Evidence-based Decision Making for Sustainable Development
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Abstract

This paper discusses the contribution of research-based evidence to effective policy and decision-making for sustainable development. It underlines to the importance of interactive relationships between decision-makers, researchers and other stakeholders in the policy process. The paper is based on the case-study of the research project entitled, "Adapting to Climate Change through Integrated Water and Nutrient Management for Increased Crop Yields," being implemented in Uganda by Sustainable Livelihoods International (SLINT)–Uganda in partnership with Makerere University and National Agriculture Research Organisation (NARO).

In Uganda, agricultural productivity is constrained, among other factors, by climatic changes. In turn this is significantly impacting on food security and sustainable development efforts. In recent years, a number of organizations and government institutions, including SLINT-Uganda and Makerere University, have initiated programmes to help farmers increase their capacities to cope with the impacts of climate change and to significantly reduce their vulnerabilities through informed climate change mitigation and adaptation policies and measures.

In the project, participatory research approaches including Farmer Field Schools (FFS), on-farm demonstrations, farmer field days, focus group discussions and social dimensions documentation aligned to the interactive model and enlightenment model have been used to produce empirical data to facilitate evidence-based policy and decision-making on climate change adaptation.

One of the key lessons learned so far is that participatory documentation of on-the-ground conditions and farmers' experiences provides a framework for effective policy development. The involvement of key stakeholders to analyse climate change challenges and practices that have a dramatic impact on their lives and sustainable development contributes to policy design and development. It is thus a foundation for evidence-based decision-making and policy-making because it fosters strong relationships with stakeholders throughout the entire process, including development of recommendations for policy and practice from the research results. When people are well-informed, they become active agents and advocates of change. Collecting of research evidence also requires diligent application of a wide array of tools, techniques and strategies. This would set a proper context for subsequent policy development. This case study offers a number of important lessons that can be replicated in other areas.

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Introduction

More than 55% of Uganda's population lives in poverty and over 80% depends exclusively on subsistence agriculture for its immediate livelihood needs and economic development (NAPA, 2007). In the struggle to meet their basic livelihoods needs, the rural poor exclusively depend on rain-fed agricultural productivity (NAPA, 2007). However productivity is low partly because it is constrained and affected by climatic changes that are characterized by irregular rainfall patterns frequent and severe droughts and floods among other factors. This is compromising the very livelihood security of many farmers and rural population who are feeling the impacts first and worst (Hughes et' al, 2008).

On the one hand there is more erratic rainfall in the March to June rainy season, bringing drought and reductions in crop yields and plant varieties; on the other hand the rainfall, especially in the later rains towards the end of the year, is reportedly more intense and destructive, bringing floods, landslides and soil erosion (Hughes et' al, 2008). Flooding leads to waterlogged fields or washing away of crops, while prolonged droughts and long dry spells cause seasonal soil moisture stress. Due to such erratic weather patterns, farmers are experiencing not only a change in planting calendars but also resulting reduced crop yields or even crop failures. Whereas the Ministry of Agriculture gives guidelines on when to plant, these are often very broad and hence of minimal benefit to many farmers. As a consequence, farmers have often experienced crop losses owing to untimely planting advice. According to the NAPA (2007), It is estimated that on average, 800,000 hectares of crops are destroyed annually by either droughts or floods, making the Uganda not only food insecure but also short of Uganda shillings 120billion in revenue loss. Indeed, agricultural yields in some of Uganda's districts have reduced by 30 per cent.This is not only impacting on livelihoods of the rural communities but also significantly impacting on food security, production; health and decreased standard of living. In turn this is also significantly impacting sustainable development efforts and threatening to frustrate poverty eradication efforts and the Millennium Development Goal programmes.

In recent years, a number of Non Governmental Organizations, Government aided organizations and government institutions in Uganda, including Environmental Alert, World Vision, OXFAM, CARE-International, Sustainable Livelihoods International (SLINT) Uganda, National Agriculture Research Organisation (NARO) and Makerere University, have initiated programmes to help farmers increase their capacities to cope with the impacts of climate change and to significantly reduce their vulnerabilities through informed climate change mitigation and adaptation policies and measures. These organisations promote and have adapted a number of approaches aimed at helping local people, policy and decision makers make well informed decisions about climate change policies, programmes and projects. Key among the approaches have included participatory research approaches and social dimensions documentation aligned to the interactive model and enlightenment model to produce empirical data used to facilitate evidence-based policy and decision-making on climate change adaptation.

Through such approaches, the best evidence from research has been put at the heart of policy development and implementation (Sutcliffe and Court, 2005). Such approaches have come to be known as Evidence Based Policy (EBP), defined as a set of methods which inform the processes by which policies are formulated, rather than aiming to affect the eventual goals of the policy. This paper discusses the contribution of research-based evidence to effective policy and decision-making for sustainable development. It reviews the experiences and lessons learned from the research project entitled, "Adapting to Climate Change through Integrated Water and Nutrient Management for Increased Crop Yields," that has been implemented in Uganda by SLINT–Uganda in partnership with Makerere University and NARO in Iganga and Lira districts in Uganda. The programme has been supported by USAID LEAD

Programme. The initiative has supported local farmers to increase commercial and household agricultural production and build professional capacity in adapting to climate change. Using the participatory research approaches and social dimensions documentation aligned to the interactive model and enlightenment model, the programme promoted coping mechanisms for farmers in the face of climate change. Overall, the programme underlines to the importance of interactive relationships between decision-makers, researchers, farmers and other stakeholders in the policy process.

Understanding the links between research and policy has been the subject of recent investigation in the development policy literature. There is now widespread evidence that various other social and institutional factors may intervene in the policy process and influence outcomes. Consequently, understanding the role of research in the policy formulation process requires a careful ethnographic assessment of existing policy networks, through which ideas are exchanged and decisions made.

Case study project

SLINT-Uganda through the "Adapting to Climate Change through Integrated Water and Nutrient Management for Increased Crop Yields," research project in partnership with Makerere University and NARO has since December 2009 supported and enabled local farmers to increase commercial and household agricultural production and build professional capacity in adapting to climate change. The project has been implemented in Iganga and Lira districts, which are prone to drought due to changes in rainfall patterns which have taken place over the years.

The project adopted an academic training and research oriented approach. Four graduate student researchers enrolled and trained at Master's level at Makerere University to build their capacity to conduct applied field research. The project has benefited more than 500 people including poor resource farmers, academicians, researchers, decision and policy makers, local and district officials.

Through this, the project has (i) developed simple decision support tools for determining the onset of the planting season, (ii) analysed the growth-enhancement potential of rhizobia through legume inoculation and proper crop rotations for increased yields, (iii) studied how local communities are coping with changes in climate and nutrient depletion and (iv) identified the factors that determine the adoption and maintenance of soil and water conservation technologies and increase water storage and utilization efficiency. Each student handled one objective of the project. At least more than 600 people have indirectly benefited including those who have participated in the training workshops, obtained copies of the awareness/training materials and/or interacted with student researchers, and academic supervisors and volunteers that have visited the project area.

The training and research has culminated in the development of optimum soil moisture conservation technologies for farmers to avert the effects of droughts. The ultimate impact of the project is improved livelihoods of farming communities in Uganda through soil health improvement, better incomes and food security. The gains made by the project are being sustained through farmer education using participatory approaches such as the Farmer Field Schools (FFS), on-farm demonstrations and farmer field days. SLINT–Uganda is working closely with collaborating organisations in disseminating their findings.

Interactive model and Enlightenment model

In order to help farmers increase their capacities to cope with the impacts of climate change and to significantly reduce their vulnerabilities through informed climate change mitigation and adaptation policies and measures, participatory research approaches including Farmer Field Schools (FFS), on-farm demonstrations, farmer field days, focus group discussions and social dimensions documentation aligned to the interactive model and enlightenment model have been used to produce empirical data to facilitate evidence-based policy and decision-making. The empirical data has been in the form of ideas, knowledge and research evidence.

Weiss in Ajayi and Kwaako (2006) contends that the impact of research findings occurs slowly, by shaping existing discourses and ideas, which influence the formulation of new policies. This is the enlightenment model. Enlightenment model is the indirect influence of research rather than the direct impact of particular findings in the policy process (Davies et' al, 2009). The model advocates a more rational, rigorous and systematic approach, and moves beyond traditional notions of research to adopt a broader understanding and incorporate evidence-based practices.
In the enlightenment model, research influences policy through overlapping policy networks, feeding into a dynamic process of information exchange and challenge. This is a much more fluid notion of the way knowledge accumulates and infiltrates thinking. Using the model, research is recognized as raising new ideas, shedding new light, using new techniques and concepts, suggesting new solutions and having a cumulative effect rather than an immediate and direct influence on public policy (Walt, 1994).

At the same time, Weiss (1979) in Davies (2009) notes that interactive model uses research as only one part of a complicated process that also uses experience, political insight, pressure, social technologies and judgement".p.30. The researchers are just one set of participants among many. The interactive approach allows the collaboration with and in open interaction between all relevant stakeholders in a policy formulation. Stakeholders are given the opportunity and are stimulated to participate in the definition of problems/ potential opportunities and related policy issues and are invited to propose possible solutions or lines of action in adapting to climate change through Integrated Water and Nutrient Management for Increased Crop Yields.

In implementing the project, we find it useful to adopt an interactive model and enlightenment model of the policy process. These models are appropriate as they stress the role of different stakeholders not only during the implementation phase and end of project sustainability but also in facilitating evidence-based policy and decision-making on climate change adaptation. Key interventions are further discussed below.

SLINT-Uganda Interventions

Below a presentation of some of the approaches that have been used in the project to produce evidence are presented.

Participatory Baseline studies and social dimensions documentation

Interactive baseline studies on social dimension documentation on climate change using focus group discussions (FGD) have been conducted. These aimed at generating information from a wider community about what has changed in attitude, behavior and appearance in farms of the farming communities with respect to climate change. The FGDs were used to generate insights into the changes that have taken place as a result of climate change as experienced and observed by the farming communities, and local people. They also helped to generate as much information as possible with enhanced efficiency and effectiveness to facilitate decisions on climate change adaptation in the project area. The different stakeholders including farmers, farmer groups, local and district officials and participating organisations among others have been given the opportunity and stimulated to participate in the definition of problems/ potential opportunities and related policy issues. They have also participated in proposing and finding possible solutions or lines of action to climate change challenges. The different target groups have also defined their potential roles in implementation of activities in relation such as the planting of multi-purpose and agroforestry trees and practicing various aspects of sustainable agriculture practices such as cover cropping, and use of fast maturing seed varieties.

From the demonstration above, it is thus eluded that research evidence facilitates decisions and foster s dialogue between researchers, bureaucrats, politicians and local people (Davies et' al, 2009). However, it also takes additional set of circumstances for research to influence policy decisions directly. Thus the project built farmers capacities as described below to further influence policy decisions directly.

Building the capacity of individuals and farmer groups

The programme has built and strengthened local awareness, skills and knowledge of project participants including farmers, local and district leaders, and organisations. This has been through conducting Farmer Field Schools (FFS), on-farm demonstrations and farmer field days and experiments including: (i) technical training in developing simple decision support tools for determining the onset of the planting season; (ii) training on the growth-enhancement potential of rhizobia through legume inoculation and proper crop rotations for increased yields, (iii) training on the various aspects of the adoption and maintenance of soil and water conservation technologies and increase water storage and utilization efficiency (iv) technical extension support and on-spot advice to farmers; (v) organization of field visits and farmer to farmer visits;

By January 2012, the project had set up 80 field experiments in Lira and Iganga districts and a series of field visits had been made to the two districts by the core research team, the Project coordinator, collaborators, academic supervisors and students. Through the building of farmers' capacity, the project has allowed for better situation analysis and quality decision making. This has been through a better understanding of priority issues farmers' face by linking the different sources of knowledge, information and expertise on climate change. Besides, policy networks and policy communities have been formed by enabling farmers interact. Davies et' al (2009) supports the view of involving the public in analysis. It enables the farmers, intellectuals, experts and politicians to interact in a form of 'collective reality testing', Davies et' al notes.

How the Project is facilitating evidence-based policy and decision-making

The project has produced tangible results which have generated excitement and enthusiasm among farmers, partners.

Policy communities created and Partnerships promoted

The project has enabled the creation of formal partnership between SLINT-Uganda, NARO, Makerere University, and informal relationships with agricultural officials, local leaders and farming communities among other stakeholders. Davies et' al (2009) notes of the concepts of policy networks and policy communities in policy making observing the role research utilization plays. The diverse nature of policy networks/communities shapes the way in which policy is made and implemented according to Davies et'al. Accordingly, because the project being implemented is dependent on farmers and other people facing similar climatic challenges, it has created a policy community. Through this, the project has been able to generate information/research evidence needed and passed on evidence because different stakeholders and beneficiaries have been collaborative. As a result, the project has used the network communities to discuss and promote advocacy on climate change as well shared this with communities. Through the project, farmers received a lot of technical advise and support, translated this through training opportunities, field extension advise, and; knowledge sharing for the farmers. This has improved the likelihood of success and sustainability of implementation through enhanced acceptance and ownership of the key decisions formulated.

Increased knowledge and practices on Climate change adaptation and resilience

Project participants have appreciated the realities of climate change. This has been through the various forums the project has organized including field experiments, FGDs and Farmer field days to create awareness and draw attention to climate change. So far farmers have learnt to synchronize planting dates in such a way that there is soil moisture during the most critical growth stages in rain-fed cropping systems. The farmers started planting and growing agroforestry and multi-purpose trees. The farmers have also learned and applied improved farming practices, including compositing, soil fertility management and integrated pest management.

These demonstrate that the project is incubating innovation, fostering good farming practices and scaling-up the adoption of appropriate farming practices. At least 200 farming households have diversified their crop production and have engaged, in the planting of fast maturing seeds. This has been possible through creating policy network communities as a result of involving farmers, experts, intellectuals, and politicians in different interactions as a form of 'collective reality testing and advocacy on the importance of knowing climate change. The increased knowledge has also supported improvement of the problem-solving capacities of the participating farmers and institutions.

Lessons learned

One of the key lessons learned so far is that participatory documentation of on-the-ground conditions and farmers' experiences provides a framework for effective policy development. The involvement of key stakeholders to analyse climate change challenges and practices that have a dramatic impact on their lives and sustainable development contributes to policy design and development. The project has led to the formation of both formal and informal policy networks and communities which has enabled the generation of exchange of information. This has been through the use of different participatory research approaches. As a result this has culminated into the foundation for evidence-based decision-making and policy-making because policy networks created through the interactive and enlightenment models fosters strong relationships with stakeholders throughout the entire process, including development of recommendations for policy and practice from the research results. This results into people being well informed. When people are well-informed, they become active agents and advocates of change. Collecting of research evidence using diligent application of a wide array of tools, techniques and strategies further sets a proper context for subsequent policy development because it attracts and enables groups of people get interests and knowledge in shaping policy. This case study has thus offered a number of important lessons that can be replicated in other areas.

Key challenges

In the implementation of the project it was found out that the application of the different tools in line with the enlightenment and interactive models required more time than other approaches to allow for understanding of climate change challenges and actions needed for adaptation.
The use of approaches and the models also requires proper preparation and planning of the interactive processes including communication throughout the process.

Conclusion

This paper has drawn attention to the contribution of research-based evidence to effective policy and decision-making for sustainable development. It underlines to the importance of interactive relationships between decision-makers, researchers and other stakeholders in the policy process. The

paper is based on the case-study of the research project entitled, "Adapting to Climate Change through Integrated Water and Nutrient Management for Increased Crop Yields," being implemented in Uganda by Sustainable Livelihoods International (SLINT)–Uganda in partnership with Makerere University and National Agriculture Research Organisation (NARO). It has discussed the, participatory research approaches including Farmer Field Schools (FFS), on-farm demonstrations, farmer field days, focus group discussions and social dimensions documentation aligned to the interactive model and enlightenment model that have been used to produce empirical data to facilitate evidence-based policy and decision-making on climate change adaptation. One of the key lessons learned so far is that participatory documentation of on-the-ground conditions and farmers' experiences using the approaches and models provides a framework for effective policy development.

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