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**Report on parallel session on vulnerability analysis**

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# 1. Rationale for the session

The aim of this session was to explore participatory analysis of vulnerability to climate impacts at the local level. It drew on research conducted in the Sierra Madre Oriental, Mexico, in 2012 ([Newsham et al., 2012a](#_ENREF_1) , [Newsham et al., 2012 -b](#_ENREF_2) , [Newsham et al., 2012c](#_ENREF_3) , [Quintero et al., 2012](#_ENREF_4)). This research used a participatory vulnerability analysis toolkit, grounded in a political ecology approach to vulnerability ([Ulrichs et al., 2012](#_ENREF_5)). As such it sought to disaggregate the communities we worked with into the more heterogeneous  sets of  actors of which they were comprised (i.e. along gender, class, age etc lines), and to try to understand which climate impacts people were vulnerable (or resilient) to, and how vulnerability differed between different groups within the community.

This toolkit is now being adapted and translated for use within a CCAFS benchmark fieldsite in East Africa. The modifications to the toolkit are to:

1. Improve the analysis and coverage of food security dimensions of vulnerability to climate impacts? The starting point for this is the various (and increasing number of) vulnerability analysis kits that have been produced by other organisations.
2. Improve the analysis and coverage of nutrition dimensions of vulnerability to climate impacts.
3. Improve its utility as a tool to be used by local government?

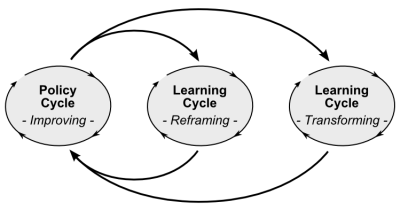
The session attempted three things:

1. Present the conceptual approach we took to vulnerability and how this informed the toolkit
2. Put session participants ‘in the middle’ of the analysis by road-testing one of the methods with the group
3. Explore ways to draw on the collective experience of session participants to point to ways to improve the toolkit

In this way, the session sought to contribute to the social learning agenda which defined the CCAFS science meeting by discussing, amongst a group of people with strong experience in working on vulnerability, a set of methods which explicitly attempts to do most of the following:

* Involve heterogeneous actors
* Be open to beneficiaries from the start
* Follow a bottom up and empowering approach
* Be dynamic and experimental
* Pay attention to power neutrality of information and knowledge
* Ensure contextual relevance

What emerged from the session is captured in the report below. In the end, the session was perhaps more successful at generating cross-disciplinary conversations about vulnerability analysis, and at discussing the strengths and weaknesses of the toolkit, than it was at assessing how it scored against . These reflections are explored in section 2. Nonetheless, what emerged very clearly is that there are many further conversations to have around working collaboratively on vulnerability within and beyond CCAFS. Perhaps most importantly of all, there are many different ways to approach vulnerability analysis, varying across a range of disciplinary, methodological and even epistemological starting points. Top-down (in the methodological sense) quantitative and bottom-up qualitative analyses of vulnerability may not necessarily produce the same conclusions about who is vulnerable to climate impacts, or what the most important determinants of vulnerability are. Nor is it clear that, either within CCAFS or beyond, researchers working on vulnerability in different disciplines are collaborating in ways which may help to reconcile some of these methodological differences (anomalies?). Fostering such collaboration is going to be necessary if we are to produce more robust, multi-level vulnerability analysis methodologies. In one sense, this is a challenge which could benefit from ‘triple-loop’ learning, in which working collaboratively (loop 2) provides opportunities to challenge assumptions about vulnerability analysis (loop 3) and provide better guidance and tools for policy intervention to build resilience to climate impacts (loop 1) – see Figure 1 for a diagram of the social learning process. What such collaborative working might look like is the subject of section 3.



**Figure 1: triple loop learning (source:** [**http://www.newater.uni-osnabrueck.de/img/Simplified\_MTF\_TripleLoop\_Diagram.png**](http://www.newater.uni-osnabrueck.de/img/Simplified_MTF_TripleLoop_Diagram.png)**)**

2. Introducing the toolkit

Prior to embarking on the exercise, the IDS vulnerability analysis toolkit ([Ulrichs *et al.*, 2012](#_ENREF_5)) was described and discussed through a presentation. In essence, the methodology is derived from a broader conceptual framework which explores the vulnerability to climate impacts of social-ecological systems, designed for use by researchers and development practitioners/planners, and to be scaled back or coupled with other methods, depending on the resources available. At its heart is the idea that human adaptations (to climate change and other processes) can affect ecosystem health, whilst the adaptations ecosystems make to climate impacts can likewise affect the quality of the ecosystem services upon which human activities depend. There are feedback loops here and getting to grips with them is one of the key factors for understanding vulnerability to climate impacts. The kit is aimed primarily at addressing the social, political and economic dimensions of vulnerability at the local level. Whilst it provides qualitative information about the state of ecosystems and associated services, it can also be used as part of a broader interdisciplinary, multi-level analysis which includes climate projections. As such it can be used as a free-standing resource or as part of a more coupled social ecological systems approach to vulnerability analysis.

It has two other core characteristics. First, it is a sensitivity analysis, that is, it focuses on understanding current and historical resilience (or lack therein), that is, capacity to withstand recover from and adapt to climate impacts. It does this because the information provided at the local level from climate projections is in many contexts not a credible basis for decision-making. Second, it is about disaggregating vulnerability  to climate impacts, according to gender, ethnicity, socio-economic class and other variables: by avoiding the mistake of treating communities as if they were homogenous entities, it permits intervention to be targeted more effectively and generates data on the politics behind the current distributions of poverty/access to available resources.

The toolkit is guided by a conceptual framework ([Quintero *et al.*, 2012](#_ENREF_4)) which distinguishes both ecological and social dimensions of vulnerability. Given its primary utility for capturing the social dimensions of vulnerability, we focussed in the exercise on these:

1. Climate impacts on livelihood activities.
2. Climate impacts human wellbeing
3. individual/household capacity to respond
4. Collective capacity to respond
5. Governance systems ([Quintero *et al.*, 2012](#_ENREF_4))

The toolkit consists of a sequence of methods that feed into each other: transect walks, spoken maps, seasonal calendars, wellbeing ranking using local categories, semi-structured interviews, key informant interviews, Venn diagrams. Perceptions of change are explored through two timeline exercises: 1) a timeline mapping big changes in the community; climate impacts come into this; and 2) a timeline showing general trends, and including exploration of how local communities have adapted to change, e.g. growing two crops of maize per year because no freezing in winter. These trends could be taken forward into planning future adaptation. The toolkit includes a matrix showing which methods are most suitable for understanding the different dimensions of vulnerability.



**Figure 2: exercises in the toolkit and suitability for investigating different dimensions of vulnerability**

**Issues for discussion that emerged:**

The discussion around the toolkit was very rich and varied. In summary, the core issues that emerged during this part of the session are as follows, and relate mainly to the practicalities of employing it:

* Time and skills needed: The exercise need eight researchers working for one week, but fewer people could also do it over several weeks, working with local NGOs and students.
* The toolkit has not yet been used for monitoring changes in levels of vulnerability over time.
* How to connect local perceptions of climate change with scientific knowledge? It is difficult to disaggregate farmers’ response to climate-related and non climate-related changes.

# 3. Group exercise: ‘road-testing’ the seasonal calendar

In order to allow session participants to ‘get their hands on’ the toolkit, they were invited to try out the seasonal calendar exercise, in order to gain a clearer appreciation of its strengths and weaknesses. The exercise consisted of the following steps:

1. Assign roles
2. Agree on geographical context for the exercise
3. Brainstorm livelihood activities for participants
4. Feed data into and construct the seasonal calendar
5. Discuss the strengths and limitations of the method

*Assigning roles*

For this the group assumed two sets of roles: two became researchers (group facilitator – Douglas Beare – and rapporteur – Ann Waters-Bayer); and a group of people in a developing country context in which vulnerability to climate impacts was worthy of further research.

The assignment of roles to group participants was as follows (with a real effort to put ourselves in the shoes of people in a different walk of life):

* Jenny: woman farmer, whose husband migrates to Kampala
* James: landless male working on commercial farm; wife does petty trade
* KPC Rao: male farmer on own land
* Joost Vervoort: woman teacher
* Ioannis: 12-year-old female student in elementary school; father smallholder, mother petty trade
* Jakob van Etten: big landowner, mayor, has 200 head of cattle
* Tegen Blaine: man who migrates to Kampala in dry season to do construction work, spend wet season drinking in village; wife does some farming
* Robert: male priest and traditional healer
* Andy Newsham: female health worker
* Alain: migrant from elsewhere, charcoal dealer and honey producer (non-timber forest products); no land rights

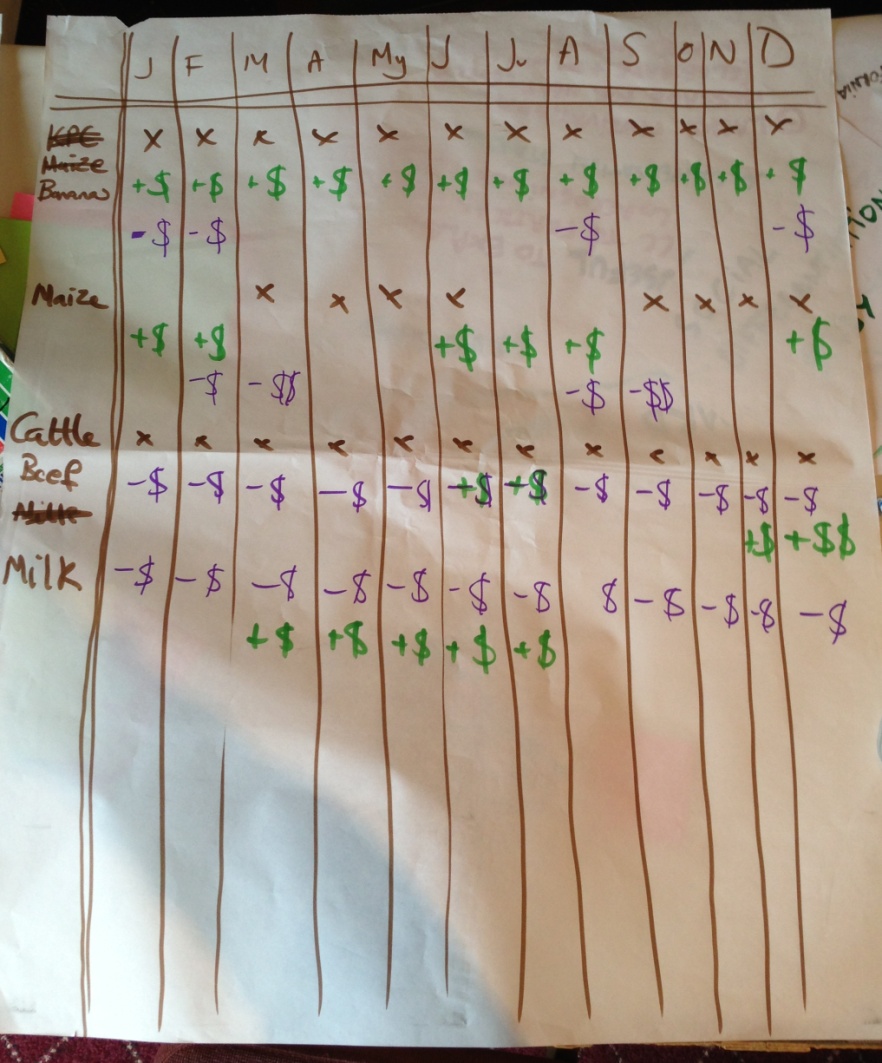
*Brainstorming geographical context and sources of livelihoods in village:*

The group chose the context of Central Uganda, a village 2.5 hours from Kampala, with an elementary school, some people working on own land, some wage labourers working on other people’s land, some people working for the local government, some migrating to Kampala to work. The discussion identified the principal elements of the livelihood strategies to be found in our notional village various field crops, horticulture, livestock-keeping, NTFPs, farmer labour, small-scale retailing, civil servant, off-farm labour, migrant labour, local food processing (see flipchart). A number of comments also emerged while making the seasonal calendar (see figure two):

* No difference in seasonal work for commercial and smallholder maize, as no irrigation, but differences in amount of investment
* No seasonality in growth and harvest of plantains but seasonality in work on crop protection; heavy work in preparing holes for new plants before the main rainy season
* When commercial farmer/landowner is spending money, e.g. on crop protection measures for which labour needs to be hired, the labourers are earning money
* Because of such differences within the community, it is difficult to make a seasonal calendar reflecting an average at community level; the average may reflect something that does not exist
* In livestock, the parasite load increases during the wet season; male offspring are likely to be sold to pay for school fees; seasonality in production and earning from sales is higher in the case of milk compared with animals/meat
* The exercise revealed the complexity of assessing livelihood sources
* Using such participatory assessment tools gives everyone insight, is important for capacity building at community level and stimulates social learning
* Seasonality is a good entry point for discussing and tackling climate change
* During such exercises, there may be a problem that people keep up appearances and it will not be easy to find out about illegal activities such as smuggling or prostitution

*Strengths and limitations of the tool*:

* Structural way to tease out information on the agricultural system
* Gives baseline about how climate is linked to household-related activities
* Can be related to how climate is likely to change and to see how climate change is likely to have an impact on livelihoods
* Can be combined with future climate scenarios; local-level vulnerability analysis could help with identifying some of indicators
* Provides a record of extreme weather events over time
* Should be linked with historical weather data – what happens in the short term may not be what happens in the long term; need to identify the “game changers” that influence development
* May be useful to make seasonal calendars for good and bad years
* Can lead to discussions about the adaptive capacities people are already using
* Similar toolkits are already being used within CCAFS, e.g. the IUCN toolkit used in West Africa. It will be important to ensure that the use of this method (and the broader toolkit within which it sits) does not duplicate existing efforts.



**Figure 2: partially completed seasonal calendar**

# 4. Reflections and next steps

There was a lot of agreement that much work within CCAFS was looking at vulnerability from different perspectives and but not necessarily in a way that was ‘joined up’. The group thought that insights could be gained from doing this, and there was some interest in working collaboratively. The overlap from the toolkit seemed especially prominent with the following areas of CCAFS research activity:

* With the scenarios work of Joost Vervoort and colleagues
* With the farm- (and other-) level modelling done by KPC Rao and colleagues in relation to the AGMIP (Agricultural Modelling Intercomparison Project)
* Potentially with the CIAT ‘vulnerability hotspots’ quantitative framework led by Andy Jarvis and colleagues; unfortunately, we did not have any CIAT people in the room

However, there could potentially be difficulties related to the commensurability (or lack therein) between different methods, and these would have to be worked through. For instance, how can qualitative data from a participatory analysis at the local level be fed into a model which projects vulnerability at a broader level (i.e. national), which requires quantitative values and which takes its vulnerability information from different datasets? Is it possible to quantify all of the necessary qualitative data? To what extent would this act of translation and triangulation reconcile qualitative and quantitative methodologies?

There was, moreover, a keen awareness that outside the CCAFS initiative, there is a rapidly expanding amount of work on vulnerability going on which needs to be better coordinated. Two key points to mention here:

* The recent proliferation of qualitative, participatory toolkits kits risks diminishing our ability to collect local level data which can then be compared with other sites, to generate analysis across a bigger geographical area? Tegan Blaine (USAID) is doing some work on this question, and the outputs of it would be highly pertinent to the group
* Reconciling quantitative and qualitative vulnerability analysis assessments – we need to do it but how, in practice is it to be done? In many ways, unless we find ways to do this more effectively, the validity of vulnerability analyses will continue to remain open to question. This has substantial implications for the viability of adaptation options identified on the back of vulnerability analysis and, therefore, the prioritisation of adaptation funding. This is not, therefore, a trivial consideration.

There is an increasing interest in this agenda from a number of donors (CDKN, GIZ, USAID) who are concerned to ensure that they are directing their funding towards the most effective and legitimate forms of intervention. A potential next step, therefore, is to identify a set of actors, perhaps for the meantime within the CCAFS initiative, working on vulnerability from different methodological perspectives, and perhaps to write a research proposal around the idea of methodological integration, with a view to seeking funding from interested donors or other research funders. The idea would be to bring different approaches together in the hope of generating a coherent, robust and genuinely multi-level vulnerability analysis methodology, which is capable of giving an accurate national level understanding of vulnerability which is genuinely rooted in, and ‘ground-truthed’ by, local-level analysis.

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