



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Welcome

Climate, Agriculture, and the Environment Training: Proving Concepts and Improving Climate Change Integration in Agriculture Sector Activities

Hosted and Sponsored by
USAID/DCHA Food for Peace and
USAID/BFS Feed the Future

Climate, Agriculture, and the Environment
Malawi • 24–28 October 2016



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DAY 1 – STATE OF CLIMATE, ENVIRONMENT, FOOD SECURITY, AND PROGRAMMING IN MALAWI

- 8:30 *Participant Sign-In*
- 9:00 Welcome, Intro, and Objectives
- 9:30 Integrated Issues in Climate Change, Agriculture, and Household Resilience in Malawi
- 10:30 *Break*
- 10:45 Project Goals and Barriers to Success, Part 1
- 11:45 Project Goals and Barriers to Success, Part 2
- 12:15 *Lunch*
- 13:15 State of Climate and Environment: Where Climate, Environment, and Agriculture Converge
- 14:00 Malawi Government Climate Adaptation Plan
- 14:30 Introduce CRM Tool and Discuss Environmental Impact of Select Climate Risk Mitigation Measures
- 15:15 *Break*
- 15:30 Hypothetical Climate Change Scenario in Groups, Part 1a: Exercise Instruction
- 16:00 Hypothetical Climate Change Scenario in Groups, Part 1b: Malawi 2026 Visions





DAY 2 – PRINCIPLES AND TECHNIQUES FOR ADDRESSING CLIMATE CHANGE AND ENVIRONMENT IN AGRICULTURAL ACTIVITIES

- 8:30 *Day 1 Recap and Day 2 Plan*
- 9:00 Integrated Systems: Agroforestry and Livestock Management
- 9:25 Increase Biomass: Soils Management
- 9:50 Pests and a Changing Environment
- 10:15 *Break*
- 10:30 Water Management for Agriculture
- 11:00 Off the Farm: Sourcing of Inputs, Post-Harvest Systems & Marketing
- 12:15 *Lunch*
- 13:15 Hypothetical Climate Change Scenario in Groups, Part 2: Priority Actions
- 14:30 Hypothetical Climate Change Scenario in Groups, Part 3: Build the Case with Beneficiaries
- 15:30 *Break*
- 15:45 Working with Existing Work Plans, Part 1
- 16:30 Working with Existing Work Plans, Part 2





DAY 3 – FIELD VISITS

Note: The timing below is approximate. Everyone will visit two field sites (WALA and Njira). To accommodate the group size, participants will be split into two groups and the groups will switch sites after lunch.

8:00 Site Visit

12:00 Lunch

13:00 Site Visit





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DAY 4 – DIVING INTO THE WORK PLAN

- 8:30 Field Visit Recap and Day 4 Plan
- 9:00 FFP/FtF Sites: Group Work
- 10:15 *Break to be taken at leisure during group work*
- 11:30 FFP/FtF Sites: Report Out
- 13:00 *Lunch*
- 14:00 Working with Existing Work Plans, Part 3
- 15:30 *Break to be taken at leisure during group work*



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DAY 5 – REPORTING OUT ON LEARNING

- 9:00 Working with Existing Work Plans, Part 3 continued
- 10:30 *Break*
- 10:45 Group Discussion: What Bigger Changes Can We Make in the Future
- 11:30 Group Report Outs
- 12:00 Wrap-Up and Synthesis: Incremental vs. Transformative Changes
- 12:30 Certificates and Evaluation
- 13:00 *Lunch*





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FFP Field Site Visits

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FIELD VISIT LOGISTICS – GROUP 1

8:00

Meet in front of the hotel for departure

9:00 Arrive at WALA

9:00 Community Leader meeting

9:15 Round robin with smaller groups

12:00 Return to bus area for questions to community

12:30 Depart for Hippo View

1:30 Lunch at Hippo View

2:15 Depart for Njira Watershed site

3:00 Arrive at Simbota watershed

3:00 Community Leader meeting

3:15 Round robin with smaller groups

4:45 Return to bus area for questions to community

5:15 Depart for Hippo View

****Water and a snack will be provided on the bus.***

You need to bring walking shoes, notepad and pen, sunblock/hat.





FIELD VISIT LOGISTICS – GROUP 2

8:00

Meet in front of the hotel for departure

8:45 Arrive at Njira Site

8:45 Community leader meeting

9:00 Round robin with smaller groups

10:45 Return to bus area for questions to community

11:15 Depart for Hippo View

12:00 Lunch at Hippo View

12:45 Leave for WALA site in Lingoni, Machinga

1:45 Arrive WALA Site

1:45 Community leader meeting

2:00 Round robin in small groups

4:45 Return to bus area for questions to community

5:15 Depart for Hippo View

****Water and a snack will be provided on the bus.***

You need to bring walking shoes, notepad and pen, sunblock/hat.





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WALA

Several years after closeout so might look more like a FTF site at the start (farmers with higher capacity, more resources, have had time to work through issues)

NJIRA

New project (1 year). Just beginning to implement in an area that was not previously serviced. Working with FFP beneficiaries so more training needed at this point.

Activities:

- Reforestation water absorption trenches
- Check dams
- Marker ridges and afforestation
- Irrigation
- Fish pond and inter-cropping
- Looking at previously deforested areas and new absorption trenches
- Observing traditional and best new tilling practices
- Visit and discuss borehole issues and water scarcity



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FIELD VISIT QUESTIONS

- Compare the difference in working with FFP and FTF beneficiaries based on what you have seen with WALA serving as a proxy site for FTF.
- How would that change your adaptation planning?
- What can the two programs learn from each other?
- What were the attitudes of the community? What did you note that would have helped you when we talked about “building a case”?
- Which interventions did you think would be the most useful for adaptation? Mitigation?
- What changes would you make to the activities to make them more resilient? What were the best practices that you could adopt?
- How was the environmental condition affecting the project? What means could help you address those?





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Njira Project Site – Simbota Watershed Management, Manga Village (Balaka)

Background

In 2014, PCI began implementing a \$30 million dollar, five-year Food for Peace project designed to improve food security through agriculture, agribusiness, health, nutrition, and disaster preparedness for vulnerable families in Balaka and Machinga districts.

Under Purpose 1 - Increased food and income - Njira promotes a number of practices including: conservation agriculture, permaculture gardens, irrigation, watershed management, post-harvest technology, agribusiness, livestock management, and Women Empowered /Village Savings and Loans.

The project also has a strong health and nutrition component (Purpose 2) as well disaster risk management (Purpose 3).

Simbota Watershed Management, Manga Village (Balaka)

The field visit site is located in Balaka District, which has one of the highest poverty levels in the country. Subsistence agriculture is the primary livelihood in the district with few cash crops grown. The average rainfall in the area is 600 mm. Simbota, like much of the surrounding areas, has faced large-scale deforestation, land degradation, reduced ground water recharge, and permanent drying of river beds.

The challenges the Simbota watershed face include:

- River Mkandabwako has not flowed for about 15 years.
- Food insecurity: previously the local community cultivated in the river valleys using water from the river, which enhanced food security. Irrigated farming in these valleys is now not possible since the drying up of the river.
- Local people cannot easily access water and have to source it from a distance. A borehole near the site provides drinking water only. (The yield is not good and the committee managing it has imposed restrictions on the amount each household can draw per day).
- Land degradation/loss of soil fertility.
- Deforestation

The PCI intervention focuses on water management practices which started in June of 2016. In response to deforestation in the Simbota watershed, specific activities include:

- Construction of stone bunds to act as a soil and water conservation measure; (60 cm wide and 30 cm in height)
- Construction of contour staggered trenches;
- Construction of check dams on the streams;
- Construction of gully plugs
- Allowing for natural regeneration in the degraded hillsides;
- Afforestation/agroforestry (including establishment of tree nursery).

These activities are implemented as part of the Disaster Risk Management Plans for area in collaboration with Government of Malawi. These activities are funded under a Food for Assets Program implemented by Njira.



Njira Project Site – Simbota Watershed Management, Manga Village (Balaka)

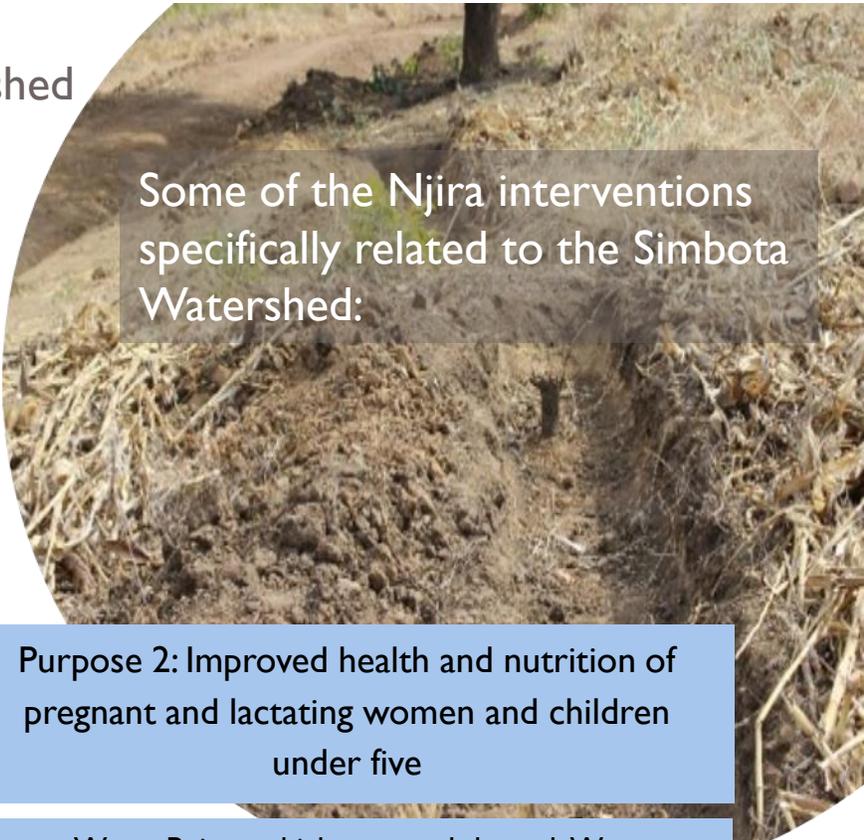
Purpose 1: Increased Food and Income

Conservation Agriculture (CA) in the form of minimum soil tillage, retention of crop residues and intercropping with cowpeas or pigeon peas, is the major thrust for Njira agriculture. Njira is promoting other drought tolerant staple foods such as orange flesh sweet potatoes, sorghum and pearl millet.

Most farmers at the Simbota watershed site have not tilled their land and have retained the residues from the previous crop as part of the Conservation Agriculture initiative, however, because the activity started so recently, some farmers still utilize traditional practices.

Agribusiness – Farmers are linked to buyers to facilitate collective marketing of crops and livestock as well as being taught to treat farming as business.

Post-harvest storage technology is being promoted by using metal silos and the use of Purdue Improved Crop Storage (PICS) bags. The bags are sealed and prevent damage from stored grain pests and disease.



Some of the Njira interventions specifically related to the Simbota Watershed:

Purpose 2: Improved health and nutrition of pregnant and lactating women and children under five

Water Points, which are managed through Water Point Committees responsible for establishing fencing around water points, management of the borehole, and construction of vegetable gardens around water points to raise funds for borehole management. Njira provides training in all these aspects to ensure sustainable water points.

The water point at the site is unique in that there are watershed features above the waterpoint. Over the next few rainy seasons, the water harvesting features above the water point should increase the yield of water significantly.

Purpose 3: Improve capacity to prepare for, manage, and respond to shocks

P3 has taken the lead in developing the Simbota as well as other Watershed Sites. This is because watershed restoration not only helps to recharge groundwater but it also helps to prevent shocks such as droughts and floods.

Community contingency plans include installation of rain gauges, river line gauges, and use of cell phone technology, for disaster preparedness.

Infrastructural Development, including river bank stabilization and dike construction, as well as upgrading and rehabilitation of feeder roads is being carried out to increase community resilience.

Data collection for better disaster planning, will include field level weather data and the use of GIS maps, to give up to date maps of the Njira impact area. These maps will greatly assist disaster preparedness as well as all aspects of programming.

Wellness and Agriculture for Life Advancement (WALA) Program Site in Lingoni, Machinga

Background

WALA was a five-year \$81 million Bureau for Food Security Program funded by USAID's Food for Peace Office from 2010 to 2014. The Program was led by Catholic Relief Services (CRS) and implemented by a consortium of private voluntary organizations (PVOs), including ACIDI/VOCA, Africare, Chikwawa Catholic Diocese, Emmanuel International, Project Concern International, Save the Children, Total Land Care, and World Vision International.

The WALA project had

Prior to the intervention, the area faced significant issues with deforestation. The river Lingoni did not flow during the dry season, and the area faced considerable food insecurity.

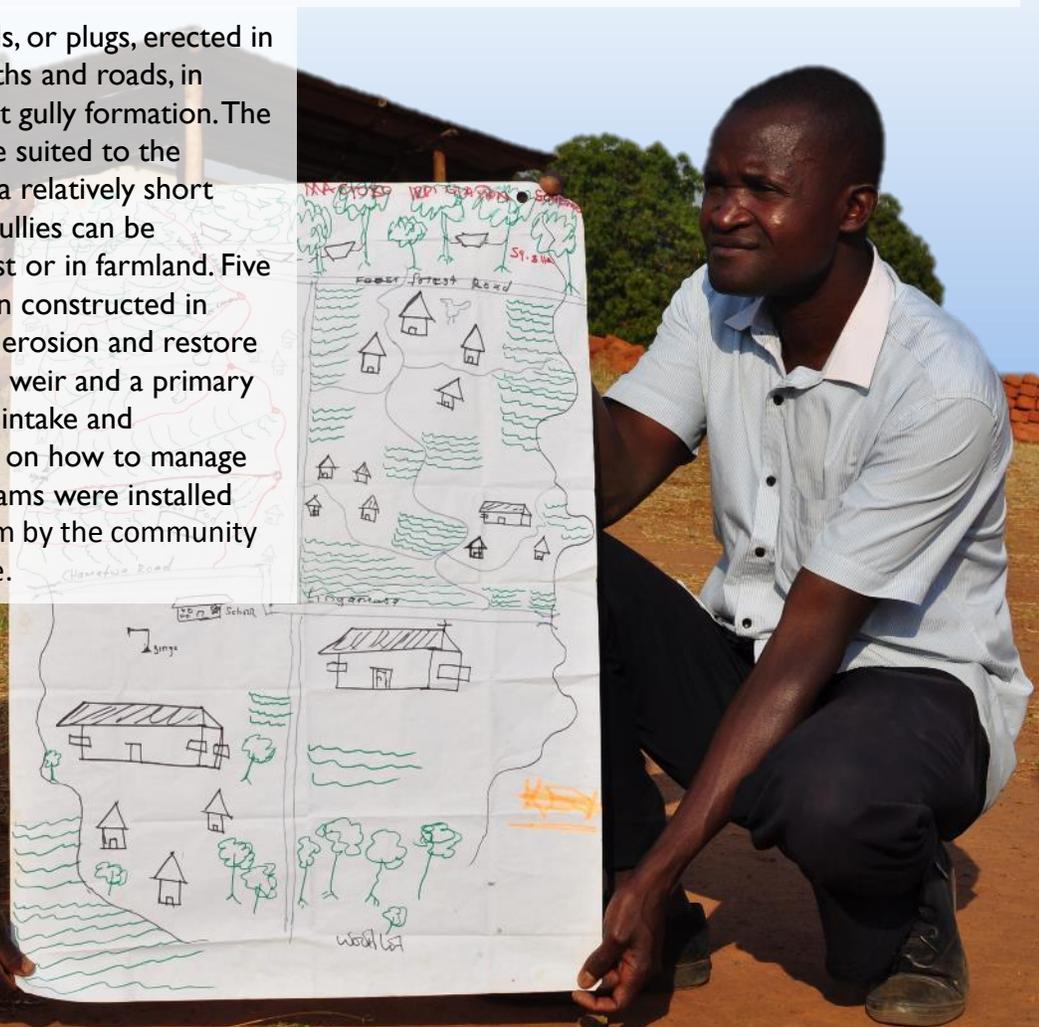
Specific WALA activities in Lingoni include:

Water Absorption Trenches (WATs) are typically large and therefore not recommended for use in farmers' fields, but rather are typically used on field perimeters or up-watershed, such as in an adjacent forest. WATs are used to capture and retain water, in order to recharge the water table. The watershed has 5,440 WATs constructed on 134 hectares of land.

Continuous Contour Trenches (CCTs) are considerably smaller than WATs and are excavated along contour lines in farmers' fields. The trenches reduce water runoff, thus allowing water percolation into fields and increasing soil moisture content. A total of 861 CCTs in 13 rows have been completed.

Stone Bunds are low rock walls erected along a slope's contour that form a semi permeable barrier that slows surface water runoff rate, filters water, and helps spread water over a field. This is a preferred land treatment where loose stone is available. Over time, stone-filled slopes may morph into arable terraced farmland.

Check Dams are simple stone walls, or plugs, erected in eroded gullies or adjacent to footpaths and roads, in order to reclaim trenches or prevent gully formation. The specifications of check dams must be suited to the locality, particularly the flow rate. In a relatively short period (one or two rainy seasons), gullies can be reclaimed either in a protected forest or in farmland. Five hundred (500) check dams have been constructed in gullies, which has helped reduce soil erosion and restore the watershed. WALA constructed a weir and a primary canal, which improved overall water intake and distribution, and trained the farmers on how to manage the irrigation scheme. Many check dams were installed after the close of the WALA program by the community members without outside assistance.



Wellness and Agriculture for Life Advancement (WALA) Program Site in Lingoni, Machinga

Alternative income activities,

including bee keeping and fish ponds, were integrated into the responsibilities of the Watershed Rehabilitation Committees. In 2012, WALA helped the local community construct six bee hives. In 2014, the hives were harvested twice, with each hive giving an output of 10 L, or 120 L/year for all the hives. The honey was sold at \$5.66/L so the hives were able to generate \$675 per year. The community used the proceeds to construct six additional beehives, increasing the number of hives to 12.

A fish pond was constructed and stocked with about 2,500 fingerlings. The first time the community harvested approximately 20kg of fish. They have since harvested the fish three (3) times and the profit margins are strong. The community plans to construct and stock three (3) additional fish ponds, increasing the number of fish ponds to four (4). Individuals are also encouraged to have their own fish ponds. Portions of the fish harvest from the large community pond go towards community consumption, sale on the market, and to the poor and sick members in the community. Fish feed and fertilizers are purchased for the members.



More WALA activities
in Lingoni:



Afforestation activities promoted by WALA involved the raising and transplantation of indigenous trees, including fruit trees and grass. Vetiver grass was raised in nurseries and transplanted throughout the watershed for purposes of stabilizing treatments such as gullies and marker ridges, among others.

Irrigation and intercropping have been promoted where the main crop grown is maize and rice. The farmers have created small irrigation basins for holding water. The irrigation committee manages water use, ensuring that all farmers are getting their ration of water. Maize is intercropped with beans, garden peas, and pumpkin.



Disaster Risk Reduction (DRR)

The program has built community capacity in disaster preparedness and response, strengthened linkages among Government of Malawi (GoM) DRR mechanisms, and provided reliable safety nets to the most vulnerable households.

Small grants capacity building support involved building the capacity of communities to apply successfully to the small grants scheme that will be funded under the new national DRR policy.

Training provided the communities means to identify and incorporate new information into their messaging to maintain community interest. Training manuals on DRR were provided.

Food for Work incentives were used as an important complementary tool for DRR and in improving productivity in communities. WALA invested over \$2.2 million in Food for Work (FFW) incentives, representing a cost of \$1.11 per structure-meter.



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Environmental Compliance

at USAID

Fun with the IEE and EMMP



*Everything you ever wanted to know
(Almost!)*

Initially USAID did NOT consider Environmental Issues



- In 1975, improper pesticide use by USAID-funded project in Pakistan results in 5 deaths and hundreds sickened
- Consortium of US NGOs successfully sued USAID to force consideration of environmental issues



USAID is Forced to consider Environmental Issues

- USAID settled out of court
- In 1980, USAID published Title 22 Code of Federal Regulations, Part 216 (**Reg. 216**) Environmental Compliance Procedures
- Reg 216 is a US law that is required

Reg. 216 Requires USAID to:

- Consider environmental consequences of financed activities before deciding to proceed *and adopt appropriate environmental safeguards*
- Define *environmental limiting factors* that may constrain development and identify and carry out activities that assist in restoring the renewable resource base upon which sustainable development depends
- Assist *host countries* to strengthen capabilities to appreciate and evaluate potential environmental effects of proposed strategies and projects, and to select, implement and manage effective environmental programs
- Document environmental review decisions *before funds are irreversibly committed* and maintain review-decision records
- USAID conduct an *Initial Environmental Examination (IEE)*

Initial Environmental Examinations (IEE)

- USAID examines **potential negative environmental impact** of an activity, with a focus on prevention and best practices which contributes to environmentally sound design and management.
- IEE is **drafted by the COR/AOR**, reviewed by activity team, signed by Office Director, submitted to BEO, who concurs with, or requests reconsideration, of recommended Threshold Decision.
- The IEE contains **legally binding requirements**, which can include **Conditions**.
- **Implementers MUST have a copy of the IEE** in order to understand project environmental issues and develop an effective EMMP.
- The IEE is required to be completed **prior to obligation of funds and activity initiation**.

Reg. 216 Determinations

If the IEE analysis finds...	The IEE recommends a . . .	Implications (if IEE is approved)
No significant adverse environmental impacts	CATEGORICAL EXCLUSION	No conditions. Go ahead.
With specified mitigation and monitoring, no significant environmental impacts	NEGATIVE DETERMINATION WITH CONDITIONS	Specified mitigation and monitoring must be implemented
Significant adverse environmental impacts are possible	POSITIVE DETERMINATION	Do full EA or redesign activity. Conditions imposed by the EA must be implemented.
Not enough information to evaluate impacts	DEFERRAL	Rare. No activity implementation until the IEE is amended
Emergency/disaster funded with International Disaster Assistance money thru OFDA	EXEMPTION	Very Rare , can only be declared by Administrator

Applicability of a Negative Determination (with Conditions)

- The proposed action has only minor (not significant) environmental impacts that can be feasibly mitigated and controlled
- Applies only to *small scale projects*:
 - Small-scale controlled agricultural research
 - Limited construction
 - renovation and refurbishment
 - Small-scale water supply and sanitation
 - Small-scale road improvements

A Negative Determination with Conditions Require Implementers to:

- Incorporate **IEE conditions** and requirements into budgets and workplans
- Based on the IEE Conditions, develop the **Environmental Mitigation and Monitoring Plan (EMMP)**
- The **EMMP is an key part of project implementation**, reporting progress as appropriate to the activity
- **Report** environmental compliance findings in routine project reporting to USAID (quarterly reports, annual reports)
- Upon activity completion, show project was conducted according to the applicable EMMP

Environmental Mitigation Monitoring Plan EMMP

EMMP

- **TRANSLATES IEE conditions into specific mitigation measures** to implement IEE conditions
- **SETS OUT indicators/criteria for monitoring implementation & effectiveness of mitigation**
- **ESTABLISHES Timing & responsible parties**

The EMMP

The EMMP sets out:

- 1. Mitigation actions.** Mitigating actions lessen possible negative environmental impacts resulting directly or indirectly from a project activity. The EMMP specifies the mitigating actions that will be taken based the IEE conditions.
- 2. Monitoring actions.** The EMMP sets out the indicators or criteria that will be used to monitor (1) whether the mitigation actions are being implemented, and (2) whether they are effective and sufficient.
- 3. Responsibility and Scheduling.** The EMMP specifies who is responsible for mitigation and monitoring actions and the schedule for these tasks.

EMMPs may also include a log of monitoring results and budget estimates for EMMP activities.

What does an EMMP look like?

Activity [name of activity] [briefly describe activity]			
IEE Condition	Mitigation	Monitoring	Timing and Responsible Parties
From IEE	Specific actions to be taken to comply with the condition.	How to know mitigation is being implemented and is both effective and sufficient?	Who is responsible for mitigation, monitoring, & reporting. What will be the timing or frequency of these actions?



What is the purpose of environmental monitoring?

Environmental monitoring:

1. Determining whether mitigation is being implemented as required by IEE

2. Determining whether mitigation is working

Environmental monitoring is achieved through the EMMP



Environmental monitoring should be a normal part of project monitoring and evaluation

Environmental Monitoring

- Tells you clearly and cost-effectively if mitigation is sufficient and effective.



- **But, what about CRM??**

Why Care About Pesticides?



- Poor pesticide use practice is wide-spread
 - Overuse accelerates pest resistance which induces increased use
 - Significant resistance requires switching to less safe and more costly pesticides
- As potent killing agents, pesticides have intrinsic dangers attached to their use
 - Misuse kills the “good bugs” that are essential to pollination or that naturally control the “bad bugs”
 - Misuse can result in acute poisoning, chronic sickness, birth defects, cancers, and even death
 - Misuse can seriously impair a country’s ability to export to the US, Europe, Japan and other major markets
- The lack of quality control in the production in some developing countries represents a hazard with non-US manufactured pesticides

Pesticide Procurement & Use

Procurement:

- 1. Direct purchase of pesticides**
- 2. Payment in kind, donations, provision of free samples and other forms of subsidies**
- 3. Guarantee of credit to banks or other credit providers / provision of credit to borrowers specifically for pesticides**

Use:

- 1. Sale**
- 2. Handling, transport, storage,**
- 3. Mixing, loading, application**
- 4. Disposal**
- 5. Provision of fuel to transport pesticides**
- 6. Technical assistance in pesticide management, including training**

The “PERSUAP”

Pesticide Evaluation Report & Safer Use Action Plan

The “Pesticide Evaluation Report” directly respond to the 22 CFR 216 Pesticide Procedures requirements.

The “Safer Use Action Plan” identifies actions for mitigation & monitoring, including compliance with host country procedures

The “PER” 12 Factors

- 1. US EPA registration status of recommended pesticides;**
- 2. Basis for selection of the pesticide;**
- 3. Extent to which the proposed pesticide use is part of an IPM plan;**
- 4. Pesticide availability and application method;**
- 5. Any toxic hazards;**
- 6. Effectiveness of the requested pesticide for the proposed use.**
- 7. Compatibility of pesticides with the local ecosystems;**
- 8. Environmental conditions where the pesticide is used;**
- 9. Availability & effectiveness of other pesticides or non-toxic controls;**
- 10. Host country’s ability to regulate the requested pesticides;**
- 11. Provisions for training users and applicators**
- 12. Provision for monitoring the use and effectiveness of the pesticide.**

SAFER USE ACTION PLAN

An adequate SUAP should, at minimum, do the following:

- **Monitoring plan and reporting;**
- **Training, development and distribution of appropriate information, education and communication;**
- **Establish pesticide quality standards and control procedures;**
- **Require good packaging and clear and adequate labeling;**
- **Define and assure safe use practices;**
- **Define appropriate methods of pesticide handling, storage, transport, use and disposal;**
- **Assure accessibility of protective clothing and equipment needed;**
- **Discussion of proper handling, use, and disposal of pesticides;**
- **Identify Roles and Responsibilities.**

Thank You!!

Questions?



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Malawi Analytics and The Geocenter

**Dr. Brent McCusker
West Virginia University
USAID GeoCenter**



The Depth of the Challenge

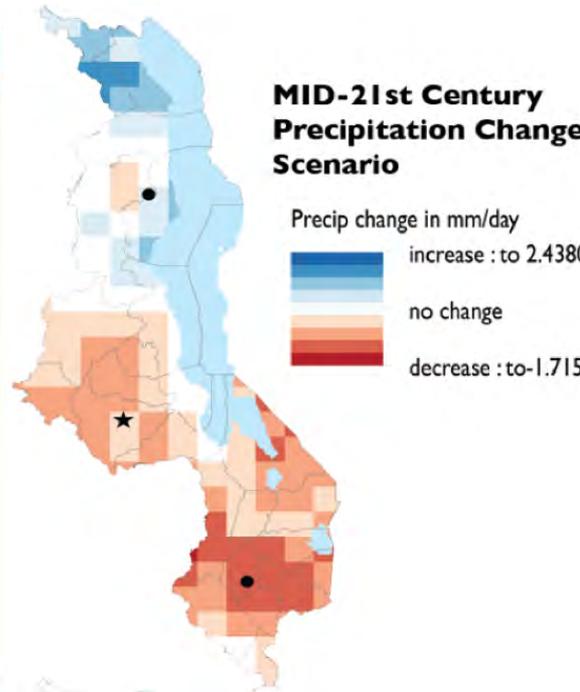
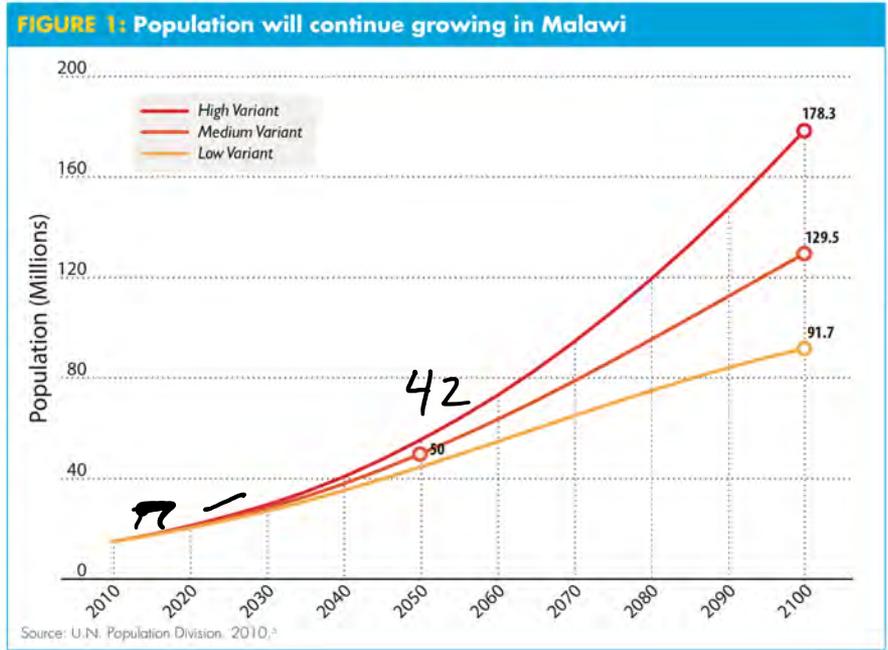
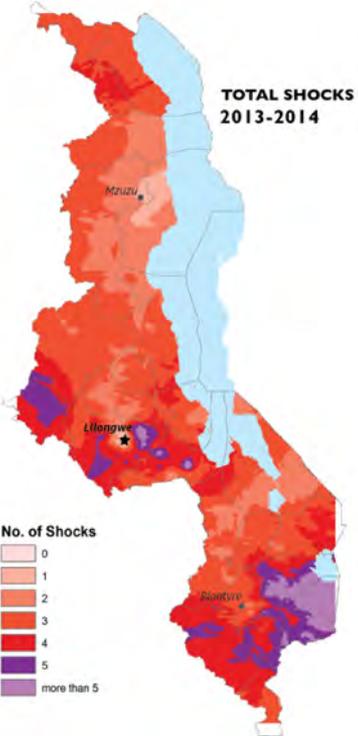
Recent Shocks

+

Population Projection

+

Future Climate



Livelihoods Analysis & Mapping

Three Most Prevalent Shocks

(Niger, Uganda, Ethiopia, Bangladesh)

1. **Natural Hazards** (drought, floods, fire, landslides)
2. **Health** (illness, injury, death in household)
3. **Food prices**

Factors Contributing to Shocks

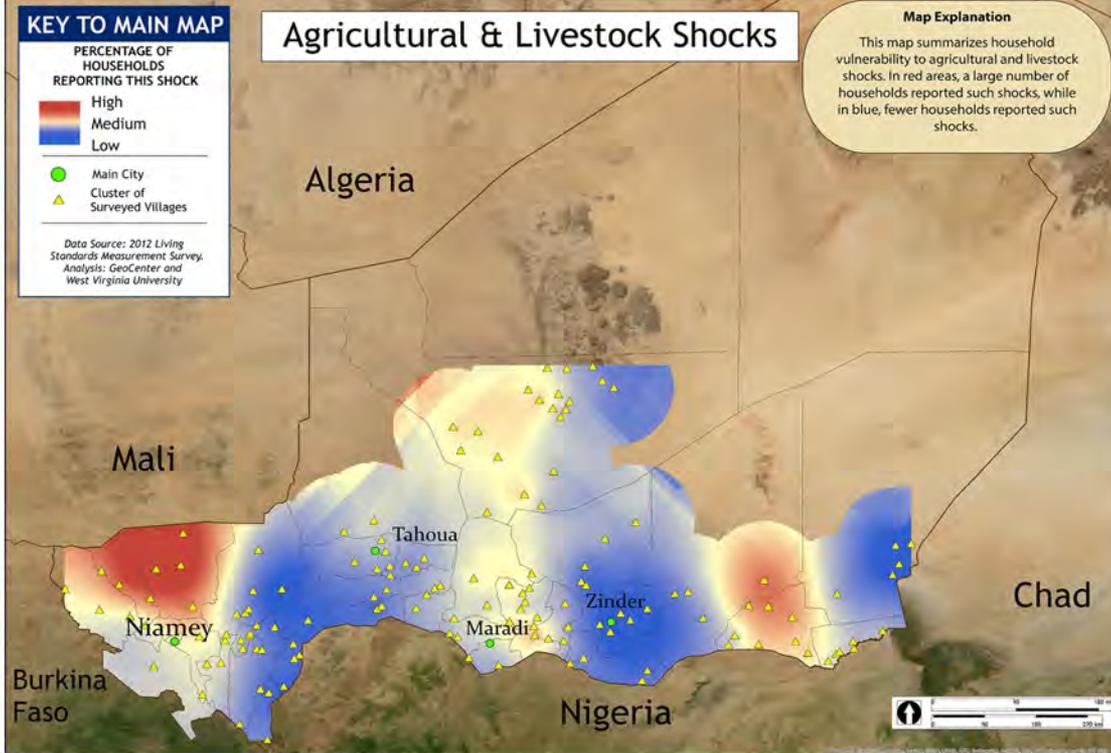
(determined through regression testing)

1. Gender
2. Education
3. Age
4. Household assets & infrastructure
5. Household size

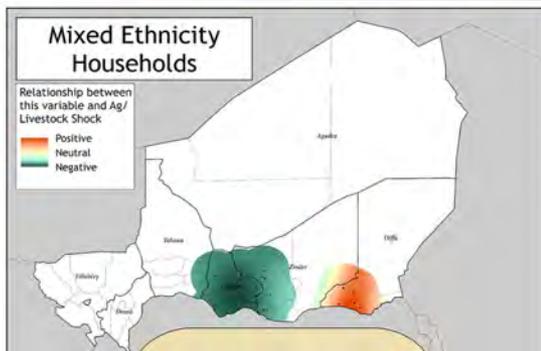
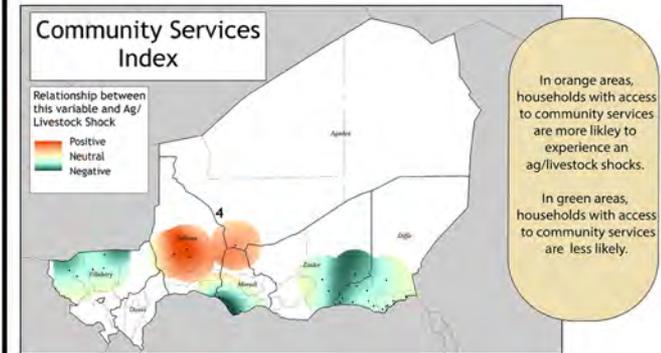
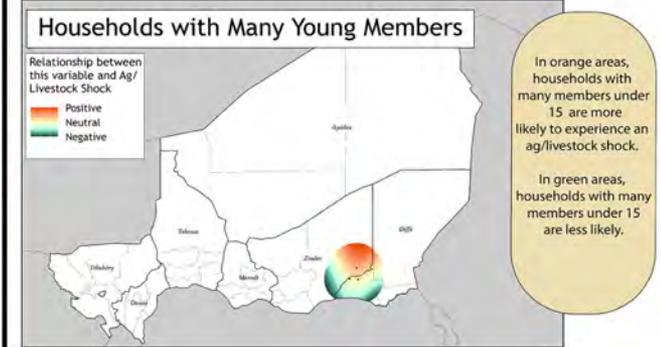
Most Common Contributing Factors to Shocks

	NIGER	UGANDA	ETHIOPIA	B.DESH
EDUCATION		√	√	
FEMALE EDUCATION			√	√
MALE-FEMALE RATIO	√	√	√	
FEMALE HEADED HH	√			√
HOUSEHOLD SIZE		√		
AGE (YOUTH)	√	√		
AGE OF HH HEAD	√			√
ETHNICITY	√			
HH INFRASTRUCTURE		√		
COMMUNITY SERVICES	√			
HH ASSETS (WEALTH)	√	√	√	√
LAND (OWN/ACCESS)			√	√

Names and boundary representation are not necessarily authoritative

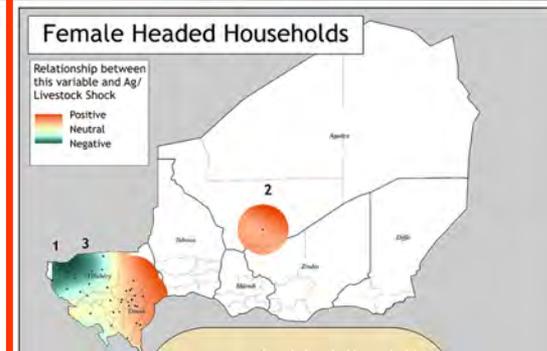


These variables are related to agricultural and livestock shocks.



In orange areas, mixed ethnicity households are more likely than non-mixed ethnicity households to experience an ag/livestock shock.

In green areas, mixed ethnicity households are less likely.



In orange areas, female headed households are more likely than male headed households to experience an ag/livestock shock.

In green areas, female headed households are less likely.

Development Questions:

1. Why might female headed households in the green areas be less likely to experience an ag/livestock shock than male headed households in the same areas?
2. Why might female headed households in orange areas be more likely more to experience ag/livestock shocks than male headed households in the same area?
3. Could female headed households in green areas be less likely to have ag/livestock shocks because they rely more on remittances?
4. Why do some places with more community services have more shocks? Why do they experience shocks differently?

The total number of shocks in Uganda was highest between Nakasongola and Moroto in 2009/10. Shocks are the disruptions to people's livelihoods that can cause high levels of vulnerability. This map shows the total number of shocks for households in each year of the analysis. The main factors that contributed to shocks include the number of young people under age 15, gender ratio (male to females), agricultural wealth index (access to farming tools, etc.), infrastructure index (type of roof, home construction, etc.) and availability of male labor.



1 Total Household Shocks 2009/10

Total Shocks

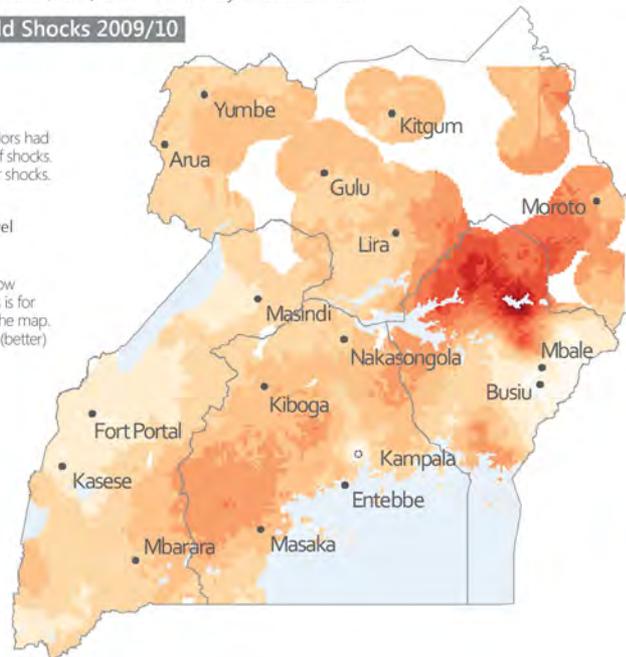


Areas in the deepest red colors had the highest total numbers of shocks. Lighter colors indicate fewer shocks.

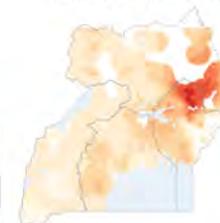
2009/10 Confidence Level



The map below indicates how strong the statistical analysis is for the places represented on the map. Darker areas have stronger (better) statistical confidence.



Total Shocks 2010/11



Total Shocks 2011/12



2 Contributing Factors 2009/10

Youth



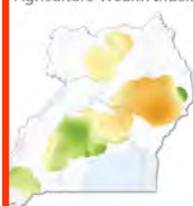
In orange areas, households with many young people under age 15 experienced more shocks. In green areas, they experienced fewer shocks.

Gender Ratio



In orange areas, households with more men had more shocks. In green areas, they had fewer shocks.

Agriculture Wealth Index



In orange areas, households were more exposed to shocks due to agriculture wealth. Because they had more wealth, they had more to lose during a shock.

Infrastructure Index



In orange areas, the better infrastructure a household had, the more it had to lose during a shock. In green areas, households were not as exposed.

Male Labor



In orange areas, households with more male labor had more shocks. In green areas, they had fewer shocks.

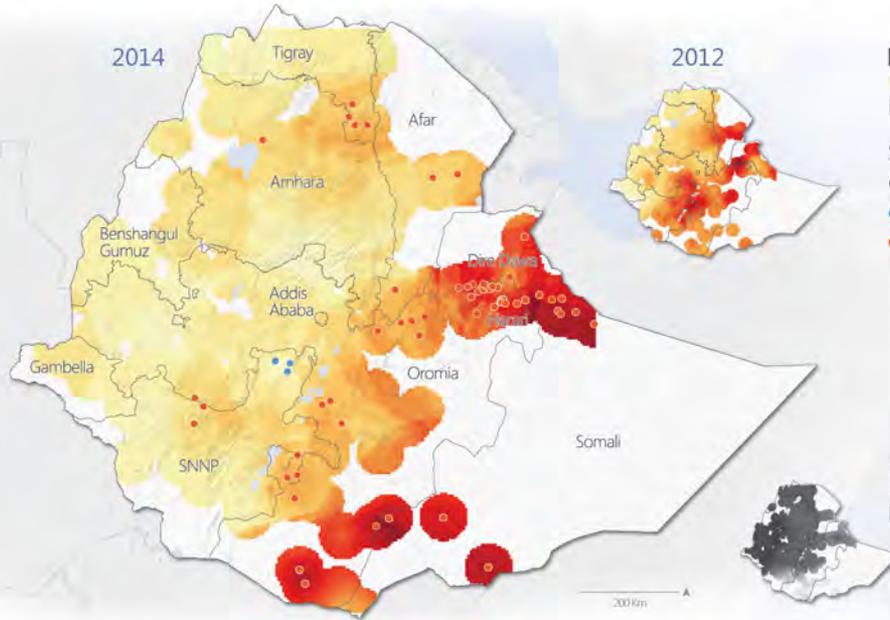
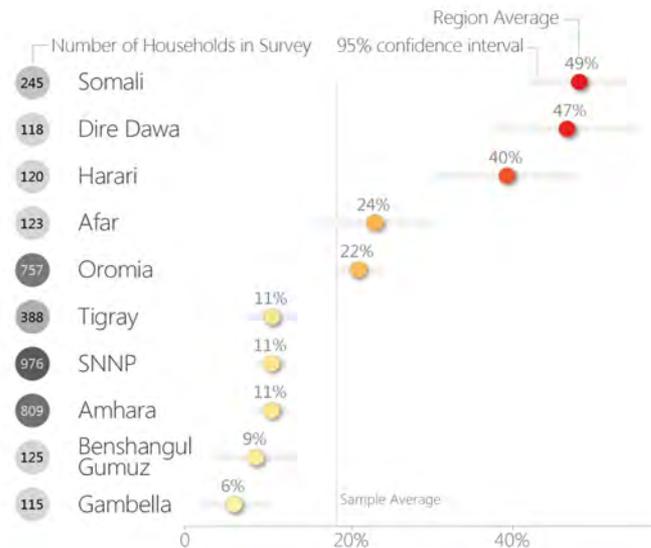
Note: "Total shocks" include: natural hazards (58%), health (18%), crime (10%), loss of assets (8%), food price changes (4%) and loss of employment (1%). The percentages refer to the proportion of households that experienced each shock in 2009/10, the main shock year.

Price shocks affected households more than any other type of shock in 2012/2014. Prices are a key indicator of properly functioning markets and rapidly changing prices contribute to household vulnerability. In areas with severe or repeated shocks, markets may not be functioning properly due to isolation, local issues or other broader problems.



1 Price Shocks 2014

Percent of Households with Price Shock



Price Shocks

Low High

Significant Clusters of Price Shocks

● Few Price Shocks
● Many Price Shocks

Confidence Level 2014

Low High

2 Contributing Factors 2014

The southern and eastern parts of Ethiopia had the most frequent price shocks. Shocks in these regions were far more prevalent than in other parts of the country.

MARRIED HEAD OF HOUSEHOLD

In brown areas, households with married heads of household have more shocks. In blue areas, they have fewer shocks.



WEALTH (ASSET OWNERSHIP)

Households in brown areas are more exposed to shocks due to wealth. Because they have more wealth, they have more to lose during a shock.



FEMALE EDUCATION

In brown areas, households with more educated females have more shocks. In blue areas, they have fewer shocks.

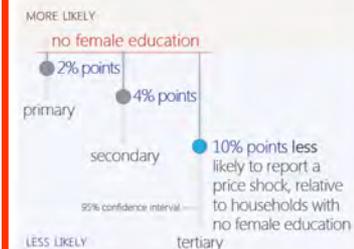


3 Significant Relationships

Education and religion affect whether households experience price shocks.

EDUCATION

Households with higher female education report fewer price shocks.



RELIGION

Muslim-headed households report more price shocks compared to Orthodox households.

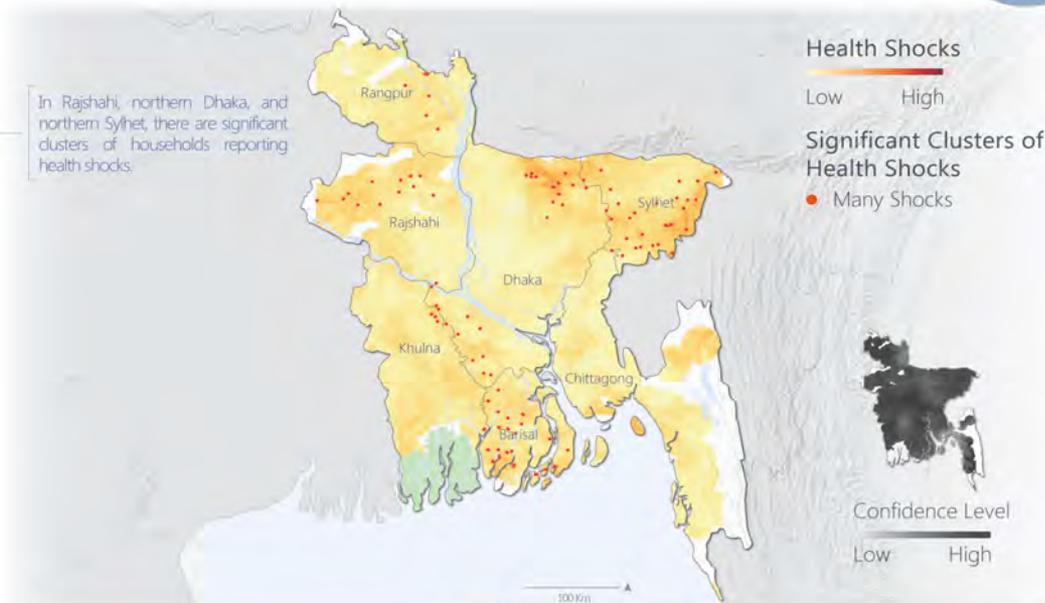
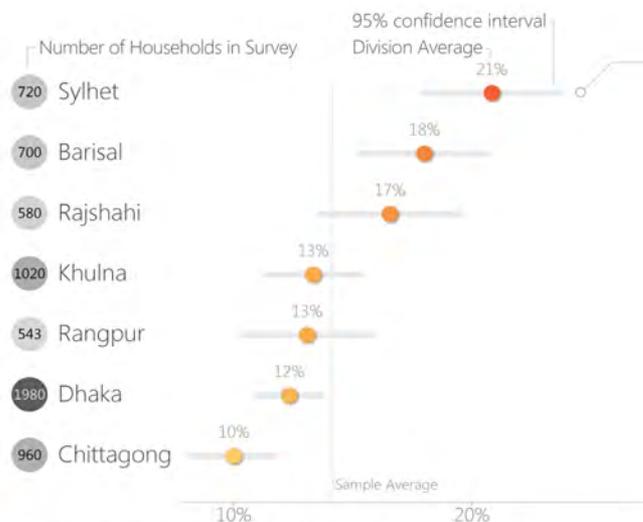


Health shocks were greatest in the northeast, northwest, and south-central parts of Bangladesh in 2011. Health shocks deplete savings and can force households into undesirable coping behaviors, such as liquidating productive assets.



1 Health Shocks 2011

Percent of Households with Health Shock



2 Contributing Factors 2011

Head of household gender, dependency ratio and households with no land were the main contributing factors to hazard shocks.



FEMALE HEAD OF HOUSEHOLD

In brown areas, female headed households were more likely to experience a health shock. In blue areas, they are less likely to experience this shock.



Bad Good

DEPENDENCY RATIO

In brown areas, households with more dependents were more likely to experience a health shock.



HOUSEHOLDS WITH NO LAND

In brown areas, households with no land were more likely to experience a health shock.

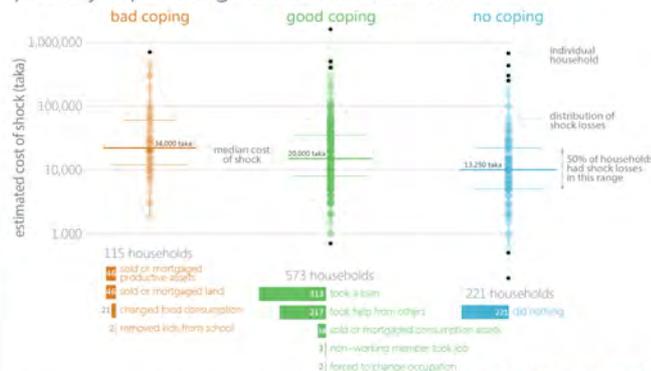


Dependency Ratio

Households with higher proportions of dependents – adults over 64 and children under 15 – were more likely to report medical expense shocks.

3 How do people cope?

Households with more severe medical expense shocks tend to primarily cope through less sustainable means.



Shocks in Malawi

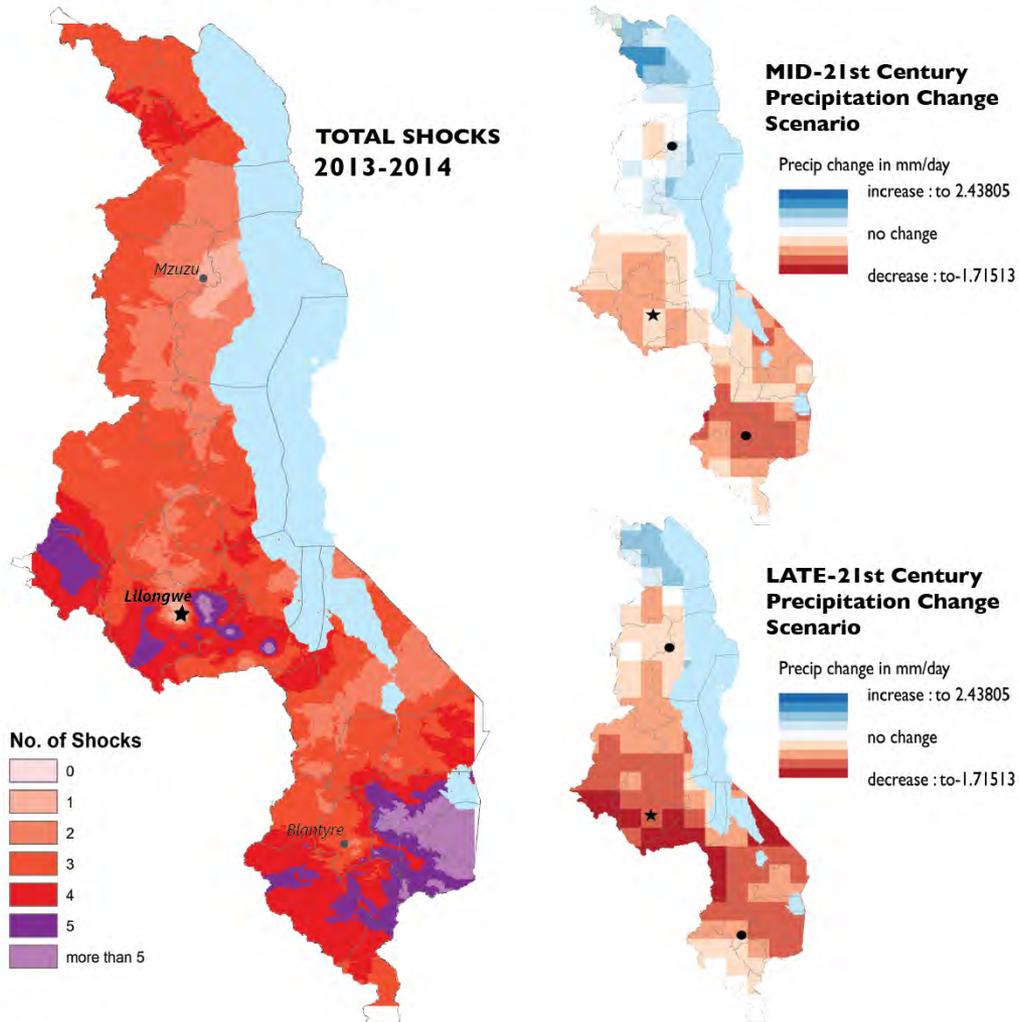
**PRELIMINARY ANALYSIS*

1. Agriculture / Natural Hazards
2. Food Prices
3. Health



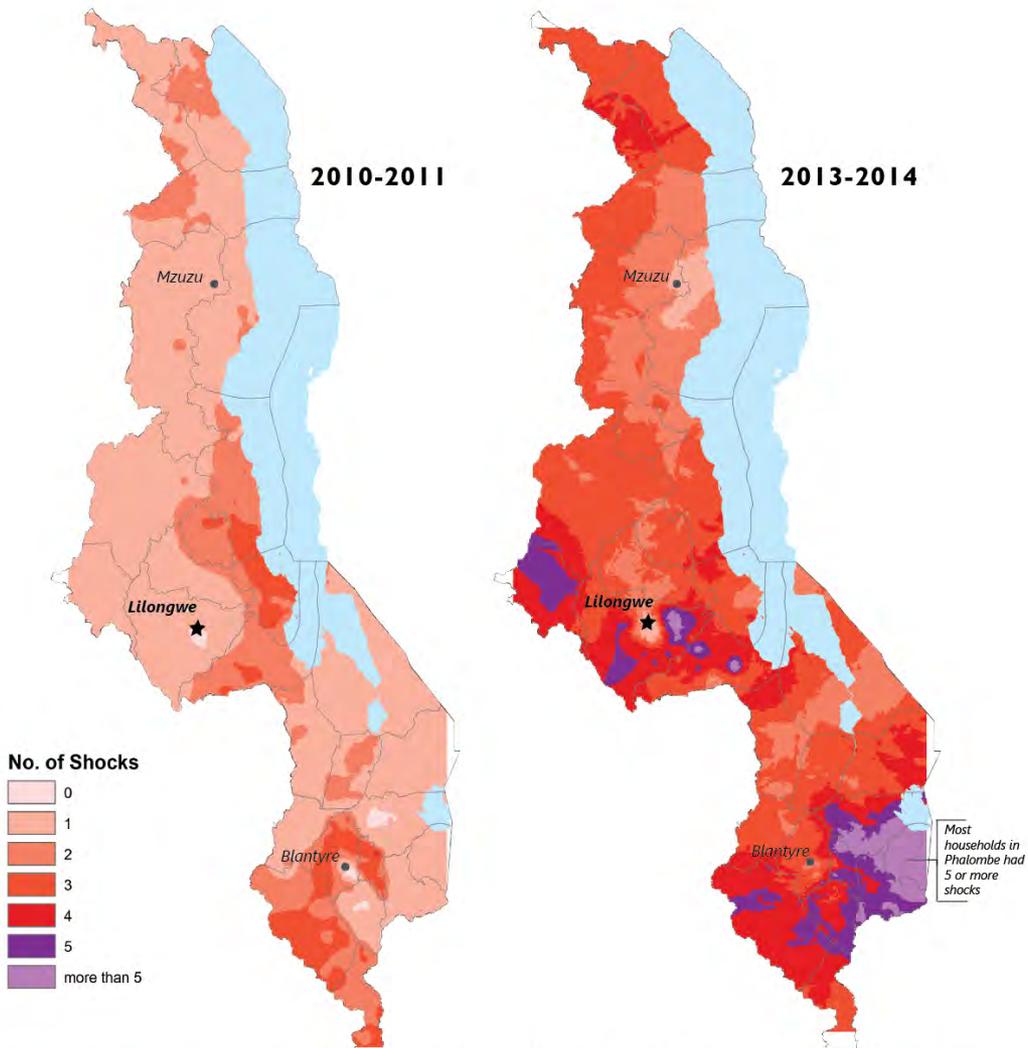
Precipitation change scenarios portend acute development challenges for Malawi.

Drastic reductions in precipitation are possible in southern Malawi by the mid-2000s and in central Malawi for the late-2000s. Given that the Southern Region is the main subsistence maize growing area and the Central Region is the main commercial tobacco area, Malawian agriculture will be seriously affected by such changes. Note that these are climate *scenarios*, not predictions, meaning that they were developed based on known existing climate conditions and anticipated future changes based on carbon emission scenarios.





Vulnerability in Malawi was highest in the south, where farm plot sizes were typically less than 0.25ha. Shocks are disruptions to household income or subsistence, as reported by the household itself. Many households experienced five or more discrete shocks in 2013-14. The single largest shock was agricultural, which included crop failure and high input prices. High fuel prices created additional difficulty.



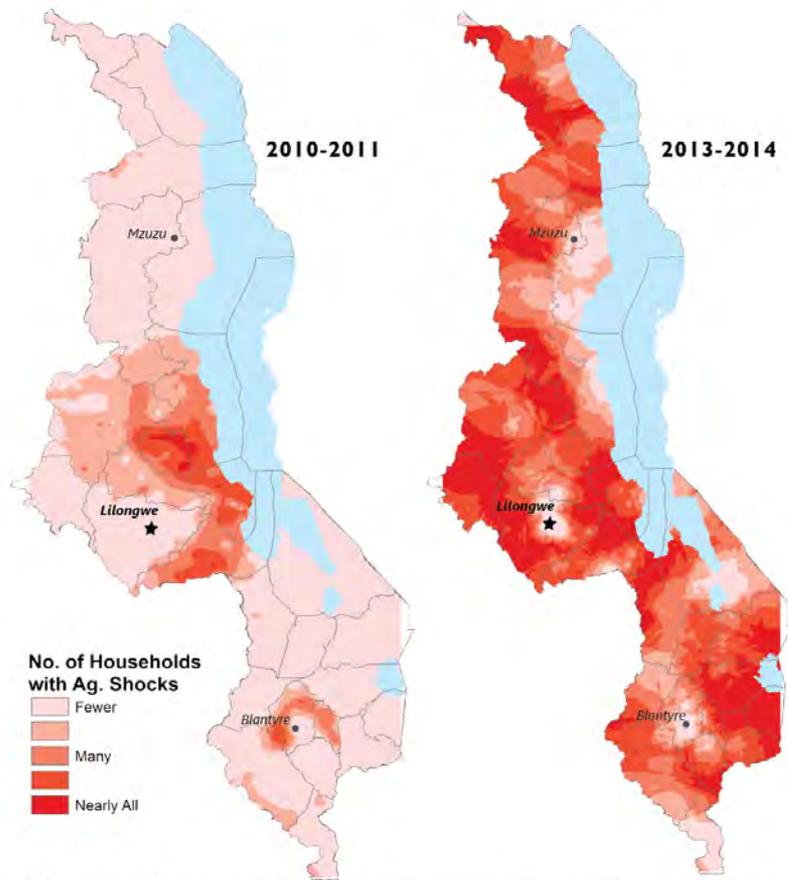


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MALAWI LIVELIHOOD ANALYSIS: AGRICULTURAL SHOCKS

Most rural Malawian households experienced agricultural shocks in 2013-14.

Agricultural shocks included crop failure, lack of fertilizer and high input prices. Most households are overly reliant on maize or cassava for their staple crops and have remarkably low dietary diversity. High fuel prices created additional difficulty.



GEOCENTER Data Sources: Malawi Third Integrated Household Survey, 2012 and Malawi Integrated Household Survey Panel, 2014. Data Analysis and Cartography: West Virginia University and USAID Geocenter

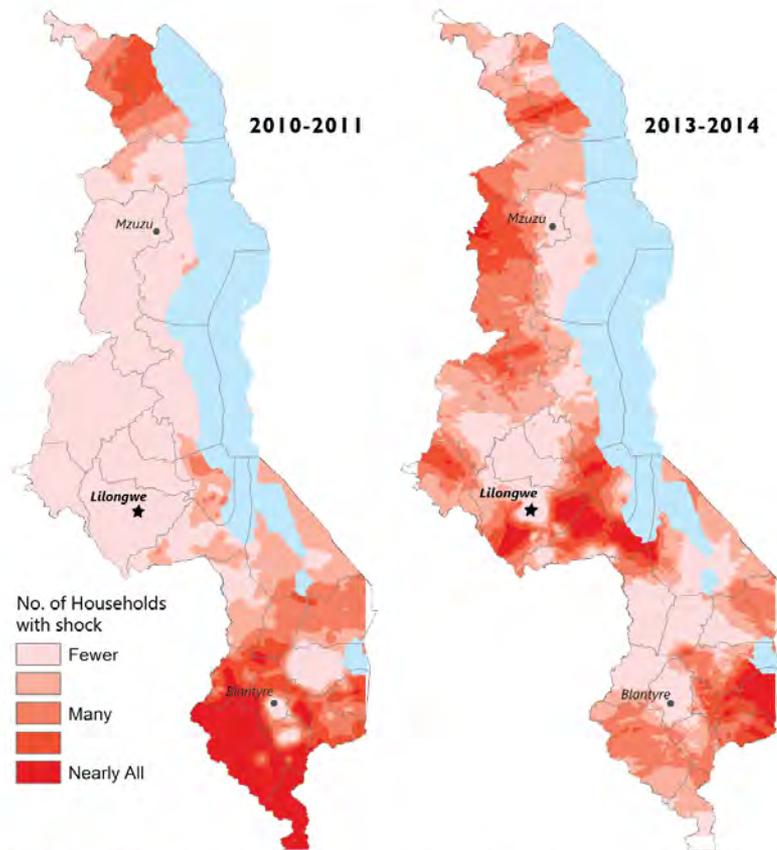


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MALAWI LIVELIHOOD ANALYSIS: NATURAL HAZARD SHOCKS

Natural hazards were frequent, severe and highly localized in Malawi.

Droughts, floods, landslides and earthquakes constituted natural hazard shocks in the dataset. These shocks did not consistently result in agricultural shocks. Chikwawa and Nsanje suffered the most severe shock in 2010-11. Households in Phalombe, Dedza and Lilongwe Rural reported the most hazardous shocks in 2013-14.

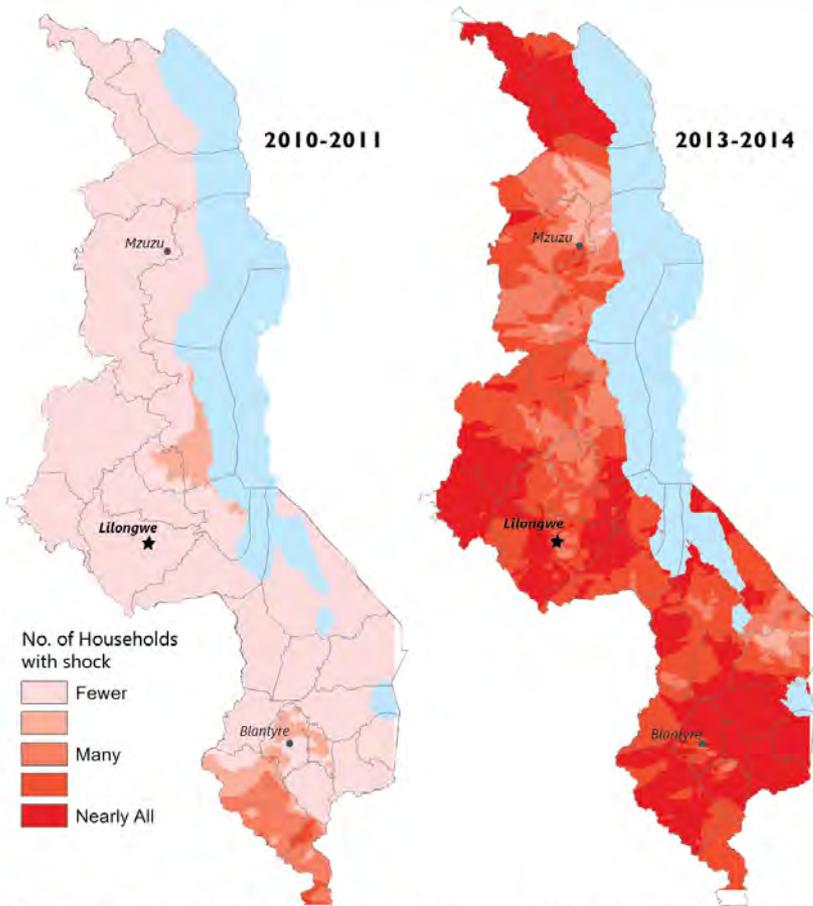


GEOCENTER Data Sources: Malawi Third Integrated Household Survey, 2012 and Malawi Integrated Household Survey Panel, 2014. Data Analysis and Cartography: West Virginia University and USAID Geocenter



MALAWI LIVELIHOOD ANALYSIS: FOOD PRICE SHOCKS

Food price shocks were widespread and severe in Malawi in 2013-14. As in most of the developing world, Malawian households are very sensitive to the price of food. Many households do not grow enough food for their own consumption and must purchase food. Even in years where shocks were not widespread, such as 2010-11, some communities in the south still experienced a food price shock.

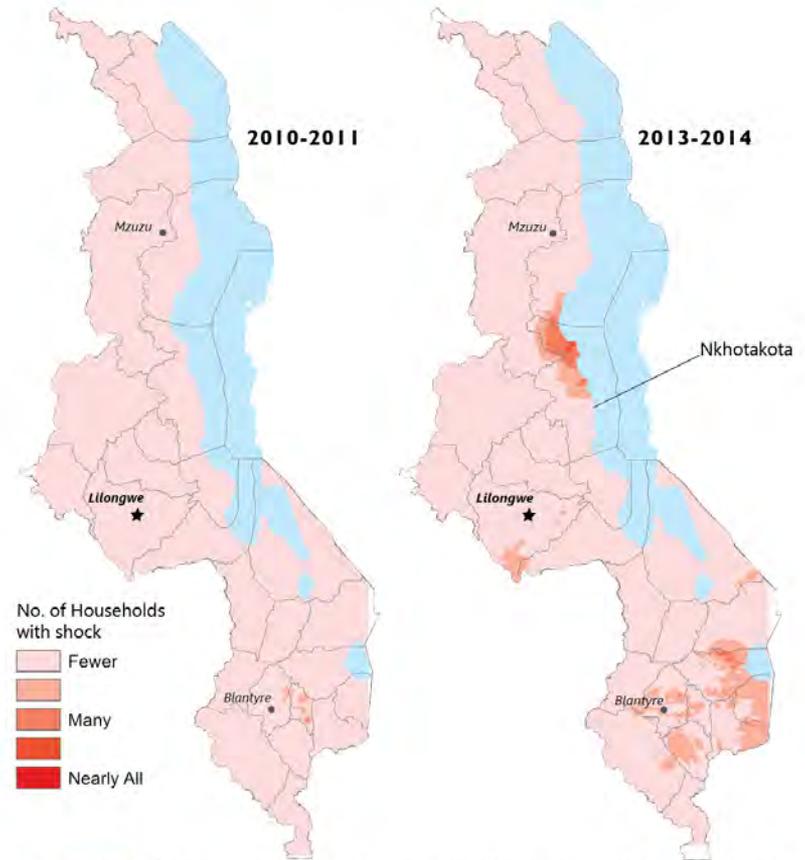


GEOCENTER Data Sources: Malawi Third Integrated Household Survey, 2012 and Malawi Integrated Household Survey Panel, 2014. Data Analysis and Cartography: West Virginia University and USAID Geocenter



MALAWI LIVELIHOOD ANALYSIS: HEALTH SHOCKS

Health shocks in Malawi were most pronounced near Nkhotakota in 2013-14. These maps show the distribution of households suffering a death, birth, or significant illness in 2010-11 and 2013-2014. Health shocks are often masked by natural hazards but are not always correlated to them. Longer term health issues, such as HIV/AIDS prevalence, are not adequately reflected here.



GEOCENTER Data Sources: Malawi Third Integrated Household Survey, 2012 and Malawi Integrated Household Survey Panel, 2014. Data Analysis and Cartography: West Virginia University and USAID Geocenter

NSF/USAID Study on Household Adaptation

- Study conducted with 2000 households in Nkhata Bay, Balaka, Machinga, and Mulanje, 2008-2015.
- Household profile...
 - 20% of households could not afford fired bricks
 - 40% of households have thatch roofs
 - 63% have not completed primary school
 - 44% were born in the village (heavily biased by southern sites)
 - 50% of households have borehole water (untreated)
 - 95.6% of households do NOT own any cattle.**

NSF/USAID Study on Household Adaptation

- Household profile...

70% do not have a goat

64% of households have a cellphone

67% of own/access less than 2 ha of land

41% have 1 or fewer ha of land

76% used 1 or fewer (shared) FISP fertilizer coupons

55% did not see an extension agent in the previous year

NSF/USAID Study on Household Adaptation

- On Climate and Environmental Change, households report...

90% say dry spells are increasing in frequency

72% say late onset rains disrupted their livelihoods in the at least once in the last 10 years

76% consider themselves "highly vulnerable" to climate change

50% increased their use of *ganyu* labor in the last 10 years

NSF/USAID Study on Household Adaptation

Climate and Adaptation

- Households accurately recall rainfall and temperature anomalies up to 10 years prior to survey
- Beyond 10 years, fidelity is lower
- Coping is relatively thin
 - Ganyu labor is the first and most prevalent coping mechanism
 - followed by switching foods or purchasing food
 - then diversifying into a "business" usually some sort of petty trading or petty commodity production
 - then selling a consumptive asset
 - then selling a productive asset
 - **78% of households say they will not move to the local city**

NSF/USAID Study on Household Adaptation

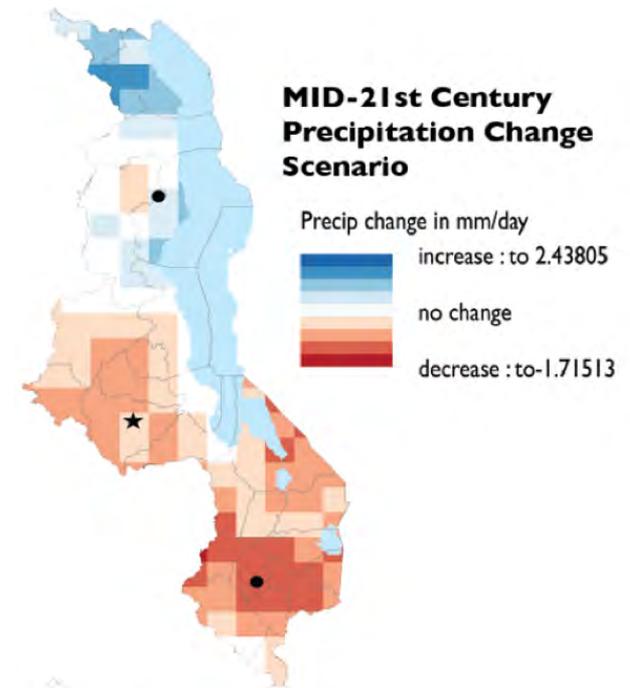
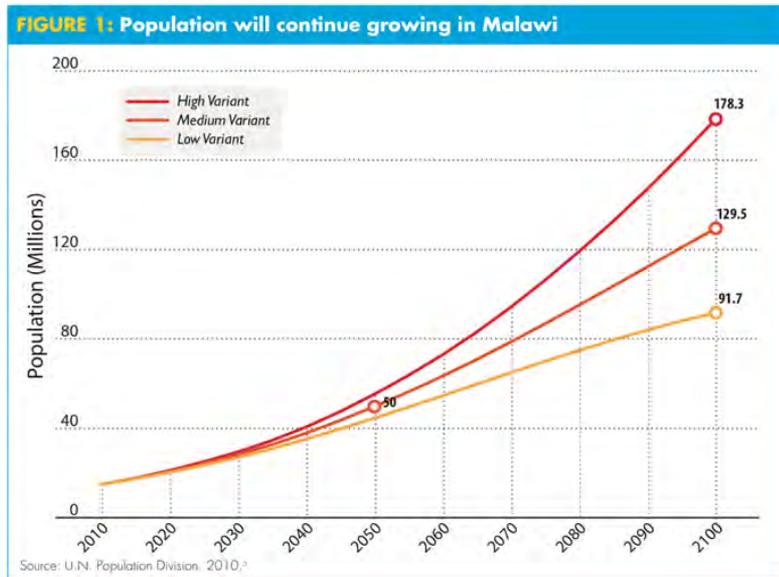
- Moving from Coping to Adaptation
- Intervening factors are important in understanding which mechanisms stay and which fall away
 - Other shocks
 - health
 - food prices
 - other commodity prices (fuel)
 - uncertainty in land tenure arrangements/institutions
 - "crowding" and lack of land
 - lack of educational attainment of children
 - gender relations
- Adaptation is heavily reliant on ganyu labor and petty business activity

Taking Stock: Resilience in the face of adversity

- Two TDYs to Malawi in 2013 to assess how innovative farmers succeeded.
- Examined climate resilient natural resource management techniques
 - Conservation agriculture
 - Community afforestation
 - Use of improved cook stoves
 - Community managed fisheries
 - Production of high value export crops (macadamia).
- We asked the questions – "how did this farmer succeed where others have failed"? And "could this be replicated to promote climate smart adaptation"?

Taking Stock: Resilience in the face of adversity

- The answer is "yes", but not in the face of...

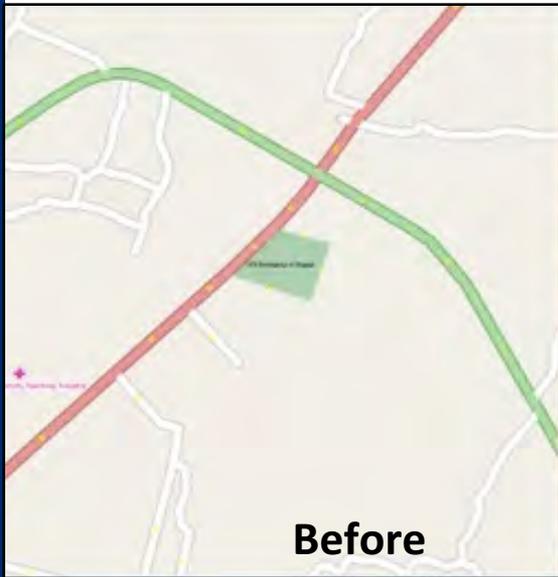


Geocenter Services

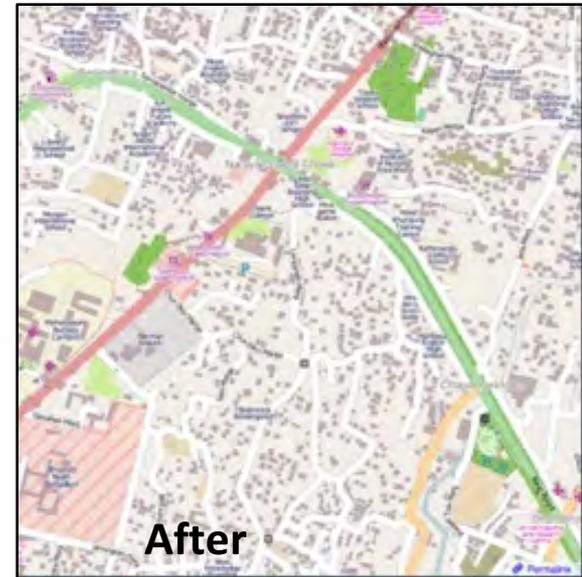
- Analytics to help address these challenges:
 - 1) Full Livelihoods Analysis & Mapping with correlating factors
 - 2) Futures Scenarios
 - 3) Mapping for Resilience/Youth Mapping



Youth Mappers Program Chapters @ Chancellor College and Univ. of Pretoria



Before

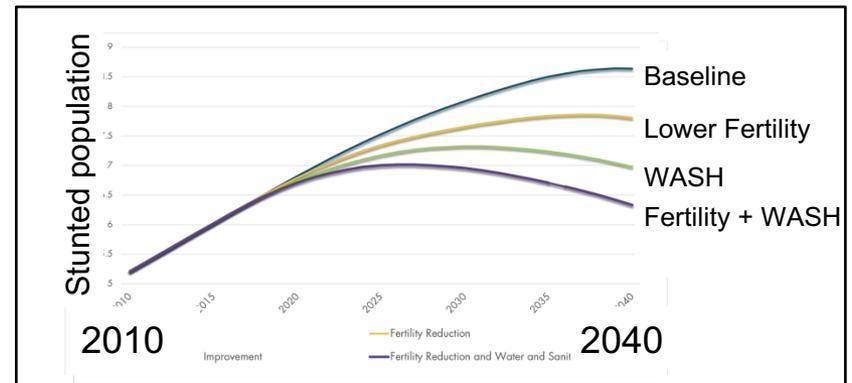


After

Futures Analysis

Trends Analysis

Long-term socioeconomic trend data + consequences of development interventions



Scenario Planning

Stakeholders question assumptions, assess risks, opportunities, & determine alternative future scenarios

