool with demonstration**
13.00 - 14.00	*Lunch break*
14.00 - 15.30	**Tutorial session of Cool Farm Tool**
15.30 - 15.45	*Coffee break*
15.45 - 17.15	**Overview of Ex-Act tool**
17.15 - 17.30	**Set the stage for day 2**
17.30 – 19.00	*Cocktail (Aventino Room, 8th floor)*
WEDNESDAY, 22 MAY 2013	
09.00 - 09.30	**Recap of day 1 and objectives for day 2**
09.30 - 11.00	**Training of Ex-Act with a tutorial**
11.00 - 11.30	*Coffee break*
11.30 - 13.00	**Precision on process for assessing long-list:** 1. Presentation of our preliminary long-list of mitigation options; 2. Precision on the process of how to assess these lists; 3. The functional ability of the tools to address these mitigation options.
13.00 - 14.00	*Lunch break*
14.00 - 15.30	**Discussion on workplan at country level**
15.30 - 15.45	*Coffee break*
15.45 - 17.00	**Discussion on workplan at country level (cont.)**
THURSDAY, 23 MAY 2013	
09.00 - 10.30	• Introductions • Overview of objectives and intended outcomes • Introduction/update to multi-stakeholder scenarios theory
10.30 - 11.00	*Coffee break*
11.00 - 12.30	**Scenarios exercise in breakout groups**
12.30 - 13.30	*Lunch break*
13.30 - 15.30	**Overview of proposed scenarios process outline: scenarios development**
15.30 - 15.45	*Coffee break*
15.45 - 17.00	**Discussion and revision of scenarios development outline**
FRIDAY, 24 MAY 2013	
09.00 - 10.30	**Overview of proposed scenarios process outline: use of the scenarios**
10.30 - 11.00	*Coffee break*
11.00 - 12.30	**Steps to take in South East Asia**
12.30 - 13.30	*Lunch break*
13.30 - 15.00	**Steps to take in Zambia**
15.00 - 15.30	*Coffee break*
15.30 - 17.00	**Steps to take in Malawi**
17.00 - 17.30	**Closing discussion and way forward**

Scan the QR code or visit
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