IMAGE BY NEIL PALMER (CIAT)

Designing and costing a scalable mechanism for Malawi's Social Cash Transfer Program

CHAPTER 3

Disaster Risk Financing & Insurance Program

SUPPORTED BY WORLD BANK GROUP

Global Risk Financing Facility

Supporting Early Action to Climate Shocks, Disasters, and Crises

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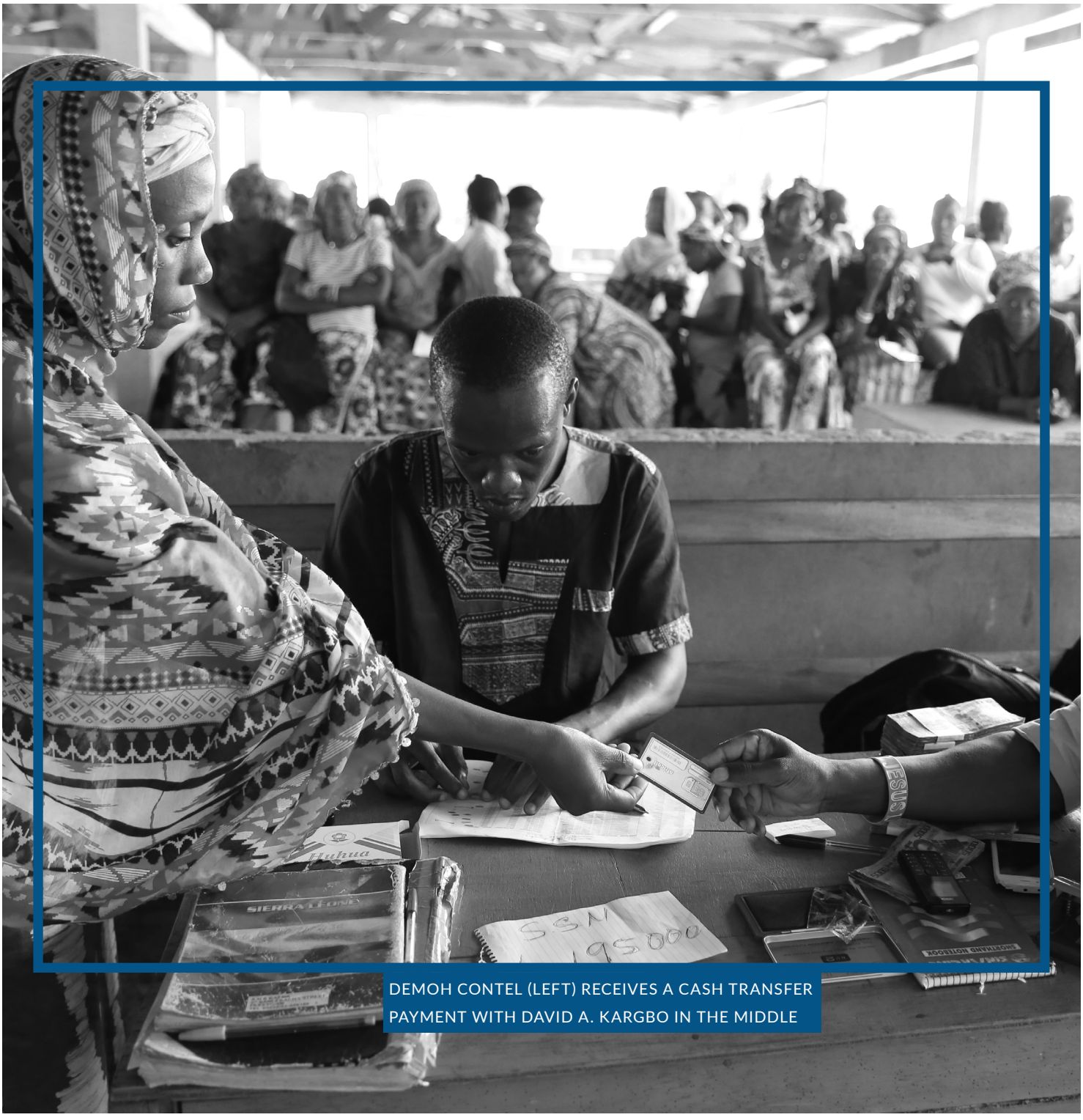
CHAPTER 3:
DESIGNING AND COSTING A SCALABLE MECHANISM FOR MALAWI'S SOCIAL CASH TRANSFER PROGRAM

I. INTRODUCTION

The purpose of this chapter is to help guide the decision-making process of policy makers in **setting key scale-up parameters for the scalability mechanism that determines and defines a scale-up** of a Shock Responsive Social Protection (SRSP) program.

This chapter builds on key lessons from Chapter 1 and 2, which laid out the *fundamental principles* of such scalability mechanisms and the role of *data collection and analysis* to enable objective rules that determine when a scale-up should take place. Robust data enable transparent and objective policy decisions about the design of the scalability mechanism, for example who to protect and when to respond.



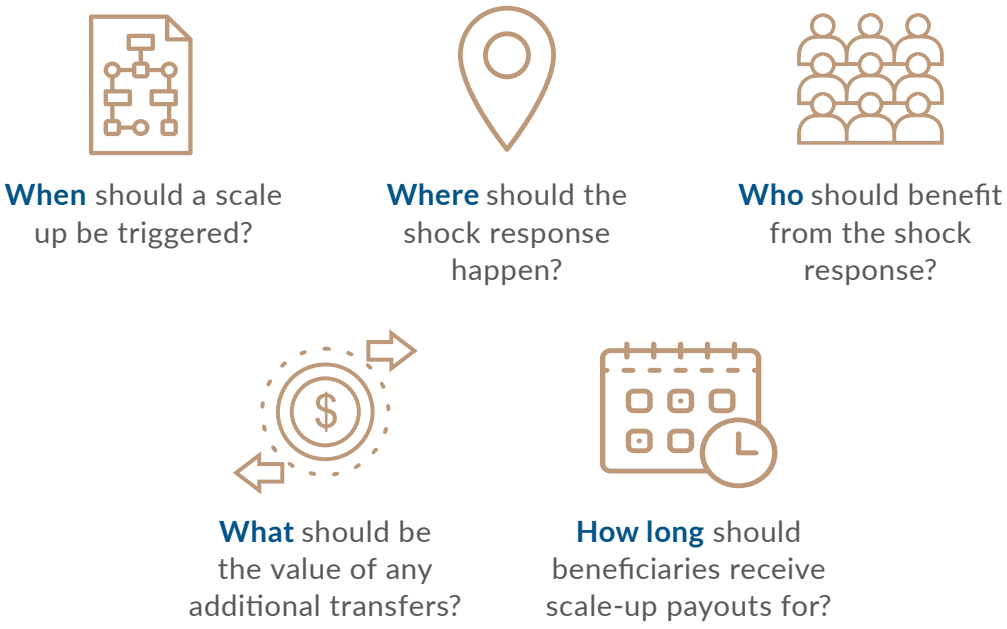
DEMOH CONTEL (LEFT) RECEIVES A CASH TRANSFER PAYMENT WITH DAVID A. KARGBO IN THE MIDDLE

1. Defining policy priorities: What do decision makers want to achieve

The design of the scalability mechanism needs to be informed by government priorities and will be constrained by funding available. Decision makers need to prioritize between different policy parameters that define the support provided to affected populations during a shock. Aspects that need to be decided upon are when to scale-up, the areas covered by a scale-up, the amounts of transfers, and the number of households covered during the expansion, among others.

Defining these parameters is the first step in the design process of a scalability mechanism. It articulates what the mechanism is supposed to achieve. Specifically, five questions need to be answered:

FIGURE 1 - FIVE KEY SCALE-UP PARAMETERS IN DESIGNING A SCALABILITY MECHANISM



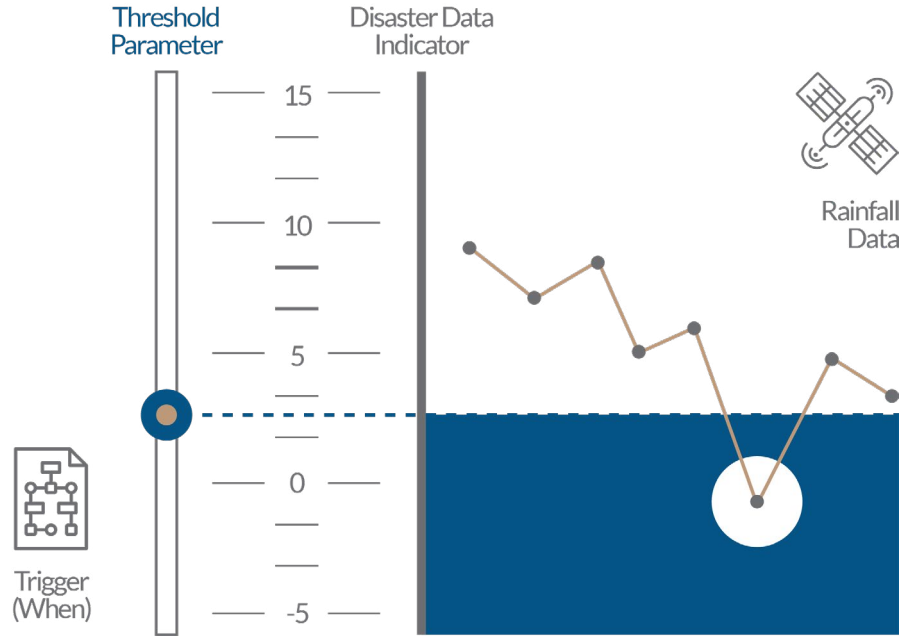
2. Setting the parameters: How to translate policy priorities into action

Critical to the design of the scalability mechanism is **pre-defining the values of the different scale-up parameters which determine *when* a social protection program expansion is triggered and *what* actions it induces.** Setting the parameter values determines the timing and type of scale-up (i.e. coverage and value) and the expected cost of the mechanism.

Agreeing on a data indicator is required to measure the level of the shock or disaster and setting the threshold value for this indicator to determine when a scale-up is triggered (Figure 2). One example for a relevant data indicator in the case of drought monitoring is rainfall data. The set threshold is a certain data value, for example a certain rainfall amount. When the chosen data indicator drops below this threshold, a scale-up is triggered.

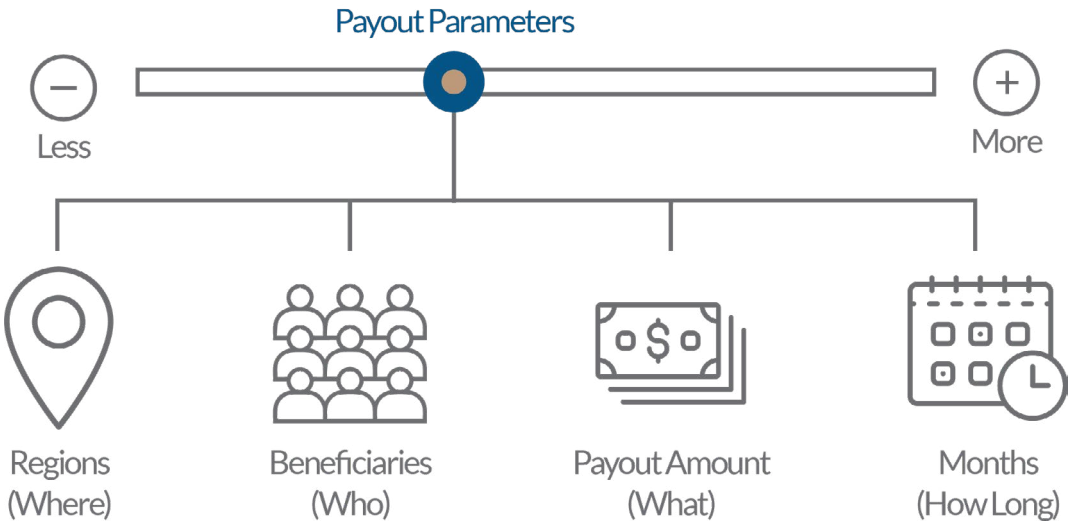
Having clearly defined and objectively measurable trigger thresholds is required to receive buy-in into the scalable social protection mechanisms from important stakeholders, including donor partners. Such triggers further provide reassurance that scale-up decisions are insulated from political pressures, increasing the credibility of the system.

FIGURE 2 - SETTING THE THRESHOLD PARAMETER DETERMINES WHEN A SCALE-UP OCCURS



A scale-up triggers specific interventions that respond to increased needs of vulnerable populations. Decision makers need to decide what type of support is triggered, and which beneficiaries receive it to determine how the scale-up process unfolds (Figure 3).

FIGURE 3 - CHOOSING THE VALUES OF THE PAYOUT PARAMETERS DETERMINES THE BENEFITS TRIGGERED



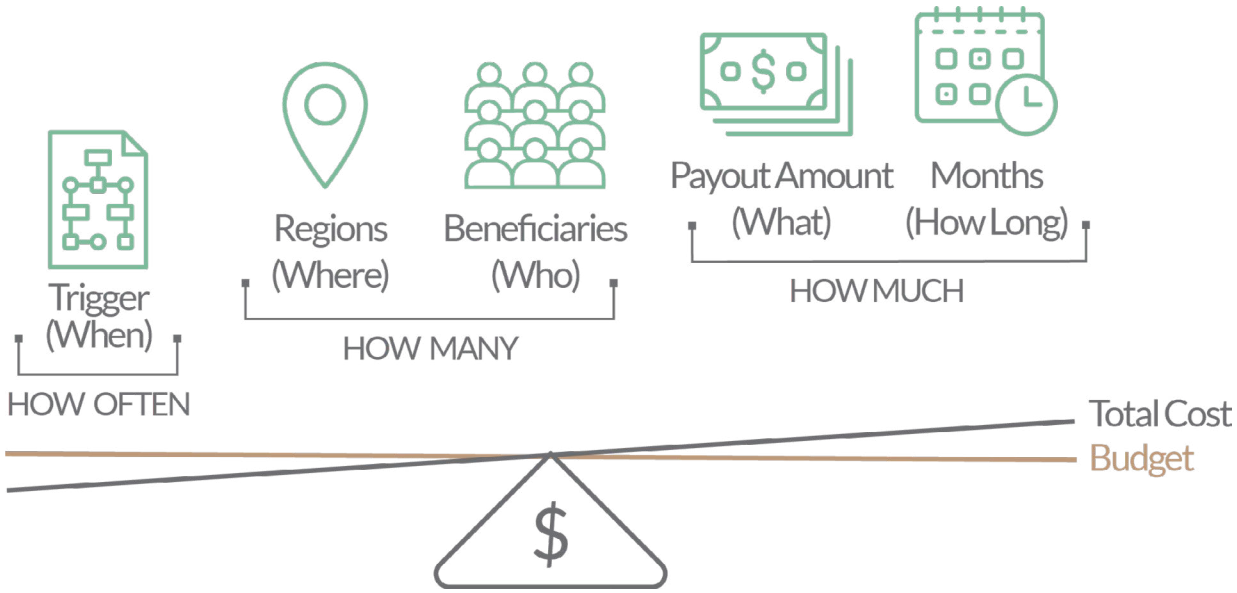
3. Considering trade-offs: Balancing different policy priorities under financial constrains

A scale-up always comes with financial, operational, and opportunity costs, creating trade-offs that need to be considered when determining the values of different parameters. Understanding the cost of responding to disasters before they occur is essential to assess whether such a system is financially feasible and to determine the most appropriate way to trigger and finance a response.

The cost of the scalable mechanism is driven directly by the values chosen for the five key parameters. For example, the more often the mechanism is designed to trigger (determined by the choice of trigger threshold) the greater the cost.

Estimating the costs of a scalability mechanism should be done using data from multiple historical years not just one potential shock event (Chapter 2), as well the latest climate science on changes in frequency and severity of shocks. Risk modelling techniques can be used alongside the historical data to predict future occurrence of disasters so decision makers can adjust the shock responsive safety net features.

FIGURE 4 - TRADE-OFFS BETWEEN DIFFERENT SCALE-UP PARAMETERS AND OVERALL BUDGET CONSTRAINTS

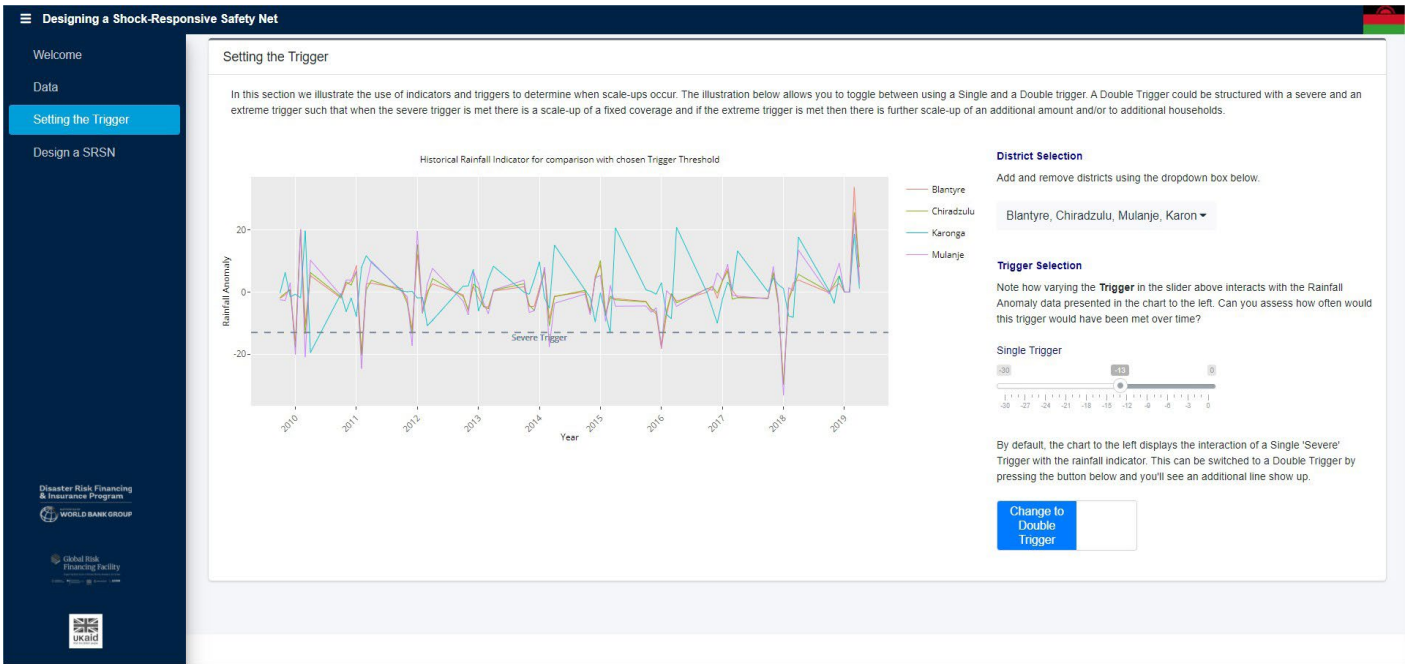


Online Training Tool: Putting the learnings into practice

To strengthen the understanding of the financial implications of selecting different parameter values, the World Bank's Disaster Risk Finance and Insurance Program has created an Online Training Tool. This Tool enables the user to set different parameter values that determine when a scale-up is triggered, which households will be covered, and what level of aid they will receive. It compares the impact on cost of different designs in the Malawi context, using data on district level population and historical rainfall data as the drought data indicator. The Tool is for educational purposes only and the Government may decide to use alternative data indicators to inform their final design. The Tool can be found through;

Access to the Online Training Tool for Designing a Scalable Mechanism for the Malawi Social Cash Transfer Program (SCTP)

FIGURE 5 - SCREENSHOT OF THE SCTP SCALABILITY MECHANISM ONLINE TRAINING TOOL



Costing and budgeting tools like this one are required to consider the costs of scaling up social protection programs under different scenarios. The Tool uses historic data to better understand what the mechanism would have paid out had it been in place. It does not include future scenarios which means we are limited by the experiences in recent history. Further details are laid out in the final section of this chapter.

II. KEY DECISIONS FOR DESIGNING A SRSP SYSTEM

The five parameter questions laid out below resemble the key choices decision makers have to make when designing a scalability mechanism. They determine when a scale-up is triggered and what the nature of the intervention will be.

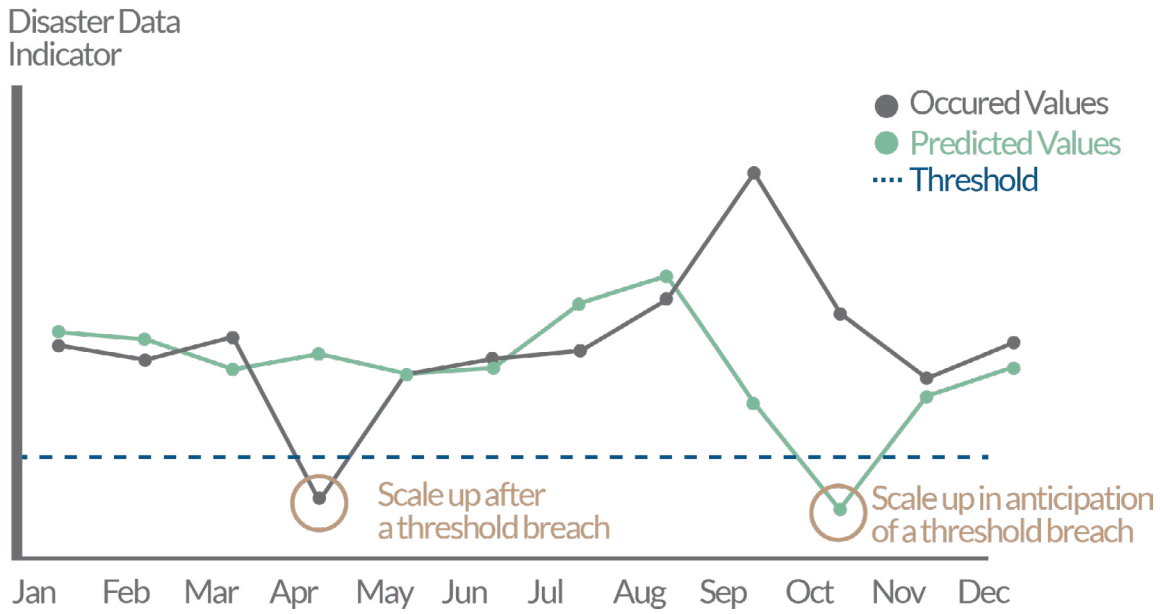
1. When should a scale up be triggered?

The decision of when a scale-up occurs must be based on the type of data used to monitor the shock conditions which the scalability mechanism system seeks to protect against and the level of shock conditions that need to be reached to trigger a scale-up.

Building on the lessons from Chapter 2, data sources chosen for the scalability mechanism serve as an appropriate proxy for the type, magnitude, timing, and location of the shock to which the system is supposed to respond. A scale-up is triggered when the chosen disaster index breaches a pre-agreed threshold value. The data must be *timely*, so that scale-ups can be conducted not only quickly but also at points in time when additional transfers are most effective; *relevant*, so that the mechanism offers reliable protection; *objective* and possible to audit, to avoid subjective analysis and the risk of politicizing scale-up decisions; and *available* over a long time horizon.

Last, it is possible to have multiple triggers to account for different types or intensities of risks. For instance, if decision makers want the amount of a payout to depend on the severity of the shock, they can put two different triggers in place to respond to different levels of need. For example, the Hunger Safety Net Program (HSNP) in Kenya (see Chapter 1) has two threshold levels which account for different drought conditions experienced. The first trigger initiates payouts to non-routine households experiencing *severe* drought conditions with a cap on coverage at 50 percent of the sub-county population. A breach of the second threshold is made when *emergency* drought conditions are recorded and triggers a further payout to an additional 25 percent of non-routine households.

FIGURE 6 - A SCALE-UP IS TRIGGERED WHEN A PRE-DEFINED THRESHOLD VALUE OF THE DATA INDICATOR IS BREACHED (THIS COULD BE IN ANTICIPATION OF A DISASTER OR IN RESPONSE TO A DISASTER)



Decisions to be made:

- To what shock drivers should the system respond to (droughts, floods, ...)?
- How are shocks defined and measured, with what data or indicators (rainfall data, vegetation cover, yield data, ...)?
- Should a scale-up be triggered before or after a shock occurred (actual or predicted values)?
- What is the threshold value of the disaster data index that needs to be breached to trigger a scale up?

Trade-offs:

- The lower the severity threshold value is set, the more often the system triggers, initiating payouts to affected households more often but also increasing the associated costs.
- If the system is triggered too often with relatively high payouts, the need of the beneficiaries might not be as critical, yet increasing pressure on the budget and increasing the opportunity costs
- If the system is triggered too often with relatively low payouts, the transaction costs of the operational procedures might outweigh the provided financial benefit for beneficiaries, thereby decreasing the cost-effectiveness of the system
- If the system is triggered too rarely, populations in need might not receive crucial support from payouts.

Take away:

- The threshold value level that triggers a scalability mechanism ultimately decides when, how often, and to which shocks the system responds. Having lower trigger thresholds are generally more suitable for more often occurring but less extreme shocks, triggering 'smaller' scale ups. The opposite is true for rarer but more extreme events, for which thresholds should be less sensitive but trigger 'bigger' in payouts.

2. Where should the shock response happen?

The decision of where a scale-up should take place defines the geographic coverage of the scalability mechanism. It needs to consider several aspects. The first requirement for choosing areas is that the chosen disaster data indicator from *Parameter 1 – When* they are available in the considered areas.

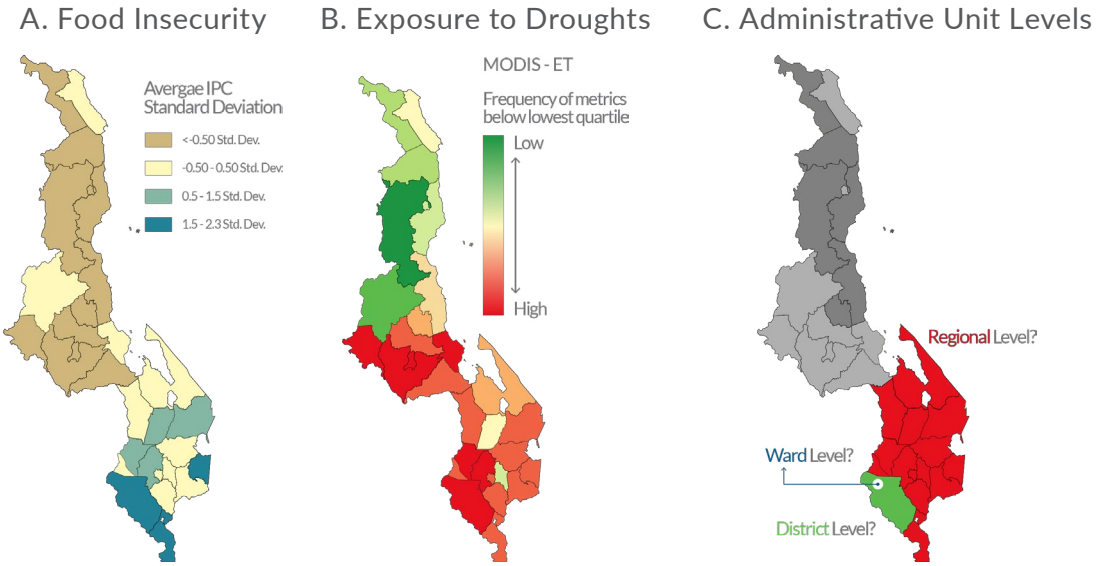
Second, regions should be chosen based on the need of the local populations to be supported by a scale-up. If the purpose of the scalability mechanism is to provide protection against the impact of droughts, it is important to analyze the historic drought conditions to determine which districts and people are most vulnerable and would benefit the most. The maps in figure 8 below show the level of food insecurity (A) and exposure to droughts (B) in Malawi, indicating the need for increased government support for vulnerable households located in affected areas.

FIGURE 7 – KEY CRITERIA TO BE CONSIDERED WHEN CHOOSING GEOGRAPHIC AREAS

Need Analysis	*Administrative Feasibility*
Poverty Rates	*Existing capacity of districts*
Malnutrition levels	*Accessibility*
Food insecurity	*Presence of necessary staff*
Disaster-related vulnerability	*Regional balance*

Third, it must be decided on which administrative unit level the system is implemented. This question will decide on what geographic scale the data index is measured on, which influences the level of basis risk.[1] Another aspect that needs to be considered is the administrative feasibility: chosen administrative units (C) play a key role in establishing and managing the system; their administrative structures and capacities must therefore be considered when deciding on where to implement the system to ensure that payouts can be effectively administered.

FIGURE 8 - WHERE TO SCALE UP SHOULD DEPEND ON POPULATION VULNERABILITY, SHOCK EXPOSURE, AND EXISTING ADMINISTRATIVE UNITS (SOURCE: TETRA TECH)



*1 The risk that a parameter or a loss model does not capture an actual loss as experienced on the ground. If the exceedance of a given parameter or of a modeled loss are chosen as the trigger for a payout, the failure of such a parameter/loss model to capture actual losses can result in situations where significant loss is experience but no/low payouts are made. This risk is inherent in insurance with parameter/index/model-based triggers and cannot be fully removed. However, through rigorous review and testing this risk can be better managed and understood.

Decisions to be made:

- What geographical area is intended to be covered?
- On what factors should the decision be based on? Political? Needs-based? Data-availability? Existing operational system (beneficiary registries, disbursement channels, ...)?
- On what administrative unit level should scale-ups occur (regional, district, ward)?

Trade-offs:

- The more areas selected to be covered, the higher the associated costs to establish the required operational procedures on each administrative level and to finance scale-up itself.
- The fewer areas are selected to be covered, the higher the share of fixed investment costs of establishing the system compared to the overall volume of disbursed payouts.
- The more granular the administrative unit level chosen, the more area-specific the system can react to shocks, the lower the basis risk, but the higher the establishment and transaction costs of operating the system and the higher the risk of discontent, as the proximity between recipient and non-recipients increases.

Take away:

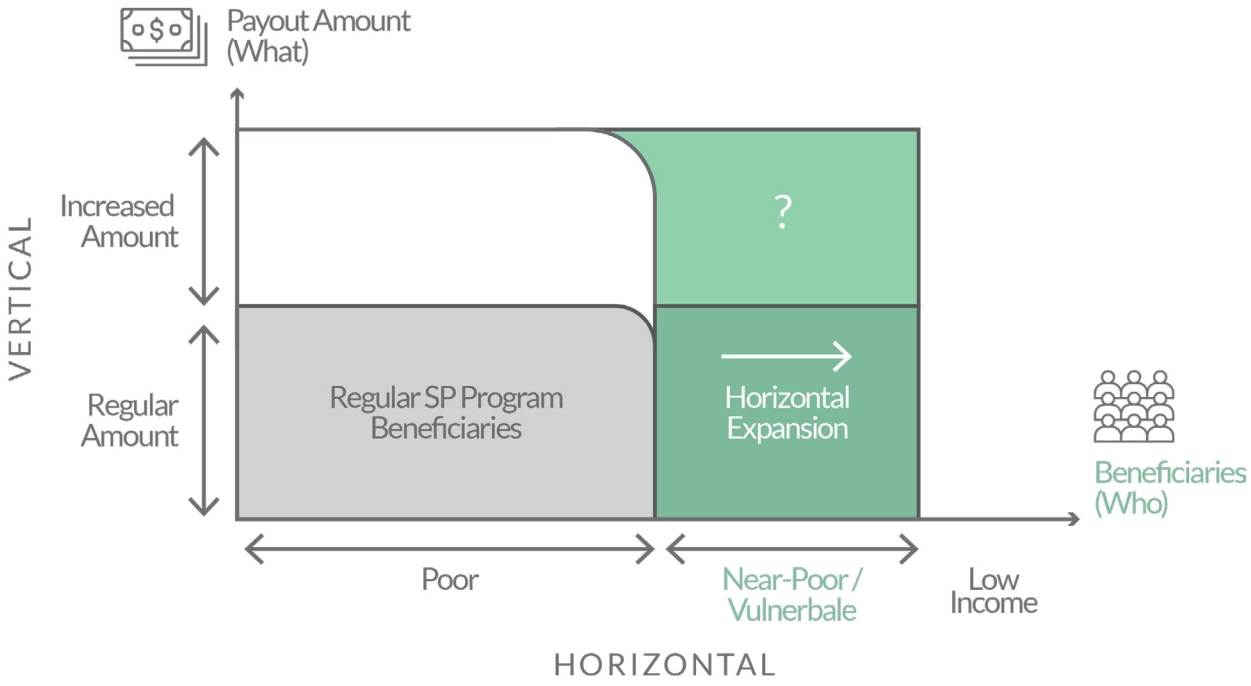
- When deciding on the geographic area that the scalability mechanism should cover, decision makers should consider existing operational systems that exist in different areas and on different administrative levels which can be used as outreach and disbursement channels to reach beneficiaries.

3. Who should benefit from the shock response?

Decision makers need to determine which beneficiaries receive payments once a scale-up has been triggered in a given district. Specifically, it needs to be decided whether to only provide payouts to already existing, regular recipient of the social protection system ("vertical expansion"), and/or, alternatively, to increase the coverage to additional vulnerable households to help them cover their transitory needs and prevent them from falling into a poverty trap ("horizontal expansion").

A horizontal expansion entails the registration, selection, and enrollment of additional beneficiaries. Assuming that all households have been registered on a single MIS linked to targeting and payment mechanism and that these households are ranked in wealth order from poorest to least poor, decision makers need to set the coverage level for this, informed by the number of households near-poor/vulnerable status. One additional question is whether non-routine recipients receive the same payout amount as regular beneficiaries. This decision will further be elaborated on in the next section.

FIGURE 9 – A SCALE-UP MAY PROVIDE PAYOUTS TO REGULAR BENEFICIARIES AND/OR TO ADDITIONAL NON-ROUTINE HOUSEHOLDS (HORIZONTAL EXPANSION)



Decisions to be made:

- Who should benefit from the shock response (existing beneficiaries, other members of the population, or both)?
- What number of additional households should be reached?
- What should be the criteria when choosing non-routine beneficiaries (socio-economic, geographic, ...)?[2]
- How can the chosen new beneficiaries be identified (population registries, ...)?[2]

Trade-offs:

- The more additional beneficiaries covered, the higher the financial cost of payouts, the higher the transaction cost of identifying and channeling payment to non-regular recipients.
- The fewer additional beneficiaries covered, the higher the risk of populations in need not receiving crucial support from payouts.

Take away:

- The decision of whether to provide payouts to additional, non-routine recipients should be based on budget considerations, the relative need of regular compared to non-routine recipients, and the investment and transaction cost of identifying and channeling payouts to non-routine recipients.

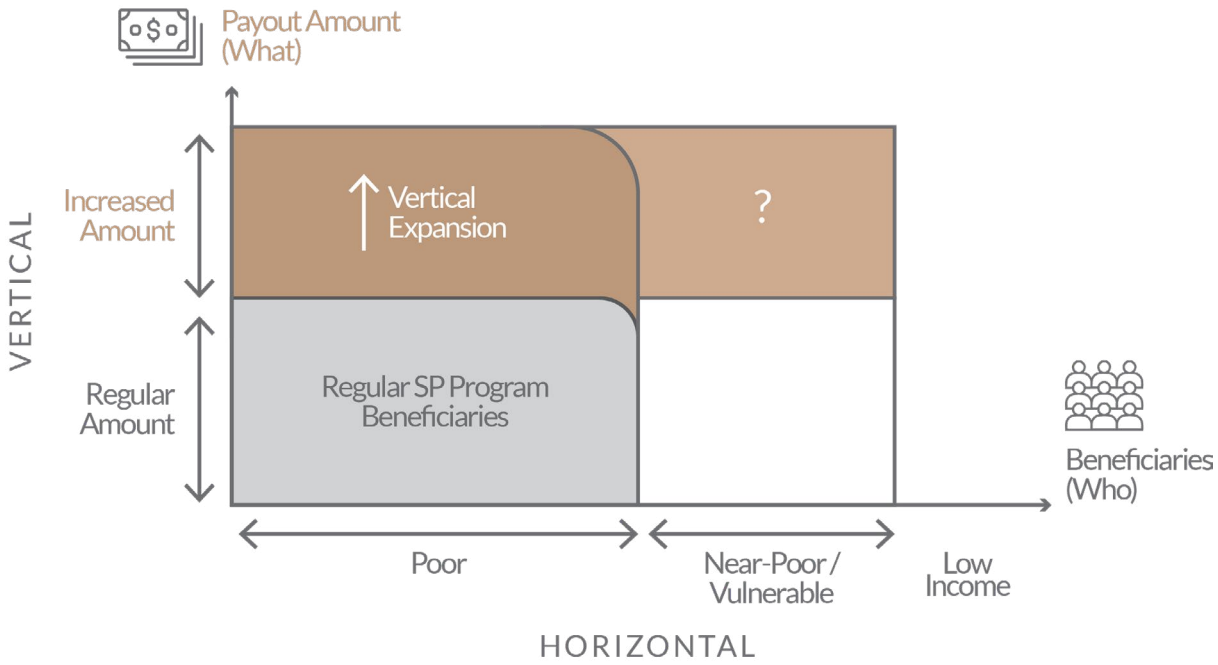
4. What should be the value of additional transfers?

The number and selection of beneficiaries (Who) needs to be determined alongside the decision on the payout amount they receive (What). It must be decided how much they will receive and whether the amount will be the same for routine recipients in the case of vertical expansion and non-routine beneficiaries in case of a horizontal expansion.

A vertical expansion takes place if the scale-up provides an additional payout to regular program beneficiaries on top of the regular cash that they receive will be provided to help cover additional transitory needs. Any amount to regular beneficiaries can be considered an additional 'top-up'. Decision makers need to determine the payout per household per month, which should be reviewed periodically. The amount should be assessed with reference to cost of minimum food basket and the level of financing available.

In case horizontal expansion is taking place as well, decision makers need to determine how high the payout amount to these non-routine beneficiaries is. The payout amount can differ and should be informed by the respective need both groups are experiencing.

FIGURE 10 – THE PAYOUT AMOUNT PROVIDED MAY DIFFER BETWEEN REGULAR BENEFICIARIES (VERTICAL SCALE-UP) AND NON-ROUTINE BENEFICIARIES (HORIZONTAL SCALE-UP)



Decisions to be made:

- What should be the value of any additional transfers?
- Should existing beneficiaries receive the same, more, or less than non-routine beneficiaries?
- Should there be a standard transfer amount, or should it vary according to the shock and the needs?
- Which disbursement channels can be used for the payouts?

*2 Consideration not included in the online tool

Trade-offs:

- The higher the additional payout amount, the higher the overall costs of the scale-up, and, potentially, the lower the cost-effectiveness of the intervention.
- Vertical expansion could be viewed as double dipping if they are already receiving support, despite their needs increasing.

Take away:

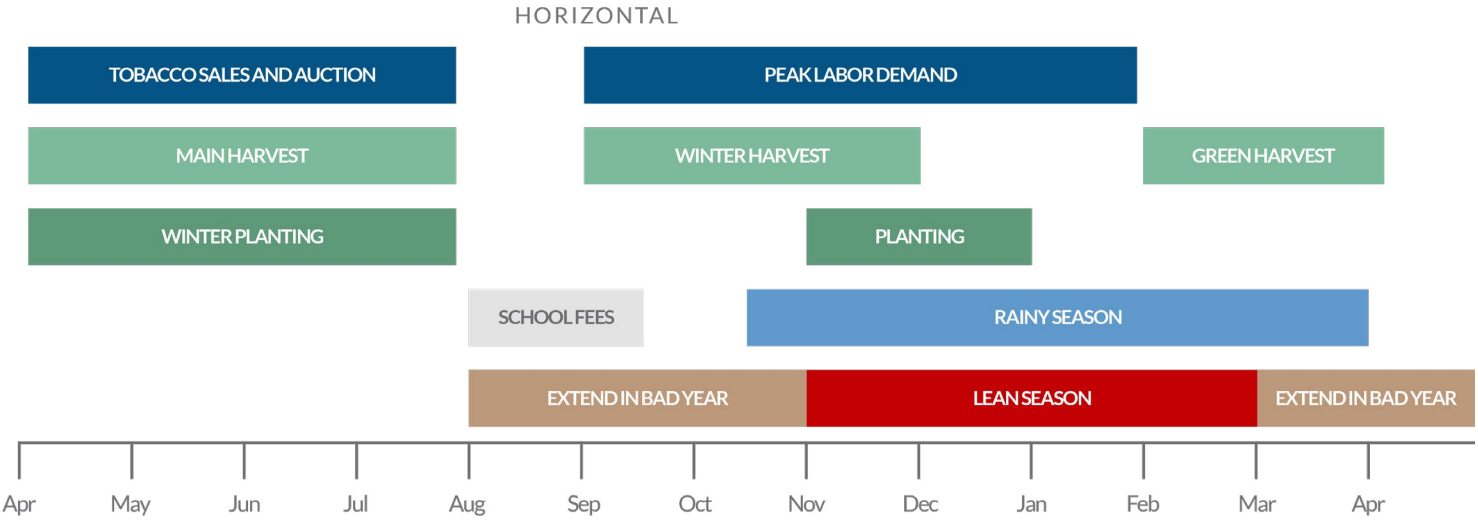
- The payout amount to regular and potentially non-routine beneficiaries should be decided on the available budget and the relative need caused by the shock. Having multiple trigger levels can help match the relative need level with appropriate payout amounts.

5. How long should beneficiaries receive scale-up payouts for?

A scale-up can either trigger a one-time payment or several payments stretched out over a specific period of time. This decision must be informed by three key considerations:

Matching payouts with occurring needs: Decision makers need to determine which seasonal period they want payments to cover in order to decide how many months a scale-up is supposed to cover. The calendar below (Figure 11) illustrates the links between livelihoods, food security, and shocks. For example, if there is a failed harvest in Malawi, the lean season starts much earlier and so the government may wish to scale-up the SCTP from July/August until other interventions kick in or the next harvest. The decision of whether and how to structure the timeline of payments determines whether payouts occur on a monthly level to cover specific time periods, or whether to disburse a single (larger) lump sum payment that provides beneficiaries certainty of the amount and the flexibility to make investments independently. The decision should also be informed by the liquidity considerations of households, considering when households have the highest needs and are at the highest risk to engage in negative coping mechanisms that risk long-term development gains.

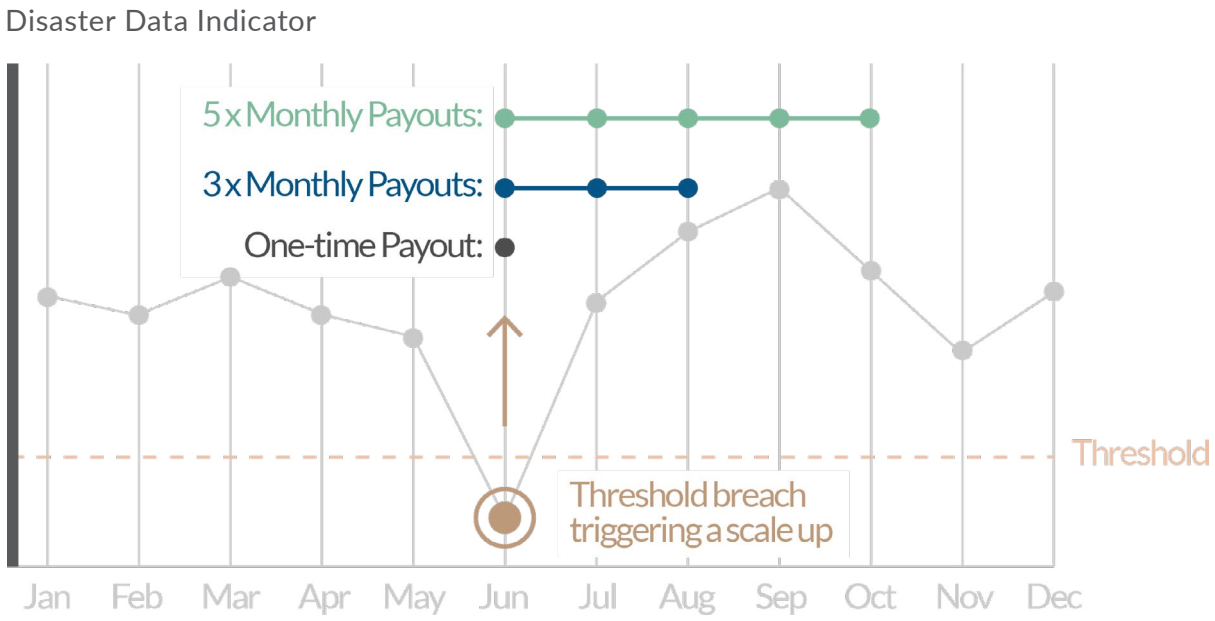
FIGURE 11 - AGRICULTURAL, VULNERABILITY, AND SHOCK PERIODS IN MALAWI (SOURCE: TETRA TECH)



Delivery mechanism to be used: The mechanism used to provide payments to beneficiaries determines the transaction costs when making payouts, as for instance physical cash disbursements entail more logistical effort than cashless payouts. Another consideration is if physical cash is used in the delivery mechanism, whether the risk of crime against recipients or corruption by facilitators increases.

Alignment with existing interventions: Decision makers should consider how the payout timeline fits into other government programs and humanitarian responses. For instance, regular payments under Malawi's SCTP are made bi-monthly, so it must be considered whether scale-up payments should be made at the same time to help with delivery infrastructure or whether at separate times to better spread out government support.

FIGURE 12 - DECIDING ON THE NUMBER AND TIMING OF PAYOUTS AFTER A SCALE-UP HAS BEEN TRIGGERED



Decisions to be made:

- How long should beneficiaries receive a scaled-up benefit?
- Should payments or transfers be a one-off or continue for several months after the trigger has been hit (such as until the rains arrive or the floods subside)?
- How should the amount of the payout vary depending on number of payments?

Trade-offs:

- The more often payouts are made, the better beneficiaries might be able to cover lasting costs occurred through the shock, but the less flexibility they have to make productive, self-determined investments and, depending on the delivery channels, the higher the total transaction costs.

Take away:

- The timeline of payouts must be determined by considerations of when the need of beneficiaries are the highest, which disbursement channels are available, and how the scale-up payments align in the bigger picture of government and development interventions.

ONLINE TOOL MANUAL

Objective

This Online Training Tool (the 'Tool') was developed to support the Government of Malawi in their design of a scalable Social Cash Transfer Program (SCTP). The Tool is exploratory but highlights the different key design elements needed for a scalable SP program and illustrates the cost implications of varying each element. The Tool is pre-loaded with population and rainfall data anomalies for Malawi, changes to this data will impact on the costing analysis presented. This section of workbook is designed to help a user navigate the Tool and includes some exercises for the user to work through to check their understanding.

The Tool is designed to work on a laptop or desktop computer with the web browser maximized, you may not be able to use the Tool on smaller screens. The Tool requires a strong internet connection and may be slow to load without this. The Tool may timeout after a period if inactive.

Authorship

This Tool was developed by the Disaster Risk Financing and Insurance Program (DRFIP) which is housed in the Finance, Competitiveness and Innovation Global Practice of the World Bank Group. It has been developed with financial support from the Global Risk Financing Facility.

Disclaimer

Information in the Tool is provided for educational purposes only and does not constitute legal or scientific advice or service. The World Bank makes no warranties or representations, express or implied as to the accuracy or reliability of the Tool or the data contained therein. Users of the Tool should seek qualified expert advice for specific diagnostic and analysis of a specific project. Any use thereof or reliance thereon is at the sole and independent discretion and responsibility of the user.

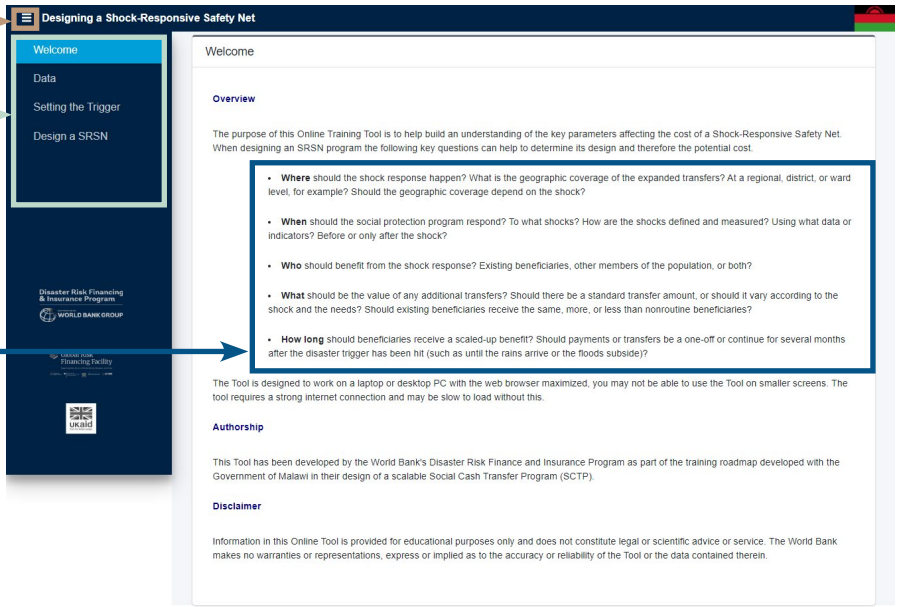
NAVIGATION / WELCOME

This page gives the user an overview of the Tool and its authorship and any disclaimers.

The user can **create more space** on their page by clicking on the three horizontal lines to hide the sidebar shown here

The Tool is divided into **four sections** which can be navigated via the left-hand sidebar.

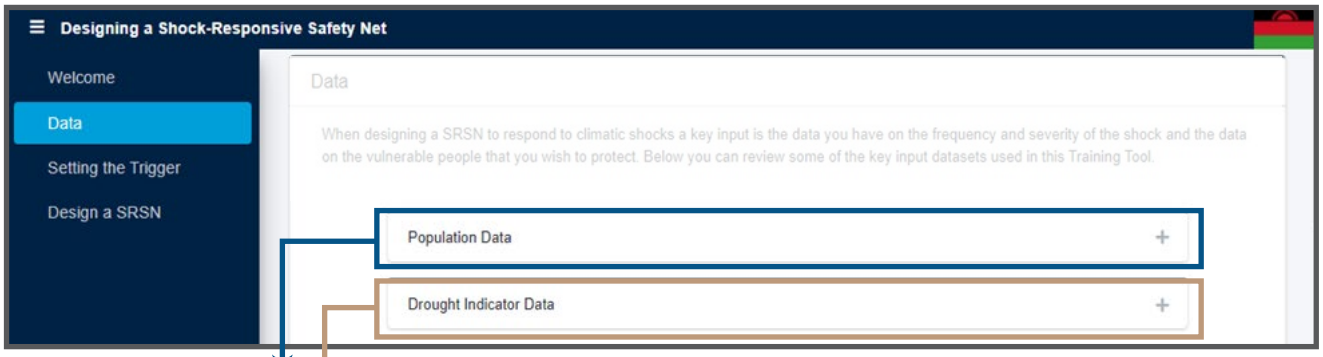
The tool is structured according to the **5 parameters** of designing a scalability mechanism

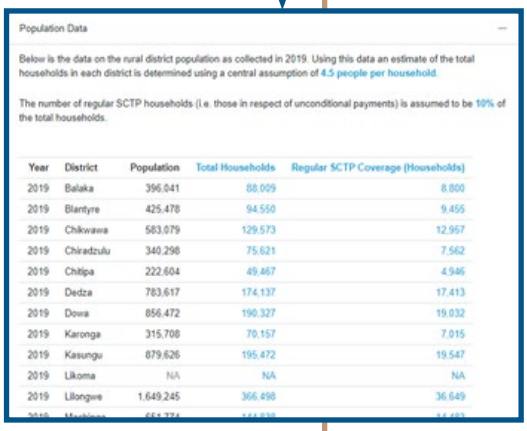


II. DATA

On this page the user can see the pre-loaded data on population and the indicative drought indicator. The data shown here is the foundation of the Tool but for the purpose of this exercise cannot be edited, although it is possible that alternative data sources would be more appropriate.

To view the datasets click on the plus symbol as highlighted below.





Population Data

The population data is important because it is used to determine the number of households that could be covered by the mechanism and the number of regular beneficiaries (as shown in the final two columns).

Drought Indicator Data

Rainfall data is used as the drought indicator for educational purposes. The raw monthly rainfall data was converted into a rainfall anomaly for each month in the rainy season (October to April). The months where the rainfall is below average is shown in red and above average in green.

To view the data for all 28 districts in Malawi the user can ask the Tool to show you 50 entries as highlighted below, or use the search bar by entering the district name of interest.

Who

Population data links back to the selection of beneficiaries, for instance how to identify non-routine recipients for a horizontal expansion.

Where

Robust data sources for both population and risk indicator data in considered geographic areas are required for a scalability mechanism and must therefore be analyzed in the design phase.

When

The chosen risk indicator will determine when, where, and how often the scalability mechanism is triggered. Rainfall data as used in this example is the only option to be considered for drought events, others may include vegetation and soil moisture.

1. How many Regular SCTP Coverage households are in the district of Rumphi?

A. 4,572 B. 3,452 C. 1,588

2. Scrolling through the drought indicator data, in which of the following months did every district experience below-average rainfall?

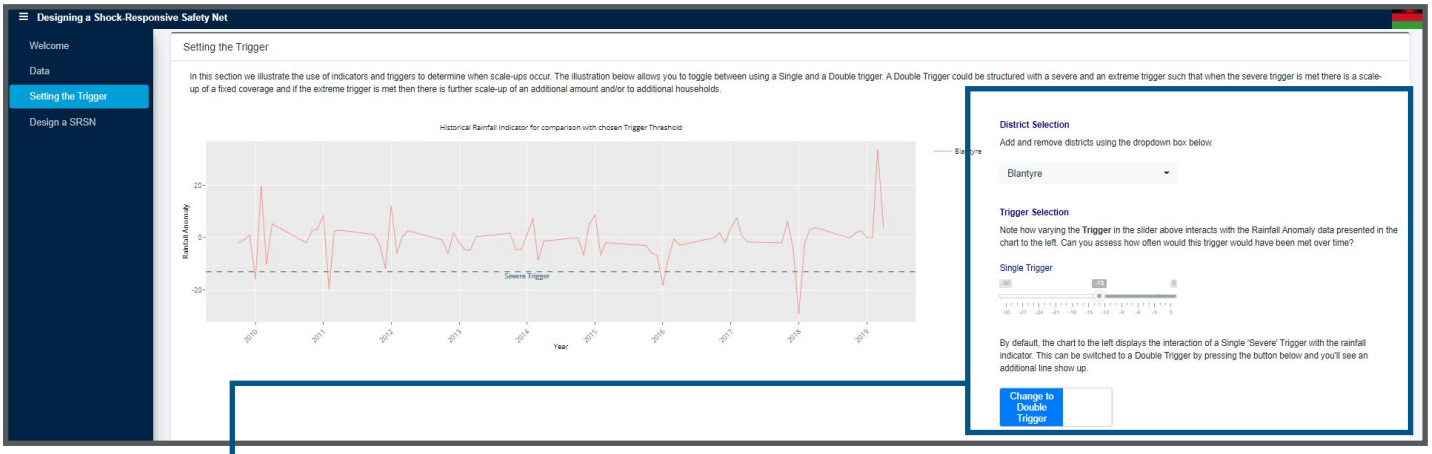
A. Feb-12 B. Nov-13 C. Oct-18

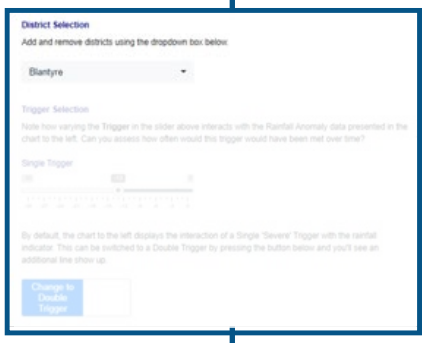
3. For which district is neither population nor rainfall data available? (And hence the Tool cannot design a scale up mechanism here.)

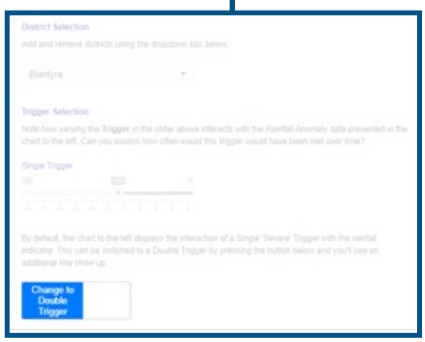
A. Dowa B. Likoma C. Neno

III. SETTING THE TRIGGER

On this page the user can select different options for a trigger threshold applied to the rainfall anomaly. The user can select the district(s) of interest and the trigger threshold, as well as switch between having a single trigger threshold and double trigger thresholds.







District Selection

Choose the **number and selection of districts** to be covered by the scalability mechanism by picking districts from the dropdown menu on the left.

The historic rainfall data of the selected districts will appear on the graph of the left.

Trigger Selection

Setting the trigger value

The user can **change the trigger value** (default is set at -13) by moving the toggler (using mouse or keyboard arrow keys). Users should notice how the value change is reflected on the graph to the left. If you choose a second trigger (see next step), a second toggle will appear.

Selecting the number of triggers

By clicking the blue button (default is for a single trigger), the user can switch between one or two threshold levels at which a scale is being triggered.

Where

The selection of districts should be informed by the need of local population, already existing government or donor interventions, and existing disbursements mechanism in place.

When

The trigger defines when a scale up takes place.

The lower the chosen value for the trigger is, the more often the mechanism will trigger.

Choosing multiple triggers makes the system more reflective of the magnitude of events taking place.

1. For Blantyre, is the trigger threshold was set at -10 how many times would trigger between 2010–2019?

A. 2 B. 4 C. 6

2. Scrolling through the drought indicator data, in which of the following months did every district experience below-average rainfall?

A. Increase B. Decrease

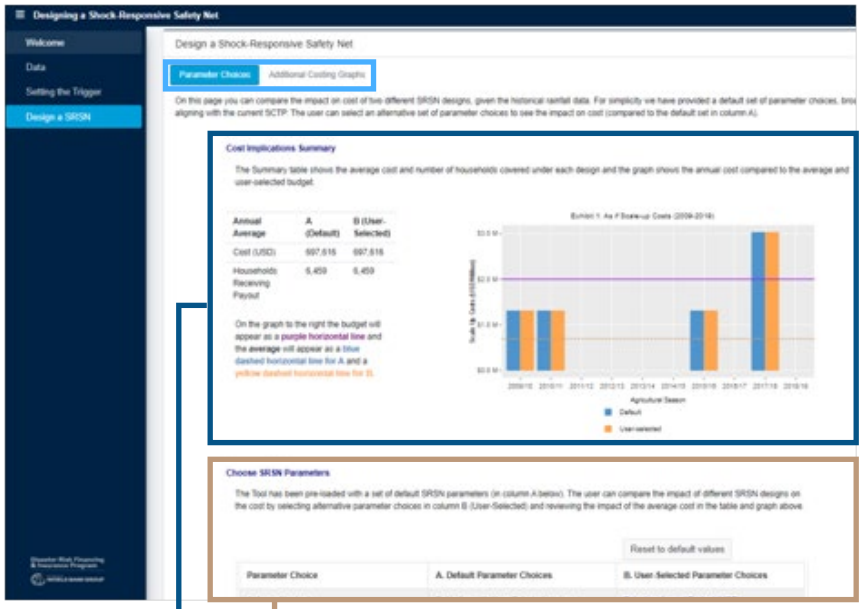
3. For Blantyre and Mangochi, in what year would a trigger threshold of -20 be met in Blantyre but not Mangochi.

A. 2018 B. 2014 C. 2016

4. Changing to a double trigger, how many severe and extreme scale-ups are there in Ntcheu if the severe trigger is set at -10 and the extreme trigger is set at -18?

A. 3/2 B. 4/1 C. 4/3

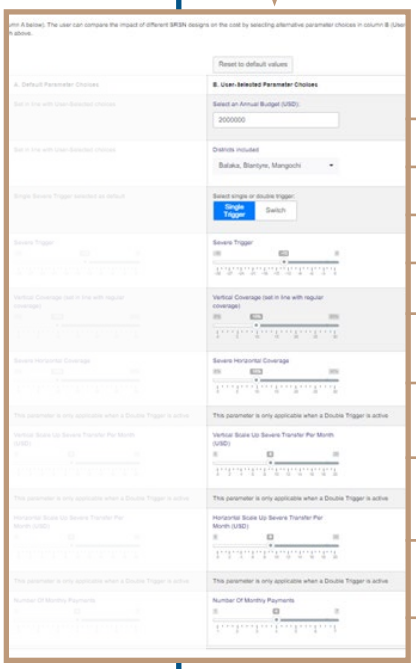
IV. DESIGNING A SRSN



This page is split into two sections: 'Parameter Choices' and 'Additional Costing Graphs'. It allows the user to design a SRSN by selecting the choices of parameters for ***where, when, who, what, how long.*** They can then see the impact of their choices on the average cost and household coverage but comparing their choices (B) against a default design (A). These two sections can be moved between by clicking on the labels.

A. Parameter choices

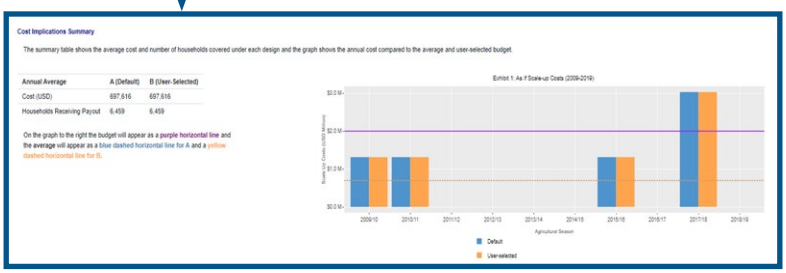
The user can design a SRSN based on the different parameter options listed below. The user can see some initial costing implications on the cost summary.



Input of design parameters

The user can amend parameters with the toggles to the left

- The higher the budget, the more space the mechanism has
- **Choose districts** by clicking on them on the dropdown menu
- By clicking this button, you **introduce a secondary trigger**
- A more negative threshold results in more frequent scale-ups
- Share of **regular** beneficiaries that would receive an additional amount
- Share of non-routine beneficiaries that would receive a payout (split by severe and potentially extreme scale-up)
- **Payout amount** to **regular** beneficiaries (vertical) (split by severe and potentially extreme scale-up)
- **Payout amount** to **non-routine** beneficiaries (horizontal) (split by severe and potentially extreme scale-up)
- The **duration of payments** in months



Cost Summary

The graph and table to the left provide a responsive **summary and comparison of the cost and impact** implications of the design parameters of the default as well as user design.

1. Which parameter would you set to zero if you don't want a payout to be transferred to beneficiaries?

A. 2 B. 1 or 12 C. 5 or 8

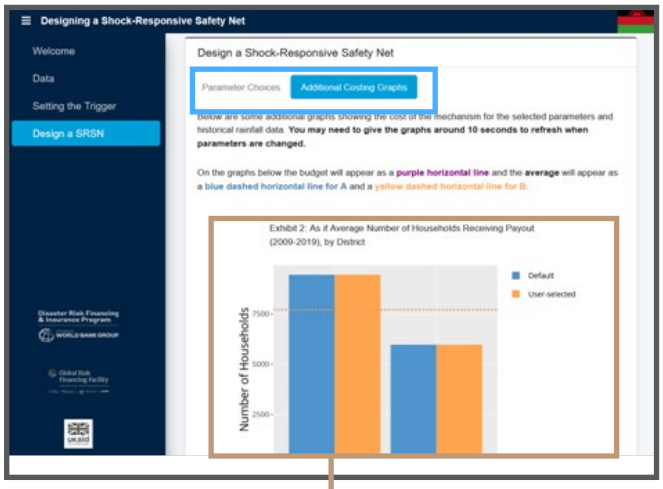
2. What impact does removing vertical coverage have on the average cost and number of households receiving payouts?

A. Increase B. Decrease

3. If you want 15% of the households to be covered by horizontal coverage, what parameter would you change?

A. 3 or 4 B. 5 C. 6 or 7

IV. DESIGNING A SRSN



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B. Additional Costing Graphs

In this section the user can see further analysis of how their design from the 'Parameter Choices' section compares to the default design.

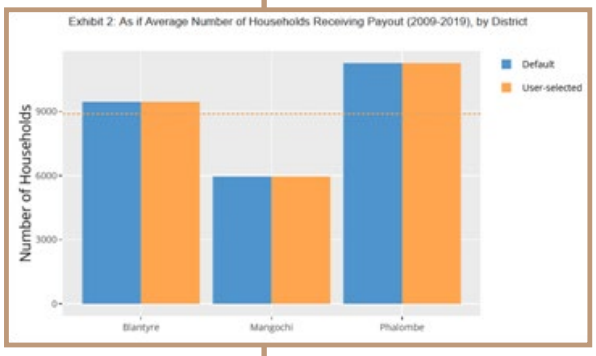

Exhibit 2

This exhibit shows the **estimated annual average number of households in receipt** of a scale-up payment under each design across years 2009 to 2019 for each district included. The blue bars represent the default parameter choices, whereas the yellow bars represent the user-selected parameter choices. The dashed lines show the average across all districts.

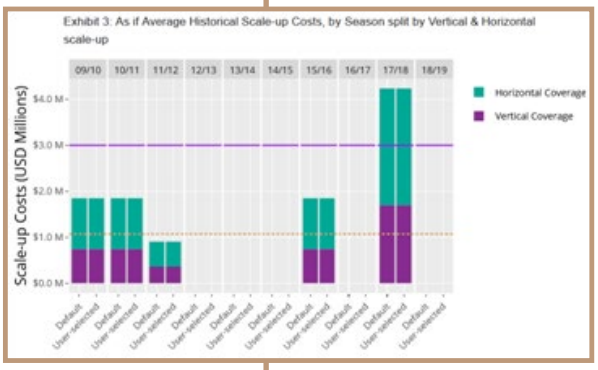

Exhibit 3

This exhibit shows the **split between vertical and horizontal scale-up costs by year**, averaged across the included districts. The dashed lines show the average across all districts and the purple line shows the user-selected budget available.

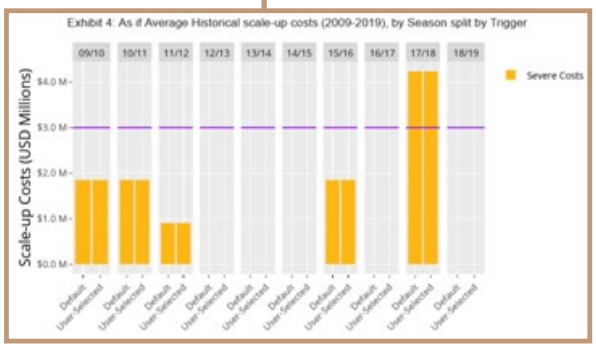

Exhibit 4

This exhibit shows for each historical year, **the average cost of scale-up across the included districts**. If a double trigger is selected, then the graph will split out the costs between severe and extreme payouts. The purple line shows the user-selected budget available.

1a. What is the average cost of running the mechanism in these 3 districts under the default assumptions?

☐ A. $1,067,894 ☐ B. $2,427,903

1b. If we assume a budget of $3 million per year, in how many seasons would the mechanism cost more than the available budget?

☐ A. One ☐ B. Two ☐ C. Five

2a. How does the cost and coverage of the mechanism change if we assume no scale up to regular recipient but 15% horizontal coverage?

☐ A. Cost: -US$266,683 / -1,830 HHs
☐ B. Cost: -US$427,157 / -3,560 HHs

2b. How high can you set the monthly payment for horizontal expansion such that the average costs remain below US$1 million?

☐ A. $12 ☐ B. $15 ☐ C. $20

3a. If we add in additional districts, Mulanje and Zomba, in how many more years is the budget exceeded?

☐ A. 5 ☐ B. 6 ☐ C. 7

3b. Which district has the highest household coverage, including Mulanje and Zomba)? (tip: see exhibit 2)

☐ A. Mulanje ☐ B. Blantyre
☐ C. Phalombe

Thank You

For more information please contact,

Evie Calcutt
FINANCIAL SECTOR SPECIALIST
ecalcutt@worldbank.org

Kaavya Krishna
KNOWLEDGE MANAGEMENT OFFICER
kashokkrishna@worldbank.org

Alejandra Campero
FINANCIAL SECTOR CONSULTANT
acampero@worlbank.org

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