

The impact of Cyclone Idai on the poorest

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Following a year of drought in 2018, the southern and central regions of Malawi experienced a tropical cyclone, Cyclone Idai, in March of 2019. The Malawian Government estimated that the cyclone, and associated floods, affected over 975,600 people (5.4% of the population), displaced 86,976 people (0.5% of the population) and killed 60 people; 288,371 houses were damaged or destroyed and the effects from this disaster cost an estimated USD\$ 220 million.

In this Brief, we examine the impact of the floods on some of the poorest people living in Mangochi and Nsanje; the extent of the damage caused to their households; and the warnings and type of assistance received. We also investigate differences in the impact of the floods on households enrolled on Concern's Graduation programme.

Methodology

The flooding happened during the first full year of implementation of Concern's Graduation programme (which runs from 2017 to 2021). As part of a pre-existing research plan, data was collected between early June and mid-August 2019 and utilised two surveys; the first lasting 30-minutes was fielded at the household level to the female spouse of those enrolled in Cohort Two of the programme (they had started receiving programme benefits in November 2018; Cohort One is also referred to as the pilot phase). The second consisted of a more comprehensive two hour long baseline survey and was fielded to both spouses in eligible households part of the third cohort of the programme (due to be fully enrolled in November 2019). While the flooding module was administered to both respondents, this brief uses the female's responses to make it consistent with the short survey for Cohort Two. The food security module was administered to the female respondent only.

The study covers 200 villages, stratified across Mangochi and Nsanje districts and 3,300 households in total. As questions related to Cyclone Idai were administered to the complete sample of female spouses (in both cohorts), we have 3,280 household level observations. The sample is not representative of the entire population who live in these areas as the Graduation programme is targeted at couples who have been classified as very poor or poor by a community wealth ranking or a proxy means test.

In the following, we first present the results for all non-graduation households (meaning those in the comparison arm for cohort two and all households in cohort three) to identify differences between districts in terms of whether and how they had been affected by the floods, without the mitigating impact of being enrolled on the Concern programme. We then compare between these households and those who have received support on the graduation programme.

Impact of the Flooding

The impact of the floods was widespread; in total 82% of the 3,280 households interviewed stated they were affected by the flood, with almost all (94%) in Nsanje and seven out of 10 in Mangochi affected. In both districts, the percentage of households citing bad harvest due to flooding more than tripled from one year earlier. In 2018, only 8.6% of households in Mangochi and 11.4% of households in Nsanje cited a bad harvest for this reason, by 2019, over 33% of

Concern Worldwide Malawi's Graduation Programme

The Graduation Programme is designed to address the many challenges of extreme poverty by simultaneously boosting livelihoods and income, providing access to financial services, improving people's self-confidence and tackling social exclusion. The intervention in Malawi is an 18 month intense, multifaceted intervention comprising training on a specific livelihood activity, a capital transfer, enhancing access to savings facilities, time-bound cash transfers while on the programme (of MWK 15,000 per month to cover basic needs for 12 months) and regular coaching and support visits, as well as introducing and testing an innovative approach to engaging male and female spouses for improved gender equality amongst the programme participants.

This final element is the subject of a rigorous piece of research implemented with Concern's research partner, the Trinity Impact Evaluation Unit (in Trinity College, Dublin). The Research comprises three separate treatment arms that vary key gender components of the programme, with results compared to a control group. In the first treatment arm, all the benefits of the graduation programme are targeted to the female. In the second treatment arm, all benefits are targeted at the male in the couple. In the final treatment arm, while all the benefits are targeted at the female, the couple is exposed to a twelve month couples training called *Umodzi*. *Umodzi* is designed to transform gender and power relations' within the household through monthly modules that cover the role of gender, not just female empowerment but also the role of men and boys, time management, budgeting, communication tools and issues of violence.

households in Mangochi and 78% of households in Nsanje gave this response, with 'poor harvest due to flooding' becoming the most common shock households experienced in 2019.

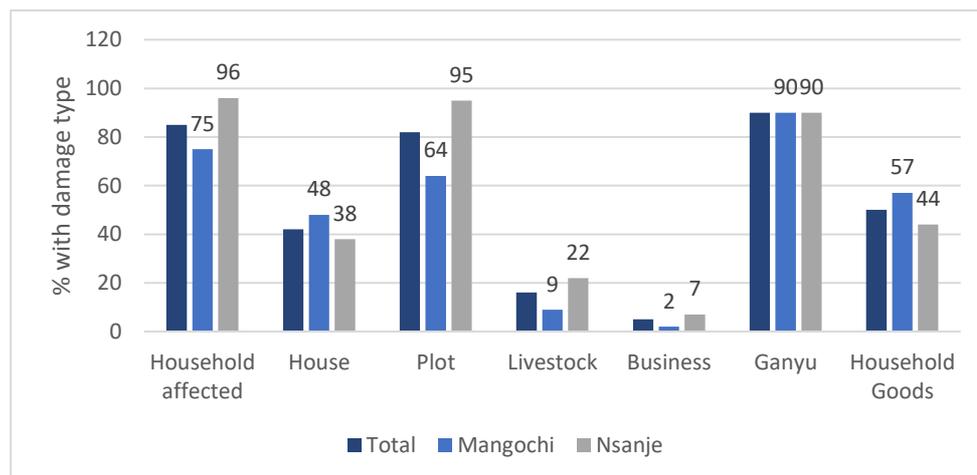
82% of all households interviewed were affected by the flood, with almost all in Nsanje affected

Amongst households who were not on the graduation programme, 85% had been affected by the floods. Of these, 82% reported agriculture plot damage, while over 90% of households' affected reported loss of daily labour (*Ganyu*), 42% of households had their house or other buildings damaged and 50% had other household durable goods damaged or destroyed by the flooding. In contrast, only 16% of households reported loss of livestock, while 5% reported their businesses being affected. The proportion of respondents reporting damage to household buildings was higher in Mangochi (48% against 38% in Nsanje), similarly for asset damage (57% against 44% in Nsanje). Both districts experienced the same impact on casual labour (90%). For all the other categories, a greater percent of households in Nsanje reported experiencing damage or loss. Here almost all agricultural plots were affected (95%).

In terms of the flood's impact on whether household members fell ill, 7.2% of non-graduation households reported that someone in the household got sick after the flood. This was as low as 2.4% in Mangochi, while 10.9% of households in Nsanje reported being ill. Of the 146 non-graduation households that fell sick, 95% of them received treatment, with 62% receiving treatment in a public clinic, while 27% received treatment in a hospital. None of the households went to a private clinic and only one percent received treatment from a healer or in the shelter they went to post flooding.

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Figure 1 Households reports assets damaged by floods, by district (%), non-graduation households

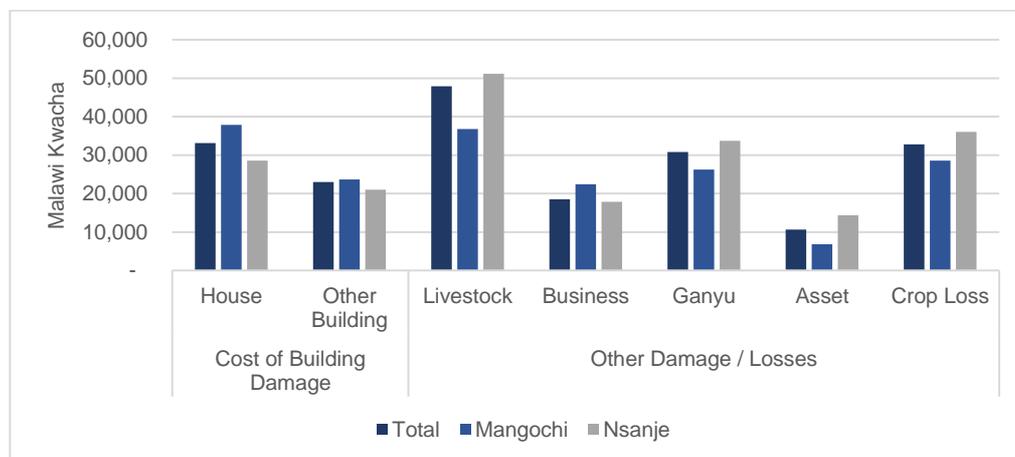


Most households were likely to face damage in more than one area, with over 62% affected in 2 - 3 different ways, underlining the multiple layers of impact a shock can have.

Financial Cost of the Flooding

Non-graduation households affected by the flood estimated that on average it would cost MWK 33,142 to repair the damage caused by Cyclone Idai to their housing structure and MWK 22,986 to repair damage to their other buildings. The estimated cost for other damage and losses is MWK 88,189, including losses to livestock holding of MWK 47,924, estimated crop losses of MWK 32,763 and the loss from income earning from *ganyu* was MWK 30,830.

Figure 2: Estimate costs of Cyclone Idai (non-treated households)



While households in Mangochi had a higher reported average for housing structure damage, households in Nsanje reported a higher estimated financial loss across most categories (the equivalent of MWK 96,773 for all 'other damages and losses', compared to MWK 77,025 in Mangochi), with reported losses in livestock showing a particularly large difference (almost 40% higher in Nsanje). The one exception to this regional pattern is for 'business', where households in Mangochi experienced higher estimated losses.

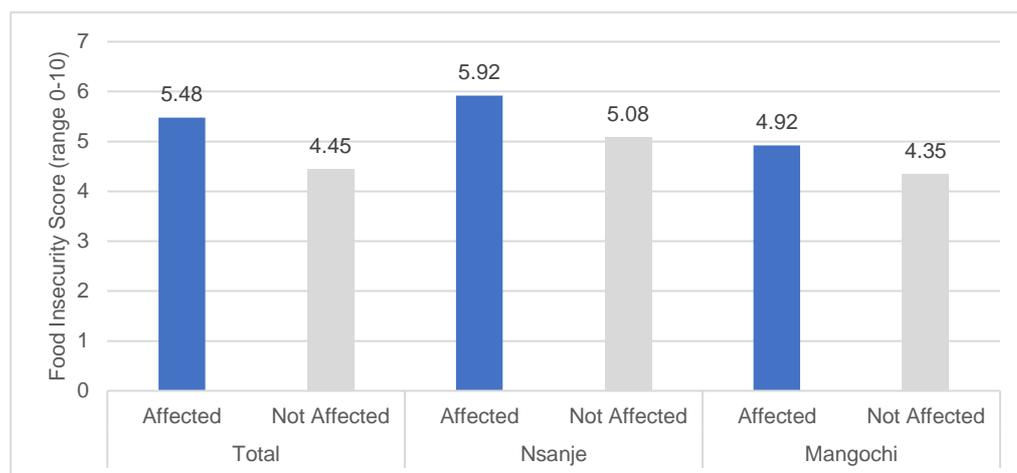
Food (in)Security

Taking two specific measures of food security, the Food Insecurity Indexⁱ and the Hunger Gapⁱⁱ (used broadly in Concern programmes), somewhat unsurprisingly we found that households

affected by the flood were considered more food insecure than those not affected (with a food insecurity score of 5.48 compared to 4.45 for those not affected). This pattern is consistent across districts. Though, households in Nsanje, regardless of whether they were affected by the flood or not, had a higher level of food insecurity than households in Mangochi.

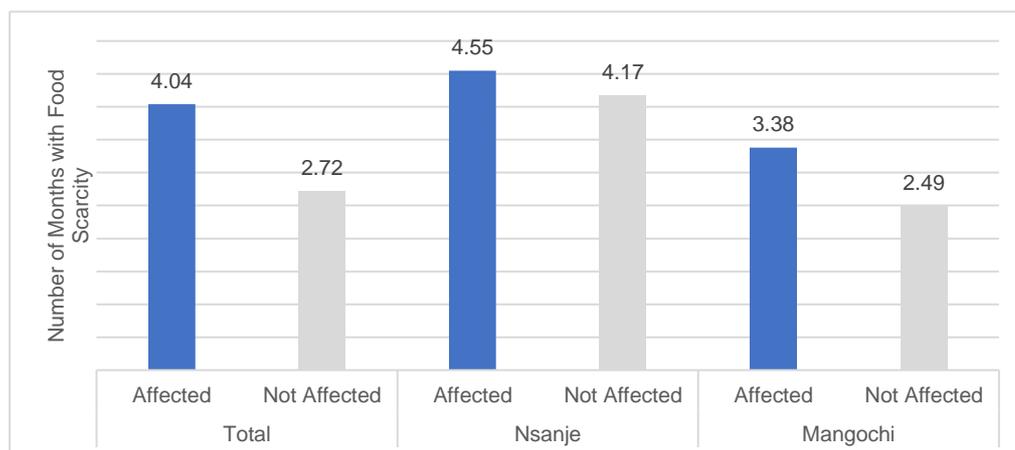
The floods caused by Cyclone Idai had a significant impact on food insecurity

Figure 3 Food Insecurity Score disaggregated by flood affected status, by district



Similarly, for the Concern Hunger Gap, the research showed that non-graduation households affected by Cyclone Idai faced over 4 months of food scarcity, while those who were not affected faced 2.7 months.ⁱⁱⁱ

Figure 4 Hunger Gap, disaggregated by flood affected status, by district



Overall, the research found that there was a significant impact on food insecurity for those affected by the flood.

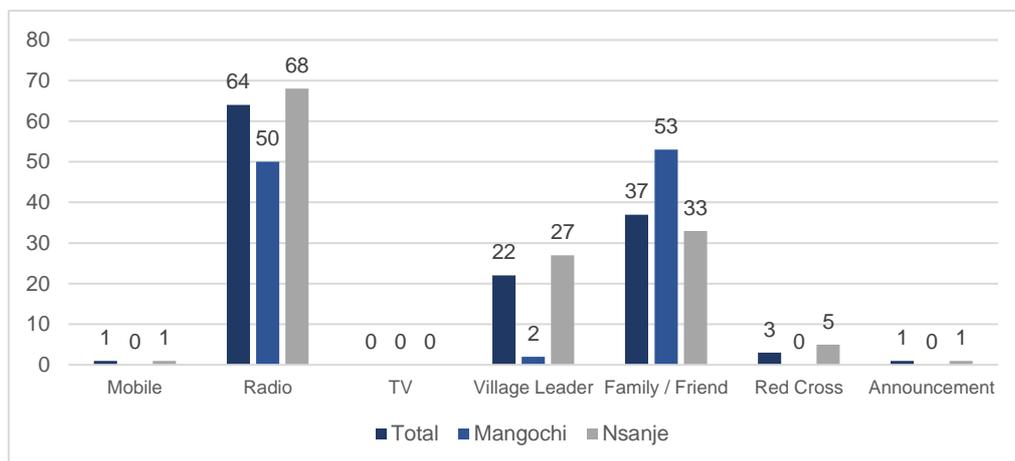
Early Warning

Less than half (49.6%) of households across the two districts received some form of warning, with a lower proportion reached in Mangochi (24.4%) where floods are less frequent and took

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place in early March. In Nsanje, where floods are more frequent, a higher proportion (63.8%) of households received a warning. The most common source of information for those who received a warning was the radio, with over 68% of Nsanje households and 50% of households in Mangochi receiving warnings from this source. Households in Mangochi were more likely to receive warnings from family and friends than those in Nsanje. While over 27% of households in Nsanje received warnings from village leaders, less than 2% of households in Mangochi received warnings from this channel.

Figure 5 Source of Flood Warning amongst those who received a warning, by district



Receiving Assistance

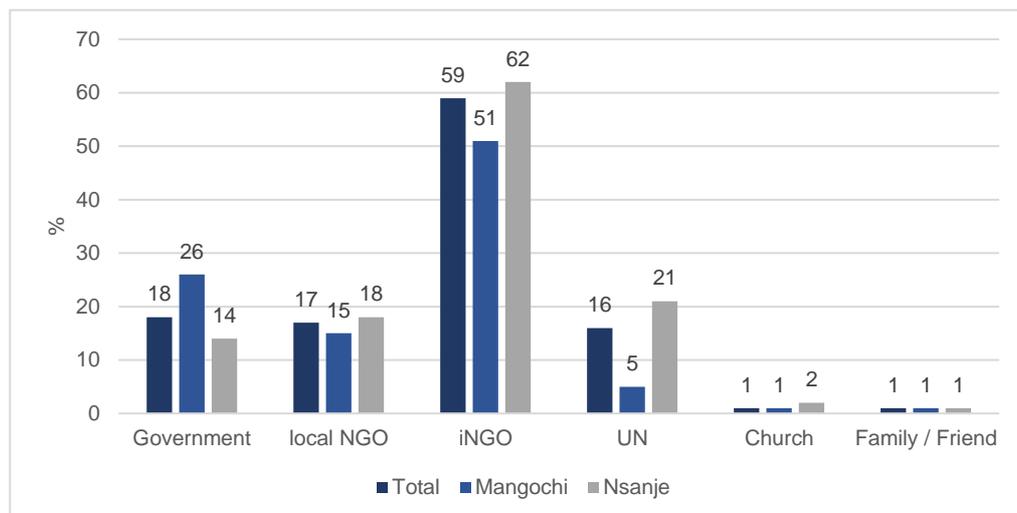
Most households affected by the flood did not receive any kind of relief: only 23.2% received assistance, with substantial differences between Nsanje (29%) and Mangochi (16%). Of those who received relief, 59% received it from an international NGO, 18% received it from a government source, 17% from a local NGO and 16% from UN agencies. There are differences between districts in terms of who provided assistance: while relief from INGOs was the most common source across both, 51% of households in Mangochi who received relief got it from this source compared to 62% in Nsanje. Similarly, 21% of households in Nsanje who received relief identified the UN as the source of their relief, compared to only 5% of households in Mangochi. On the other hand, 26% of households in Mangochi reported receiving government support, compared to 14% in Nsanje.

Less than a quarter of households who were affected by the floods identified that they had received assistance from any source

The main type of relief provided was in the form of food, reported by 53% of households, followed by grain, at 49% and then cash at 36%. For the 215 households who received cash, the average amount received was MWK 25,516; this was (slightly) positively correlated with the scale of household losses, though the amount of relief is not on par with the reported damage. We found some preliminary evidence of targeting, with a positive correlation between the likelihood of receiving relief and the amount of damage endured. Of those who received relief, we found that 13 percent had incurred no damage.

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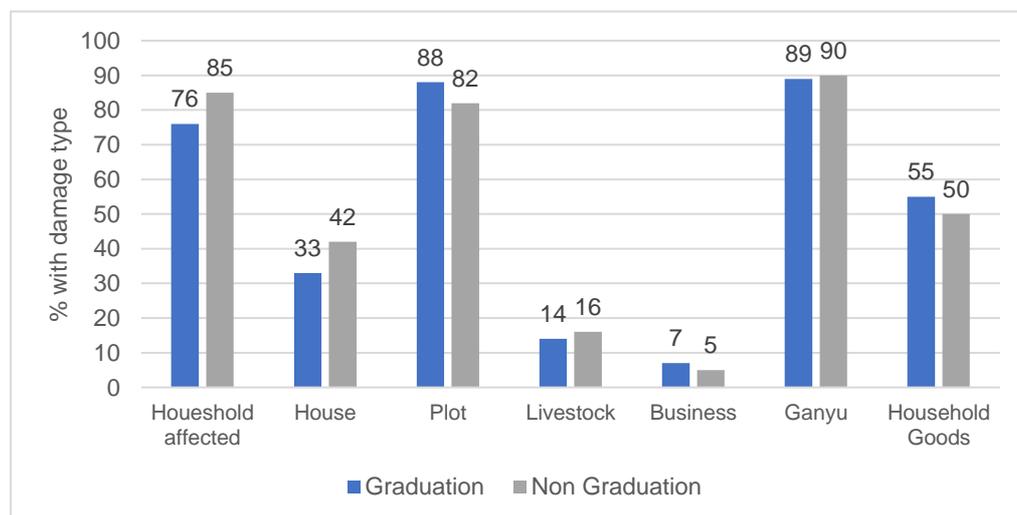
Figure 6 Source of relief received, by district



Impact of enrolment on Concern's Graduation programme

In addition to the households described in the previous section (non-affected and affected but not enrolled in Concern's graduation programme), data was also collected on a number of household's who had been enrolled on Concern's Graduation programme for nine months and receiving monthly income/consumption of MWK 15,000. 76% of graduation households said they were affected by the flood meaning they were 9.3 percentage points less likely to be affected than non-graduation households were, though a greater proportion of graduation households reported damage to their agriculture plots, businesses and household goods.

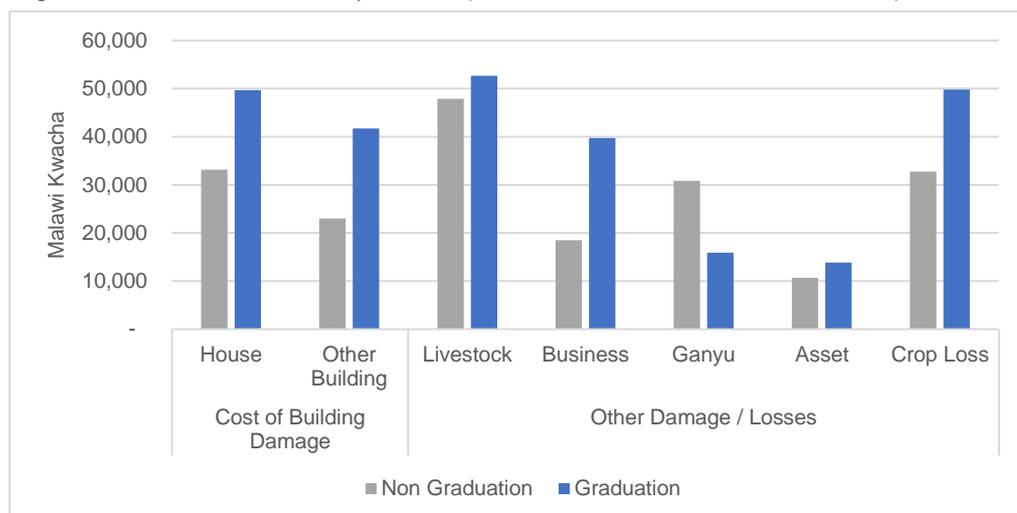
Figure 7 Households with Assets damaged due to flood, graduation vs non-graduation households



While Graduation and Non-Graduation Households had similar asset holdings at the baseline Graduation households report higher losses for livestock (by MWK 4,749) crops (by MWK 17,071) and business, outside of crop and livestock (by MWK 21,253), than non-Graduation households. They also show a much smaller loss in terms of *ganyu*.

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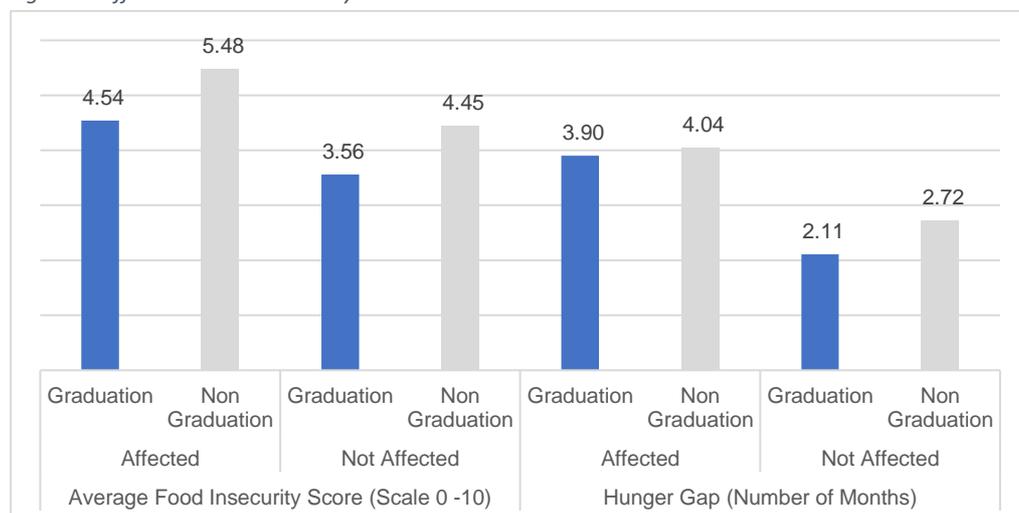
Figure 8 Estimated Losses due to Cyclone Idai (Graduation vs Non-Graduation Households)



Even though the Graduation households had not yet received their capital transfer for investment in income generating activities at the time of Cyclone Idai, household visits undertaken as part of regular programme monitoring suggest they had used part of the income provided as consumption support to buy poultry and livestock, invest in agricultural plots and start small businesses. This suggests they were likely to have higher asset holdings at the time of the Cyclone and can help to explain the greater financial loss due to crop damage, loss of livestock and business for these households. Further, the smaller loss in income due to *ganyu* can be attributed to a decreasing dependence on this source of income. All of this suggests that hard fought gains can easily be lost in an environment of pervasive risk and regular shocks, Cyclone Idai in this case. It suggests the potential existence of an environmental poverty trap, where households are unable to move out of or fall back into poverty, as a result of weather shocks.

Despite these greater losses, graduation households were more food secure than non-graduation households, providing preliminary evidence of a positive effect of the programme.^{iv} Non-graduation households had a higher food insecurity score (5.48 for those affected by the flood and 4.45 for those not affected) than those who were part of the second cohort of treated households (4.54 for those affected and 3.56 for those not affected). We also observed a positive difference in the number of reported food scarcity months between graduation and non-graduation households, though this was not statistically significant.

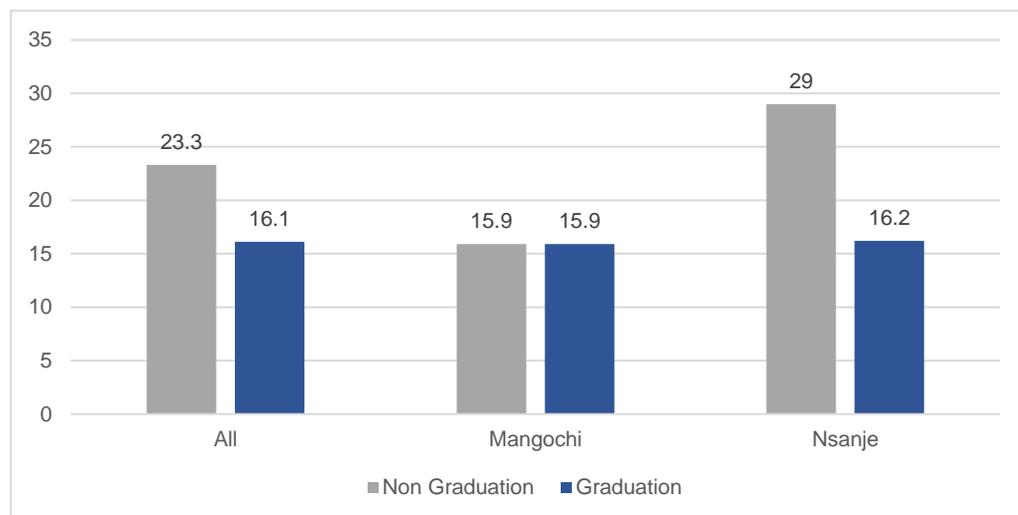
Figure 9 Difference in Food Security Measures between Graduation and Non-Graduation Households



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We saw no differences between graduation and non-graduation households in terms of whether they received an early warning or not. However, we did see a difference in terms of whether flood affected households received assistance; across both regions 23.3% of non-graduation households received relief, compared to 16.1% of graduation households. This was more pronounced in Nsanje where 29% of non-graduation households received relief post Cyclone Idai, compared to only 16.2% of graduation households. The reasons for this are unclear, but could be related to the fact that graduation households were perceived to be less in need as part of the targeting process, even though their losses were greater.

Figure 10 Receipt of any flood relief, disaggregated by Graduation and Non Graduation Households



Conclusion and Policy Asks

The impact of the floods were widespread affecting 82% of households interviewed, with almost all (94%) in Nsanje and seven out of 10 in Mangochi affected. Most households were likely to face damage in more than one area, with over 62% affected in two or three different ways, underlining the multiple layers of impact a shock like this can have. Financial losses were substantial; for non-graduation households the estimated damage to their homes and other damage and losses came to MWK 144,317 – for households included on the Graduation programme, this was higher at MK 189,035. Even though Graduation households had not yet received their capital transfer under the programme, there is evidence that they have been investing their monthly income support on a variety of productive and domestic assets, leaving them with a higher asset ownership and more to lose.

There were also significant impacts on household's food security observed; amongst non-graduation households, those affected by the flood were considered more food insecure, with graduation households being more food secure, irrespective of whether they were affected by the floods or not, providing preliminary evidence of a positive effect of the programme. Less than half (49.6%) of households across the two districts received some form of early warning. While the research did find some preliminary evidence of targeting, less than a quarter affected by the floods received any assistance.

In terms of the way ahead, our early research results suggest the need for

- A stronger and more timely Early Warning Systems that utilises media, such as the radio, that households can access. This EWS should engage village leaders and community structures more and should also be available in areas with less frequent flooding.

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- Strengthened shock responsive social protection system that can be scaled up to reach all households affected by such a natural disaster that is based on need and level of loss, rather than access to other programmes.
- Where individual agencies continue to respond, their targeting criteria should be harmonised and focus on the most in need.
- The need, to consider recovery efforts that support households to rebuild their livelihoods and food security through multiple means as floods affected households in a variety of different ways. At the same time, there is a need to ensure guidelines on building in flood plains are easily accessible and disseminated widely to reduce the impact of future floods.
- In terms of the research, we will continue to undertake further multivariate analysis (or multivariable regression analysis) to move beyond these preliminary findings and comprehensively examine the economic impacts of the flooding, and the gender dimensions of the impact of the flood.

i The Food Insecurity Index is constructed using 10 questions including whether the household ever experienced any difficulty in having enough food to fulfil the needs of the family, the number of meals and days that the household did not have enough food to eat, the number of days that the household ate meat over the past week, whether any household member skipped any meal or reduced consumption due to the shortage of food and the number of days and meals skipped, whether the household borrowed food or received any help from friends or relatives, and the order in which household members are served food when food is in short supply. The analysis here draws on the pre-analysis plan for a multi-country RCT of the Sahel Adaptive Social Protection, in Bossuoy, T., Goldstein, M., Karlan, D., Kazianga, H., Parienté, W., Premand, P., Udry, C., and Vaillant, J. (2019). Promoting Productive Inclusion and Resilience among the Poor: Multicountry RCT of the Sahel Adaptive Social Protection. Pre-analysis plan, AEA RCT Registry.

ii This measure is calculated using two questions: whether the household ever experienced any difficulty in having enough food to fulfil the needs of the family and the number of months that the household struggled to feed the family from any source of food.

iii From the total of 2404 non-graduation households, 2029 were affected by the flooding, 351 were not, while 24 households have missing responses.

iv A total of 665 graduation households were affected by the flooding while 211 graduation households were not.

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