water

IMPACT FACTOR 3.5

CITESCORE 6.7

Article

A Deliberative Rural Community Consultation to Assess Support for Flood Risk Management Policies to Strengthen Resilience in Malawi

Ozius Dewa, Donald Makoka and Olalekan Ayo-Yusuf

Special Issue

Advances in Modeling and Risk Analysis of Floods under Changing Climate

Edited by

Dr. Yonas K. Demissie

MDPI

https://doi.org/10.3390/w14060874

water

MDPI

Article

A Deliberative Rural Community Consultation to Assess Support for Flood Risk Management Policies to Strengthen Resilience in Malawi

Ozius Dewa [1,*], Donald Makoka [2] and Olalekan Ayo-Yusuf [1,3]

[1] Southern Africa Resilience Innovation Lab (SARiLab), School of Health Systems and Public Health, University of Pretoria, Pretoria 0002, South Africa; lekanay@gmail.com
[2] Centre for Agricultural Research and Development, Lilongwe University of Agriculture and Natural Resources, Lilongwe P.O. Box 219, Malawi; donmakoka@yahoo.co.uk
[3] Africa Centre for Tobacco Industry Monitoring and Policy Research, University of Pretoria, Pretoria 0002, South Africa
* Correspondence: oziusd@gmail.com; Tel.: +27-799781832

Abstract: As disasters increase in frequency and magnitude with adverse effects on population health, governments will be forced to implement disaster risk management policies that may include forced relocation. Ineffective public consultation has been cited as one reason for failure of these policies. Using the deliberative polling method, this study assessed the capacity of rural communities to participate in flood risk management policy priority setting and the impact of providing accurate and balanced information on policies by comparing pre-and post -deliberation data. The study also assessed the level of trust on whether government and community would use the results of this study. Results indicated strong community support for policy options to reduce vulnerability in communities and strong resistance to relocation. As all the top five ranked policy options were concerned with population pressure, gender, and social service issues, which are all conceptually considered social determinants of a healthy community, this study concludes that public health considerations are central to flood risk policy development and implementation. The study revealed high levels of trust in government and the community relating to flood risk management, which policymakers in low-to-middle income countries can capitalise on for meaningful community consultation for effective disaster risk management.

Keywords: policy; deliberative polling; climate change; flood risk management; disaster risk reduction; Malawi

check for updates

Citation: Dewa, O.; Makoka, D.; Ayo-Yusuf, O. A Deliberative Rural Community Consultation to Assess Support for Flood Risk Management Policies to Strengthen Resilience in Malawi. *Water* **2022**, *14*, 874. https://doi.org/10.3390/w14060874

Academic Editor: Yonas K. Demissie

Received: 13 December 2021
Accepted: 3 March 2022
Published: 11 March 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

The World Meteorological Organization's [1] global estimates indicate that there was a five-fold increase in disasters in the period 2000–2009 compared to the period 1970 to 1979 due to climate change. Between 1970 and 2019, weather-related disasters accounted for 50% of all recorded disaster events and 45% (just over 2 million) of all reported disaster-related deaths world-wide. In this period, Africa recorded 1695 weather-related disasters, accounting for 15% of global weather-related disasters, of which 60% were floods. These weather-related disasters resulted in the loss of 731,747 lives, that is, 35% of all deaths associated with weather-related disasters globally [1]. Floods negatively affect the functioning of communities and public health systems [2], particularly in flood prone communities [3]. If not mitigated, these adverse effects result in health-compromising conditions of public health importance and pose a challenge to the resilience of communities, with negative impacts on the functioning and sustainable development of these communities.

Global weather-related sudden onset disasters are predicted to increase in frequency and magnitude [4]. Scientists and policymakers argue that this will heighten the need for

governments to declare all areas in harm's way inhabitable, resulting in the relocation of many people to safer places, among other disaster risk management (DRM) interventions. However, evidence suggests that relocation poses further public health risks such as food insecurity, limited access to health care, increased morbidity and mortality, and social disintegration, inter-alia, if not planned and implemented properly [5]. Consequently, many people refuse to be relocated [6] with evidence showing examples of some communities that have been relocated but returned to their original homes. Such examples include the reoccupation of the city of Old Gediz in Turkey following the 1970 earthquake [7], the failed resettlement from Banaba Island in the Pacific in the 1940s [8], the resettlement during the Ethiopian drought of the mid-1980s, the case of the Carteret Islands in Papua New Guinea, and that of the Newtok community in Alaska [9]. Both the World Bank, 2001 [10] and Ferris, 2011 [6] suggest that where resettlement cannot be avoided, it should be done in a sustainable way that improves livelihoods and living standards of the affected people and implemented only after meaningful consultation with communities.

Since the 1970s, a community-based disaster risk management (CB-DRM) approach emerged and gained traction among policymakers and governments as it held promises for more community involvement in DRM policy formulation and implementation [11,12]. Within the broad CB-DRM framework, a hazard specific concept, community-based flood risk management (CB-FRM), emerged as the key sub-approach to strengthening community resilience in the face of flooding [13,14]. CB-FRM has been defined to mean the processes and activities undertaken to clearly define flood risks, developing, and implementing sustainable, socially, and environmentally sensitive and cost-effective measures that reduce flood risk and strengthen community flood resilience [15,16]. From a CB-FRM perspective, communities are seen as knowledge generating and containing systems that are important in flood-risk related policy development and implementation and should be involved or consulted in flood risk management (FRM) policy development and implementation [17]. Despite the acknowledgement of the importance of community-based approaches to FRM, more than 30-years following its evolvement, evidence suggests that there are still challenges on how to effectively consult communities [12].

Community involvement or consultation with people living in disaster prone areas is considered good practice in public health policy making [18,19], in policy forming and priority-setting activities [20] and in the governance and design of public services [21]. Community consultation takes several forms including search conferences, citizens' juries, consensus conferences, charrette, residents' feedback panels [22,23], deliberative polls [24], focus groups [25,26] and role-playing [27]. Florin and Dixon, 2004 [21] define public involvement in the health sector as "*the involvement of members of the public in strategic decisions about health services and policy at local or national level*" [28] (p. 159).

There is increasing evidence that communities can meaningfully contribute to policy decisions, but this requires an interactive and deliberative approach [29]. Ineffective public consultation has been cited as one of the reasons why disaster risk reduction (DRR) policies have failed in many countries [30]. It is reported that public consultation in policy making is often limited in such instances and only considered by governments later in the policy making process [31]. The drafting of policies is often based on subjective assessments of situations, with the bottom-up approach only involving a selected few in leadership positions [31–33]. This not only stifles community contribution to policies but also robs citizens of the opportunity to engage with policy issues that affect their livelihoods and often result in failure of relocation initiatives as noted in the examples above. The resultant relocation policy contestation between government and citizens arises from the development and implementation of policies that are deemed rational and effective by policymakers with little or no consideration of its implications on the day-to-day lives, lived values and livelihoods of the affected people. Consulting affected communities and understanding what people value most in DRM policy development and implementation could lead to the adoption of policies that are perceived to be fair both in process (procedural justice) and outcomes (distributive justice) [34]. Thomas and Twyman, 2005 [35] define

procedural fairness as how and by whom decisions on adaptive responses are made [35]. On the other hand, distributive fairness focuses on the allocation of "*wealth, rights, honours and other benefits, and duties*" [36] (p. 15).

In addition to community consultation, other studies have shown that higher levels of trust in government lead to increased willingness of disaster affected people to follow government recommendations on adaptation, such as the adoption of COVID-19 prevention measures [37,38] or getting vaccinated against seasonal influenza [39]. Government transparency and timeous communication of accurate disaster adaptation information have been identified as predictors of increased trust in government [40]. Furthermore, evidence demonstrates that perceived fairness of government [41], individual support and willingness to cooperate [42], and inclusive policy making [43] are key enablers for governments to gain public trust during crises.

Given the above and the potentially cumbersome nature of community consultation, how to effectively consult communities and seek their opinions in an adequately representative and unbiased manner remains a challenge [30]. This study explored three questions:

- Can poor rural communities exposed to flooding effectively participate in DRM policy making and priority-setting if they are provided with accurate and comprehensive information about the hazard?
- If they can effectively participate, what FRM policy options do people living in flood prone areas support and what do these policy choices tell us about absorptive and adaptive capacities required for community flood resilience strengthening?
- What is the level of trust of the flood affected people in government and community governance structures adopting and implementing FRM policy priorities they set through community consultation processes?

We addressed the first question by assessing if provision of comprehensive and balanced information about the effects of flooding on people's health and well-being and an opportunity to discuss among themselves and with a panel of experts can result in the study participants changing their choices of FRM policies, using a repeated measure design. Such changes and maintained mean scores for policy options are conceptually considered measures of poor rural communities' capacity to engage with FRM policy priority-setting processes in the context of social justice and fair adaptation to climate change. The identified FRM policy options lead to a discussion around context-specific absorptive and adaptive community capacities required for strengthening community flood resilience. Moreover, given evidence suggesting that trust in government is a predictor for successful DRM policy implementation, we assessed the communities' level of trust in government and community governance systems adopting and implementing the identified priorities. The extent of implementation of FRM policy options identified through such community consultative processes can be conceptually considered a measure of fair adaptation [34].

2. Community Consultation for Flood Risk Management

Community consultation is extoled and widely implemented as a means of improving the formulation and implementation of public policy and priority-setting [44–46] in various fields including public health. It is common to find terms such as 'community engagement', 'community partnerships', 'bottom-up' initiatives, 'triple bottom line' planning, 'stakeholder input' and 'community reference groups' when referring to community consultation in the parlance of public policy and FRM [47]. Beyond being informed by the moral dimensions of social justice, equality, and participatory democracy [48,49], the increasing search for representative and systematic approaches to community consultation is rooted in the theoretical and conceptual view that communities are knowledge generation and containing systems. The capacity to generate knowledge is at the core of these communities' ability to conduct meaningful social life [50]. It is through the construction and use of knowledge of different kinds—common sense, experiential, transcendental, folk wisdom, and scientific—that communities make intersubjective social life possible, meaningful, and progressive [51]. The conceptual and theoretical contributions of this body of literature

suggest that policymaking is a negotiated exercise shaped by multifaceted socio-structural and cultural complexities that characterise communities.

Given this theoretical basis, community consultation is presented as a process through which community individuals and policymakers are perceived, and see themselves, as resourceful and active citizens who can engage with each other and collaborate on all matters concerning the wellbeing of their community [23]. Thus, engaging communities in FRM is presented as important in ensuring that FRM initiatives are considered fair, equitable and effective towards meeting community flood risk adaptation needs in the long-term [52]. Following this argument, community consultation plays an enlightening role by explaining and clarifying to the policymakers the competing views, meanings, and lived-values [53] and life-events as expressed by the community members through their participation. However, even the proponents of genuine community participation are said to harbour fear of an uninformed citizenry or decisions based on inadequate opinion polling [54,55].

In the African region where half of the population lives in rural areas, with many paradoxically reliant on floodplains and rivers for their livelihoods [56], CB-DRM approaches, including CB-FRM, with a strong element of community consultation have emerged [13]. This is mainly because of the realisation that communities living in flood prone areas have a lot to lose when disasters such as flooding occur and also, they stand to benefit from FRM interventions if developed and implemented with their involvement. As communities not only lose when disaster strikes, but also benefit directly from risk reduction activities [57]; FRM is presented here as a quintessentially local affair where adaptation occurs. Local communities own a creative set of approaches based on the local knowledge and that empowers them to live in the flood-prone areas, accepting the paradigm shift from fighting with floods to living with them [58]. Despite this promise of improved community involvement in DRM processes, actual community consultation processes have remained sub-optimal [47] and ineffective [30].

In their report on ideas for community consultation, Carson and Gebler, 2001, capture 10 principles for making community consultation work [23]. These are: (i) making consultations open, fair and subject to evaluation, (ii) timely, (iii) inclusive, (iv) community-focused, (v) interactive and deliberative, (vi) effective, (vii) matter, (viii) well-facilitated, (ix) cost-effective and (x) flexible [23]. The principles of community consultation being inclusive, interactive and deliberative relate to the important need for enhanced representation and the need to build deliberative capacity [59] which is essential for ensuring citizens can participate in policymaking processes that are often highlighted as complex. Search conferences [60], deliberative polls/televoting [61], citizens' juries [62], consensus conferences [63], focus groups [64], charrettes [65], residents' feedback panels [22,66] and role-playing [27] are some methods that are considered to hold promise for optimizing representativeness and creating deliberative spaces for effective community consultation [59].

Given the multiple nature of these community consultation methods and their suitability to different contexts and research questions, Carson and Martin, 1999, developed a matrix with guiding questions that should be considered for making a choice of one method over the others [67]. Examples of questions include whether participants are required to determine the consultation or research questions, if the envisaged approach requires randomisation in the sample selection, the sample size required, whether community consultation participants need to meet face-to-face, the time involved in consultative meetings, and the time required from the inception of consultations to the findings [67]. For example, if a consultative process is required that allows participants to help to determine the key questions, the authors suggest that practitioners select either a search conference, a consensus conference, or a charrette. The main disadvantage with these methods is that they are more applicable at the strategic planning and vision setting stage and therefore are not conclusive and would require additional consultations to be done [67]. If a consultative process is required within which the key questions are already determined, the authors suggest that practitioners select either a deliberative poll, a citizens' jury, or a focus group.

These latter methods are said to be more effective in situations where the purpose for consultation is to find out what an entire community thinks about a policy aspect and representativeness is essential. Such representativeness should be achieved through the random selection of participants [61].

While the determination of the hazard of focus (flooding) for this study had been made since, across Africa, floods have overtaken droughts in terms of the number of people impacted [56], the researchers still needed to determine, with the community, the overall guiding FRM policy options for strategic planning and vision setting. In addition, because floods affect the whole community, albeit in different ways depending on the level of vulnerability of individual members, it was important for the researchers to conduct a consultation process with the whole community, thus a representative sample of the community was needed. It is here that the Deliberative Polling® (DP) approach's ability to marry high level strategic vision setting and community level consultation can be used to optimise community consultation, a key tenet of the DP as espoused by the original developers of the approach [61]. Furthermore, the DP approach was considered ahead of other consultative methods because it is the only method capable of handling a bigger sample size (over 200 participants) required to achieve representativeness. The DP approach also proved to be effective in the tracking of changes in opinions, which reflected the increase in shared knowledge and the ability of poor rural communities to participate in often considered difficult policy priority setting processes.

The DP approach is a citizen-based data generation method which seeks to reframe public opinion research and contribute to the process of developing interventions that respond to the felt needs of the people [61]. It is based on the principle that when people have accurate and comprehensive information, they reach informed decisions and make quality contributions to policy and programs [61]. The DP is thus described as the gold standard for consulting people on development issues such as community flood resilience. It is a call to governments to move beyond structural mitigation in their approaches to policy development and implementation to comprehensively address lived values [34] of at-risk communities in a way that sustain their livelihoods and well-being. Thus, this study applied, for the first time in southern Africa [68], a deliberative polling approach to explore the capacity of flood prone communities to participate in FRM policy priority setting, to ascertain what policies they supported and their level of trust in governance systems implementing the recommendations of the consultative process.

3. Data and Methods

3.1. Research Design

This was a mixed methods study with both quantitative and qualitative data collected, analysed and presented. A DP-based repeat cross-sectional survey, with pre-deliberative and a post-deliberative event assessment, was conducted (Figure 1). In between the surveys, a facilitated deliberative event was conducted at a local primary school to collect qualitative information on opinions held by participants on FRM policies. The conduct of the deliberative event in between the surveys allowed for assessment of the impact of the deliberations among participants and with a panel of specialists on their support for various FRM policies. Data collection methods followed a seven-step process previously published elsewhere [30] and described below. The study was approved by the University of Pretoria's Faculty of Health Research Ethics Committee in South Africa and the National Committee on Research in the Social Sciences and Humanities (https://www.ncst.mw/national-committee-on-research-in-the-social-sciences-and-humanities/; accessed on 15 September 2018) in Malawi.

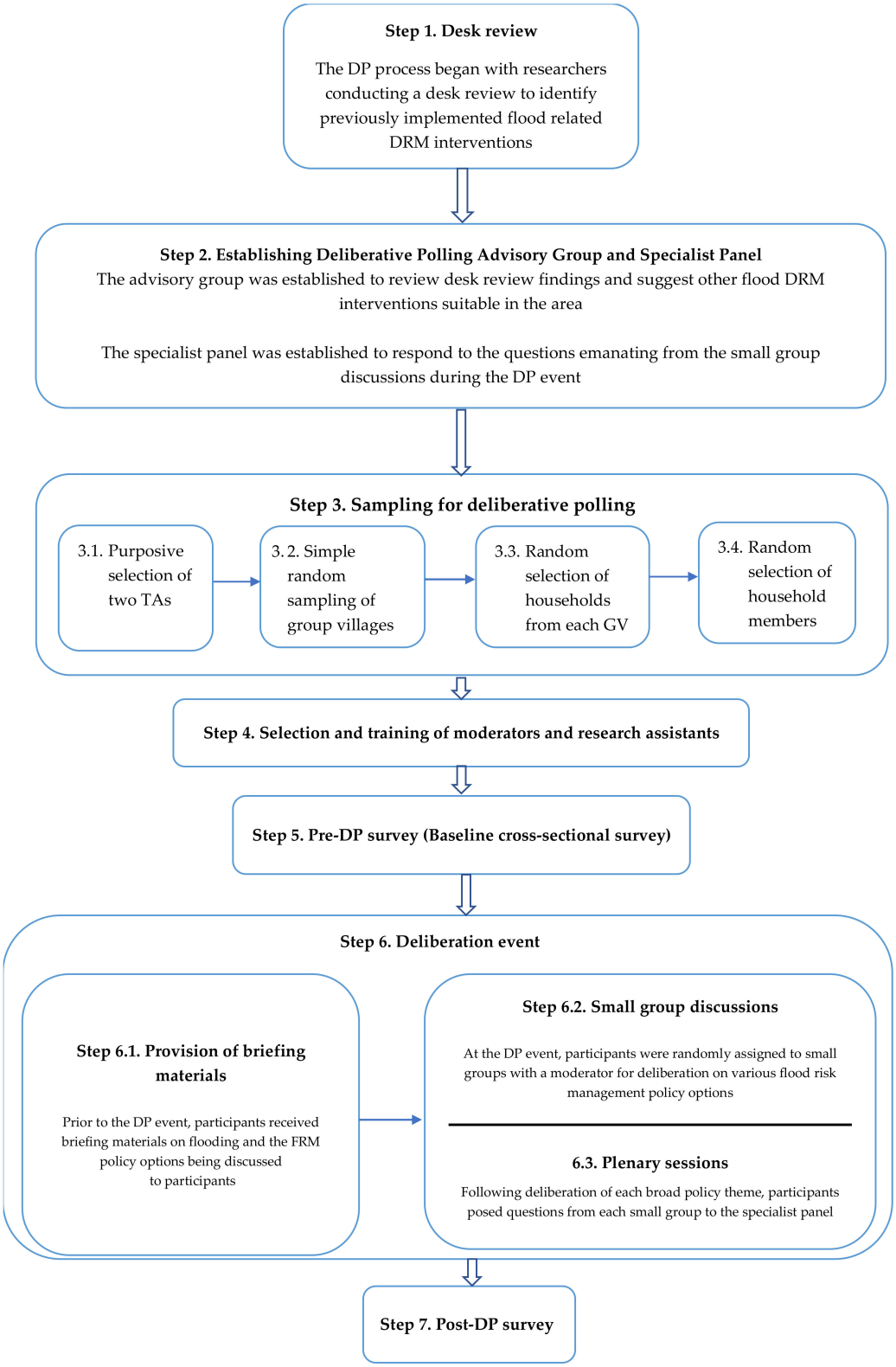


Figure 1. The design of the DP process.

3.2. Case Studies

Malawi is one of the poorest southern African countries, and it is affected by flooding. Serious flooding took place in 1989, 1997, 2001, and 2015 [69], with Cyclone Idai causing the most recent floods of 2019. The Cyclone Idai induced flooding in 2019, which affected about 975,600 people and caused 672 injuries and 60 deaths [70]. The most affected areas

were in the lowland Nsanje district in the south of the country. Flooding frequently occurs due to high siltation in the Shire River and cultivation in the Ndindi Marsh, which limits its ecological function of trapping the waters and reducing the incidence of flooding [71].

The Nsanje district of Malawi lies in the Lower Shire River valley. It is surrounded by Mozambique on the south and the Shire River to the north and the east. Nsanje is the poorest of the total 28 districts in Malawi and is virtually dependent on the government and Non-Governmental Organisations (NGOs) [72]. Most income in the district comes from smallholder farming, which is almost entirely dependent on rain-fed agriculture. This renders the district vulnerable to climate variability, particularly drought and flooding, with devastating effects on crop production. Livestock production and fishing are other economic activities that sustain the lives of many [73]. In response to the incessant floods and resulting deaths in Nsanje district, the Government of Malawi (GOM) declared Traditional Authority (TA) Nyachikadza a flood-prone area and barred people from staying in the area [71]. However, the people of TA Nyachikadza have refused to be relocated. The government, in response, prohibited other service providers from delivering social services, including public health in the TA, as a way of forcing the community to relocate, thereby compounding the community's vulnerability [71].

This deliberative polling study was conducted in TAs Nyachikadza (lowland prone to flooding) and Ndamera (upland where flood victims seek refugee) in the Nsanje district (Figure 2).

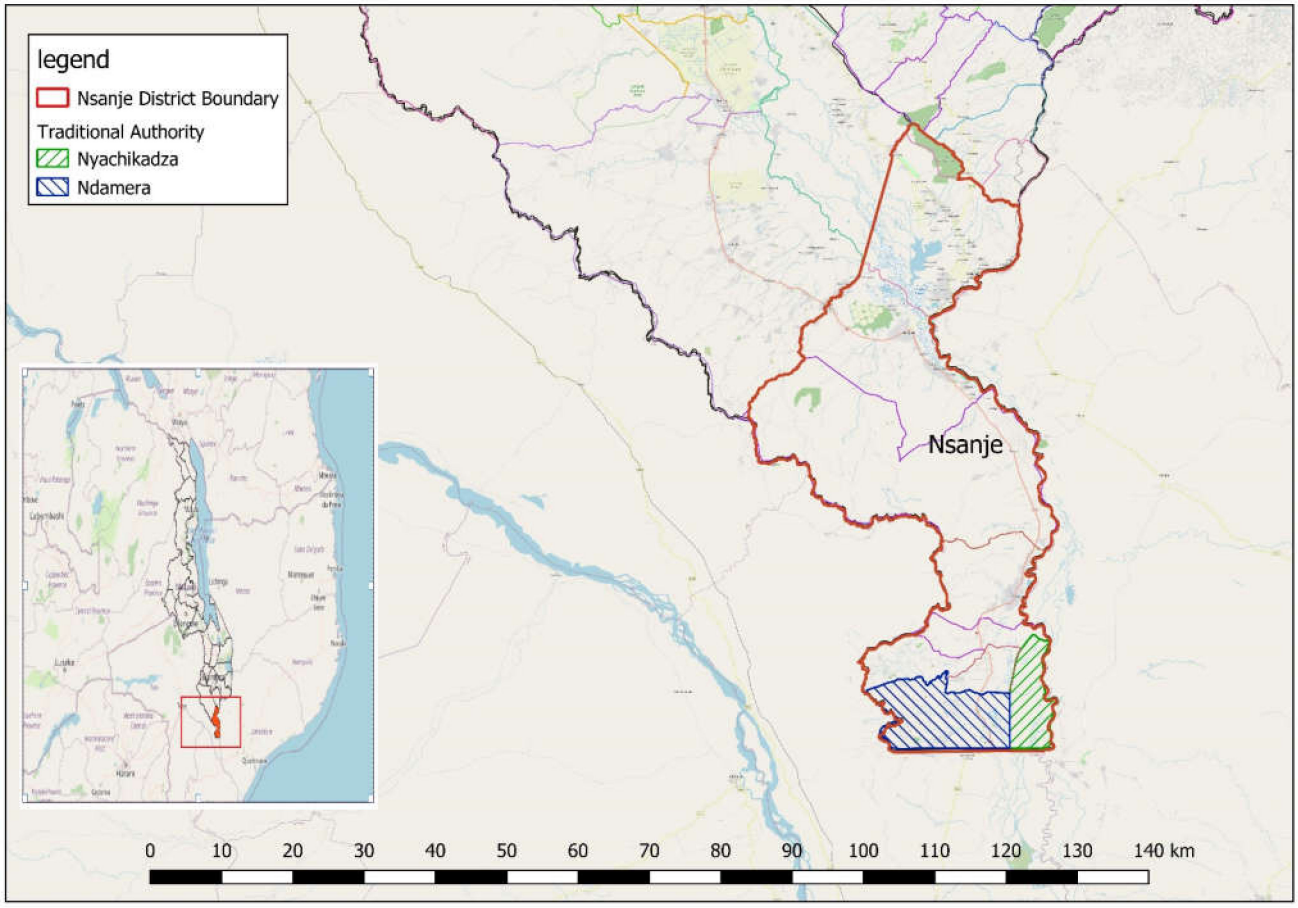


Figure 2. Location of traditional authorities Ndamera and Nyachikadza in Nsanje district of Malawi.

The district is subdivided into nine Traditional Authorities, two of which are TA Nyachikadza (lowland) and TA Ndamera (upland). TA Nyachikadza is home to over 1000 households, which are located across 9 group villages (GVs). The community is affected by frequent flooding. When flood waters come, residents of TA Nyachikadza seek

refuge in the neighbouring TA Ndamera [71]. TA Ndamera has 28 Group Villages (GVs). Of these, 14 GVs are neighbours with TA Nyachikadza. In these 14 GVs, around 80% of the households grow crops in the wetlands of Nyachikadza. Half of these households own the land in the wetlands of Nyachikadza, and the remaining half grow their crops on rented land [71]. In general, these two communities depend on each other due to the recurrent flooding and the need for food production.

3.3. Data Collection

3.3.1. Desk Review to Identify Previously Implemented DRM Interventions

The DP process began with a desk review conducted by the researchers to identify DRM interventions previously implemented both in the Nsanje district and elsewhere in similar flooding situations. The review included the identification of the advantages and disadvantages of each policy option to facilitate discussions with both the community advisory group and the DP participants.

3.3.2. Deliberative Polling Advisory Group and Specialist Panel

Following the desk review, the researchers identified different stakeholders in the Nsanje district who would form a DP advisory group (AG). The advisory group, comprising 28 participants, was made up of representatives of various government ministries and departments, the district council, local political and community leaders, local and international NGOs operating in Nsanje, community-based organizations (CBOs) and a representative from the office of the district Member of Parliament. The identification and constitution of a local advisory group was done to promote local ownership, buy-in and to ensure contextual relevance of the FRM options to be deliberated at community level. The purpose of the advisory group was to also provide expert experiential advice on FRM options previously implemented in the two TAs and to review the feasibility of options identified through desk review. Following the identification of the advisory group, a meeting was convened to review the potential FRM options identified through desk review and to seek suggestions on additional interventions to be tabled for deliberation by community participants and for consideration by government for implementation.

After discussion, a list of 32 policy options emerged and these were grouped into three broad policy priorities, namely, (i) proposals on relocation and resettlement; (ii) proposals on reduced vulnerability in existing communities; and (iii) proposals on population pressure, gender, and social services. The broad policy priorities and their various options (items) were used in the design of a standard questionnaire and briefing materials for use during the survey and deliberative event. A specialist panel, different from the AG, was identified through purposive expert sampling, based on their knowledge and experience with the three broad policy priorities. This panel comprised a District Disaster Risk Management Officer, a Clinical Officer at Ndamera Health Centre, a Programme Manager from a local NGO (Foundation for Community Support Services) that had been working in the district since 2000, and an Agricultural Extension Development Officer in the Ministry of Agriculture, Irrigation, and Water Development from within the Nsanje District. The purpose of the specialist panel was to serve as an expert consultative body that would respond to questions emerging from the DP participants in their small group discussions. The experts also provided information and clarification on the implications of the various policy options raised in the DP.

3.3.3. Sampling

The DP participants were selected through a four-stage sampling technique. During the first stage, two TAs from Nsanje District, one from the upland (TA Ndamera) and another from the lowland (TA Nyachikadza), were purposively selected due to their vulnerability and experience of flooding, being the worst affected among all TAs in the district. In the second selection stage, 5 Group Villages (a political administrative level immediately below the traditional authority constituting more than one village, grouped to

the discretion of the Chief, as described in the Chiefs Act (https://www.lawcom.gov.mw/law-commission-report-review-chiefs-act; accessed on 1 March 2022)) (GVs), out of 9, and 7 GVs, out of 14, were selected from TAs Nyachikadza and Ndamera, respectively, using the simple random sampling technique. The distribution of the GVs was proportional to the number of GVs in each TA. In the third stage, a random selection of 40 households from each GV was conducted.

The sample size was determined, taking into consideration three factors—desired level of precision, confidence level and the degree of variability in the population [74,75]. A determination of the sample size was considered an important step to achieving a scientifically rigorous DP that would confer confidence in the results and allow inferences to be made. To this end, we employed the procedure set out by Yamane, 1967, assuming a 95% confidence level [76], 7% level of precision and 0.5 degree of variability which refers to the distribution of attributes in the population representing maximum variability in a population which is used as a standard in sample size determination in academic practice [75]. The DP applied the finite sample size calculation formula below:

$$n = \frac{z^2 p(1-p)N}{e^2(N-1) + z^2 p(1-p)}$$

where:

n = sample size,
p = proportion of population containing the major interest,
z = Z-statistic corresponding with confidence level,
e = confidence interval,
N = population size.

Using the above formula and the Malawi National Statistical Office's 2017 projected population in the sampled 7 GVHs in TA Ndamera was 8370 (the 2018 Malawi Population and Housing Census Report indicates a population of 33,679 for TA Ndamera and 7643 for TA Nyachikadza; accessed 03 February 2022) for TA Ndamera, and the minimum sample size for Ndamera was 192. Similarly, for TA Nyachikadza the projected population in the sampled 5 GVHs was 4157. Using this population, the minimum sample size that was obtained for TA Nyachikadza was 187. The 2 calculated sample sizes were rounded up to 200 per TA. Furthermore, we estimated an attrition of about 20% between pre- and post-DP surveys, hence a target sample of 240 per TA (a total of 480 for the study) was targeted. In the fourth stage, a listing of all households in TAs Nyachikadza and Ndamera formed the sampling frame for the sampling process. From the 480 households identified, household members older than 18 years were listed and one member was randomly selected from each household to participate in the survey without any option for replacement later in the deliberative event and post event survey.

3.3.4. Selection and Training of Moderators and Research Assistants

Twenty-four qualified and experienced research assistants were recruited and trained on the DP methodology, the conduct of the DP surveys and to moderate small group discussions with community members. The training of research assistants was guided by DP experts from Stanford University's Centre for Deliberative Democracy (https://cdd.stanford.edu/; accessed on 21 April 2017).

3.3.5. Pre-DP Survey (Baseline Cross-Sectional Survey)

The pre-DP survey was conducted 2 weeks before the DP with 480 participants. Trained research assistants collected data from participants using a paper-based structured questionnaire consisting of FRM policy options or proposals centered on the three broad policy priorities identified during the meeting with the advisory group. Participants also had to confirm their availability to attend the DP event. Each participant was issued a

numbered card that was subsequently used to identify them for the DP event, and without which they would not be allowed to participate in the deliberation and the post-DP survey.

3.3.6. Deliberation

At the Deliberative Event: Briefing Materials

The DP event was conducted from 3 to 4 June 2017. Guided by previously published protocols [24,77], briefing materials were made available to the participants, ensuring such materials were carefully balanced and comprising pros and cons for each of the 32 policy options that were developed by the advisory group. In addition, a 15-minute video was prepared in local language, Chichewa, based on the balanced briefing materials, and addressing the topic of the DP, the recurrent flooding and how the communities were affected. The video was shown to participants upon arrival at the DP event. The video also captured the aim of the deliberations, which was to facilitate a face-to-face conversation among the participants, and for participants to provide government and other DRM stakeholders with their informed opinions on the flood risk policy options they deemed appropriate to their context. Each participant was also given a written version of the briefing materials in the local language, Chichewa, which served as a guide to the issues for discussion with the moderators.

At the Deliberative Poll: Small Group and Plenary Sessions

Participants were randomly assigned to 24 small groups of about 20 people each after screening and confirmation of their identity and proof of participation in the pre-DP survey. Each small group was led by a trained research assistant, acting as a moderator with support from the researchers. The groups deliberated, over two days, on the three broad policy priorities, with moderators leading discussions as guided by the 32 policy options. All discussions were audio recorded, with the participants' consent, as a way of collecting qualitative data. At the end of each small group session for each broad policy priority, the participants would come up with questions around flood risk management policy options they would not have understood. All the unique questions identified from each group were presented to the experts in plenary and responses to each question given in plenary for the benefit of all participants.

3.4. After the Deliberative Event: Post-DP Survey

After the small group deliberations and plenary sessions with experts, about 97.5% (468) of the participants participated in the DP event and completed the post-DP survey, using a paper-based structured questionnaire, consisting of the same questions as the pre-DP questionnaire. To ensure confidentiality, research assistants were assigned to assist participants from different groups to the ones they moderated. Participants were asked to rank the importance or unimportance of each of the policy options pertaining to the three broad flood risk management policy priorities (relocation and resettlement; reducing vulnerability within the existing communities; responding to population pressure, gender issues, and social services) on a Likert scale from 0 to 10, where 0 is extremely unimportant, 10 is extremely important, and 5 is exactly in the middle. An illustrative policy option could, for example, be for government to, "*Construct a dyke along the Shire River from Nsanje District Centre to TA Nyachikadza (a distance of around 40 km*)" (Supplementary File S1). The primary purpose of conducting a post-DP survey was to gauge whether participants had changed their opinions after the small group discussions and plenary sessions. The resulting changes in opinion represents the conclusions the participants reached after having an opportunity to deliberate on the important flood risk management issues facing their community.

3.5. Data Analysis

Data analysis for this study was conducted in three stages. Firstly, analysis was conducted for each of the observed measures. Second, case specific analysis was conducted to assess the scores for each TA. Third, comparative analysis was conducted to assess

the differences in scores of the two communities. In all cases, analysis was conducted, comparing the scores for both the pre- and post-deliberation data. The pre- and post-deliberation surveys were matched for each participant. The analysis, using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, NY, USA), examined the pre- and post-deliberation data using paired samples *t*-tests. The paired comparison tests excluded "don't know" and missing data. Significance was tailed at *p*-value less than 0.05. The paragraphs below briefly explain how each stage of analysis was conducted.

For both communities, there were 13 demographic and socioeconomic variables used to profile the participants for both communities. Eleven of these were categorical while two were continuous. In addition, there 32 policy options posed for deliberation covering 3 topics: resettlement and relocation, reducing vulnerability in existing communities and population pressure, gender, and social services. The participants were asked to rate the 32 options in importance on a scale from 0 (extremely unimportant) to 10 (extremely important), with 5 in the middle for all continuous variables. Measurement specific analysis was conducted by computing frequencies, calculating percentages and mean scores for each community and for the overall population.

Case specific analysis, for each TA and combined, was conducted by computing mean scores for each variable using pre -and post-deliberation data separately and combined. Changes in the rating of policy options were computed by subtracting the pre-survey/baseline scores from the post-survey/end-line scores. To determine whether there were statistically significant differences between the pre- and post-test scores, a paired samples *t*-test was conducted.

Comparative analysis was conducted to assess if there were any differences between the two communities using demographic and socioeconomic variables. Sample characteristics were compared between communities using an independent *t*-test and Pearson chi squared test for continuous and categorical variables, respectively. In addition, analysis to assess changes in rating scores for each policy option between the pre- and post-DP surveys for each TA and the overall population was conducted. We explored whether percentage changes computed were statistically significant by performing a paired samples *t*-test. For the overall population, the top-five rated proposals were the ones that had best survived all the DP event counterarguments as evidenced by ranking of post-DP indices.

The small group deliberations and the plenary discussions were audio recorded. Transcriptions were done by group in Chichewa before being translated to English. Thematic analysis [78] was used to analyse qualitative data obtained from the deliberative event. A deductive analysis approach was used, in which the three broad policy priorities were treated as major themes and their specific 32 policy options as guiding preconceived sub-themes. Data was categorised under each of these themes and analysed for a better subjective and explanatory understanding of the quantitative results and any changes in opinion after deliberation.

4. Results

This section presents the results from this study. In this respect, Table 1 shows the demographic and socioeconomic profile of participants from the two study communities.

Table 1. Demographic and socioeconomic profile of study participants by traditional authority (TA or community).

Variables	Category	TA Ndamera Upland n = 222		TA Nyachikadza Lowland n = 246		*p*-Value
		n	%	n	%	
Gender	Male	116	52.3%	181	73.6%	
	Female	106	47.7%	65	26.4%	
						0.000 ***

Table 1. *Cont.*

Variables	Category	TA Ndamera Upland n = 222		TA Nyachikadza Lowland n = 246		*p*-Value
		n	%	n	%	
Current occupation	Farmer	199	89.6%	239	97.2%	
	Non-Farmer	23	10.4%	7	2.8%	
						0.001 **
Marital status	Married	182	82%	203	82.5%	
	Single	7	3%	13	5.3%	
	Divorced	4	2%	8	3.3%	
	Widowed	29	13%	22	8.9%	
						0.259
Highest level of education	None	55	24.8%	55	22.4%	
	Primary	101	45.5%	157	63.8%	
	Secondary	66	29.7%	34	13.8%	
						0.000 ***
Have a member of the family chronically ill	Yes	30	13.5%	34	13.8%	
	No	192	86.5%	212	86.2%	
						0.923
Ownership of land in both communities	Yes	135	60.8%	36	14.6%	
	No	87	39.2%	210	85.4%	
						0.000 ***
Membership to the Village or Area Civil Protection Committees	Yes	77	34.7%	35	14.2%	
	No	145	65.3%	211	85.8%	
						0.000 ***
Having an alternative place to go to during times of a flood	Yes	61	27.5%	161	65.4%	
	No	161	72.5%	85	34.6%	
						0.000 ***
Having any training or education on disasters or flooding	Yes	63	28.4%	64	26%	
	No	159	71.6%	182	74%	
						0.566
Age [Years]	n/a	43.3		44.1		0.613 †
Household size [children]	n/a	6.2		6.4		0.335 †
Perception of economic value of the Shire River [Mean score]	n/a	8.41		8.36		0.836 †
Perception of risk posed by the Shire River [Mean score]	n/a	6.33		6.85		0.074 †

Notes: TA denotes Traditional Authority (Community). *p*-Value measures differences across rows: ** $p < 0.01$, *** $p < 0.001$; † Independent samples *t*-test.

The data shows that while the targeted sample size was 240 for each community, the actual sample size for the lowland community was higher, with 6 participants who may have requested to participate in the study and, for ethical reasons, could not be turned away. The proportional differences across gender between the two communities were statistically significant with more males from the lowland than the upland ($p < 0.001$). In both commu-

nities, over 80% of the participants were married and close to 14% indicated that they had a family member who was living with a chronic illness. Most of the participants from the lowland community were farmers compared to the upland community with statistically significant differences ($p < 0.01$). All female participants (n = 65) from the lowland were farmers. There were differences between the two communities regarding highest level of education, with significantly more people with primary education as their highest level of education in the lowland, and those with secondary education as their highest level of education in the upland community ($p < 0.001$). Paradoxically, there was a relatively higher percentage of participants from the upland community who were members of the Village or area Civil Protection Committees as compared to those from the lowland community, which had a higher risk of flooding ($p < 0.001$). Over 70% of the participants from both communities did not have any training or education on disasters or education.

A significantly greater proportion of those from the upland community compared to those from lowland owned land in both communities ($p < 0.001$). The following quote supports this finding:

> "*I agree with what he said because this is what is happening. Do you know that most people from Ndamera are in Nyachikadza? As we speak, people are in the lowlands cultivating the crops. The river doesn't flood every day. It's only the first 3 month, in January, February and March. After that we go back to our land to continue farming*". (Group 9 Participant)

As expected, there was a significantly greater proportion of participants (65.4%) from the lowland who had an alternative place to go to during a flood compared to their upland counterparts ($p < 0.001$). One deliberative event participant captured the reciprocal exchanges that existed between the two communities for sustaining livelihoods:

> "*The exchange of land is already in progress, some people in Ndamera have been given land to cultivate in Nyachikadza. To be honest, a lot of people from Nyachikadza have houses here in the upland. This is what we already do*". (Group 19 Participant)

In both communities, perception of economic value was relatively higher compared to the perception of risk posed by the Shire River. The mean score for economic value of 8.41 for the upland community and 8.36 for the lowland community was not significantly different. Similarly, the perception of risk with mean score of 6.33 for the upland community and 6.85 for the lowland community was not statistically different.

4.1. Shift in the Level of Community Support for Various Flood Mitigation Policy Options

This section presents results of the impact of providing accurate and balanced information on a range of DRM policy options for resilience to flooding, by comparing pre-and post-DP event data. The results are presented for each community and for the overall sample. The mean scores with statistically significant differences between pre- and post-DP scores are indicated. The observed differences in opinion and the different effects of the DP event on scores of the two TAs could be because of the two TAs' different experiences with the adverse effects of flooding and their disparate coping and adaptation mechanisms.

4.1.1. Relocation and Resettlement Proposals

Table 2 presents results of the policy priority on resettlement and relocation of the lowland community and its various policy options.

Table 2. What the government should do regarding relocation and resettlement.

Variable	TA Ndamera			TA Nyachikadza			Total		
	Pre	Post	Margin (Δ) Post-Pre	Pre	Post	Margin (Δ) Post-Pre	Pre	Post	Margin (Δ) Post-Pre
1. Facilitate relocation of TA Nyachikadza community to suitable land in high land area within same district	7.11	6.64	−0.47	1.35	2.32	0.97 **	4.06	4.35	0.29
2. Facilitate relocation of TA Nyachikadza community to best suitable land anywhere in Malawi	3.84	4.77	0.93 **	0.35	0.79	0.44 **	2.00	2.68	0.68 ***
3. Should only proceed with resettlement after it has developed plan that is approved by TA Nyachikadza community	6.97	6.93	−0.04	2.54	3.11	0.57 *	4.64	4.92	0.28
4. Provide legal title to land for TA Nyachikadza community members before relocation	7.02	6.31	−0.71 **	1.83	3.06	1.23 *	4.29	4.60	0.31
5. Facilitate complete relocation but allow communities to continue using land for crop cultivation	8.01	7.71	−0.30	2.36	3.93	1.57 *	5.04	5.72	0.68 ***
6. Prohibit provision of any social service in TA Nyachikadza as way of 'forcing' people to relocate	4.43	4.61	0.18	0.86	1.2	0.34	2.55	2.82	0.27
7. Provide increased social services in TA Ndamera if people are relocated there	7.99	7.43	−0.56 *	1.6	2.02	0.42	4.63	4.59	−0.04
8. Facilitate TA Ndamera's access to low land for crop cultivation in exchange for hosting TA Nyachikadza's residence in upland (TA Ndamera)	6.12	6.08	−0.04	0.95	1.05	0.1	3.40	3.44	0.04
9. Facilitate increased agricultural production in TA Ndamera	6.92	7.32	0.4	1.24	1.82	0.58 *	3.93	4.42	0.49 **

Notes: TA denotes Traditional Authority (Community). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Overall, almost none of the relocation policy options were considered important, except for facilitating complete relocation with opportunity to continue using land for crop cultivation, which was considered only fairly important, with an aggregate score of 5.72 post-deliberation, having moved significantly from the pre-deliberation score of 5.04. However, there were significant differences between the two communities on perceived importance of the various relocation and resettlement policy options. In general, although deliberation significantly increased support for several policy options, none of the policy options were considered important by those in TA Nyachikadza (lowland community) even after deliberation, as indicated by mean scores less than five (5). In contrast, most of the policy options for relocation and resettlement were considered fairly important (supported) by those from TA Ndamera (upland community), as indicated by mean scores of 5 and above, except for two, namely, "*facilitate relocation of TA Nyachikadza community to best suitable land anywhere in Malawi*' and *'prohibit provision of any social service in TA Nyachikadza as way of 'forcing' people to relocate.*"

The upland sample of participants had statistically significant negative changes after deliberation on policy options that had to do with the provision of legal title to land compared to the lowland community inhabitants before relocation ($p < 0.01$) and provision of increased social services in the upland if people are to be relocated there ($p < 0.05$). For the lowland community, despite producing mean differences that were statistically significant between the pre- and post-DP scores, all post-DP mean scores remained below five, showing a lack of support for the intervention items. The following quote illustrates the lowland community's resistance to intervention options regarding relocation and captures three reasons for such recalcitrance. These included a heightened sense of attachment to ancestral land, the ability to adapt to flooding using early warning systems (EWS) based

on monitoring water levels, and the increased food production capacity of the flood prone area, which also attracts people from the upland:

> "*We cannot move from Nyachikadza because we were born there and our parents have died there. Furthermore, when we see the water levels rising, we are able to know that those waters are harmful, we then run. People from Ndamera also come to settle in our land for cultivation. We cannot relocate because Nyachikadza is very fertile and we produce a lot of crops. We cannot relocate*". (Participant Group 9)

4.1.2. Reducing Vulnerabilities in the Existing Communities

Table 3 presents the results of the second policy priority pertaining reducing vulnerabilities in the existing communities.

Table 3. What the government should do regarding reducing vulnerability in the existing communities.

Variable	TA Ndamera			TA Nyachikadza			Total		
	Pre	Post	Margin (Δ) Post-Pre	Pre	Post	Margin (Δ) Post-Pre	Pre	Post	Margin (Δ) Post-Pre
1. Construct a dyke along the Shire River from Nsanje District Centre to TA Nyachikadza	6.38	5.21	−1.17 ***	7.87	9.12	1.25 **	7.16	7.27	0.11
2. Construct a dyke along the Shire River from Nsanje District Centre to TA Nyachikadza with labour from communities coordinated by District Council as part of the Public Works Programme	6.67	5.09	−1.58 ***	7.90	8.82	0.92 **	7.32	7.05	−0.27
3. Allow TA Nyachikadza communities to 'access' land upland to temporarily relocate during floods and return afterwards	5.77	7.38	1.61 ***	6.51	7.64	1.13 **	6.16	7.52	1.36 ***
4. Allow communities to remain but develop an effective flood-early warning system	5.79	7.14	1.35 ***	8.40	8.78	0.38 *	7.16	8.00	0.84 ***
5. Sensitize TA Nyachikadza communities on flood early warning	7.49	8.15	0.66 **	8.51	9.07	0.56 **	8.03	8.64	0.61 ***
6. Develop places of safety for children and vulnerable groups (elderly, sick) when flood warnings are administered	8.42	8.65	0.23	7.97	7.79	−0.18	8.18	8.20	0.02
7. Put in place effective life-saving measures (such as petrol boats, life jackets, etc.) in all strategic places to be used to rescue people during floods	7.93	8.37	0.44	8.33	8.84	0.51 **	8.14	8.61	0.47 ***
8. Have the VCPC, ACPC and DCPC consider indigenous knowledge systems (IKS) in flood early warning	7.49	7.09	−0.40	7.61	7.16	−0.45 *	7.56	7.13	−0.43 ***
9. Have all the Area Civil Protection Committees (ACPCs) and Village Civil Protection Committees (VCPCs) along the Shire River form an alliance to share information about flood early warning	8.23	8.50	0.27	8.27	8.31	0.04	8.25	8.40	0.15

Notes: TA denotes Traditional Authority (Community). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In the overall sample, all policy options had mean scores above 6 compared to the previous policy proposal on relocation and resettlement, which all had mean scores below 6 in the overall sample. TA Nyachikadza (lowland) had relatively higher mean scores compared to TA Ndamera (upland) mean scores across almost all the policy options, representing stronger support for the policy proposal on reducing vulnerabilities in the existing communities among the flood prone lowland community participants.

The four most favoured policy options under this policy priority for the overall sample as measured by the biggest positive and statistically significant shift in opinion between pre and post-DP were, *'Allow TA Nyachikadza communities to 'access' land upland to temporarily relocate during floods and return afterwards'*, *'Allow communities to remain but develop an effective flood-early warning system'*, *'Sensitize TA Nyachikadza communities on flood early warning'*, *and 'Putting in place effective life-saving measures (such as petrol boats, life jackets, etc.) in all strategic places to be used to rescue people during floods.'* Overall, the highest mean difference (1.36; $p < 0.001$) was on allowing the lowland community people to 'access' land upland for temporary relocation during floods and returning afterwards. This option also registered the highest change among both the upland participants (1.61; $p < 0.001$) and those from the lowland (1.13; $p < 0.01$). It is evident that participants from both communities agreed on the need for government to put in place flood risk management measures that would enable and support existing mutually supportive coping and adaptation mechanisms practiced by the two communities. The following quote illustrates this position:

> "*This is what we do, when floods occur, we move to the uplands, when the levels have lowered, we go back and work on our fields. This is a good policy option. Complete relocation is what we don't want*". (Participant Group 11)

It is also important to note that, in the overall population and for the lowland community, the policy option on having the VCPC, ACPC, and DCPC considering indigenous knowledge systems (IKS) in flood early warning, had a statistically significant negative change. In addition, while the policy options on the construction of a dyke recorded a statistically significant negative change following deliberation among the upland community, they recorded a statistically significant positive change among the lowland community. The following quotes from two participants, one from the lowland and another from the upland, in the same group discussion are illustrative of this disagreement:

> "*The government should just construct a dyke because we have everything we need in Nyachikadza. Nothing comes from the upland and goes to the lowland. We don't buy anything there because we produce all we need. A dyke should be constructed*". (Participant Group 1)

> "*A dyke will not be the best solution because heavy rains and water come with a lot of pressure that may even damage the dyke. They should settle here and go back to just cultivate. Otherwise, lives will be lost*". (Participant Group 1)

4.1.3. Population Pressure, Gender and Social Services

Table 4 presents results pertaining to the third policy priority on population pressure, gender, and social services.

It is observed that the indices on what the government should do regarding population pressure, gender, and social services were high across the two communities relative to the other two policy proposals. This is also true for the overall sample, which registered mostly positive and statistically significant mean differences between the pre- and post-DP mean scores for 64% of the policy options. The policy option on ensuring that a woman should not lose family land if her husband dies recorded negative changes across the two communities and in the overall sample following deliberation. These changes were statistically significant in the overall sample and for the lowland community. The following quotes shed light into small group discussions that may have informed this decline:

> "*It is important to ensure that women do not lose their family land because they need to use that land to take care of their children and to send their children to school. But if the woman is still young and if she gets married to another man then it is better that she loses the land*". (Participant Group 5)

> "*Chuma chili mu nthaka (Wealth is in the ground (in agriculture)), therefore women should not lose the land. But if there are no children between this widow and the late husband the woman needs to lose the land*". (Participant Group 7)

Table 4. What the government should do regarding population pressure, gender, and social services.

Variable	TA Ndamera			TA Nyachikadza			Total		
	Pre	Post	Margin (Δ) Post-Pre	Pre	Post	Margin (Δ) Post-Pre	Pre	Post	Margin (Δ) Post-Pre
1. Provide wide access to free family planning services	8.52	9.35	0.83 ***	8.45	9.00	0.55 ***	8.48	9.17	0.69 ***
2. Construct a health centre in TA Nyachikadza so long as people live there	5.07	6.59	1.52 ***	9.34	9.58	0.24 *	7.32	8.16	0.84 ***
3. Have families consider their land resources in deciding how many children to have	6.99	7.68	0.69 **	6.97	7.59	0.62 **	6.98	7.64	0.66 ***
4. Increase the use of temporary shelters for evacuation instead of classrooms	8.88	8.89	0.01	8.80	8.50	−0.30	8.78	8.68	−0.10
5. Use community by-laws to restrict child marriages	8.70	9.35	0.65 ***	8.76	9.24	0.48 ***	8.73	9.29	0.56 ***
6. Poor families with children of school-going age should only receive a cash transfer if they enroll their children to school	8.82	9.16	0.34 **	8.84	9.02	0.18	8.83	9.08	0.25 **
7. Adults with children of school-going age should only participate in the Public Works Program if they enroll their children in school	7.99	8.67	0.68 ***	8.14	8.45	0.31	8.07	8.56	0.49 ***
8. Establish collective storage facilities for food in the uplands (by the people from the lowlands)	6.78	6.28	−0.50	5.19	3.87	−1.32 ***	5.94	5.01	−0.93 ***
9. Provide adequate security in evacuation centres to ensure women and girls are protected from abuse	9.16	9.21	0.05	9.01	8.99	−0.02	9.08	9.10	0.02
10. Allow families to be able to stay together during flood evacuations	7.14	8.20	1.06 ***	7.65	7.62	−0.03	7.41	7.89	0.48 **
11. Allow households with persons who are vulnerable, and sick be prioritized during flood evacuations	8.30	8.88	0.58 ***	8.57	8.69	0.12	8.44	8.78	0.34 **
12. Promote the capacity building of the VCPCs to know how to respond to emergencies	8.54	8.53	−0.01	8.80	8.68	−0.12	8.68	8.61	−0.07
13. Promote village savings and loans to provide alternative income sources for women	8.76	9.33	0.57 ***	9.08	9.03	−0.05	8.93	9.18	0.25 **
14. Ensure a woman should not lose the family land if her husband dies	9.32	9.16	−0.16	9.31	8.61	−0.70 ***	9.31	8.87	−0.44 ***

Notes: TA denotes Traditional Authority (Community). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The policy option on government establishing collective (for both upland and lowland communities) storage facilities for food in the uplands had the lowest mean scores (marginal support) across the two communities and in the overall sample post-DP, with a statistically significant negative changes after deliberation in the overall sample (pre-DP = 5.94, post-DP = 5.01, $p < 0.001$) and in the lowland community. The following quote is an example of some reasons given that explain the marginal support for this policy option:

> "*We cannot agree with that; same way the government cannot establish a Malawian collective food storage in Zambia*". (Participant Group 6)

The most supported policy options under this policy proposal, with highly significant positive changes, i.e., positive changes that maintained or improved their scores to above nine between pre- and post-DP, include issues to do with the provision of free family planning services, restricting child marriages, developmental projects to support child education, women empowerment through village savings and loans, and provision of adequate security for girls and women in evacuation centres. Among these five, the last

option did not change significantly but was considered strongly supported on the basis that it maintained a high mean score (above 9) across communities and combined. In addition, the lowland community strongly supported the policy option regarding "*construction of a health centre in TA Nyachikadza so long as people live there*". The need for a health facility was explained in the broad sense of addressing public health emergency beyond flooding to include disease outbreaks. The following quote is illustrative:

> "*This is what we have been looking for because in the past we had a health centre. We lose a lot of people through diseases than floods, for example, per last year 7 people died due to Cholera while only 2 died due to floods, so we need this*". (Participant Group 1)

4.1.4. Top Five Policy Options Supported by the Communities

The presentation of results for shifts in opinion between the pre- and post-DP above identified the policy options that were strongly supported under each policy priority. The DP event produced statistically significant positive and negative changes of opinion in 19 (59.4%) out of 32 policy options. This section presents the top 5 policy options supported by the 2 communities across the 32 policy options. For this study, the top-rated proposals were the ones that had best survived all the DP event counterarguments as evidenced by the ranking of post-DP indices. Thus, the aspects scoring 9 and above, out of a maximum of 10 scores, were considered the topmost policy options for government intervention. The top five policy options for the overall sample all concerned the policy priority focused on population pressure, gender, and social services.

The highest ranked policy option was about the use of community by-laws to restrict child marriages (mean score = 9.29). The illustrative quote below is a plea made by one of the participants to their fellow community members, which demonstrates that child marriage was a common harmful social practice in the two communities that should be stopped.

> "*This is an important law . . . this is what should be done. Am asking you my friends that in this room to please let your children go to school first. As much as we all want an in-law who can help us out at our homes, but our children's school needs must come first. Our children should be independent in the future.*" (Participant Group 4)

The second ranked policy option was regarding 'promoting village savings and loans to provide alternative income sources for women' (mean score = 9.18). The following quote supports this:

> "*Village Savings and Loans must really be promoted to increase our sources of income. We are enjoying being in these groups because whenever you run out of money for food, you explain to the group, and they willingly provide a loan. In that way you reduce the burden on yourself and on your husband. You are also able to pay school fees using that money*". (Participant Group 8)

The third most favoured policy option was regarding 'provision of wide access to free family planning services' (mean score = 9.17). The following quote illustrates this need in the context of women assuming control on birth control issues as well as taking control of their lives and their health.

> "*I would like to agree with my fellow women, family planning is very important. You may die young if you can be bearing children every year. We need to take heed of the advice from the hospital. Other men are abusive, they do not accept this issue of family planning, but others are good they provide enough support to a woman on these issues*". (Participant Group 11)

The fourth most highly ranked policy option was to do with 'providing adequate security in evacuation centres to ensure women and girls are protected from abuse' (mean score = 9.10). The quotes below capture the need for provision of security and complaints or suggestion procedures within the camps.

> "*It is very true some women are victimised during this period, so the government should really increase the security, this will help prevent women to live in fear*". (Participant Group 17)

> "*I believe we had security in 2015 in the camps that were made. But an issue that was there was that the security personnel started having affairs with women in the camps and women were submissive because they wanted to have favours in receiving food. Government should put in place suggestion boxes where we can be submitting complaints*". (Participant Group 10)

The fifth most highly ranked policy option was to do with 'poor families with children of school-going age should only receive a cash transfer if they enroll their children to school' (mean score = 9.08). This would ensure that children participate in school for better child development outcomes. The following quote is illustrative:

> "*This would be very good because if parents are not motivated to send their children to school but they notice that their neighbour is sending all their children to school, and is even receiving a cash transfer on top of that, they will be motivated to send their children to school as well*". (Participant Group 4)

An analysis of the topmost supported policy options shows that they mostly related to supporting women and children. We further disaggregated our analysis by sex for these gender related themes to assess the mean scores for male and female participants and how deliberation affected them. Table 5 presents the pre- and post-DP mean scores for these themes.

Table 5. Comparing pre- and post means of the study participants on five gender related variables by sex.

	Male				Female			
Variable	**Pre**	**Post**	**Post-Pre**	***p*-Value**	**Pre**	**Post**	**Post-Pre**	***p*-Value**
Provide wide access to free family planning services	8.43	9.17	0.74	0.000 ***	8.57	9.16	0.59	0.003 **
Use community by-laws to restrict child marriages	9.03	9.25	0.22	0.508	9.29	9.36	0.07	0.892
Provide adequate security in evacuation centres to ensure women and girls are protected from abuse	9.12	9.06	−0.06	0.658	9.54	9.17	−0.37	0.504
Promote village savings and loans to provide alternative income sources for women	9.25	9.12	−0.13	0.694	8.91	9.81	0.90	0.103
Ensure a woman should not lose the family land if her husband dies	9.26	8.71	−0.55	0.001 **	9.40	9.15	−0.25	0.138

Note: ** $p < 0.01$, *** $p < 0.001$.

The data shows that, except for the option on provision of family planning services, the post-DP mean scores for female participants were relatively higher than their male counterparts for the other four options. For both sexes, the option for provision of family planning services recorded a statistically significant positive change. The policy option on ensuring that women do not lose family land following the death of their husband recorded a statistically significant negative change among the male participants.

4.1.5. Participants' Trust in the Use of Results by Government and Community

Three variables that were conceptually considered to indicate participants' expression of confidence that the government and the community would listen to their voices and use the results of the DP, were selected from the questionnaire. The variables included participants' perception of whether, (i) the government will take seriously the suggestions and views provided, (ii) the government will use the results from the DP event, and (iii) the community will use the results from the DP event. A paired samples *t*-test comparing

pre- and post mean scores of the study participants was conducted. Table 6 presents these results.

Table 6. Comparing pre- and post means of the study participants on three variables measuring participants' expression of trust in the government and community using results from the DP.

Variable	All			
	Pre	Post	Margin (Δ) Post-Pre	*p*-Value
Will the government take seriously the suggestions and views provided?	7.54	7.53	−0.01	0.982
How confident are you the government will use the results from this event?	7.08	7.48	0.40	0.237
How confident are you the community will use the results from this event?	7.32	8.53	1.21	0.018 *

Note: * $p < 0.05$.

Both pre- and post-DP mean scores show that the study participants maintained a high perception of government and community interest in using the results of the DP process to address the flooding challenges they faced. This was reflected by mean scores of over seven for all the variables measured. There was a statistically significant positive difference between the pre- and post-DP mean scores of study participants' perceptions of the community interest in using results from the DP event ($p < 0.05$).

5. Discussion

5.1. Reciprocal Adaptation to Flooding and Limited Participation in DRM Activities

The socio-economic and demographic characteristics of the two communities in this study supported by the qualitative data from the deliberative event point to the existence of a reciprocal relationship between the two communities informed by learning from the past flooding experiences and the need for sustaining livelihoods. This is supported by evidence showing that while most of the upland community participants owned land in both communities, for livelihoods (lowland) and shelter (upland), inversely, most of the lowland participants only owned land in the lowland but had an alternative place to run to in the upland during a flood. The practice of moving to higher ground as a disaster coping mechanism was recorded elsewhere [79] and the concept of learning from and adapting to a disturbance over time is consistent with findings of previous studies [80–82].

Another factor that points to the existence of this reciprocal relationship is the gender distribution and occupation of the participants from the two communities. There were significantly more male participants and participants indicating farming as their occupation from the lowland community compared to the upland community. In addition, all women from the lowland community indicated farming as their occupation. This observation seems to suggest a strong sense of the economic value placed on the lowland, in which staying in the lowland was strongly connected with farming as a livelihood activity. Thus, the two communities seem to have adopted both on-farm and off-farm strategies to cope and adapt to the adverse effects of flooding; a coping mechanism observed in flood prone communities in Northern Ghana [83]. In the case of the current study, it appears that most men adopted on-farm while most women adopted the off-farm coping and adapting mechanisms. This reciprocal adaptation captures two elements of Martin-Breen and Anderies', 2011, three interdisciplinary frameworks of resilience; the systems resilience, which is defined as coping and maintaining system function in the event of a disturbance, and the complex adaptive systems, which is defined to include the ability to withstand, learn and adapt, and reorganise in response to crisis [84].

The data also shows that very few participants from both communities were trained in or had education on disasters. In addition, very few participants, particularly from the lowland, indicated that they were members of the village or area protection committees. These findings are consistent with other studies in Malawi [3,85,86] that have shown an

inadequate participation in CB-FRM. The lack of willingness to voluntarily participate in CB-FRM activities by people living in flood prone communities is inconsistent with evidence showing that willingness to participate and volunteerism are important in community flood risk preparedness [87]. The observed limited participation in DRM activities by participants in this study could be because of the government's position of prohibiting provision of social services in the area as a way of forcing people to relocate [71] coupled with the fragmented nature of activities by Non-Governmental Organisations (NGOs) who only implemented DRM activities in specific areas of interest [68] in the Nsanje district, under which these two communities fall.

5.2. Potential of Poor Rural Communities to Participate in Policy Priority Setting

One of the objectives of this study was to assess if poor rural communities exposed to flooding can effectively participate in DRM policy making and priority-setting if they are provided with accurate and balanced information. With almost a quarter of the participants having no formal education and over half with primary schooling as their highest level of education, this study demonstrated that the DP can be successful in helping poor people in rural communities to balance trade-offs among various policy options and identify those that they consider important for their health and wellbeing. These findings are consistent with findings from other studies [30,88,89]. The choice of supported priorities and the justifications behind them and the observed trends in the mean scores of different policy options between pre- and post-DP surveys reflect this ability of the communities to meaningfully engage with health policy design and implementation. We briefly discuss some of the observations made from this study that necessitate this conclusion.

The ability of the communities to effectively participate in policy priority setting in this study was demonstrated by significant changes, both negative and positive, to the mean scores of 19 out of all the 32 available policy options. These changes reflect the impact of the briefing information provided to the participants during the DP event, the small group deliberations they had with their fellow community members, and the opportunity get clarifications on other policy options from a panel of experts. Thus, with increased knowledge, participants were able to make their final choices on policies they deemed suitable for their context; a finding consistent with the results of an assessment of data from five DPs conducted in the United Kingdom in the 1990s [90]. In addition to the observed changes between pre- and post-DP mean scores, this paper also argues that the maintained high and low mean scores for other policy options reflect that the participants had fully considered those options and still maintained their scores without any significant changes. For example, the policy priorities under resettlement and relocation theme maintained very low scores, mostly below 5 out of 10, while those in the population pressure, gender and social services theme maintained high scores above a mean score of 7 out of 10 in the overall population.

An analysis of the policy options supported across the three themes (resettlement and relocation, population pressure, gender and social services and reducing vulnerability in existing communities) shows a systematic and consistent support for options that would result in minimal disruption to existing ways of coping and adapting with flooding for livelihood sustenance. For example, in the resettlement and relocation theme, participants strongly supported relocation if they could still access the lowland for crop cultivation. In the reduced vulnerability within the same communities theme, study participants strongly supported interventions that would reduce the adverse effects of flooding to people's lives, such as establishing early warning systems and the provision of life-saving equipment such as life jackets and petrol boats. Strong support for these options was despite none of the topmost rated policy options coming from either of these themes. Thus, the two communities were able to identify specific policy options across different themes that would strengthen their resilience to flooding despite their diminished support for the overall theme.

Support for policy options that would result in minimal disruption to existing coping and adaptation mechanisms is also evidenced by the upland community's significant decrease in support for policy options to do with provision of legal title to lowland community before relocation and increased agricultural production in the upland if people are relocated there. Establishment of collective storage facilities for food in the uplands for both communities also recorded a significant decrease in support among lowland community participants. When looked at collectively, these policy options, if adopted and implemented, would result in significant structural and material changes to the way the two communities functioned and related with each other. Thus, through DP, the two communities were able to effectively participate and identify priority policy options that would bolster their resilience to flooding.

5.3. The Topmost Rated Flood Risk Management Policy Priorities

In this study, the topmost rated proposals were the ones that had best survived all the DP event counterarguments as evidenced by ranking of post-DP indices of 9 and above. As a result, the population pressure, gender, and social services priority was most supported by participants, with all top five favoured policy options falling under this policy priority. These were concerned with access to health care (family planning), child marriages, which put women and young girls at risk of increased morbidity and mortality, alternative income streams for women, access to education for children, and security in the evacuation camps for girls. The decision to resist complete relocation seems to be informed by many factors including place attachment, highly fertile floodplains and associated favourable food production capacity in the flood prone area, and participants' learned resilience based on reading flood water levels as early warning and escaping to the upland until the water level subsides. This finding is consistent with previous studies [71,91–93].

The identified top priority options have a strong element of gender, which could reflect the gendered nature of vulnerability to natural hazards such as flooding. In a study on disaster resilience in flood prone areas, Chisty et al., 2022, found that female members of the community lag in terms of disaster resilience compared to their male counterparts [94]. As these top five priorities relate to prioritisation of the most vulnerable members of the community and their recognition in DRM policy development and implementation, these findings are in line with those from Chisty et al., 2022 [94] and therefore call for a differentiated approach to consulting communities on the policy priority options they support.

Surprisingly, while it would seem intuitive for people living in flood prone areas to support policies that would reduce the immediate and more direct adverse effects of flooding, the study participants rather strongly supported policy options related to population pressure, gender and social services that would appear distant to the immediate challenge of flooding. This finding shows two adjacent communities that had learnt to live collectively in harm's way while maintaining system function through learning to adapt from historical flooding experiences. This is consistent with the assertion that "*resilience to a disturbance is cultivated through learning from and adapting to that very same disturbance over time*" [81] (p. 736). This assessment is also consistent with findings of a study conducted to assess community disaster resilience in flood-prone areas in Bangladesh, in which the authors concluded that differential scores across different components of the resilience framework indicate that there are gaps in terms of level of resilience as it is experienced by the affected people [94]. In the current study, it appears that participants may have supported policy options that would address the perceived gaps in their existing coping and adapting approaches while they continue staying and accessing the lowland for food production. Thus, we argue that the DP approach enabled the participants to make choices on their preferred FRM policies through discussion and reflections on their flooding experiences.

Following the climate justice discourse, this study argues that community consultations need to consider the distribution of outcomes of a disaster and disaster risk management policies for different population groups in the affected communities. To achieve

that, considerations need to be made to the procedural fairness of the consultative process in terms of ensuring representation of all the concerned groups [34,95]. Considering the dominance of gender related policy options among the top-rated priorities, we conducted a sex disaggregated analysis of all the identified priority options. Results indicate that both male and female participants strongly supported the provision of free family planning services in their communities. Given this strong emphasis on strengthening access to health services and that all the top-rated priorities can be considered social determinants of a healthy community, this study concludes that public health considerations are central to the development and implementation of policies that seek to strengthen community capacities required for coping and adapting to flooding.

A sex disaggregated analysis on the policy option to do with ensuring that women do not lose family land if their husband dies showed a statistically significant negative change following deliberation among male participants. Qualitative data from the deliberative event seem to suggest that while participants were in support of the policy option, there were some exceptions in which it was considered appropriate for women to lose land following the death of their husband. These include cases where there were no children born out of the marriage and if a woman decides to re-marry. A study on women's land rights in Africa [96] indicate that while landholding in Malawi is based on matrilineal systems, there is no automatic guarantee of women having more decision-making power on land. This finding seems to explain why support for this policy option significantly declined among male participants as they perhaps feared that its adoption and implementation may result in women holding more decision-making power over land. Thus, this study reaffirms the need for a differentiated approach to community consultation for policy priority setting and implementation. Through the DP approach, this study has managed to apply this differentiated approach through ensuring representativeness and captured both aspects of distributive and procedural fairness in the community consultation process for flood risk policy priority setting.

5.4. Trust in Government and Community Systems

Previous studies have demonstrated that levels of trust towards government, other fellow citizens (community), and science (DP consultative approach) [38,97,98] are essential predictive factors on community support for the development and implementation of disaster mitigation interventions. This study revealed that despite the adverse effects of frequent flooding on their well-being, and failed attempts by the government to forcibly relocate them, the affected communities still maintained high levels of trust in governance systems, both at national and community level, to positively respond to their expressed views regarding DRM priorities. In Zimbabwe, lack of trust between duty-bearers and communities regarding proposed DRR interventions resulted in lack of cooperation and resistance by the communities [99]. Therefore, governments and policymakers in low-to-medium income countries, like Malawi, need to nurture and grow the trust that citizens have for effective development and implementation of DRM policies that strengthen community resilience. Given the above, this study concludes that the participants trust the Malawian government and policymakers responsible for developing and implementing policies that seek to reduce vulnerability, protect livelihoods, and address the determinants of health with a focus on the most vulnerable members of the community, and they consider the proposed adaptation to be fair. Beyond trusting the government, it is important to note the statistically significant increase in confidence with the community using the results of the DP event. This paper argues that this increase is evidence of an increased sense of community agency in dealing with the flood related challenges they face following deliberation. Thus, this represents an endorsement on the DP process as an effective community consultation method for policy making and implementation.

6. Conclusions

As the number of people affected by floods continue to grow in Africa, governments will be forced to implement flood risk management policies that include forced relocation and resettlement of people with limited planning and participation of the people affected. This study sought to explore the capacity of flood prone communities to participate in FRM policy priority setting, to ascertain what policies they supported and their level of trust in governance systems implementing the recommendations of the consultative process.

Results of the study have shown that the two neighbouring communities studied had, over time, and learning from the past experiences with disasters, developed reciprocal coping and adaptation mechanisms to enable them to live with floods while sustaining their livelihoods. The changes and sustained low and high mean scores of supported policies between pre- and post-DP surveys was evidence that poor rural community people incessantly affected by flooding can effectively participate in flood risk management policy priority setting if provided with fair, balanced, and comprehensive information about the hazard.

Overall, the two communities converged on the top five priorities with minor variations on specific priorities perhaps informed by community specific contexts and available coping and adaptation approaches. An assessment of the top five identified policy options point to the desire by the two communities to have policymakers and practitioners to support their existing coping and adaptation mechanisms through increased access to family planning services, implementing women's economic empowerment, supporting children's education, enhancing security of the most vulnerable during flooding response activities, and implementation of laws to end child marriages.

The study has also shown that against the backdrop of a relocation policy contestation between government and the community, the community members had high levels of trust in the government and community governance systems adopting and implementing their expressed views through the DP process. This increase in community confidence between pre- and post-DP points to improved community agency and a conformation of the DP as an effective means for community consultation in flood risk management policy development and implementation. Thus, the DP process managed to reduce complex policy issues to the level of conceptualization and engagement that common citizens are accustomed to, which makes their involvement meaningful. Meaningful engagement in decision making about flood risk management options and perceived fairness of the consultation process can be strong predictors of community support for disaster risk management policies.

This study concludes that focusing only on relocating the affected people and building physical infrastructure for wading off floods, while sometimes necessary, may not be enough to reduce the adverse effects of flooding on the exposed people. There is need for development and implementation of FRM policies that put issues of gender, health, the welfare of the most vulnerable and human capital development through education and training at the core of strengthening community capacities for coping and adapting with flooding. The development and successful implementation of policies that affect people's wellbeing need to be based on representative consultations that include different groups of people who will engage in consultations from their perception of risk and level and type of vulnerability. Governments of low- to middle-income countries and their stakeholders need to promote active voluntary participation in local level flood risk management activities by people exposed to flooding. It is also important that training and education on context specific disasters be provided to people living in disaster prone areas, as evidence shows that training and education increase communities' preparedness and response capacities.

7. Study Limitations

The study did not seek to extensively reconcile differences among different groups of people in the population. While there were some overarching themes and clear convergence of priorities among the participants, there were also some divergent views, e.g., the declining support for construction of a dyke among the upland community and the increase

in support of the same option among the lowland participants. It was not clear if these divergent views represented community specific entrenched differences in lived values, experiences, or conceptualization of flooding and its effects. However, the community specific profiling and the mixed methods approach provided context specific and qualitative explanatory data that provided insights into some observed differences.

Supplementary Materials: The following are available online at https://www.mdpi.com/article/10.3390/w14060874/s1.

Author Contributions: Conceptualization, O.D. and O.A.-Y.; methodology, O.D.; software, O.D.; validation, O.D., D.M. and O.A.-Y.; formal Analysis, O.D.; investigation, O.D., D.M. and O.A.-Y.; resources, O.D.; data curation, O.D.; writing—original draft preparation, O.D.; writing—review and editing, O.D., D.M. and O.A.-Y.; visualization, O.D.; supervision, D.M. and O.A.-Y.; project administration, O.D.; funding acquisition, O.A.-Y. All authors have read and agreed to the published version of the manuscript.

Funding: This study was made possible by the generous support of the American people through the United States Agency for International Development (USAID), grant number AID-OAA-A-13-00018. The content is the responsibility of the authors and does not necessarily reflect the views of USAID or the United States Government. The Article Processing Charges (APC) were funded by the University of Pretoria. The views and opinions expressed in this paper are those of the authors and not necessarily the views and opinions of the University of Pretoria.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Health Research Ethics Committee of the University of Pretoria's in South Africa (protocol code 365/2018; approved on 26 July 2018) and the National Committee on Research in the Social Sciences and Humanities of the National Commission for Science and Technology in Malawi (protocol code P.09/18/316; approved on 5 November 2018).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data available upon request from the authors.

Acknowledgments: We acknowledge all the individuals and organizations that participated in this study. We are grateful to the Malawi Department of Disaster Management Affairs and the Nsanje District Council for the provision of letters of support that enabled the conduct of this study.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

References

1. World Meteorological Organization. *WMO Atlas of Mortality and Economic Losses from Weather, Climate, and Water Extremes (1970–2019)*; WMO: Geneva, Switzerland, 2021.
2. World Health Organization. *Public Health Risk Assessment and Interventions Flooding Disaster: Nigeria 1 November 2012*; World Health Organization: Geneva, Switzerland, 2012.
3. Trogrlić, R.S.; Wright, G.B.; Adeloye, A.J.; Duncan, M.J.; Mwale, F. Taking stock of community-based flood risk management in Malawi: Different stakeholders, different perspectives. *Environ. Hazards* **2018**, *17*, 107–127. [CrossRef]
4. IPCC. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*; IPCC: Geneva, Switzerland, 2014; p. 151.
5. Cernea, M.M. Public Policy Responses to Development-Induced Population Displacement. *Econ. Polit. Wkly.* **1996**, *31*, 1515–1523.
6. Ferris, E. Planned relocations, disasters and climate change. In Proceedings of the Conference on Climate Change and Migration in the Asia-Pacific: Legal and Policy Responses, Sydney, NSW, Australia, 10–11 November 2011.
7. Oliver-Smith, A. Successes and failures in post-disaster resettlement. *Disasters* **1991**, *15*, 12–23. [CrossRef] [PubMed]
8. McAdam, J. Historical Cross-Border Relocations in the Pacific: Lessons for Planned Relocations in the Context of Climate Change. *J. Pac. Hist.* **2014**, *49*, 301–327. [CrossRef]
9. O'Collins, M. Carteret islanders at the atolls resettlement scheme: A response to land loss and population growth. In *Implications of Expected Climate Changes in the South Pacific Region: An Overview*; UNEP Regional Seas Reports and Studies, No. 128; Pernetta, J.C., Hughes, P.J., Eds.; UNEP: Nairobi, Kenya, 1989. Available online: https://wedocs.unep.org/rest/bitstreams/13341/retrieve (accessed on 1 September 2021).

10. World Bank. *Involuntary Resettlement Sourcebook: Planning and Implementation in Development Projects*; World Bank: Washington, DC, USA, 2001.
11. Tanwattana, P. Systematizing Community-Based Disaster Risk Management (CBDRM): Case of Urban Flood-Prone Community in Thailand Upstream Area. *Int. J. Disaster Risk Reduct.* **2018**, *28*, 798–812. [CrossRef]
12. Trogrlić, R.Š.; Wright, G.; Adeloye, A.; Duncan, M.J. Community Based-Flood Risk Management: Experiences and Challenges in Malawi. In Proceedings of the XVI World Water Congress, Cancun, Mexico, 29 May–3 June 2017; pp. 1–13. Available online: http://wwc2017.iwra.org/congress/resource/ABSID173_ABSID173_SakicTrogrlicetal.2017.FinalApprovedVersion.pdf (accessed on 16 February 2022).
13. Shiwaku, K.; Shaw, R. Proactive Co-Learning: A New Paradigm in Disaster Education. *Disaster Prev. Manag.* **2008**, *17*, 183–198. [CrossRef]
14. Bhattarai, T.N. Flood Events in Gangapur Village, Banke District: An Example of Climate Change-Induced Disaster in Nepal. *J. Inst. Sci. Technol.* **2018**, *19*, 79–85. [CrossRef]
15. Woodward, M.; Gouldby, B.; Kapelan, Z.; Khu, S.-T.; Townend, I. Real options in flood risk management decision making. *J. Flood Risk Manag.* **2011**, *4*, 339–349.
16. Tyler, J.; Sadiq, A.A.; Noonan, D.S. A review of the community flood risk management literature in the USA: Lessons for improving community resilience to floods. *Nat. Hazards* **2019**, *96*, 1223–1248. [CrossRef]
17. Tyler, J.; Sadiq, A.A.; Noonan, D.S. Decision Making for Managing Community Flood Risks: Perspectives of United States Floodplain Managers. *Int. J. Disaster Risk Sci.* **2021**, *12*, 649–660. [CrossRef]
18. Fung, A.; Wright, E. *Deepening Democracy: Institutional Innovations in Empowered Participatory Governance*; The Real Utopia Project: Madison, WI, USA, 2003; Volume IV.
19. Lovan, W.R.; Murray, M.; Shaffer, R. *Participatory Governance: Planning, Conflict Mediation and Public Decision-Making in Civil Society*; Ashgate: Aldershot, UK, 2004.
20. Rowe, G.; Frewer, L. A Typology of Public Engagement Mechanisms. *Sci. Technol. Hum. Values* **2005**, *30*, 251–290. [CrossRef]
21. Harrison, S.; McDonald, R. *The Politics of Healthcare in Britain*; Sage Publications: London, UK, 2008.
22. Kathlene, L.; Martin, J. Enhancing Citizen Participation: Panel Designs, Perspectives and Policy Formation. *J. Policy Anal. Manag.* **1991**, *10*, 46–63. [CrossRef]
23. Carson, L.; Gelber, K. *Ideas for Community Consultation: A Discussion on Principles and Procedures for Making Consultation Work*; A report prepared for the NSW Department of Urban Affairs and Planning; Department of Urban Affairs and Planning: Sydney, NSW, Australia, 2001.
24. Fishkin, J.; Luskin, R. Experimenting with a Democratic Ideal: Deliberative Polling and Public Opinion. *Acta Polit.* **2005**, *40*, 284–298. [CrossRef]
25. Krueger, R.A. *Focus Groups: A Practical Guide for Applied Research*; Sage Publications: Thousand Oaks, CA, USA, 1994.
26. Kumar, K. *Conducting Group Interviews in Developing Countries (AID Program Design and Evaluation Methodology Report No. 8)*; USAID Bureau for Program and Policy Coordination: Washington, DC, USA, 1987.
27. Sternberg, P. *Who's in Your Shoes?* Praeger: New York, NY, USA, 1989.
28. Florin, D.; Dixon, J. Public involvement in health care. *Br. Med. J.* **2004**, *328*, 159–161. [CrossRef]
29. Meier, B.M.; Pardue, C.; London, L. Implementing community participation through legislative reform: A study of the policy framework for community participation in the Western Cape province of South Africa. *BMC Int. Health Hum. Rights* **2012**, *12*, 15. [CrossRef]
30. Neema, S.; Bua, G.M.; Tuhebwe, D.; Ssentongo, J.; Tumuhamye, N.; Mayega, R.W.; Fishkin, J.; Atuyambe, L.M.; Bazeyo, W. Community Perspective on Policy Options for Resettlement Management: A Case Study of Risk Reduction in Bududa, Eastern Uganda. *PLoS Curr.* **2018**, *10*, 10. [CrossRef]
31. Irvin, R.A.; Stansbury, J. Citizen Participation in Decision Making: Is It Worth the Effort? *Public Adm. Rev.* **2004**, *64*, 55–65. Available online: http://www.jstor.org/stable/3542626 (accessed on 6 September 2021).
32. Chinsinga, B. *Exploring the Politics of Land Reforms in Malawi: A Case Study of the Community Based Rural Land Development Programme (CBRLDP)*; Discussion Paper Series Number Twenty; Chancellor College, University of Malawi: Zomba, Malawi, 2008. Available online: https://assets.publishing.service.gov.uk/media/57a08baced915d622c000e15/IPPGDP20.pdf (accessed on 9 June 2021).
33. Chiweza, A.L. Participation: Reality or rhetoric in rural communities of Malawi. *Tanzanet J.* **2005**, *5*, 1–8.
34. Graham, S.; Barnett, J.; Fincher, R.; Mortreux, C.; Hurlimann, A. Towards fair local outcomes in adaptation to sea-level rise. *Clim. Change* **2014**, *130*, 411–424. [CrossRef]
35. Thomas, D.S.G.; Twyman, C. Equity and justice in climate change adaptation amongst natural-resource dependent societies. *Glob. Env. Chang.* **2005**, *15*, 115–124. [CrossRef]
36. Cullen, B. Philosophical theories of justice. In *Justice: Interdisciplinary Perspectives*; Scherer, K.R., Ed.; Cambridge University Press: Cambridge, UK, 1992.
37. Fullana, M.A.; Tortella-Feliu, M.; De La Cruz, L.F.; Chamorro, J.; Pérez-Vigil, A.; Ioannidis, J.P.; Solanes, A.; Guardiola, M. Trust in government regarding COVID-19 and its associations with preventive health behaviour and prosocial behaviour during the pandemic: A cross-sectional and longitudinal study. *Psychol. Med.* **2021**, 1–11. [CrossRef]

38. Pagliaro, S.; Sacchi, S.; Pacilli, M.G.; Brambilla, M.; Lionetti, F.; Bettache, K. Trust predicts COVID-19 prescribed and discretionary behavioral intentions in 23 countries. *PLoS ONE* **2021**, *16*, e0248334. [CrossRef] [PubMed]
39. Verger, P.; Bocquier, A.; Vergelys, C.; Ward, J.; Peretti-Watel, P. Flu vaccination among patients with diabetes: Motives, perceptions, trust, and risk culture—A qualitative survey. *BMC Public Health* **2018**, *18*, 569. [CrossRef] [PubMed]
40. O'Malley, P.; Rainford, J.; Thompson, A. Transparency during public health emergencies: From rhetoric to reality. *Bull. World Health Organ.* **2009**, *87*, 614–618. [CrossRef] [PubMed]
41. Meredith, L.S.; Eisenman, D.P.; Rhodes, H.; Ryan, G.; Long, A. Trust influences response to public health messages during a bioterrorist event. *J. Health Commun.* **2007**, *12*, 217–232. [CrossRef]
42. Han, Q.; Zheng, B.; Cristea, M.; Agostini, M.; Belanger, J.; Gutzkow, B. Trust in Government and Its Associations with Health Behaviour and Prosocial Behaviour During the COVID-19 Pandemic. *Psychol Med.* **2021**, 1–11. [CrossRef]
43. OECD. *Trust and Public Policy: How Better Governance Can Help Rebuild Public Trust*; OECD Publishing: Paris, France, 2017.
44. Munroe-Clarke, M. *Citizen Participation in Government*; Hale and Iromonger: Sydney, NSW, Australia, 1992.
45. Bellamy, J.; Johnson, A. ICM and Sustainable Agriculture: Moving from Rhetoric to Practice. Presented at the Second National Workshop on Integrated Catchment Management, Canberra, ACT, Australlia, 29 September–1 October 1997.
46. Holland, I. Consultation, Constraints and Norms: The Case of Nuclear Waste. *AJPA* **2002**, *61*, 76–86. [CrossRef]
47. Crase, L.; Dollery, B.; Wallis, J. *Conceptualising Community Consultation in Public Policy Formulation: The Case of the Living Murray Debate in the Murray-Darling Basin of Australia*; Working Paper Series in Economics; University of New England: Armidale, NSW, Australlia, 2004. Available online: https://www.une.edu.au/__data/assets/pdf_file/0010/67942/econ-2004-12.pdf (accessed on 2 February 2022).
48. Barber, B.R. *Strong Democracy: Participatory Politics for a New Age*; Berkeley: London, UK, 1984.
49. Dryzek, J.S. *Discursive Democracy*; Cambridge University Press: Cambridge, UK, 1990.
50. Geertz, C. *Local Knowledge: Further Essays in Interpretive Anthropology*; Chicago University Press: Chicago, IL, USA, 1983.
51. Shahidullah, S.M. Useful sociology: Can sociological knowledge be valuable in policy-making? *Int. J. Sociol. Soc. Policy* **1998**, *18*, 86–112. [CrossRef]
52. Oluseyi, O.; Fabiyi, G.; Akinbola, J.; Oloukoi, F.; Thonteh, G.; Enaruvbe, E.; Adagbasa, B.O. *Integrative Approach of Indigenous Knowledge and Scientific Methods for Flood Risk Analyses, Responses and Adaptation in Rural Coastal Communities in Nigeria*; Final project report for 2011 START grants for Global Change Research in Africa; Climate and Development Knowledge Network: Cape Town, South Africa, 2011. Available online: http://www.start.org/download/gec11/fabiyi-final-report.pdf (accessed on 16 February 2022).
53. Graham, S.; Barnett, J.; Fincher, R.; Hurlimann, A.; Morteux, C.; Waters, E. The social values at risk from sea-level rise. *Environ. Impac. Assess. Rev.* **2013**, *41*, 45–52. [CrossRef]
54. Barber, B.B. Opinion Polls: Public Judgment or Private Prejudice? *Responsive Community* **1992**, *2*, 4–6.
55. Walton, D. *Appeal to Popular Opinion*; Pennsylvania State University Press: University Park, PA, USA, 1999.
56. Lumbroso, D. Flood risk management in Africa. *J. Flood Risk Manag.* **2020**, *13*, e12612. [CrossRef]
57. Jahangiri, K.; Izadkhah, Y.; Tabibi, S. A comparative study on community-based disaster management in selected countries and designing a model for Iran. *Disaster Prev. Manag.* **2011**, *20*, 82–94. [CrossRef]
58. Sharma, R. Community Based Flood Risk Management: Local Knowledge and Actor's Involvement Approach from Lower Karnali River Basin of Nepal. *J. Geosci. Environ. Prot.* **2021**, *9*, 35–65. [CrossRef]
59. Carson, L. Innovative consultation processes and the changing role of activism. *Third Sect. Rev.* **2001**, *7*, 7–22. Available online: http://www.activedemocracy.net/articles/08_activism.pdf (accessed on 16 February 2022).
60. Emery, M.; Purser, R.E. *The Search Conference: A Powerful Method for Planning Organizational Change and Community Action*; Jossey-Bass Publishers: San Francisco, CA, USA, 1996.
61. Fishkin, J. *The Voice of the People: Public Opinion and Democracy*; Yale University Press: New Haven, NH, USA, 1995.
62. Coote, N.; Lenaghan, J. *Citizen's Juries: Theory into Practice*; Institute for Public Policy Research: London, UK, 1997.
63. Renouf, C. Rebirthing Democracy: The Experience of the First Australian Consensus Conference. *Consum. Interest* **1999**, *79*, 16–19.
64. Smischney, N.J.; Pannu, J.; Hinds, R.F.; McCormick, J.B. Community Consultation for Planned Emergent Use Research: Experiences from an Academic Medical Center. *JMIR Res. Protoc.* **2018**, *7*, e10062. [CrossRef]
65. Forseyth, M. The Charrette—Is it an effective consultation tool? In Proceedings of the 1996 Open Government, Community Consultation and Participation Conference, Sydney, NSW, Australia, 23–24 October 1996. Reprinted in: Open Government Network. *Reaching Common Ground Conference 1996 Proceedings: Open Government Community Consultation and Public Participation 23–24 October 1996*; Open Government Network: Sydney, NSW, Australia, 1997.
66. Mann, C.; Vob, J.P.; Amelung, N.; Simons, A.; Runge, T.; Grabner, L. *Challenging Futures of Citizen Panels: Critical Issues for Robust Forms of Public Participation*; Technische Universität: Berlin, Germany, 2014. Available online: www.innovation-in-governance.org (accessed on 16 February 2022).
67. Carson, L.; Martin, B. *Random Selection in Politics*; Praeger Publishers: Westport, CT, USA, 1999.
68. Dewa, O.; Makoka, D.; Ayo-Yusuf, O.A. Assessing Capacity and Implementation Status of the Disaster Risk Management Strategy for Health and Community Disaster Resilience in Malawi. *Int. J. Disaster Risk Sci.* **2021**, *12*, 673–688. [CrossRef]
69. Tadeyo, E.; Chen, D.; Ayugi, B.; Yao, C. Characterization of Spatio-Temporal Trends and Periodicity of Precipitation over Malawi during 1979–2015. *Atmosphere* **2020**, *11*, 891. [CrossRef]

70. GOM. *Malawi 2019 Floods Post Disaster Needs Assessment Report*; Government of Malawi: Lilongwe, Malawi, 2019.
71. Resilient Africa Network. *Gauging Citizens' Voice: Strengthening Resilience in Nsanje District, Southern Malawi*; Southern Africa Resilience Innovation Lab: Lilongwe, Malawi, 2017. Available online: https://cdd.stanford.edu/mm/2017/10/malawi-dp-final-report.pdf (accessed on 13 February 2021).
72. World Bank. *Republic of Malawi Poverty Assessment: Poverty and Equity Global Practice Africa Region*; World Bank: Washington, DC, USA, 2016.
73. GOM. *Independent Environmental Impact Assessment for the Upgraded Kamuzu Barrage: Final Resettlement Action Plan*; Volume 2—Record of Consultation; Government of Malawi: Lilongwe, Malawi, 2013.
74. Kish, L. *Survey Sampling*; John Wiley and Sons, Inc.: New York, NY, USA, 1965.
75. Israel, D. *Determining Sample Size*; University of Florida: Gainesville, FL, USA, 2013.
76. Yamane, T. *Statistics: An Introductory Analysis*, 2nd ed.; Harper and Row: New York, NY, USA, 1967.
77. Siu, A.; Fishkin, J.; He, B.; Wang, R. Deliberative Democracy in China: Connecting a Deliberative Poll with the Local People's Congress. In Proceedings of the 2009 APSA Annual Meeting & Exhibition, Toronto, ON, Canada, 3–6 September 2009. Available online: https://ssrn.com/abstract=1468086 (accessed on 16 February 2022).
78. Castleberry, A.; Nolen, A. Thematic analysis of qualitative research data: Is it as easy as it sounds? *Curr. Pharm. Teach. Kearning* **2018**, *10*, 807–815. [CrossRef]
79. Rakotobe, Z.L.; Harvey, C.A.; Rao, N.S.; Dave, R.; Rakotondravelo, J.C.; Randrianarisoa, J.; Ramanahadray, S.; Andriambolantsoa, R.; Razafimahatratra, H.; Rabarijohn, R.H.; et al. Strategies of smallholder farmers for coping with the impacts of cyclones: A case study from Madagascar. *Int. J. Disaster Risk Reduct.* **2016**, *17*, 114–122. [CrossRef]
80. Nguyen, K.V.; James, H. Measuring Household Resilience to Floods: A Case Study in the Vietnamese Mekong River Delta. *Ecol. Soc.* **2013**, *18*, 13. [CrossRef]
81. Liao, K.H. From Flood Control to Flood Adaptation: A Case Study on the Lower Green River Valley and the City of Kent in King County, Washington. *Nat. Hazards* **2014**, *71*, 723–750. [CrossRef]
82. Kuang, D.; Liao, K.H. Learning from Floods: Linking flood experience and flood resilience. *J. Environ. Manag.* **2020**, *271*, 111025. [CrossRef]
83. Lolig, V.; Donkoh, S.A.; Obeng, F.K.; Ansah, K.G.I.; Jasaw, G.S.; Kusakari, Y.; Asubonteng, K.O. Households' Coping Strategies in Drought-and Flood-Prone Communities in Northern Ghana. *J. Disaster Res.* **2014**, *9*, 542–553. [CrossRef]
84. Martin-Breen, P.; Anderies, J.M. *Resilience: A Literature Review*; Institute of Development Studies, Bellagio Initiative: Brighton, UK, 2011.
85. Chawawa, N. *Why Do Smallholder Farmers Insist on Living in Flood Prone Areas? Understanding Self-Perceived Vulnerability and Dynamics of Local Adaptation in Malawi*; University of Edinburgh: Edinburgh, UK, 2018.
86. Trogrlić, R.W.G.; Duncan, M.; van den Homberg, M.A.; Adebayo, M.; Faidess, M.J. Characterising Local Knowledge across the Flood Risk Management Cycle: A Case Study of Southern Malawi. *Sustainability* **2019**, *11*, 1681. [CrossRef]
87. Shariff, N.N.M.; Hamidi, Z.S. Community-based approach for a flood preparedness plan in Malaysia. *Jàmbá J. Disaster Risk Stud.* **2019**, *11*, 598. [CrossRef]
88. Tugendhaft, A.; Hofman, K.; Danis, M.; Kahn, K.; Erzse, A.; Twine, R.; Marthe Gold, M.; Christofides, N. Deliberative engagement methods on health care priority-setting in a rural South African community. *Health Policy Plan.* **2021**, *36*, 1279–1291. [CrossRef]
89. Baker, R.; Mason, H.; McHugh, N.; Donaldson, C. Public values and plurality in health priority setting: What to do when people disagree and why we should care about reasons as well as choices. *Soc. Sci.* **2021**, *277*, 113892. [CrossRef]
90. Sturgis, P.; Roberts, C.; Allum, N. A Different Take on the Deliberative Poll Information, Deliberation, and Attitude Constraint. *Public Opin. Q* **2005**, *69*, 30–65. [CrossRef]
91. Mavhura, E.; Collins, A.; Bongo, P. Flood vulnerability and relocation readiness in Zimbabwe. *Disaster Prev. Manag.* **2017**, *26*, 41–54. [CrossRef]
92. Puertas, D.G.-L.; van Steenbergen, F.; Haile, A.M.; Kool, M.; Embaye, T.G. *Flood Based Farming Systems in Africa*; Overview paper; Flood-Based Livelihood Network: Wageningen, The Netherlands, 2011. Available online: http://spate-irrigation.org/wp-content/uploads/2015/03/OP5_Flood-based-farming-in-Africa_SF.pdf (accessed on 28 January 2022).
93. Rey-Valette, H.; Robert, S.; Rulleau, B. Resistance to relocation in flood-vulnerable coastal areas: A proposed composite index. *Clim. Policy* **2019**, *19*, 206–218. [CrossRef]
94. Chisty, M.A.; Rahman, M.M.; Khan, N.A.; Dola, S.E.A. Assessing Community Disaster Resilience in Flood-Prone Areas of Bangladesh: From a Gender Lens. *Water* **2022**, *14*, 40. [CrossRef]
95. Barnett, J. Justice and adaptation to climate change. In *Climate Change and Social Justice*; Moss, J., Ed.; Melbourne University Press: Melbourne, VIC, Australia, 2009; pp. 131–143.
96. Emmanuel, S.; Mbaya, S.; Codispoti, B.; Atananga, J.; Moseti, B.; Mugehera, L. Women's Land Rights in Africa: Does Implementation Match Policy? In Proceedings of the Conference on Land Policy in Africa, 2019: Winning the Fight against Corruption in the Land Sector: Sustainable Pathway for Africa's Transformation, Abidjan, Côte d'Ivoire, 25–29 November 2019.
97. Tanner, T.; Zaman, R.; Acharya, S.; Gogoi, E.; Bahadur, A. Influencing resilience: The role of policy entrepreneurs in mainstreaming climate adaptation. *Disasters* **2019**, *43*, S388–S411. [CrossRef] [PubMed]

98. Ge, Y.; Yang, G.; Wang, X. Understanding risk perception from floods: A case study from China. *Nat. Hazards* **2021**, *105*, 3119–3140. [CrossRef] [PubMed]
99. Dube, E.; Mtapuri, O.; Matunhu, J. Managing flood disasters on the built environment in the rural communities of Zimbabwe: Lessons learnt. *Jàmbá J. Disaster Risk Stud.* **2018**, *10*, 542. [CrossRef] [PubMed]