UNIVERSITY of GREENWICH
NRI | Natural Resources Institute

European Commission

UNIVERSITY OF MALAWI

LEARNING BRIEF

FARMER FIELD SCHOOLS TO STRENGTHEN COMMUNITY RESILIENCE TO CLIMATE CHANGE

LESSONS FROM A STRENGTHENING CLIMATE RESILIENCE PROJECT, SOUTHERN MALAWI

Valerie Nelson, Richard Lamboll, and Miriam Joshua, February 2020

KEY LESSONS

- Farmer Field Schools can be an effective means of supporting farmer learning, as part of an integrated, asset diversification and building approach, but the magnitude of benefits is variable. Such an approach clearly builds farmer capacity and it can also stimulate practice changes and farmer benefits, but the realization of these depends on access to sufficient resources. Scaling processes to date tend to have been limited to close neighbours and kin, partly because of the negativity from wider community members, but more time is needed for scaling to occur. More visible impacts are likely to be important in winning over larger numbers of community members, but this can be difficult in contexts of repeated climate shocks.
- Conceived with a focus on farmer experiential learning, various factors have drawn the project back into a technology 'adoption' paradigm; this over-simplifies how farmers encounter, are disposed and respond to new technologies and methods and underplays the need for more tailored or flexible approaches, which would facilitate visioning and planning of whole farms, diets and livelihoods systems.
- Adaptive capacity was most strongly enhanced through crop diversification and soil and water management methods.
- Participation and the realization of benefits is mediated by gender relations; women frequently have fewer resources to apply new skills and knowledge through adaptation and experimentation. More investment is needed in initial gender action and learning.
- Appropriate policies, investments and measurement of success are needed for effective Farmer Field Schools which encourage asset diversification and building for climate resilience. This implies re-visiting a wide range of topics including: government policy on maize seed and inorganic fertilizer subsidies, good agricultural practice guidance manuals and performance criteria for appraisal of extension workers.

INTRODUCTION

This briefing presents lessons from an evaluation study (funded by the EC[1]) on Farmer Field School approaches, as implemented by the Food and Agriculture Organisation (FAO) within an integrated climate resilience-strengthening project in Malawi. The study offers insights on whether, how and why Farmer Field Schools succeed and how the approach can be improved to inform project implementers, donors and the wider resilience and agriculture community of practice.

Learning plot.

The Strengthening Climate Resilience (SCR) project (2016 – 2021) seeks to strengthen community and institutional climate resilience in four districts (Blantyre, Neno, Phalombe and Zomba) in Southern Malawi. The project works through the formation of and support for Farmer Field Schools, as part of an integrated asset-diversification and building approach, with technical, social and financial interventions linked in a mutually reinforcing manner – see Box 1. Supported interventions include cropping and livestock, nutrition, natural resources and biodiversity conservation, and sustainable livelihoods. The initial project conception was of Farmer Field School group formation, followed by participatory Farmer Field School planning by the groups, leading to three phases of benefits for farmers and communities: i) foundational knowledge and skills; ii) productivity increases and income rises; iii) accelerated asset accumulation and diversification.

BOX 1: The FAO's Caisses de résilience (CdR)[2] approach revolves around farming and pastoralist communities (women and men), connecting and integrating productive, financial and social activities. The approach addresses the accumulation and diversification of assets and knowledge as critical elements of resilience.

METHODOLOGY

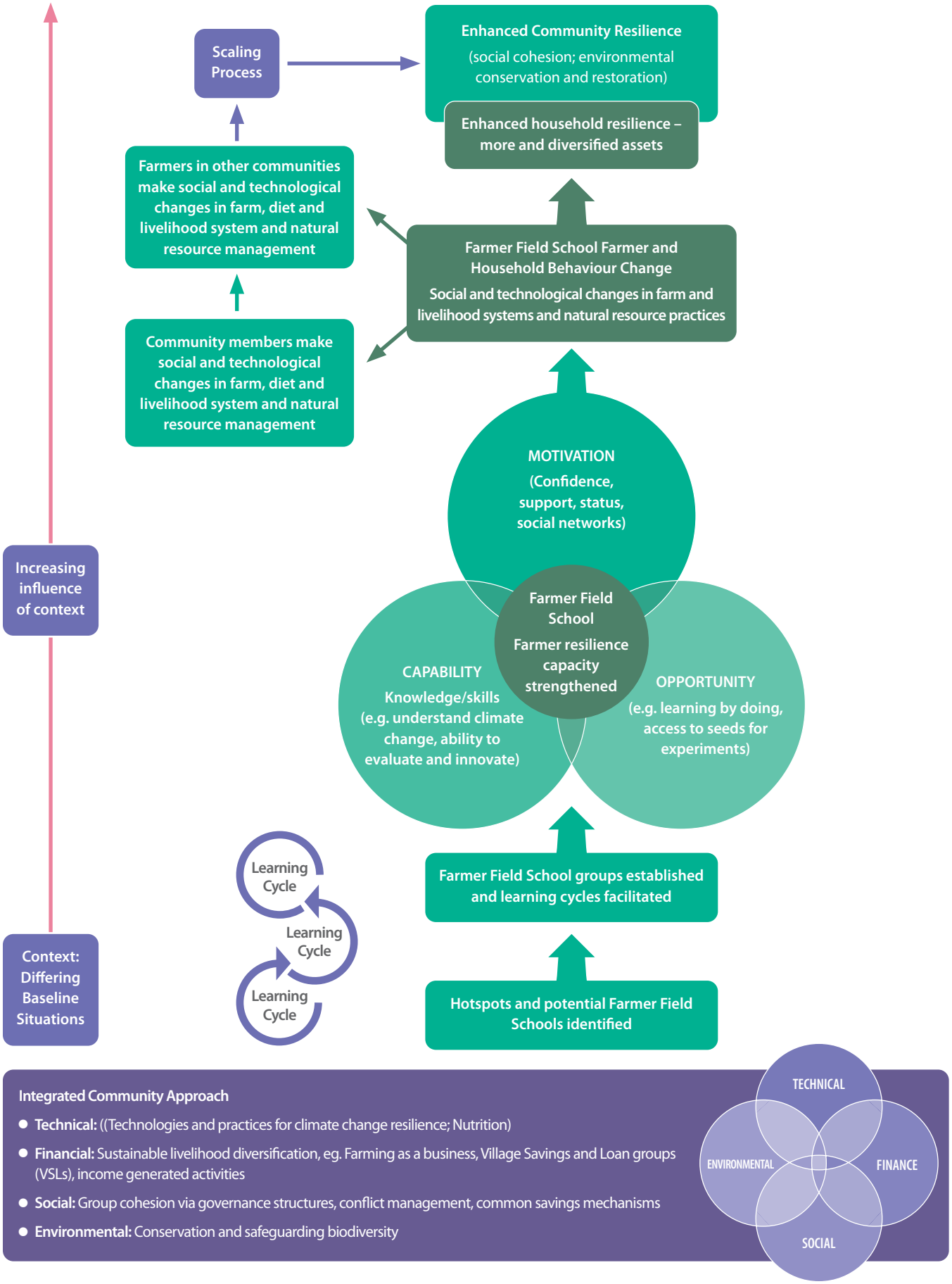
The study objectives are to explore: i) if and how Farmer Field The study objectives were to explore: i) if and how Farmer Field School processes are effective and what is their impact, and for whom, in strengthening community resilience? ii) what lessons can be learned about how to improve Farmer Field Schools for strengthening climate resilience? Using theory-based evaluation, a Theory of Change (ToC) was developed with project staff, focused on Farmer Field Schools (Figure 1) within the broader asset building and diversification approach. Project implementation and targeting are anticipated to lead to (mutually reinforcing) capacity and practice changes, which in turn lead to benefits and impacts for participating farmers, as well as scaling in their wider community and beyond.

Diversified dimba cropping, Phalombe.

The evaluative learning team gathered evidence to test the theory of change and its associated assumptions. Four Farmer Field Schools were selected from the initial 174 groups formed in the first project phase, using specific criteria. Key methods included: Focus Group Discussions, individual Household Case Studies including periodic learning plot observations and visits to homes and fields. Video was also used to document and share lessons with participating farmers and project stakeholders. Additional data has been collected by the FAO in an endline survey, including on outcome indicators selected by our team. A stakeholder validation workshop was held with farmers, extension staff and FAO in Blantyre (October 2019).

1. EC's Global Climate Change Alliance Programme
2. http://www.fao.org/3/a-i5869e.pdf

Figure 1: Farmer Field Schools in a 'Caisses de Resilience' Approach Theory of Change



KEY LESSONS ON FARMER FIELD SCHOOL EFFECTIVENESS AND IMPACT

Implementation

Well-functioning Farmer Field Schools are key. Participation from smallholder farmers has been good; three of the four case study Farmer Field Schools have good functionality, as characterized by good social cohesion, facilitative leadership, clear rules, a collaborative ethos. Quick wins may also be important, such as investment in seepage wells or goat pass-on schemes, to build belief in the process.

The quality of external support in facilitating farmer learning is critically important. The underlying FAO concepts and principles pertaining to Farmer Field Schools anticipate a farmer learning-based-on-experience process. However, during implementation, the FAO project has at times been drawn back into a more traditional 'technology transfer approach'.

'Traditional technology transfer' approaches are ineffective in improving farmer livelihoods and climate resilience. Smallholder farmers in Malawi, and elsewhere in Sub-Saharan Africa, are managing household farm systems which are complex and uncertain, unlike monocultural farming systems. They often lack access to necessary resources as well. Such farmers have always had to make difficult decisions between the options open to them, e.g. choices about which combinations of crops to grow and livestock to keep, what food to eat and how to earn income. Investing more in one aspect of their farm or activity, may mean less investment in something else – in other words, there is a trade-off in the livelihood (and environmental) outcomes. Increasing climate variability and other rural stresses, such as land scarcity, are making the daily trade-off decisions that farmers have to make ever more difficult.

"This is a learning plot for my household" (e.g. rice, cocoyam)

In this context, a technology transfer approach has proven to be unsuccessful in supporting farmers to achieve better and more resilient livelihoods because blanket prescriptions are insufficiently tailored to their contexts and not flexible enough to allow for experimentation. In reality, when farmers encounter a new technology or practice, they do not make a simple yes/no decision, they may reconfigure it (testing it in one corner of one plot, or adapting it, or combining it differently with other practices etc). Measures of uptake of individual technologies and methods thus gives a false view of what is happening in the farmer's decision-making and fields and helps explain why success has been so elusive despite investment in agricultural extension.

Recognizing the nuanced reality of how farmer practice change happens and taking into account the tradeoffs and opportunities across a household farm system is fundamental to the future success of African agricultural extension services. This means key stakeholders need to fully understand and support farmer-centred learning approaches to agricultural extension and seeking to make these work better and quickly for resource-poor farmers.

Root causes of the constant draw back to 'technology transfer' and the adoption paradigm affecting this (and other) projects are diverse: government assessment of extension staff performance based on adoption targets, project targets also focused upon adoption of practices and technologies, the capacity of some individuals in implementing organisations, and the quality of the training needed for government and NGO Farmer Field School facilitators, and for community-based facilitators.

Three of the four case study Farmer Field Schools were quite well aligned with several of the guiding FAO principles for Farmer Field Schools: The field is the learning place; hands-on and discovery-based learning; Agro-ecosystem analysis (AESA) on the learning plots; comparative experiments; equitable rather than hierarchical leadership; team building; facilitation not teaching (although the latter to a limited extent). All the Farmer Field School groups were able to manage their main learning plots for at least two seasons and the design of the learning plots generally improved over time.

The Farmer Field School process aligned less well in terms of the following indicators: farmers are clearly regarded as experts in their own context; members have influence on defining the curriculum or identifying special topics, participatory monitoring and evaluation taking place. **The SCR project has supported 'inclusive' Farmer Field Schools, with mixed wealth and gender participation, which is valuable from an equity perspective, but also presents specific challenges.** It is positive that the FAO

project has striven to facilitate the participation of "This is a learning plot for my household" (e.g. rice, cocoyam) women and poorer households, given that some other Farmer Field.

School projects only engage with better off farmers. Other agricultural extension approaches work with lead farmers who tend to have relatively better access to resources. Overall, both women and men are highly positive about the Farmer Field School process, but an important reason why some members are less positive is that they had higher initial expectations regarding provision of inputs.

Resilient crop diversification: Buffalo beans.

A few examples emerged of clear synergies between the productive, financial, social and environmental aspects of the project at a household level. The SCR project anticipates building community resilience mainly through the Farmer Field School approach, working on productive, financial, social and environmental aspects simultaneously to diversify and increase farmers' assets. In practice, there are some examples of such integrated change happening in farming households, but to some extent the implementation of the project has treated the individual interventions separately. **A more integrated approach would involve the Farmer Field School group in planning holistically themselves, being supported to view their farming, livelihood and communities as systems.** Also, differing levels of emphasis were placed on different types of interventions and it is clear that such a multi-pronged approach is quite demanding because this approach requires diverse sets of skills, knowledge and project management flexibility on the part of implementing partners.

Capacity change

The assessment shows strong, positive outcomes in capacity strengthening of Farmer Field School participants. Capacity change may be considered not only in terms of strengthening capability, but also improving motivation and opportunities. Farmer capacity has been strengthened across all four Farmer Field School cases. Overall, capacity strengthening has been strongest in two of the four Farmer Field School cases (NthunduPhalombe and Kapako Zomba), followed by Nan'gomba-Blantyre in which fairly strong change has occurred for some farmers. **Overall, capacity strengthening has been strongest on agronomic cropping practices and crop diversification,** with more women gaining nutrition-related information and skills. Capacity strengthening on livestock management, water management, and forest and seed conservation has been less consistent.

The opportunity to 'learn by doing' has been provided by the Farmer Field School process, although at times the design of the learning plots could be improved to enable farmers to make more robust comparisons and evaluate the outcomes.

Provision of key inputs has been important to those who have received them. For some, the inputs have provided new farming and livelihood opportunities, but the process of distribution is challenging. The issue of dependency remains in some groups.

Sustainable intensive dimba cultivation, Phalombe.

Multiple shocks undermine farmers' capacity to learn, experiment and adapt. While the whole objective of this project is to support farmer learning and experimentation in a context of increasing climate variability and other rural stressors to build climate resilience, there are also limits to how far individual households and learning groups can work under challenging climatic conditions, especially when combined with other shocks (e.g. the children of a poor household becoming sick, requiring

mother to attend hospital for several weeks or months). Farmers have also learned, the importance of crop diversification – in a dry spell, many still managed to 'harvest something' and this has reinforced the lesson.

Motivation is generally high amongst participating farmers. There were also cases of participants dropping out, including quite a significant decline in the Neno Farmer Field School during the case study period. The reasons given by remaining participants and by the (limited) drop-outs interviewed are highly variable. They included people leaving the village for economic or social reasons, distance to be travelled to the Farmer Field School learning plot, tensions within the group, as well as expectations not being met.

Farmer explaining her learning and change, which was recorded on video and used as a tool for group to reflect on their climate resilience.

Strengthening resilience capacity in the light of increasing climate variability has improved, but there are clear differences between and within the Farmer Field School case studies in the extent of capacity strengthening achieved. Crop diversification has been the most significant change to respond to prolonged dry spells amongst Farmer Field School participants. There was positive feedback on the early maturing hybrid maize, but access to hybrid seeds is a challenge, which should be addressed in the context of improving both formal and informal seed systems.

Soil and water management practices can ameliorate the impacts of dry conditions on maize, but it is highly vulnerable to moisture stress. Irrigation is needed for prolonged dry spells or a shift to different, less vulnerable, staples. Some soil and water management practices (e.g. increasing soil organic matter through incorporating manure) can help to maintain yields under heavy rains and waterlogged soil conditions as well as dry spells, but other technologies such as box ridges are more specific to particular weather conditions.

Dimba cultivation and irrigation farming, where the wetland or water resources are available, has significantly strengthened farmers' capacity to respond to dry conditions. However, endowments vary in terms of access to water for irrigation, both within and between communities. The longer-term sustainability of intensified irrigated cropping by accumulating numbers of smallholders needs to be assessed.

Livelihood diversification is an important way of strengthening climate resilience. Many farmers are still reliant on coping mechanisms such as casual labouring under conditions of shocks, such as dry spells and floods, although this is slightly less common among better-off households who have more capacity to experiment and adapt.

Increased awareness of climate change, access to short term weather forecasts and having a positive outlook, were said by some farmers to be important aspects of climate preparedness. However, it is only recently that FAO has begun providing seasonal forecast climate information to farmers and there does not appear to have been exploration of longer-term projections within the project, among implementing partners, researchers and farmers.

Farmers have identified market development activities as a priority.

Farmer Field School member explaining their idea of using extract from a local shrub for a Fall Army Worm control experiment.

Behaviour change

The clearest behavioural changes by participating farmers have occurred with respect to crop diversification and agronomic practices. Changes in soil and water management practices are also quite widely reported, although the processes observed are less simple adoption, and more nuanced types of response by farmers.

One of the more systemic changes is more intensive, sustainable and continuous dimba cropping found in the Phalombe and Blantyre Farmer Field School case studies. Some livestock practice changes have occurred, but to quite a limited extent in terms of numbers of households, but those households who have benefitted, rate the change highly.

A majority of Farmer Field School members reported changes in practices relating to nutrition and health in terms of the way they prepare food and the diversity of their diet, but practice change is somewhat limited in extent. Positive feedback was given on new food preparation techniques by many of those interviewed. Although it was not possible to measure dietary changes, a limited number of participating farmers reported that other asset gains helped them to apply new nutrition knowledge in their food choices, but some poorer farmers could not afford the ingredients. Men were less involved than women in the nutrition training.

The majority of the farmers are now more strongly aware of the importance of conservation of natural resources and highly motivated to preserve and establish trees on their farms and around their homesteads. Many farmers reported efforts to conserve more trees in their fields and participated in natural tree regeneration initiatives in hotspots in some areas. Some have planted tree seedlings provided by the project, although dry spells meant that some of the seedlings did not survive. Again, environmental impact has not been measured.

Improvements in livelihood strategies were widely reported across all four case study groups, although the extent of changes varies.

Benefits and impacts for participating farmers

The project anticipated an accelerated accumulation of assets by participating households in the third year of the project. **By October 2019, participants reported the following changes in some specified assets**, resulting from Farmer Field School participation:

- Iron sheets for roofing, plastering and cement used in constructing members' houses had increased, but intense rainfall and storms weather had a negative impact on housing in 2019.
- Mobile phone ownership increased, partly as a result of Farmer Field School participation.
- More diverse sources of agricultural knowledge and acquiring agricultural knowledge through 'learning by doing'.
- Increased access to advice on agriculture from extension workers and fellow Farmer Field School members.
- Members are still primarily dependent on family labour for help with agricultural activities, which has implications for implementing labour intensive climate Smart Agriculture practices.
- Some improvement in access to and ability to manage water resources for farming is observed.
- Members' income remains directly or indirectly highly dependent on agriculture.
- Access to credit through VSLs appears to have increased markedly, but generally this is not invested in agriculture.
- Farmer Field Schools and project organisations are trusted by a majority of members, with a good proportion also indicating that the Farmer Field School is the group that they most trust.

Sweet potato and retaining 'natural' trees in Farmer Field School learning plot, Zomba.

Scaling and wider impact

Scaling and wider impact potential was found to have been limited, although sharing has occurred with close kin and neighbours. Farmers have taken some steps to share their new knowledge and skills with other farmers, but generally to a limited extent. Sharing is most common with and amongst close kin and neighbours. Some sharing is reported beyond the Farmer Field School community, but to a very limited degree in the Farmer Field School case studies covered. Barriers to sharing and uptake included negativity from other community members, which was reported especially by female farmers, or the fact that promoted technologies were inappropriate in heavy rains or required too much labour.

Concerning the 'adoption paradigm' and our findings that participating farmer decision-making process is not a simple 'yes/no' decision, the same is true for farmers not participating in a Farmer Field School group. They are unlikely to adopt technologies wholesale, but to adapt, test elements or combine differently, and many may reject them as they have not been through the learning process. This suggests **a different type of definition and associated thinking about 'scaling' is needed** and a focus on how to engage groups more widely in the community, rather than assuming 'copying' will occur.

ACKNOWLEDGEMENTS:

We would like to express our thanks to all the farmers participating in the FAO's Farmer Field Schools and to those who have shared their experiences with us over the past four years, despite the challenges they face in terms of dry spells and heavy rains affecting their livelihoods. Our thanks go to the FAO team (particularly James Okoth, Aubrey Sidik, Innocent Kaponya, Noella Kamwendo) who actively collaborated with the evaluative-learning team with a spirit of openness and commitment, and whose practice and insights inform the findings and lessons detailed here. Similarly, our thanks go to Jean Pierre Busogoro of the European Commission for his insightful and generous curation of this work.

Disclaimer

"This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of the authors, Valerie Nelson, Richard Lamboll, and Miriam Joshua, and can in no way be taken to reflect the views of the European Union."

Home gardening, Neno District.

Briefing prepared by: Valerie Nelson, Richard Lamboll, and Miriam Joshua, February 2020.

More information contact:
Valerie Nelson: **v.j.nelson@gre.ac.uk**
Richard Lamboll: **r.i.lamboll@gre.ac.uk**
Miriam Joshua: **madalitsojoshua@yahoo.com**
See **Main Evaluative Learning Report**

Production coordinator: Gillian Summers, Natural Resources Institute, University of Greenwich.
Art direction: Simon Pointer, GDA Creative Design.