Impact assessment on climate information services for community-based adaptation to climate change

Malawi Country Brief

C4 EcoSolutions

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Acknowledgements

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List of acronyms

ALP	Adaptation Learning Program for Africa
CARE	Cooperative for Assistance and Relief Everywhere
CBA	Community-based adaptation
CBOs	Community Based Organisations
CIS	Climate Information Services
CISONECC	Civil Society Network on Climate Change
DoDMA	Malawian Department of Disaster Management Authority
DRR	Disaster risk reduction
ECRP	Enhancing Community Resilience Project
FBOs	Faith Based Organisations
GCF	Global Climate Fund
GDF	Gross Domestic Project
ICT	Information and Communications Technology
IKS	Indigenous Knowledge Systems
INGOs	International Non-Governmental Organisations
KIIs	Key informant interviews
LAC	Local Adaptive Capacity
MMD	*Mata Masu Dubara* ('Women on the move' VSLA project)
NGO	Non-government organisation
PSP	Participatory Scenario Planning
ToT	Training-of-trainers
UNDP	United Nations Development Program
VSLA	Village Savings and Loans Associations

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Climate information services in Malawi

Malawi is a Least Developed Country, ranking 170th in the world on the Human Development Index[1]. The country's economy is largely agrarian, with 80% of the Malawian population of 17.2 million relying on small-scale, rain-fed agriculture as their primary livelihood activity. Given that outputs from rain-fed agriculture are inherently climate-dependent, the livelihoods of rural communities are at risk from climate change impacts such as increasingly severe weather events and erratic rainfall. Indeed, climate change has contributed to growing food insecurity and increasing instances of community displacements across Malawi. In January 2015, for example, flooding of the southern districts of the country led to the loss of over 100 lives as well as livestock and crop losses. These floods were followed by a prolonged drought in 2016, leading to a nationwide state of emergency brought on by severe food shortages. Climate change is expected to increase the frequency and severity of such extreme weather events, further jeopardising the livelihoods of Malawian small-scale farmers.

Prior knowledge of future climate and extreme weather events would capacitate individuals and communities to adapt their agricultural practices to the predicted climatic conditions. This would reduce the negative impacts of climate change and allow communities to exploit any opportunities that arise. Climate Information Services (CIS) generate and disseminate climate information to inform communities of predicted climate conditions and possible actions. While the Malawi Department for Climate Change and Meteorological Services (DCCMS) has the capacity to generate seasonal forecasts, the effective communication of such climate information has historically been challenging, particularly to remote rural communities. Moreover, the forecasts are often technical in nature and the principles of probability and uncertainty inherent to climate forecasts are not easily explained to non-scientists. Communities receiving the forecasts are thus often unable to understand them and apply the information in adapting their livelihood practices to predicted climatic conditions. To address these problems, CARE has developed the Participatory Scenario Planning (PSP) process – an approach to CIS that is grounded in Community-based Adaptation (CBA). The PSP process is transdisciplinary in nature, enabling technical experts to collaborate with local community members to interpret climate forecasts and develop advisories that are evidence-based and appropriate to local conditions[2]. First trialled in Kenya in 2011 by the CARE Adaptation Learning Programme (ALP), PSPs have since been implemented in Ethiopia, Ghana, Malawi and Niger. In Ethiopia and

[1] UNDP. 2016. Human Development Report 2016 – Malawi. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MWI.pdf [accessed on 23.05.2017].
[2] The theory of the PSP process is outlined in Box 1.

Malawi, PSPs have been adopted independently of ALP via a Training-of-Trainers (ToT) approach.

The PSP process was first introduced in Malawi in 2013, following a practitioners' training workshop organised by CARE and attended by development practitioners from nine African countries[3]. This was followed by a training for facilitators that was held in Malawi in March 2014, organised by CARE in collaboration with Malawi's Civil Society Network on Climate Change (CISONECC)[4] and a facilitator from the Kenya Meteorological Department. CISONECC, in partnership with the Enhancing Community Resilience Programme (ECRP)[5], held the first PSP workshops in Malawi. ECRP has invested in the development of climate monitoring and early warning systems through their DISCOVER programme[6;7]. Monitoring uses simple equipment such as rain and river gauges to collect data that is shared through an information centre, specifically designed to be accessible to local community members.

Box 1. PSP theory.

The theoretical link between the use of CIS and on-the-ground interventions for climate resilience underpins the PSP process. Simply put, the provision of information services increases the adaptive capacity of individuals and communities by allowing for informed and improved decision-making. PSPs add a participatory component to information provision, which allows for the inclusion of local knowledge and expertise. However, the outcome is more than just a contextualised advisory. Community participation in aspects of CIS promotes community learning, creating a new knowledge paradigm that combines scientific forecasting with traditional knowledge. This learning and consequent improved understanding of climate challenges allows for innovation and self-organisation when responding to predicted climate change impacts. Like all participatory approaches, PSPs benefit from valuing the opinions of local communities and prioritising their needs, thereby building community trust.

ECRP's partnership with CISONECC has allowed for PSPs to expand on the existing climate information pathway. When PSP workshops are included in the existing information pathway, climate information can be interpreted by a multi-stakeholder group that includes users and technical experts. Figure ***1*** and Figure ***2*** are graphical illustrations of: i) the current DISCOVER and ECRP climate information pathway; and ii) the role of PSPs.

PSP workshops produce advisories that contain the climate forecast and recommendations for the coming rain season. Users that receive the advisories can implement the recommendations without having to interpret raw climate information. This reduces misinterpretations and leads to improved adaptive practices. In addition, the advisories are informed by technical expertise and

[3] This workshop was attended by government staff and NGO practitioners from Ethiopia, Ghana, Kenya, Malawi, Mozambique, Rwanda, Somalia, Sudan and Uganda.
[4] CISONECC comprises a diverse array of Malawian organisations, including both local and international NGOs and faith-based organisations.
[5] ECRP is being implemented by a consortium led by Christian Aid Malawi and Concern Universal. The programme is being funded by the United Kingdom Department for International Development (DfID), Norwegian Ministry of Foreign Affairs and Irish Aid.
[6] Developing Innovative Solutions with Communities to Overcome Vulnerability through Enhanced Resilience (DISCOVER) works with local partners to deliver interventions that include *inter alia* early-warning systems, disaster risk management and climate-smart agriculture. During the January 2015 floods, DISCOVER early-warning systems reported several successes in avoiding damages and loss of life.
[7] ECRP. 2015. ECRP Insights Bulletin. Available at: http://resilientlivelihoods.christianaid.org.uk/wp-content/uploads/2016/01/J4738-ECRP-Newsletter-v5-WEB3.pdf [accessed 01.06.2017].

developed in association with the local community. This ensures that information is accurate as well as locally-appropriate.

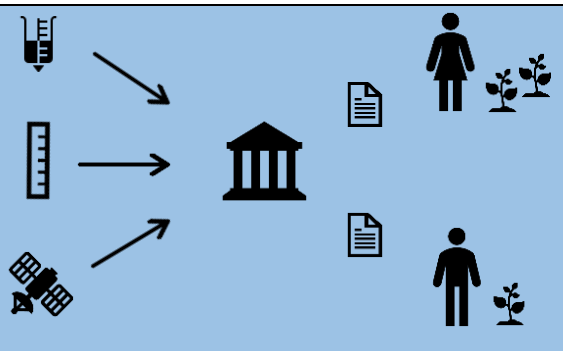

Figure 1. DISCOVER information pathway. Climate information from various sources is provided to users via an accessible climate information centre. The users interpret this information using their individual knowledge of climate impacts.

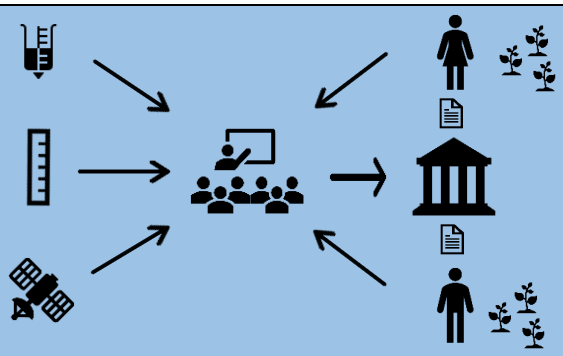

Figure 2. DISCOVER information pathway with PSP workshops. Users interact with technical experts to collectively interpret climate information and develop advisories that are communicated via the climate information centre. Here, users benefit from collective knowledge.

Together, CISONECC and ECRP have implemented the PSP process in eight districts in Malawi, namely Chikwawa, Karonga, Kasungu, Mulanje, Salima, Balaka, Nsanje and Thyolo. The PSP process in these districts has involved collaboration with relevant stakeholders, including District, Area and Village Civil Protection Committees (CPCs). The role of these stakeholders has been to ensure that agreed action plans are aligned with local priorities and contexts. Supported by the DISCOVER programme, some CPC members have also taken responsibility for spearheading the PSP process in their respective communities. In addition, CISONECC and ECRP have partnered with various organisations and government departments including the Evangelical Association of Malawi (EAM), Churches Action in Relief and Development (CARD), the Department of Disaster Management Affairs (DDMA) and the DCCMS to advance the PSP process in Malawi.

Impact assessment

In 2016, CARE commissioned a regional impact assessment of the ALP approach to CIS in addressing climate change adaptation across Ethiopia, Ghana, Kenya, Niger and Malawi. The objective of this assessment was to investigate the contribution of community-based CIS to CBA. A particular focus was on PSPs as an innovative and inherently replicable approach for interpreting and communicating climate information and building community networks for adaptation. Specifically, the assessment aimed to develop a better understanding of the use and impact of CIS in various contexts and, using lessons learned to strengthen future replication and upscaling of the PSP approach. This brief illustrates the results from the country assessment in Malawi (Figure 3).

Investigations and methods

The assessment investigated four main aspects of the PSP process in separate lines of investigation.

- **Implementation process (method):** assessment of the practice of PSP principles implemented. There are seven principles for successful implementation; these are outlined in Box 2.
- **Communication:** assessment of the reach of information, the content and quality of advisories produced and channels of communication for climate information that have developed over time.
- **Use and impact:** assessment of the use and impact of the advisories on users, intermediaries and producers.
- **Sustainability:** assessment of the potential for the process to be long-lasting beyond ECRP and CISONECC facilitating the PSP process in Malawi.

PSPs are implemented in a five-step process illustrated in Figure 4. This process is cyclical and feedback from previous PSPs will inform the preparation and facilitation of future workshops as well as the dissemination of associated advisories. Feedback will also inform the design of the PSP process to allow innovations and lessons learned to benefit both future and existing PSPs.

Figure 3. Map of the three regions in Malawi – the northern, central and southern. The seven districts with PSP implementation are indicated by purple dots. Source topographicmap.com

Data collection

The collection of data was conducted through remote consultations with CARE in Malawi and CISONECC. These representatives assisted with conducting remote interviews and discussions with key stakeholders and participants of PSP workshops.

- **Remote key informant interviews (KIIs)[8].** The KIIs involved an electronic questionnaire based on short survey questions, conducted remotely with CARE staff and representatives of various government sector offices in Malawi, including *inter alia*: i) representatives of local government; ii) research institutions; iii) CARE country representatives; iv) CISONECC and ECRP representatives; and v) development and environmental NGOs.
- **Review of literature and previous reports**. Extensive desktop reviews were undertaken to compare the main objective and achievements of the PSP process to date. These reviews covered the following resources: i) the outputs produced during the PSP implementation

[8] The compiled remote KII questionnaire responses are included in Annex 1.

period – including *inter alia* publications and outcomes of capacity-building exercises; and ii) periodic progress reports produced during PSP implementation including, monitoring and evaluation (M&E) and progress reports that contain information on PSP.

Box 2. The seven principles for successful PSP implementation.

CARE has identified and collated seven principles that contribute toward successful PSP implementation. These principles should be considered in the design and introduction of PSP in new areas. The seven principles are outlined below.

- **Inclusivity of the CIS user.** The PSP process aims to include all users of climate information. This is to ensure the roles and contributions of each user are recognised and accounted for in the development of advisories. Users include women and men of different ages and ethnicities. Strong emphasis should be placed on users enabling the PSP process and participating in the development of an efficient service that readily responds to their needs.
- **Timing of PSP workshops.** Ideally, PSP workshops should be conducted as soon as seasonal forecasts are released by the national meteorological services to prevent the delayed dissemination of vital information that users, and particularly farmers, need to prepare for the coming rain season.
- **Feedback mechanism.** To continuously improve and develop the PSP process, a feedback mechanism is needed to include input from the users following the end of the rain season. This feedback mechanism is undertaken in the form of a review. The review focusses on user satisfaction with the advisories from the previous season. Included in this review are *inter alia*: i) how were advisories communicated; ii) what communication tools were used; iii) when were advisories received; and iv) how useful were the advisories?
- **Factoring in uncertainty.** It is essential to communicate uncertainties in seasonal forecasts to users. Uncertainty is presented as a probability in the seasonal forecast and used to develop scenarios. The consideration of uncertainty allows for flexible decision-making on adaptation planning. All developed scenarios should be communicated to users to cater for all potential scenarios.
- **Multi-stakeholder approach.** The PSP process aims to create a multi-stakeholder platform to promote dialogue among state and non-state actors at different levels. Such a platform promotes the co-production of climate information which results in a user-responsive service.
- **Dissemination.** It is essential that the advisories developed during PSP workshops are communicated in a timely manner to all users to enable preparedness in anticipation of the coming rain season. The relevant users include *inter alia*: i) line ministries within the national and county governments; ii) NGOs/CBOs; iii) local communities; and iv) research institutions.
- **Advisories presented as options.** The advisories developed during the PSP workshops need to be communicated to all actors as options rather than instructions. This is to promote flexible decision-making at the individual level based on the predictions for the local context.

Results

Participants interviewed in Malawi included key stakeholders that were involved in the PSP process and individuals with expert knowledge regarding PSPs and their implementation. In total, ten people were interviewed: eight men and two women. This included four workshop participants, five workshop facilitators and one climate information producer[9]. Information from interviews and annual reports is presented according to the main assessment themes in the sections below.

[9] Interview participants consisted of high-level stakeholders in the PSP process, i.e. facilitators, programme officers and technical personnel. Unfortunately, no users were involved in the remote KIIs.

Implementation process

To date, the implementation of PSPs by CISONECC and ECRP as a form of CIS has been largely successful in Malawi. For example, most interview participants cited the availability of seasonal forecasts and stakeholder support as enabling factors, while two respondents indicated that PSPs have received good budgetary support. PSPs have enabled flexible decision-making by users, involved relevant stakeholders in the process and produced suitable advisories through the workshops. Moreover, interested parties and stakeholders, including the Malawian government, are reportedly satisfied with the PSP process.

While the process was successful in disseminating advisories, user implementation[10] of the recommended interventions remains limited. Many users found it challenging to mobilise enough resources to act on the advisories. Insufficient resources are also a barrier to the continued facilitation of PSP workshops. Funding has been repeatedly identified as a barrier to PSPs, both in Malawi and across other countries. Limited funding affects the number and quality of workshops that can be held and limits the reach and depth of communication.

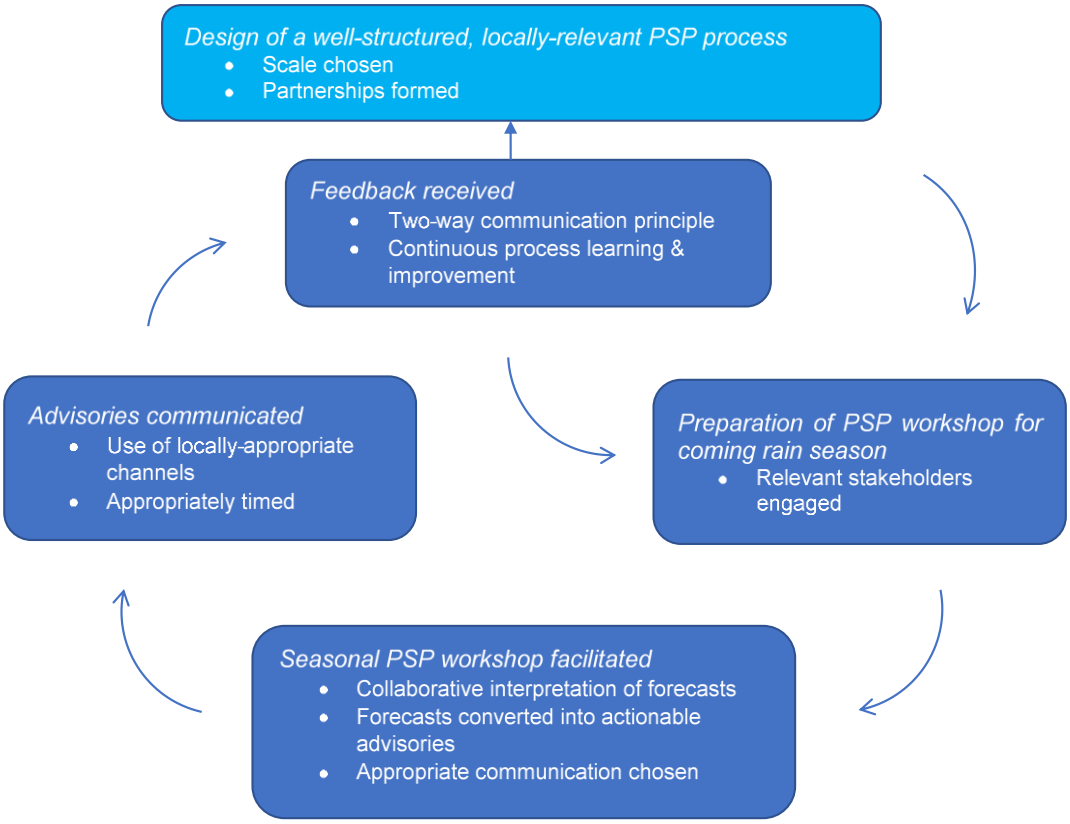

Figure 4. Implementing the PSP process. Note that some aspects of the design stage may only be once-off. Also, feedback can inform both the local PSP process and provide lessons learned for the implementation of future processes.

[10] Details of on-the-ground users were not accessible during this impact assessment.

Communication

In Malawi, radio broadcasts, extension workers and mobile phones were used as communication channels. Information centres have also been established by the DISCOVER programme to: i) monitor weather stations; ii) offer advice on preparations for the growing season; and iii) to distribute publications and other climate-related documents from the DCCMS in both English and Chichewa. However, the KIIs did not identify information centres as one of the most common or preferred channels. Interview participants indicated that radio broadcasts and mobile phones are the two preferred channels of communication by users. Mobile phones are widely used, with users reportedly responding well to receiving advisories through text messages. Respondents suggested that recipients perceived these as personal. Despite having a wider audience, radio broadcasts were found to be less convenient for users, KII participants suggested this was because access is limited and that broadcasts are viewed as impersonal. Of the countries where PSPs have been implemented, Malawi appears to have the most effective pre-existing use of mobile technology for communicating weather information. The DCCMS has, for example, established a communication system using the instant messaging service, WhatsApp, to share monthly, weekly and daily forecasts[11].

Despite the pre-existing communication systems, disseminating advisories and climate forecasts to users has been challenging in Malawi, for the following reasons[12]:

- advisories have often been interpreted differently – and inconsistently – by different users;
- advisories have, at times, been disseminated late[13];
- reach of advisories remains limited, with remote regions often not receiving advisories at all; and
- community members have different communication requirements. Some communication channels – such as posters and bulletins – exclude community members that are illiterate[14].

Use and impact

Given the recent history of climate-induced disasters, local communities in Malawi have begun to recognise the growing need for CIS. The ECRP has incorporated the use of PSPs with newly established early warning systems (EWS) in 11 disaster prone districts. This will strengthen the timely dissemination of weather forecasts and build resilience to climate-induced disasters. For example, a reduction in the number of individuals affected by floods has been attributed to PSPs, as advisories provide prior warnings. These warnings allow users to prepare for predicted weather conditions and therefore reduce disaster losses.

[11] Unfortunately, there is currently no up-to-date information available on whether these systems are used to share advisories and communicate user feedback.
[12] These challenges have been summarised from the KII participant questionnaires. Unfortunately, additional information on the challenges is not currently available for this impact assessment.
[13] One KII participant indicated that weather events took place a significant time after the release of advisories and that some people had forgotten the information relayed to them.
[14] Only 66% of the population are literate (15 years old and above). See further: The World Bank Indicator. 2017. Available at: http://data.worldbank.org/indicator/SE.ADT.LITR.ZS?locations=MW [accessed 08.06.2017].

In addition, PSPs are used to inform decision making in crop production. PSPs have contributed to improvements in planning for beneficiary farmers, with farmers adapting their crop choice and mulching patterns for the season. Those farmers using PSP advisories have declared greater yields than non-users, although this has not been independently verified. Moreover, an observed increased demand for climate information, attributable to PSPs, reflects a positive user perception of the process. This indicates that users are realising the benefits from advisories. Intermediaries – NGOs and other civil society organisations engaged in DRR and agriculture in Malawi – have also benefitted from the PSP process. The workshops have allowed them to better engage with local communities and farmers for climate-informed planning to improve agricultural yields and reduce disaster losses. Advisories have also promoted flexible planning around monthly forecasts that allows for adaptive strategies in the face of sudden changes or uncertainties.

User perception of development projects is a barrier that KII participants identified. Interview participants suggested that some community members associate the PSP process with previous failed projects and are, therefore, unwilling to participate in workshops. However, increased stakeholder consultation is altering the perception of development projects in Malawi. Relevant stakeholders are also continually advocating for the inclusion of national priorities and initiatives into the design and implementation of large-scale projects (see Box 3). These inclusions will ensure projects are well-adapted to the local context, thereby increasing use and impact.

Box 3. Climate initiatives in Malawi.

In addition to the PSP approach being implemented in Malawi, a Green Climate Fund (GCF) project titled: 'Scaling up of modernised climate information and early warning systems in Malawi' began in November 2016, to be implemented over six years in various parts of the country. The GCF/UNDP project has a budget of US$16.3 million and aims to expand the Malawian meteorological network, install weather monitoring stations and increase the nation's capacity to identify risks and forecast impacts. Under Output 2, tailored climate-based agricultural advisories will be developed. At present, these will be disseminated via information and communication technology, including mobile phones and radio broadcasting. However, Malawi's CISONECC and other relevant stakeholders have been in discussion with UNDP to see if the PSP process can be incorporated into this aspect of the GCF project.

Sustainability

Long-term sustainability of the PSP process is difficult to assess as the process is still a recent introduction to Malawi. However, advocates of the process – particularly international agencies, and civil society organisations (CSOs) – have made some progress towards ensuring its sustainability; a National Core Team (NCT) composed of 15 institutions from government, NGOs and academia was formed in 2015 to spearhead the PSP process in Malawi. The NCT has so far presented the PSP process to *inter alia* the National Technical Committee on Climate Change and the National Disaster Risk Management Platform. This has enabled the sharing of knowledge, experience and lessons learned among stakeholders, including policy- and decision-makers. Ultimately, increased awareness of PSP benefits will support the potential for mainstreaming into national policies and strategies.

KII participants reported that there has already been substantial uptake of the process by a variety of stakeholders, including the Malawian Government. The PSP process has been included in the draft National Meteorological Policy as one of the strategies to be used by government for managing climate information. This inclusion is a result of extensive stakeholder engagement – particularly with members of Malawi's CISONECC – during the development of the policy. This policy is critical for ensuring the effective implementation of the National Climate Change Management Policy (2016), as it helps to define climate information management that will inform adaptation planning in the short and long term. CSOs have consequently called on the Malawian Government to promptly approve this draft policy. For sustainability to be further assured, the PSP process should be integrated into national and district budgets.

Analysis of findings

In Malawi, the PSP process was implemented to expand on existing CIS. PSPs have subsequently made climate information more accessible to local communities by disseminating interpreted forecasts instead of raw climate information. KII participants indicated that the implementation of the PSP process has been successful overall, with users adapting their behaviour because of information provided through advisories. This adaptation has led to a comparative advantage in agricultural productivity for PSP users as well as a perceived reduction in damages from floods.

Timing of PSPs. KII participants indicated that the dissemination of advisories was, at times, delayed[15]. Late advisories often result in inadequate time for users to prepare for the predicted and communicated scenario and, therefore, result in PSPs being ineffective for that rain season. While this may have had negative impacts on PSPs in the past, interview participants have recognised the importance of timing – indicating a growing familiarity with the principles of PSPs. Improved coordination between the planning of PSPs and the facilitating of stakeholders in Malawi will be required to ensure that accurate forecasts are delivered on-time; and that workshops are held sufficiently far in advance to allow advisories to be efficiently disseminated and implemented. Conversely, when advisories are released too far in advance of the onset of climate events, users may forget recommendations in the advisories, as noted during an interview with one of the participants. This indicates that correct timing of PSPs should consider a variety of factors to be effective. Furthermore, as the rain season in Malawi lasts seven months, regular forecast updates may be required to allow for dynamic responses to changing conditions. Improved monitoring and evaluation of PSPs will address problems such as these.

Choosing an appropriate geopolitical scale. PSP workshops allow for the co-creation of advisories between technical experts and local community members. This ensures that advisories are technically accurate but also specific to the local context. If the scale at which PSPs are conducted is too broad, there is a risk that advisories may not be appropriate at the

[15] The remote KII questionnaire responses unfortunately indicated no reason for this delay.

local scale. However, if PSP workshops are held at the community level, the operational costs of PSPs will rise accordingly.

Improved communication strategy. While communicating climate information in Malawi shows innovation in the use of information and communication technology (ICT), interview participants have indicated that the current dissemination of PSP advisories does not reach all potential users[16]. Communication strategies should be location-specific and include a suite of dissemination channels to ensure that all identified information users can be reached. ICT can be considered for potential communication channels; however, the number of cellular subscriptions in Malawi is currently only ~37% of the population[17].

Improved monitoring and evaluation (M&E). On-going M&E is required for adaptive management. It is also necessary to demonstrate the value of an activity to beneficiaries. Currently, there is no coherent M&E of PSPs in Malawi. Without effective M&E on-the-ground impacts of PSPs will remain intangible. An appropriate and well-structured system of M&E should be put in place, both at the national and district levels, to assess and adaptively manage the PSP process. Such a system should aim to quantify the socio-economic benefits of PSPs to users.

Mainstreaming into government processes. For a process to be implemented effectively on a country-wide scale, it needs to be integrated into national government policy, planning and budgeting. Currently, PSPs are largely viewed as an NGO activity in Malawi, which suggests that the country has not yet taken ownership of the process. For the sustainable use and continuous improvement of PSPs as a part of the nation's CIS strategy, the process needs to be included in national policy. While various CSOs advocated for the inclusion of PSP in the draft National Meteorological Policy, this policy has not yet been formally adopted by the Malawian Government. If approved, this policy needs to be implemented by district governments in partnership with relevant stakeholders, institutions and organisations to ensure compliance.

Introducing a multi-sectoral approach. The platform for participatory planning provided by PSPs is flexible and multi-use. It can readily accommodate stakeholders from sectors other than climate planning and adaptation, allowing stakeholders from these sectors to share information relevant to their mandate. To date, the PSP process in Malawi has engaged with a variety of sectoral ministries, including the: i) Ministry of Health, CSOs and Members of the Press; and ii) Ministry of Agriculture, Irrigation and Water Development. However, if more sectoral ministries participate in workshops and advisory creation, users would have access to a wider variety of information, including sector specific advisories. Furthermore, the PSP process in Malawi would benefit overall from the increased funding leveraged by the inclusion of different sectors and stakeholders.

[16] A few KII questionnaires revealed that these users not reached are typically in the rural and remote areas.
[17] As of 2015; Statistics: World Bank Dataset. Available at: data.worldbank.org [accessed 18.10.2016].

Further research

Impact assessment approach

This impact assessment used available information on the current impact and status of PSPs in Malawi, which was obtained from remote KIIs. On-the-ground users, such as farmers and community members, were not reachable during the interview process. Because of this, there is limited user feedback and information is largely restricted to expert opinions. Therefore, the benefit of PSP advisories to on-the-ground users remains largely uncertain. Furthermore, the impact assessment took place only three years after the first PSP workshops were held in Malawi and, as a result, there is little information available on the sustainability or scalability of PSPs in the country. To more accurately reflect the status and impact of PSPs in Malawi, further research should be conducted that directly investigates the community response to PSPs. The PSP process has been implemented well in Malawi, which highlights the success of the process overall and its replicability, however further research and data analyses are required to effectively determine the scalability of the process in the country. Continuous monitoring of PSP performance and impact should be integrated into the process to enable adaptive management of the process and inform future iteration of PSPs. In addition, investigations should be made into the impacts of PSPs and advisories on user livelihoods[18] by establishing key indicators for the uptake and adoption of advisories.

Conclusions

Smallholder agriculture is an important livelihood activity for most of Malawi's population. However, agricultural livelihoods are particularly vulnerable to the impacts of climate change and climate variability. The PSP process is a participatory approach to improving CIS by facilitating collaboration between community members and technical experts. In workshops, these stakeholders interpret seasonal climate forecasts and co-create locally-appropriate advisories for adapting agricultural activities. The process follows CBA approaches to enhance the benefits of existing CIS by making the interpretation of climate information a fully participatory process. In Malawi, PSPs are gradually gaining in popularity and have shown themselves to be a useful addition to existing CIS. However, despite their success, PSPs are not yet fully integrated into the Malawian Government's policies and processes. Furthermore, challenges with the communication of advisories as well as monitoring and evaluation need to be resolved to ensure the effectiveness and sustainability of PSPs. Mainstreaming the PSP process into national government policies, plans and budgets will ensure that a central CIS platform exists to provide direction for PSPs in the country. This will promote the sustainability of PSPs and ensure the continued provision of locally-appropriate climate information, thereby strengthening the adaptive capacity of Malawian communities.

[18] These investigations should include *inter alia* observed increases in average yield amounts as well as a reduction of impacts felt by communities from floods.

The Adaptation Learning Program (ALP) for Africa aims to increase the capacity of vulnerable households in sub-Saharan Africa to adapt to climate change and climate variability. Since 2010, ALP has been working with communities, government institutions and civil society organisations in Ghana, Kenya, Mozambique and Niger to ensure that community-based adaptation approaches and actions are integrated in development policies and programmes. This is achieved through the demonstration and dissemination of innovative approaches for CBA, supported by practical tools, methodologies and evidence of impact. ALP is also working to create an enabling environment for CBA by working with civil society groups to influence national and international policy frameworks and financing mechanisms for adaptation.

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