



Hunger • Nutrition • Climate Justice • 2013

A New Dialogue : Putting People at the Heart of Global Development

15-16 April 2013 - Dublin, Ireland

Conference Papers



Photo: Neil Palmer (CIAT)





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Partners



Irish Aid

An Roinn Gnóthaí Eachtracha agus Trádála
Department of Foreign Affairs and Trade

Irish Aid is the Irish Government's programme for overseas development. The programme is managed by the Department of Foreign Affairs and Trade. The aim of Ireland's aid programme is to reduce poverty and hunger, particularly in sub-Saharan Africa where the needs are greatest. By supporting long term development and providing humanitarian assistance in over eighty countries, on behalf of the Irish people, Irish Aid works with, and contributes towards, building better futures for some of the world's poorest communities. Hunger Nutrition and climate change are key areas of focus within Irish Aid's work.



Mary Robinson Foundation Climate Justice

The Mary Robinson Foundation - Climate Justice (MRFCJ) is a centre for thought leadership, education and advocacy on the struggle to secure global justice for those people vulnerable to the impacts of climate change who are usually forgotten – the poor, the disempowered and the marginalised across the world. It is a platform for solidarity, partnership and shared engagement for all who care about global justice, whether as individuals and communities suffering injustice or as advocates for fairness in resource-rich societies. MRFCJ provides a space for facilitating action on climate justice to empower the poorest people and countries in their efforts to achieve sustainable and people-centred development.



Uachtaránacht na hÉireann ar
Chomhairle an Aontais Eorpaigh
Irish Presidency of the Council
of the European Union
eu2013.ie

The Presidency of the Council of the EU rotates among the 27 Member States every six months. Ireland holds the Presidency for the 7th time from January to June 2013. The presiding Member State advances the Union's ongoing work agenda, and has an opportunity to shape and influence EU policy and legislation. The Presidency also represents the Council in its dealings with other EU Institutions.



The World Food Programme (WFP) is the United Nations frontline agency in the fight against global hunger and food insecurity, reaching on average 90 million people in 70 countries every year. Its mission and mandate is to save lives in emergencies, protect and rebuild livelihoods in post-conflict situations, address acute and chronic hunger, and build capacities to prevent and tackle the long-term causes of hunger and food insecurity.



The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of the CGIAR and Future Earth. CGIAR is a global research partnership for a food secure future. The views expressed in this document cannot be taken to reflect the official opinions of CGIAR or Future Earth.

Sponsoring partner



The Children's Investment Fund Foundation (CIFF) is an independent, non-profit, philanthropic organisation formally linked to an investment fund which funded the foundation through management fees and profits. Founded in 2003, CIFF aims to demonstrably improve the lives of children living in poverty in developing countries through high-impact, large-scale and sustainable interventions. CIFF invests primarily in sub-Saharan Africa and India around a highly focused portfolio of programmes, targeting explicit intervention areas where the foundation assesses it can deliver high return for children.



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*A New Dialogue : Putting People
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Welcome from Mary Robinson and Tánaiste Eamon Gilmore

On behalf of the Government of Ireland and the Mary Robinson Foundation-Climate Justice, we have great pleasure in co-hosting the Dublin Conference, Hunger - Nutrition - Climate Justice 2013: A New Dialogue: Putting People at the Heart of Global Development. We are delighted to welcome you to Dublin.

This conference promises to be different.

In a ground-breaking approach, the conference will place key leaders in global development side-by-side with the people living on the frontlines of climate change and food and nutrition insecurity.

Over the next two days we will discuss and debate the linked challenges of hunger, nutrition and climate justice. We want to encourage and inspire innovative thinking and solutions. As political leaders and policymakers we want to listen, learn and lead.

The Government and people of Ireland have a long and proud commitment to supporting the most vulnerable communities in our world to tackle hunger. Global development is central to Ireland's foreign policy. Through the Irish Aid programme we are working hard hand in hand with partner governments, multilateral institutions and civil society to empower local communities to build a better future. We do this because it is right, because it is in keeping with the values and the experiences of the Irish people. As a small country in an increasingly

interconnected world, we understand how important it is to forge alliances and break through barriers to effect positive change.

We are pleased to hold this event during Ireland's Presidency of the European Union. Addressing the links between hunger, nutrition and climate change is a key development objective of Ireland's EU Presidency. This conference is a practical expression of our desire to ensure that EU and international policy is formulated in the real world and that it takes account of the challenges, hopes and experiences of communities experiencing the harsh reality of feeding their families adequately in an uncertain and changing climate.

Since its inception in 2010, one of the core goals of the Mary Robinson Foundation - Climate Justice (MRFCJ) has been to inform the global community of the dual imperatives of addressing climate change and achieving sustainability in the global food system.

At the heart of MRFCJ is a determination to give a voice to the people usually forgotten - the poor, disempowered and marginalised who suffer most from climate change. It is this principle that has guided the co-hosts in their organisation of the event.

The Dublin Conference, Hunger - Nutrition - Climate Justice 2013, takes place at a critical juncture in global development. With the international community reviewing progress on

the Millennium Development Goals - two years before the target date for their achievement - policy discussions are also beginning on the Sustainable Development Goals and the post-2015 framework for international development.

By affording local practitioners, farmers' organisation representatives and vulnerable households the opportunity to tell their stories to key international policymakers, the conference will take an important step in enabling these voices to influence new international development strategies; while also ensuring that the linkages between hunger, nutrition and climate justice are reflected in future policy decisions.

In organising this event, we wish to recognise the significant support we have received from our two conference partners, the World Food Programme (WFP) and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Both organisations have been invaluable in their engagement and

contributions throughout the process of bringing this conference to fruition.

The Children's Investment Fund Foundation (CIFF), has provided crucial support to enable 100 people living with the effects of climate change in developing countries to come to the conference and describe the impact unpredictable weather patterns have had on their crops and local food prices.

The International Institute for Environment and Development (IIED) has played a key role in helping to facilitate the event by preparing participants from developing countries.

Finally, we wish to acknowledge the crucial role played by speakers and contributors, who have come from all corners of the world to provide their insights into hunger, nutrition and climate justice. It is hoped their discussions will lead to important steps towards building global development solutions that will protect the poorest and most vulnerable.

Eamon Gilmore, T.D

Tánaiste and Minister for
Foreign Affairs and Trade

Mary Robinson

President, Mary Robinson
Foundation - Climate Justice



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A new dialogue: putting people at the heart of global development

This conference is opening a new dialogue and debate on the linked challenges of hunger, nutrition and climate justice. It is encouraging and inspiring innovative thinking and solutions, bringing together policymakers and global thought leaders with local people and practitioners who face the realities of rising food prices, failed crops, under-nutrition, increasingly erratic weather patterns and voicelessness. In this way, the conference is emphasising the voices of those most affected by climate change in developing countries. Approximately 100 developing country delegates are bringing their community's experiences to share with a further 200 political representatives, policy makers, and delegates from civil society, business, advocacy groups and research institutions.

But the conference will not simply adopt an outcome document. We hope to inspire new ways of thinking about global development challenges and to invigorate and broaden the debate, at all levels.

Our objective is to facilitate a respectful discussion and learn from practical local experience and robust evidence, so as to inform a new approach for the post-2015 development agenda that responds to people's lives and supports their strategies for coping with hunger, nutrition and climate injustice.

Connecting with the post-2015 development agenda

We welcome you to Dublin during the six month Irish Presidency of the EU, and in the year that the international community is reviewing progress on the Millennium Development Goals, two years before their target date for

achievement. Policy discussions have also begun on the post-2015 development agenda.

It is essential that these policy processes be firmly rooted in the reality of people's lives and in objective evidence of what has worked and what has not. There has been significant progress on many of the development goals, with improvements in education, healthcare and other basic services across the developing world. But 870 million people still suffer from hunger, most of them women and children. Under-nutrition among mothers and children is the underlying cause of 2.5 million deaths every year. In developing countries, nearly one third of children under five are stunted and will never reach their full cognitive and physical potential.

The conference is planned to complement, and add value to, other international events and processes on these important issues. The organising partners hope that the key messages that emerge from this unique dialogue will help the drive to achieve the Millennium Development Goals and will influence the post 2015 development agenda.

Hunger, nutrition and climate justice

We have made progress towards the Millennium Development Goals in key areas such as poverty reduction and enrolment of girls in schools, but we are falling short of the mark for child mortality, the causes of which are exacerbated by malnutrition. Despite huge effort at all levels from global to household, hunger remains a 21st century reality for hundreds of millions of people. This is because malnutrition – like climate change – is a complex issue with

no easy definition of the problems or the solutions, many interacting factors at play, and one that engenders widely divergent attitudes and opinions across society. This conference focuses on the themes of hunger, nutrition and climate justice to identify new approaches and solutions to these linked challenges.

Hunger, nutrition and climate justice are development challenges that cannot be effectively addressed without explicitly dealing with their inter-connectedness. Today, one person in eight does not have access to adequate nutritious food, making hunger and under-nutrition the number one risk to human health and development. With the world's population set to reach nine billion by 2050, global food production would have to increase by 60 per cent to meet projected demand if current patterns and levels of consumption in the 'rich' parts of the world continue and expand, and if food wastage at farm and household level is not addressed. Climate change adds a new dimension to this challenge by altering growing seasons and rainfall patterns as well as increasing the frequency of extreme events such as droughts and floods. The case studies prepared for the conference give practical examples of how hunger, nutrition and climate justice are linked from the perspective of households and communities.

Climate change impacts on food and nutritional security are exacerbating existing vulnerabilities and inequalities in resource access, especially for women who are primarily responsible for food production and for feeding families. This is unjust, because those who have done least to cause climate change will suffer disproportionately from its effects. Climate change is undermining the rights of vulnerable and marginalised people, including their right to food, to health, to water and to life itself.

It is estimated that climate change causes an average of 400,000 deaths each year,¹ mainly due to hunger and communicable diseases that particularly affect children in developing countries. It is generally the poorest and most food-insecure people living in marginal and fragile environments who have the least ability to manage increasing climate-related risks. When climate-related disasters occur, they often devastate livelihoods and assets, leaving long-term consequences. Climate justice seeks to highlight and remedy these impacts through a rights-based and human-centred approach. It aims to safeguard the rights of the most vulnerable and share the burdens and benefits of climate change and actions to resolve it equitably and fairly.

The post-2015 development agenda must adopt a more holistic agenda that acknowledges the interlinkages between hunger, nutrition and climate justice. It should strive to support and establish new integrated approaches to include, for example, universal human rights, more workable systems of global governance, fairer regimes for taxes and trade, and provisions for both social protection and environmental wellbeing. The post-2015 agenda will only be relevant and useful if it is developed through an inclusive and bottom-up approach. The conference represents a unique opportunity to contribute to this approach.

Introducing the lenses...

The conference is exploring the links between hunger, nutrition and climate justice using six 'lenses' to focus discussions and help identify key messages. These lenses are:

- Risk
- Rights
- Empowerment
- Knowledge
- Joined-up approaches
- Local to national

This conference publication includes thematic papers on each of these lenses, followed by linked case studies that illustrate the interconnected causes and the integrated nature of potential solutions to development challenges.

Why risk?

Hunger and under-nutrition remain the number one risk and obstacle to human health and progressive development, and climate change acts as a hunger risk multiplier, effectively exacerbating many of hunger's causes. These increasing risks are exceeding local management capacities. Poor people often have a wealth of knowledge about coping in adverse conditions, but they generally also have the least access to formal or even informal support. So despite local knowledge, rising risks bring increasing immediate and long-term impacts. For example, large-scale disasters interrupt market access, reduce crop production and income, deplete savings, and force poor people to sell their livestock, to pull their children out of school and to eat less nutritious food. Better support

for managing these risks should be at the heart of development actions to provide food and nutrition security and climate justice.

Why rights?

Climate change is undermining a range of human rights, with disproportionate impacts on the lives and livelihoods of those who have contributed least to the problem and are most vulnerable to its effects. Climate change acts as a multiplier compounding food and nutrition insecurity and making it even harder for poor households to secure their rights. Rights-based approaches focus on all people achieving at least the minimum conditions for living with dignity, through the realisation of their human rights.

Why empowerment?

Empowerment helps people tackle hunger, malnutrition and climate injustice by ensuring they are better able to access the productive resources (such as land, water, infrastructure and credit) they need, and can participate in the decision-making processes that affect their lives. For people to become politically empowered they need an enabling environment in which they can influence policy, make demands and hold the state to account. This means bringing people into formal political processes through both representative institutions as well as through participatory governance. Equally important is building people's capabilities to engage in and influence such processes. Making political processes accountable and participative, and improving the ability of poor and marginalised groups of people to influence them, is a key principle of climate justice and is crucial in reducing vulnerability to hunger, under-nutrition, and climate change.

Why knowledge?

Within the next century, climate change will change many natural habitats and farming systems beyond all previous human experience. The scale of change will surpass the limits of local knowledge. Scientific tools, such as techniques for forecasting, scenario building and modelling, will be increasingly important as knowledge bases for planning and action

that works in tandem with local observations and judgements. Special attention needs to be paid to 'whose knowledge counts': making sure that science works with local knowledge rather than overriding it, and that farmers and poor families who are most affected by climate change are able to access knowledge, shape how knowledge is developed, and be involved as decision makers when knowledge is used to change the future.

Why joined-up approaches?

The underlying rationale for joined-up action is that no one level, sector or stakeholder group alone can identify and implement sustainable solutions to complex societal challenges such as hunger and climate change. Joined-up approaches are a prerequisite for post-2015 sustainable development across sectors, as they can be used to assess trade-offs between different development trajectories, policies and investments under different scenarios of climate change, population dynamics and environmental impact. For example a joined-up approach in formulating a new or revised sustainable development goal on food, nutrition and agriculture could help address the interrelationships between agricultural and food systems and climate change, water, biodiversity, natural resources management, and production of fibre and fuel.

Why local to national?

A local to national approach to policymaking can address an underlying cause of development challenges like food and nutritional insecurity and climate injustice – namely that local voices are rarely heard. By transforming development planning towards a more demand-led agenda, local people are better able to express the challenges they face from increasing climate variability, and their priorities for managing these impacts. Targeting resources locally, where the most severe climate impacts are felt, is one way to put the concept of 'climate justice' into action. The stronger their voices, the more likely it becomes that climate-vulnerable people can stake a successful claim on the resources they need for effective adaptation.

Notes

■ ¹ DARA. 2012. *2nd Climate Vulnerability Monitor: A Guide to the Cold Calculus of a Hot Planet*. DARA, Madrid. ■ Conference papers, social media and webcasting of the event are available on Ireland's EU Presidency website, www.eu2013.ie



The post-2015 development framework – a timetable for moving beyond the Millennium Development Goals

In 2000, the international community adopted the Millennium Declaration and committed to achieving the Millennium Development Goals (MDGs) by 2015. The declaration and the related goals have been adopted by all 189 states that were UN members in 2000, and have since informed development policies around the world. There are eight MDGs, each with specific targets and indicators including: to reduce poverty, eliminate hunger, improve human development in crucial areas including education, health, gender equality and women's empowerment and to strengthen environmental sustainability and the global partnership for development.

Although the current focus remains on ensuring MDGs are achieved by 2015, the international community has also started to consider what the next global development framework, beyond 2015, should look like. There is a growing consensus on the need for a different framework that addresses the new and emerging challenges facing the world.

UN Member States have called for open, inclusive consultations involving civil society, the private sector, academia and research institutions from all regions, in addition to the UN system, to ensure such a framework is developed inclusively.

Several ongoing processes are supporting this work:

1. The UN Secretary-General appointed a **High-level Panel** on the Post-2015 Development Agenda. The panel is co-chaired by President Susilo Bambang Yudhoyono of Indonesia, President Ellen Johnson Sirleaf of Liberia and

Prime Minister David Cameron of the United Kingdom and it includes leaders from civil society, private sector and government. The panel has been tasked with preparing a report on the vision and shape of a post-2015 development agenda that will help respond to the global challenges of the 21st century, building on the MDGs and with a view to ending poverty. The panel has met in London, Monrovia and Bali to discuss the central themes of: individual household poverty; national building blocks for sustained prosperity; and global partnerships. Communiqués from these meetings are available online at www.post2015hlp.org/media.

2. The Rio+20 Conference on Sustainable Development, held in June 2012, called for Sustainable Development Goals (SDGs) to cover three dimensions of development: economic, social and environmental. The outcome of the conference mandated the creation of an **Open Working Group**, tasked with submitting a report to the UN General Assembly during its 68th Session (no later than September 2014) that **proposes sustainable development goals** for consideration and appropriate action. These goals should be "action-oriented, concise and easy to communicate, limited in number, aspirational, global in nature and universally applicable to all countries".

3. The UN General Assembly has mandated a **Special Event to review the MDGs**, which will be held in September 2013. The event will review progress to date, assess lessons learned and provide guidance to help accelerate achievement of the MDGs between 2013 and 2015. The event will also provide important input to help elaborate the new post-2015 global development framework.

4. The United Nations development system is leading a large number of consultations including **11 thematic global consultations** and a large number of national consultations to gain the views of citizens across the globe. The UN is also supporting consultations with citizens via social media and web-platforms. The website www.worldwewant2015.org provides comprehensive information on the national and thematic consultations, as well as a forum where citizens from all over the world can make their voices heard.

One of the 11 global consultations, the **Global Thematic Consultation on Hunger, Food Security and Nutrition**, has been co-led by the World Food Programme (WFP) and the Food and Agriculture Organization of the

United Nations (FAO). It has consisted of three phases:

- **An online discussion, moderated by the Global Forum on Food Security and Nutrition**, yielded an 'Issues Paper' available¹ in Arabic, Chinese, English, French, Russian, or Spanish.
- **A consultation of the Committee on World Food Security stakeholders** refined the emerging issues from the online consultation and presented the building blocks for a global agenda.²
- **A High-level consultation**, hosted by the Governments of Spain and Colombia, was held in Madrid on 4 April 2013.³

Date	Event
January 2012	UN System Task Team on the Post-2015 UN Development Agenda appointed
May 2012	UN System Task Team's report published
May 2012 - First quarter 2013	UN country consultations start after publication of UNDG guidelines
20-22 June 2012	Rio+20 UN Conference on Sustainable Development. Rio de Janeiro, Brazil
21 June 2012	Human sustainability index
31 July 2012	UN Secretary General appoints the High-level Panel on the Post-2015 Development Agenda (HLP)
25 September 2012	The UN General Assembly (UNGA) - The High-level Panel meets for the first time in New York
November 2012	First substantive meeting of the High-level Panel, London
July 2012 - First quarter 2013	Thematic consultations
January 2013	UN establishes the Open Working Group on SDGs
January 2013	Second substantive High-level Panel meeting, Monrovia
March 2013	First meeting of the SDG OWG
March 2013	Third substantive High-level Panel meeting, Bali
March 2013	Interim UNDG Report from consultations
4 April 2013	Hunger, food and nutrition security - The WFP and FAO host the last of the thematic consultations, Madrid
April 2013	Second meeting of the Open Working Group
15 May 2013	The High-level Panel meets in New York to finalise its report
31 May 2013	Deadline for the High-level Panel - panel members will present a report outlining their vision and priorities for post-2015 development to Ban Ki-moon
July 2013	Expected response from the UN Secretary General on the report of the High-level Panel
September 2013	UN Special Event to follow up efforts made towards achieving the MDGs At this meeting the UN Secretary General is expected to present his vision for post-2015 development based on the work of the HLP The Open Working Group may also provide inputs into this meeting

Notes

■ ¹ www.fao.org/fsnforum/post2015/sites/post2015/files/files/Issues_Paper_Post_2015_Ar.pdf; www.fao.org/fsnforum/post2015/sites/post2015/files/files/Issues_Paper_Post_2015_Ch.pdf; www.fao.org/fsnforum/post2015/sites/post2015/files/files/Issues_Paper_Post_2015_Eng.pdf; www.fao.org/fsnforum/post2015/sites/post2015/files/files/Issues_Paper_Post_2015_Fr.pdf; www.fao.org/fsnforum/post2015/sites/post2015/files/files/Issues_Paper_Post_2015_Rus.pdf; www.fao.org/fsnforum/post2015/sites/post2015/files/files/Issues_Paper_Post_2015_Sp.pdf ■ ² www.fao.org/fsnforum/post2015/sites/post2015/files/files/Vision_and_Building_Blocks_for_Global_Agenda.pdf ■ ³ www.fao.org/fsnforum/post2015/sites/post2015/files/files/Background_and_Agenda_HLM_on_FSN.pdf



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Empowering marginalised people can help fight hunger, poor nutrition and climate injustice

Hunger, poor nutrition and climate change are among the most pressing challenges facing the world. But they are not insurmountable, and empowering poor and marginalised people offers an effective way to help address them.

People are empowered when they can influence the course of their lives and the social, economic, and political processes and decisions that affect them. Conversely, constraints to empowerment often include unequal power relations, lack of opportunity, and inequality's underlying causes (including discrimination on the grounds of gender, ethnicity, religion, location, disability or age).

Empowerment can be both a top down and bottom-up process. Marginalised groups may become more able to claim their rights as capacity develops among those who are tasked with meeting such obligations. But more often people empower themselves through collective action; for example using the power of association and collective bargaining to overcome barriers such as discriminatory laws. Supporting

empowerment is best achieved by supporting an enabling environment, where constraints can be overcome, where political processes are accountable and participatory, and where the poorest and most marginalised people can make their voices heard.

Disempowerment contributes to hunger and under-nutrition, and increases climate vulnerability

Hunger and under-nutrition are not always the result of disempowerment, but many factors related to empowerment contribute to poor health and under-nutrition. These include insufficient access to education and inadequate livelihood assets,

Box I. Why empowerment?

Empowerment helps people tackle hunger, malnutrition, and climate injustice by ensuring they are better able to access the productive resources (such as land, water, infrastructure, and credit) they need, and can participate in the decision-making processes that affect their lives. For people to become politically empowered they need an enabling environment in which they can influence policy, make demands and hold the state to account. This means bringing people into formal political processes through both representative institutions as well as through participatory governance. Equally important is building people's capabilities to engage in and influence such processes. Making political processes accountable and participatory, and improving the ability of poor and marginalised groups of people to influence them, is a key principle of climate justice and is crucial in reducing vulnerability to hunger, under-nutrition, and climate change.

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EMPOWERMENT

healthcare and health information. Where these are lacking, people's options and capacities to respond creatively are reduced and vulnerability is increased.¹

Even though women farmers are responsible for between 60 and 80 per cent of food production in developing countries,² their rights and socioeconomic status are rarely equal to those of men, and this disempowerment undermines their ability to attain food and nutritional security. Rural women are highly dependent on subsistence agriculture to feed their families, however their access to natural resources such as land, water and wood is often limited. Discrimination, resulting from laws or social norms and customs, and lower levels of access to education (amongst other factors), restrict women's access to credit, agricultural inputs, technologies and services.

Poor empowerment also undermines food and nutrition security more widely, particularly in the face of an increasingly uncertain climate, for which farmers' traditional knowledge of when to sow and harvest, and when to expect rains, may no longer be adequate. For example, extension services are often aimed at those farmers who are considered 'best placed' to implement innovations – often the best resourced and most accessible farmers – while poorer farmers working on more marginal soil, or those living in remote areas, tend to be overlooked. Without support, and facing increasing risks, they are left increasingly vulnerable.

Disempowered people are also more vulnerable to the risks climate change increasingly pose to human health. Climate change is contributing to the global burden of disease. It is exposing people to water shortages and is a driver for malnutrition. All these factors undermine health. It is the poorest who are hardest hit, particularly young children. Many families with undernourished children do not have the means or capacity to adapt and cope with the multiple threats of climate change.³

Climate change can further disempower poor and marginalised people by increasing 'time poverty', particularly among women who typically shoulder a disproportionate burden of household duties. A larger part of the day may be devoted to acquiring essential resources such as food, fuel and water, which may become increasingly scarce because of unpredictable rainfall. Less time will be left for other tasks such as caring for infants or the sick or elderly, preparing food, breastfeeding, and importantly, for resting or for education. As this burden increases, people can be further marginalised from decision-making spheres, and have fewer opportunities to build their capacity to adapt and cope.

Empowerment can reduce vulnerability, increase resilience and improve food and nutrition security

Empowered people can build on their assets and capabilities, and can dramatically increase both their climate resilience and food and nutrition security. For example, empowering rural women in their role as food producers, by ensuring they have the same access to productive resources such as land, technology, capital, or extension services as men do, could increase yields on their farms by 20 to 30 per cent. The increased contribution to the food system could reduce the number of undernourished people worldwide by 100 to 150 million. Removing the obstacles that prevent equal access to productive resources could contribute substantially to improved food and nutrition security and is an effective means of ensuring family wellbeing under a changing climate.⁴ Advancing women's empowerment and gender equality are essential to achieving sustainable development.

Knowledge and information can also empower people (and improving women's access to resources such as education and information is another vital step in ensuring their participation and empowerment).² Informed citizens have more opportunity to access services, engage in civic action, negotiate effectively, and hold officials accountable. Without information that is relevant, timely and presented in a way that is easy to understand, it is impossible for people to take effective action. For example, in an increasingly uncertain climate, supporting farmers with weather and climate information services for agricultural decision making is an important strategy for enhancing food security. In Malawi, Uganda, Ethiopia and Tanzania, Irish Aid is supporting Farm Radio, a service that is providing farmers with valuable information in a low-cost and accessible format. From fertilising techniques and cultivation tips, to harvesting practices and weather forecasts, the information being broadcast is helping farmers to improve their skills, time their harvest according to expected weather, and ultimately increase their yields. Irish Aid's support for Farm Radio aims to increase the use of nutrition-sensitive and climate-smart agricultural innovations that respond to concerns and interests expressed by small-scale farmers, particularly women.

Social protection schemes are another effective tool for empowering people and supporting food and nutrition security. They can help vulnerable people adopt strategies that balance their immediate needs

with investments in future livelihoods. For example, food and cash-for-work programmes (see case study, *Scaling up an integrated watershed management approach through social protection programmes in Ethiopia: the MERET and PSNP schemes*) can catalyse empowerment by building public assets that make communities more resilient.¹ Ensuring that people know their rights, and that local communities participate in both designing and evaluating social protection programmes, is key to promoting empowerment and ensuring effectiveness.

Empowering communities to take action against their climate vulnerability, using their own resources and decision-making processes, is essential for effective community-based adaptation. And empowering women to participate, so they can take a lead in climate-related decision making at local, national and international levels, is a particularly good way to make policies and strategies more effective. Women's wide-ranging roles in agricultural production and management, household food provision and nutritional security equip them with knowledge and skills that help policies and strategies respond to community needs.

People empower themselves through collective action. For example, rural farmer organisations and cooperatives play an important role in achieving food and nutrition security, particularly for women producers, who are often economically marginalised and politically powerless. Through the power of association and collective bargaining these organisations can overcome barriers to gain better access to resources and inputs, and play a greater role in meeting global food demand. Empowering women to participate in cooperatives and farmers organisations lets them acquire a voice in decision making, allowing them to produce more, raise their incomes and attain greater food security.

Challenges for the post-2015 development agenda

Empowerment should be a key focus of the post-2015 process. Unless people are empowered to engage with and participate in the post-2015 development agenda it will fail to meet the challenges of poverty reduction and sustainable development.

Box 2. Empowerment through knowledge in Tigray, Ethiopia

A partnership of local knowledge and appropriate technology has empowered farmers in the Tigray region of Northern Ethiopia to improve their incomes and food security. The Operational Research programme (see case study, *Harnessing local innovation to improve food security, nutrition and climate resilience in Ethiopia*) links local knowledge and agricultural research to drive greater food security and climate resilience. The programme means farm households can work with researchers, government, NGOs and donors to identify needs and problems, and choose technologies that are appropriate to the risk-prone setting.

One participant is Mrs Kebedich (pictured right), a farmer from Hawzien district, who is also a widow with six children. From time spent with researchers she learned to experiment with different varieties and tested a range of different vegetable crops, some of which she now farms. The programme has helped her to diversify and build her climate resilience (training her in farming silk worms and beekeeping).

She has established many different fruiting trees including guava, mango and coffee on her



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farm. Tending fruit trees makes sense for her, because the household has little capacity for hard agricultural labour. She used to depend on loans that were difficult to repay, but now she no longer has to borrow money, and can even hire labour occasionally. Her family eat three times each day, rather than twice as in the past. Mrs Kebedich says, "fruit trees are my safety net".

Box 3. Fisherfolk empowerment for policy change in the Caribbean

In 2002, the Caribbean Community (CARICOM) established the Caribbean Regional Fisheries Mechanism (CRFM), bringing together national fisherfolk organisations to support the sector's development. In 2004, these national organisations formed the regional Caribbean Network of Fisherfolk Organisations (CNFO). With support from partners, CNFO has developed leadership and management skills among its members, training them in advocacy, negotiation, and policy analysis (see case study, *Getting a seat at the table: fisherfolk empowerment for policy change in the Caribbean*, page).



D. Gill

The strong leaders that have emerged are confident, knowledgeable, and eloquent policy advocates who have earned the respect of policymakers in their own countries and regionally. This gives fisherfolk a voice in regional and national policy processes, from which they traditionally have been largely excluded.

Build an enabling policy environment for empowerment. Although empowerment must happen through people's own actions, it can be enabled through a supportive environment. Governments can actively promote empowerment through policy frameworks and practical measures, such as social protection schemes. Both governments and civil society organisations must work to remove or reduce barriers to empowerment (such as discriminatory laws), and ensure local voices are heard in decision making.⁵ The post-2015 agenda should create mechanisms that ensure citizens' energies and

creativities are harnessed in the fight to improve food and nutrition security.

Ensure that women are empowered to maximise their role in sustainable development.

Advancing women's empowerment and gender equality are essential to achieving sustainable development. Given women's vital roles in agricultural production and household food and nutritional security, their knowledge and skills will be crucial for adapting to climate change and building resilience.

Notes

■¹ Tirado, C. 2011. *Enhancing women's leadership to address the challenges of climate change on nutrition security and health*. Report to the United Nations System Standing Committee on Nutrition. ■² FAO. 2011. *The State of Food and Agriculture 2010-II. Women in Agriculture: closing the gender gap for development*. FAO Rome ■³ UN SCN. 2009. *Implications of climate change on undernutrition*. United Nations Standing Committee on Nutrition. See: www.unscn.org/files/Statements/SCN_statement_climate_change_final.pdf ■⁴ FAO. 2012. *Cooperatives: Empowering women farmers, improving food security*. See: www.fao.org/gender/gender-home/gender-insight/gender-insightdet/en/c/164572/ ■⁵ Organisation for Economic Cooperation and Development. 2012. *Empowerment and Equity*. See: www.oecd.org/dac/povertyreduction/50157953.pdf.

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*A New Dialogue : Putting People
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Knowledge: its role in hunger, nutrition and climate justice

Climate change will change conditions for food and farming beyond all previous human experience. We need a new era of innovation, in which farmers and communities participate in learning networks, drawing on science and on others' experiences to complement their local knowledge.

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How is knowledge on hunger, nutrition and climate justice relevant to the post-2015 development framework?

The Millennium Development Goals have driven good progress in key areas such as reducing poverty enrolling and girls in schools, but we have fallen short of the mark for child mortality, for which malnutrition is a partial cause. Despite huge effort at all levels from global to household, hunger remains a 21st century reality for many millions of people. This is because malnutrition – like climate change – is a complex issue for which there is no easy definition of either the problems or solutions; in which many interacting factors are at play; and on which society holds widely divergent attitudes and opinions.

The post-2015 development agenda seeks to go

beyond international aid to a more holistic agenda that might include universal human rights, more workable systems of global governance, fairer regimes for taxes and trade, and provisions for both social protection and environmental wellbeing. Already, efforts are underway to ensure an inclusive and bottom-up process. Dynamic and widely shared knowledge in all its forms – information, awareness, methods, understanding, communication, education – will be crucial for defining and achieving a post-2015 development framework for everyone, particularly in a world of rapid climatic, demographic and economic change.

How does knowledge improve hunger and nutrition, and increase climate justice?

Hunger and climate change may have global causes (for example trade agreements, fossil fuel

Box 1. Why knowledge?

Within the next century, climate change will change many natural habitats and farming systems beyond all previous human experience. The scale of change will surpass the limits of local knowledge. Scientific tools, such as techniques for forecasting, scenario building and modelling, will be increasingly important as knowledge bases for planning and action that works in tandem with local observations and judgements. Special attention needs to be paid to 'whose knowledge counts': making sure that science works with local knowledge rather than overriding it, and that farmers and poor families who are most affected by climate change are able to access knowledge, shape how knowledge is developed, and be involved as decision makers when knowledge is used to change the future.

Box 2. Zai and half-moons as water harvesting mechanisms in West Africa

In Kagpessogo, in the north of Burkina Faso, zai and half-moons beautify the eroded landscape of Boureima Ouedraogo's farm. Zai and half-moons are micro-catchments dug to restore and rehabilitate crusted and degraded soils. Although labour intensive, these practices are extensively used by small-scale farmers like Boureima across the Sahel region (Burkina Faso, Mali and Niger), as adaptation measures to secure agricultural outputs in an unpredictable climate. These indigenous practices have been revived and updated since the early 1980s and are now often combined with agroforestry, soil erosion control technologies (for example stone lines) and crop diversification to increase small-scale farmers' adaptive capacity.

More information at: <http://ccaafs.cgiar.org/node/279>

emissions), but they are experienced locally by people in highly specific cultures and habitats. Thus local knowledge, local values and local actions are at the heart of how we achieve future nutrition despite unpredictable and rapid changes in climate. The limited coverage and capacity of extension services and other sources of knowledge in many places makes local knowledge even more crucial.

Rural households have managed the vagaries of local climates and environments for millennia. Local knowledge is rich, relevant – and largely reliable. It is also dynamic and adaptive, not just 'traditional' (see Box 2). Many types of local knowledge are relevant to keeping hunger at bay: technical information and

learning on weather, hydrology, crops, livestock, wild foods, nutrition, health and cooking, as well as institutional know-how, such as active systems for spreading out the risk over time (for example, communal grain storage, or trees as savings) and over space (for example, local markets, and in-kind sharing of food among relatives and friends). Conversely, lack of knowledge prevents people from claiming their rights, adapting to rapid environmental and social changes, and taking advantage of economic opportunities.

How can better knowledge systems support hunger, nutrition and climate justice?

For societies, hunger and climate change are highly complex problems for which there is no clear agreement on the solutions, or even the causes. This complexity, combined with continual change, means that we need informal and formal knowledge systems that allow people to learn, share information and make joint decisions. Knowledge is as much a dynamic process as it is a static asset. For knowledge to lead to social change it needs to be shared widely and pluralistically, in diverse conversations.

One-way knowledge systems in which experts develop technologies and then 'disseminate' these to beneficiaries have often failed. Farmer-led research to find ways to reduce exposure to climate risks often provides a better alternative. Innovation systems in which many people participate in a social learning process have a greater chance of success. For example, improvements in the nutritional qualities of crops, whether via traditional breeding or biofortification, work best where farmers, research organisations,

Box 3. Farms of the future: social learning that helps imagine your farm in a future climate

Rosalia Shemdoe, a single mother to six and grandmother to five, has been having a difficult time providing food and income for her family – a problem she attributes to unpredictable weather patterns and her land's reduced productivity. Her problem is urgent, but she knows that thinking long-term is important too if her farm is to continue to support her and her family in the coming decades. Imagining such a future is no easy task. So Rosalia took part in the Farms of the Future project, and made a 1,000km journey to Mbinga, a 'climate analogue' showing how Rosalia's village of Yambamay may be in 20 or 30 years from now. The 'climate analogue' approach connects sites with statistically similar climates, across space (between locations) and/or time (with past or future climates), allowing farmers and scientists to learn together about plausible farming futures, adaptation options and ways to overcome barriers and constraints.

More information at: <http://ccaafs.cgiar.org/blog/one-mans-future-another-mans-present-farms-future-hits-tanzania>



Group work in
Ethiopia

Anton Eitzinger, CIAT / CCAFS

government policymakers and private companies come together. Despite the high costs of working collectively, participatory knowledge systems can innovate faster, and share innovations more widely and equitably.

At the centre of any knowledge system is education that equips people to ask the right questions and to consider information and concepts critically. The practical value of education is immense; for example past research shows that successes in improving households' nutritional status have been much more strongly associated with women's education than with other key factors like household income.

Lifelong access to education, for example farmers' field schools, can have powerful benefits when managed well. Scientific researchers can contribute by finding imaginative ways to provide learning opportunities for farmers and rural people at the sharp edge of climate change (for example see Box 3).

What are the implications for the post-2015 development framework?

Youth, education and innovation offer a path to a more resilient and creative future. Over the coming decades, climate change may alter many places around the world where people live and farm radically, affecting: diets and food

cultures, agriculture (different crops and animals, different ways of keeping them), land and water management, energy generation and use, healthcare and sanitation. Current knowledge on how to adapt to climate change is limited, and an era of accelerating innovation is needed. The best knowledge systems will provide for social learning among multiple partners, including consumers, farmers, the private sector (small and large, informal and formal) and scientists. To achieve a post-2015 development agenda in a time of rapid change will require as much emphasis on the process of knowledge and learning as on its specific content. In particular, this calls for a focus now on education and resources for young people, whom we are asking to be responsible for a very different future.

Collective knowledge systems in an ever-changing climate. Local knowledge systems need to be firmly at the centre of actions on hunger and nutrition under climate change. The key roles for higher-level policy and science are to provide enabling frameworks for local solutions, rather than dictating blueprints. Like partnerships (MDG8), knowledge is an enabler and connector that helps achieve positive outcomes and human wellbeing – so it is perhaps not a target in itself, but an area in which clever investments can enable major widespread progress and rewards. As experience with innovation systems, social learning and similar models has shown, investing in institutions to help them manage and share

Box 4. Access to knowledge: voice message agro-advisories in India

Several parts of the 'breadbaskets' of the Indus and Ganges rivers have pronounced climate variability. Poor infrastructure, irregular electricity supply and illiteracy leave many farmers isolated from outside information. There is now very high access to mobile phones in states like Bihar, even among the poorest households, but low literacy rates have meant that early efforts to send text-based agro-advisories did not benefit farmers. A voice-based short message service (SMS), initiated by the Climate Change, Agriculture and Food Security Program (CCAFS) in partnership with a private company and the state meteorological department, has changed that in Vaishali, Bihar. Farmers receive voice messages containing expert advice, focused on crop and livestock management, weather forecasts and market information. Devender Singh, an early adopter of the innovation, says: "Weather forecasts and related agro-advisories helped villagers to know if rainfall is predicted in coming days and hence they can plan agricultural activity accordingly."

More information at: <http://ccaafs.cgiar.org/blog/help-through-participatory-videos-documenting-farmers-experiences-real-time>

knowledge among diverse stakeholders can speed up learning and uptake, while cutting costs. The people at the centre of action on climate change adaptation, often smallholder farmers and rural residents, need to be at the centre of knowledge systems too.

Access to knowledge. We need to work hard on more equitable and fairer access to knowledge and technologies. For example, the ICT revolution has reached poor and remote people – but there are still dangers of further marginalising people who cannot afford to get access, or are excluded on account of literacy or other issues. We can

do much more to make sure that the benefits reach everyone who needs knowledge on climate change issues (see Box4). Often older modes of communication – radio, print media or simply word of mouth – work better than new technologies. Knowledge systems need to speak the language of users and break down the barriers between people's living experiences of climate change and technocratic policy discussions. Legal controls over knowledge (intellectual property rights) can either protect or marginalise poor people, so we need agreements that make technologies and information cheaply or freely available for the benefit of poor consumers and producers.

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Risk management and the post-2015 development agenda

Hunger and under-nutrition are the top risks to human health, unless addressed, climate change will act as a 'hunger risk multiplier'. Understanding and managing climate risks, especially for the most vulnerable and food insecure, must become a crucial priority for the post-2015 development agenda.

Despite joint efforts by the international community to halve the number of hungry people by 2015, at least 870 million people still suffer from not having enough to eat. Up to a billion more suffer from inadequate access to micronutrients and vitamins.¹

The reasons are complex, relating to today's most pressing development challenges. Deep poverty and inequality are the main underlying drivers of hunger, but population growth, environmental mismanagement and degradation, increasing disaster intensity and frequency, conflict and political unrest – to mention a few – push vulnerable communities deeper into poverty, with greater risk of hunger. These factors are likely to develop in interconnected and unpredictable ways in the future, requiring extraordinary decision-making skills at all levels of society.

Climate change further exacerbates these risks and their impacts.² Despite poor people's extensive experience of how to make a livelihood in marginal

and fragile environments, the added burden of climate change may often go beyond local capacities to cope. This is particularly evident in communities that are already food insecure and vulnerable, where climate change acts as a hunger risk multiplier. For example, local communities may already be experiencing climate change effects as increasing floods and storms, as well as slow onset events like drought. Increased weather variability and unpredictability, is also affecting crop production, food prices and livelihoods more broadly – all of which affect people's ability to ensure their own food and nutrition security.

The impact that hunger and under-nutrition have on the youngest is particularly devastating. Mothers who were undernourished as girls are 40 per cent more likely to give birth to children who do not survive to age five. This is inter-generational under-nutrition – a cycle that's hard to break. Undernourished children are at high risk of suffering largely irreversible setbacks to their mental and physical development

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Box 1. Why risk?

Hunger and under-nutrition remain the number one risk and obstacle to human health and progressive development, and climate change acts as a hunger risk multiplier, effectively exacerbating many of hunger's causes. These increasing risks are exceeding local management capacities. Poor people often have a wealth of knowledge about coping in adverse conditions, but they generally also have the least access to formal or even informal support. So despite local knowledge, rising risks bring increasing immediate and long-term impacts. For example, large-scale disasters interrupt market access, reduce crop production and income, deplete savings and force poor people to sell their livestock, pull their children out of school and eat less nutritious food. Better support for managing these risks should be at the heart of development actions to provide food and nutrition security and climate justice.

RISK

into adulthood. They are more likely to get sick, have trouble concentrating in school, and be less productive as adults. This is why nutrition plays a critical role during the first 1000 days from conception.

Managing these factors, and climate change impacts, must therefore become a global and national priority, not only to meet current needs, but also for future generations, who risk being deprived of their potential to contribute to growth and development. To be successful, we need enough concentrated resources and capacities to address the fundamental risks and challenges vulnerable populations face. The approach must be forceful, yet inclusive and tailored to local contexts, using knowledge already acquired to target efforts that help people manage risks more effectively.

Understanding risks for better management

Effective risk management requires a number of crucial elements. Firstly, whether you are a farmer, a local government official, a head of state or a global decision maker, you must understand risks and their consequences in order to address them.

Decision makers at all levels need information to manage risks, adjust plans and seize potential opportunities. Progress has been made in this area, however risk analysis needs to be scaled up and improved with better data, better analytical tools and better integration into mainstream planning and decision-making processes.

Box 2. Drought and nutrition

Drought is a key driver of food insecurity and severely reduces dietary diversity as well as overall food consumption.

- In Ethiopia, children born during a drought are 35.5 per cent more likely to be malnourished and 41 per cent more likely to have stunted growth.
- In Niger, irrespective of the birth location, children born during a drought are more than twice as likely to be malnourished between ages 1 and 2 years.³

Under climate change, drought intensity and frequency is likely to increase, and may occur in areas with limited experience in managing drought risk.

Secondly, there is a great need to better understand how climate risks are interrelated with other potential risk trends, so we can anticipate impacts in a more holistic manner. For example, in Africa alone, around 650 million people depend on rain-fed agriculture in environments that are affected by water scarcity, recurrent droughts and floods and erratic weather patterns. These recurrent risks drive a trend for land degradation that threatens livelihoods. We need to understand how climate change will interact with these types of underlying vulnerabilities (of people and systems) in order to assess the overall risk to livelihoods and to people's food and nutritional security.

Thirdly, making sure that risks are analysed and assessed better does not automatically translate into effective risk management. A crucial part of ensuring effective risk management is to integrate risk analysis with decision making. Without effective access and links to decision makers and users at all levels, risk management approaches and products may not correspond to specific needs or may provide only limited benefit. Because vulnerable people and communities are most at risk, special attention must also be given to the needs of these groups, and their access to appropriate risk management techniques, tools and approaches.

Integrating risk management into development

If development policies and programmes do not integrate risk management they are unlikely to be sustainable or cost-effective in the long-term. Systematically promoting minimum standards for managing risks and scaling up risk management measures must take high priority as a crucial element of coming development plans and strategies. This is particularly relevant for food security and poverty reduction strategies, as well as national adaptation plans (NAPs), and without prioritising these efforts, there is a high risk of undermining, or even losing, the development gains already made, especially in vulnerable communities.

There is evidence that investing in disaster risk management has proved highly cost-effective, returning between 2 and 70 US dollars for every dollar invested, depending on the specific context and the type of risk management intervention. For example, estimates suggest constructing dykes for flood protection in the Philippines has returned up to 30 times the investment, while modernising hydro-meteorological services in Mozambique returned up to 70 dollars for each dollar invested.⁴ Building on what has been proven to work and managing risks effectively is a critically important part of achieving

Box 3. Risk management approaches, tools and services

Risk management often involves three strands: understanding risk, reducing vulnerability to underlying risk factors, and transferring or managing residual risk. For example, important elements for effective risk management might include:

- Risk knowledge and vulnerability analysis.
- Effective institutional frameworks to implement disaster risk reduction strategies.
- Livelihood rehabilitation and diversification.
- Social protection, safety nets and asset transfers to at-risk communities.
- Constructing disaster risk reduction infrastructure, such as dykes, check dams and terraces.
- Insurance and other risk transfer mechanisms.
- Emergency preparedness and response.

the Millennium Development Goals, especially for food-insecure and vulnerable people.

Risk management requires partnerships and starts at the local level. Risk management works best when it takes an integrated and layered approach. Because it is very unlikely that a single stakeholder has all the tools, capacities and skills required for successful risk management, strengthened and more innovative partnerships and alliances are an important way forward. This includes better interaction and collaboration between governments, communities, regional and international organisations, non-governmental organisations, and the private sector. It is only through partnerships that different functions and services, expertise and capacities can complement each other to achieve long-lasting outcomes for the poorest and most food-insecure communities.

Putting vulnerable communities at the centre

There is much knowledge, expertise, and experience on how governments and societies can manage risks. Yet too little has been done to help the most vulnerable, marginalised and food insecure people at the level of their own communities.

Governments are increasingly recognising their responsibility to support effective local risk reduction. This recognition is important because it creates an opportunity to build a culture of accountability among governments that meets international frameworks and standards for delivering services to those who need them most. It therefore contributes to social justice, equality and resilience

building. But there is still much to be done in terms of empowering people and communities that face the highest risk of loss and damage, and putting them at the centre of inclusive national development policies and programmes.

Overall, the availability of support for poor and vulnerable populations remains weak. For example, most investments in agriculture have been primarily focused on modern and large-scale production systems, with very little attention for the majority of world food producers - the hundreds of millions of small-scale farmers, smallholders, subsistence growers and landless people and their families. A progressive but transformative agenda is needed to challenge the status quo of distribution, entitlement and access.

One way to bring development opportunities to food insecure and marginalised groups is social protection and safety net systems. These types of asset transfer systems can play a key role in risk management, supporting people during critical periods, helping them to absorb shocks and allowing for investments in livelihoods. Without such transfers, shocks and disasters would limit development.

Lessons learnt from scaling up safety nets in various contexts - for example during the crisis in the Sahel or in the Horn of Africa - demonstrates that these efforts have been largely successful. Further investments must be made, including developing proper institutions and infrastructure support, to enable a scale-up of safety nets and social protection mechanisms as a key pillar of a more inclusive post-2015 development agenda.

Box 4. Innovations in climate services and risk management

The Global Framework for Climate Services (GFCS) is an effort led by the World Meteorological Organisation to make better use of climate services that can bring social and economic benefits, particularly to the poorest and most vulnerable people. The GFCS recognises the central role of its service users (who might be farmers, planners, NGOs or people with other climate-related knowledge needs), and suggests an effective User Interface Platform that allows users, user representatives, climate researchers and climate service providers to interact and so maximise the value of climate services. This type of interaction between service providers and users is needed to ensure that service development focuses on needs, and that the information provided meets those needs.

Linking advanced early warning with finance and early action is another way to manage risks proactively. In Ethiopia, WFP and the World Bank are working with the Government to implement the Livelihoods, Early Assessment and Protection (LEAP) programme which is linked to the Government-run Productive Safety Nets Programme (PSNP). LEAP provides national authorities with an advanced food security early warning system based on objective and transparent climate data, which activates a US\$160 million contingent fund that is used to scale up the PSNP – ensuring early action, effective response, saving lives and protecting livelihoods.

Taking action in the post-2015 development agenda

The coming decade provides a unique and critically important opportunity to address hunger and climate risks in a more anticipatory and strategic manner. As we have seen, risk management can be an effective way of fostering economic, environmental and social development, and will be increasingly necessary in the light of accelerating climate change risks. Risk management is particularly valid for food insecure and vulnerable communities, where it plays a crucial role in safeguarding lives and livelihoods and allowing for longer term plans and actions.

Global priorities must be to:

Ensure that risk management becomes a mainstreamed aspect of policies and strategies that are exposed to risks and potential impacts.

This is particularly important for food security, but also in other areas key for human development such as water, health, and poverty reduction. Several processes must be engaged to ensure this, including

the post-2015 development agenda, the post-Hyogo Framework for Action (which will outline global priorities for disaster risk reduction), and the United Nations-led climate change negotiations.

Promote a special focus on vulnerable and food insecure communities, supporting both short and long term objectives that strengthen livelihoods in a sustainable manner. Development plans and policies must recognise the multifaceted and interconnected nature of risks and opportunities facing vulnerable communities, and must be able to address various risks simultaneously, fostering partnerships across sectors and disciplines.

Strengthen capacities, frameworks, policies, services and tools that translate into real opportunities for food insecure and at-risk people. This should include safety nets and social protection measures that promote inclusive development and resilience building. But we must also promote standardised, timely, comprehensive and accessible climate services and information at all levels, to support evidence-based decision making and political leadership.

Notes

- ¹ FAO, WFP, IFAD. 2012. *The state of food insecurity in the world 2012*. FAO, Rome . ■ ² UK Met Office Hadley Centre and WFP. 2012. *Climate impacts on food security and nutrition: A review of existing knowledge*. WFP/UK Met Office Hadley Centre, Rome/Exeter . ■ ³ Fuentes, R., Seck, P. 2007. *The short-term and long-term human development effects of climate-related shocks: some empirical evidence*. UNDP, New York. ■ ⁴ United Nations and World Bank. 2010. *Natural hazards, unNatural disasters: the economics of effective prevention*. World Bank, Washington, DC.



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Human rights: their role in achieving climate justice and food and nutrition security

Human rights offer a framework for addressing food and nutritional insecurity at levels from local to international. They are particularly effective in highlighting the injustices caused by climate change impacts and the resource squeeze, the effects of which are hitting the poorest and most vulnerable disproportionately hard.

Rights-based approaches to development are based on international human rights standards and promote and protect human rights. They empower people to claim and exercise their rights and fulfil their responsibilities. The principles of rights-based approaches include (i) respecting people's right to participate in decision-making processes that affect their lives; (ii) understanding and addressing the root causes of poverty and suffering; (iii) emphasising the equal dignity and worth of all people and promotion of tolerance, inclusion, nondiscrimination and social justice; and (iv) holding all development actors accountable for respecting, protecting and fulfilling human rights – this is a shared responsibility.

predictable rainfall, droughts and floods have direct impacts on the right to food, the right to water, the right to life and, for populations forced to migrate, the right to housing.

Climate change is already making food prices more volatile on global markets, and it is threatening whole regions' ability to feed themselves. Taking into account population growth and shifting diets, as well as rising demand for non-food crops, sharp price increases for all major crops are expected in the coming decades.

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How climate change is affecting human rights to food, nutrition and justice

Climate change, exacerbated by increasingly scarce natural resources, biofuels policies and financial speculation trends, is having a domino effect on food and nutritional security for the world's poorest and most vulnerable people.

Climate change is unjustly and disproportionately threatening food supplies for the most vulnerable. Changing seasons, less

Box 1. Why rights?

Climate change is undermining a range of human rights, with disproportionate impacts on the lives and livelihoods of those who have contributed least to the problem and are most vulnerable to its effects. Climate change acts as a multiplier, compounding food and nutrition insecurity and making it even harder for poor households to secure their rights. Rights-based approaches focus on all people achieving at least the minimum conditions for living with dignity, through the realisation of their human rights.

RIGHTS

As a result, child malnutrition is predicted to increase by 20 per cent by 2050.¹ Climate change impacts will disproportionately fall on people living in tropical regions, and particularly on the most vulnerable and marginalised population groups. This is the injustice of climate change - the worst of the impacts are felt by those who contributed least to causing the problem.

Climate change results in greater pressure on natural resources, and particularly drives increased speculation on farmland. In sub-Saharan Africa and some parts of South Asia, large areas are often enclosed for commercial-scale plantations at the expense of local land users. Small-scale farmers, who often use land without formal ownership, live under the threat of evictions; artisanal fishers may find access to fishing grounds difficult; indigenous groups may be fenced off from the forests on which they depend for resources; and small-scale livestock herders may find it difficult to access grazing grounds for their animals.

Policies to reduce climate-changing emissions can themselves threaten human rights, particularly the right to adequate food. For example, biofuel subsidies and targets have led to land being used to farm energy crops for export instead of food. Adaptation policies can also undermine the right to food if improperly designed, resulting in counterproductive 'mal-adaptation'. For example, rerouting or rebuilding infrastructure (for example roads, dykes and dams) to reduce its climate vulnerability can displace people or cost them their access to land and other resources. Similarly, efforts to reduce deforestation may affect the livelihoods of forest-dwelling people or people using forest resources.

How rights can make a difference

The absence of rights makes people more vulnerable to climate change impacts including hunger and under-nutrition. Inequality, exclusion from decision-making processes and discrimination mean that people are not empowered to protect themselves from climate risks.

Protection for rights, on the other hand, can inform responses to climate change and help root them in equality and justice. Human rights tools and legal frameworks provide valuable minimal thresholds and internationally agreed standards which respect human dignity. This focus on rights can transform people's lives as it tackles the underlying causes of poverty and inequality in society. In other words, rights based approaches are rooted in people's demands and needs, giving them the potential to consolidate broader development goals. This approach can be applied to different actors and at various levels:

The role of 'on the ground' agencies. Agencies and projects can take a rights-based approach that effectively addresses development challenges. For an example, see Box 2.

The role of states. States have responsibility for respecting and protecting the right to food, established under the International Covenant on Economic, Social and Cultural Rights. This requires that they avoid policies and actions that undermine people's ability to produce their own food, or to access food for themselves and their families. This includes respecting resource ownership and access to rights, safeguarding small holder producers from land grabs

Box 2. Right-based approaches in practice in Uganda

AFARD is a rights-based organisation working to empower marginalised rural communities in the West Nile region of Uganda. It aims to help people achieve food and income security by mobilising their individual and collective resources. AFARD's approach states that "people have a right to the life they value. We will pursue ways and means that ensure that such innate rights are respected and responded to".

AFARD's involvement is increasing community resilience to climate change impacts (changing seasons and extreme weather), by helping people access the seeds, extension services and training they need to adapt. The focus on rights is also enabling better planned land use, including crop diversification that helps manage climate risk and improve incomes.

During a recent field visit by the Mary Robinson Foundation - Climate Justice, Jannet Avako, a widow with five children, explained how understanding that all people have rights - including a right to food - regardless of their socioeconomic status, has transformed her life. The encouragement and support provided by AFARD's rights-based approach to development has made her a confident and successful farmer who sends all of her children to school.

Women in Gwero village, Kayunga district, Uganda. A rights-based approach increases resilience to climate change impacts on food and nutrition security



Mary Robinson Foundation - Climate Justice

and evictions and ensuring that poor households have access to affordable and nutritious food.

But states are responsible not just for avoiding threats to the right to food, but also for fulfilling it, by designing and implementing policies that support its progressive realisation. Because of the various ways in which climate change is affecting the right to adequate food, policies addressing food and nutrition security must enable climate resilient development. These policies must favour agricultural production that can withstand climate shocks and that minimise the greenhouse gas emissions from food production and supply.²

Several countries around the world have embraced a rights-based approach to addressing hunger and malnutrition, and have adopted constitutional provisions and national frameworks, strategies, policies and programmes aiming to progressively realise the right to food. These countries include Bangladesh, Brazil, Colombia, Congo, Cuba, Ethiopia, Guatemala, India, Iran, Malawi, Mexico, Nicaragua, Nigeria, Pakistan, Paraguay, South Africa, Sri Lanka, Uganda, and Ukraine.

In designing these strategies, legal frameworks and policies, all actors, including governments, aid agencies and local officials, have a responsibility to ensure full participation by the people they seek to benefit. This can be achieved by establishing platforms or organisations to allow for a structured dialogue between civil society and government. Such a dialogue makes food security strategies more effective because it ensures they respond to the real

needs of people suffering from food and nutrition insecurity, and tackle obstacles identified by the intended beneficiaries. But legal, institutional and policy frameworks, though important, are not enough on their own. Effective implementation, which requires capacity-building, takes time and is not a matter of good intentions alone. States are also responsible for regulating business interests and for taking practical measures to ensure effective enforcement.

The role of business. The private sector has a role to play in protecting the right to food (with governments responsible for regulating their behaviour and holding them to account). The Guiding Principles on Business and Human Rights, endorsed by the Human Rights Council in 2011, particularly require businesses to recognise the legitimate rights of land users. Rising pressure on natural resources gives this duty a renewed prominence, as the competition for land and water resources increases due to climate change.

The role of the international community. At the international level the United Nations Human Rights Council is responsible for promoting and protecting human rights around the globe and for addressing human rights violations. The role of the Human Rights Council includes assigning Independent human rights experts with mandates to report and advise on human rights from a thematic or country-specific perspective. This includes the UN Special Rapporteur on the right to food.

In 2008, the Human Rights Council recognised the impacts of climate change on human rights,

RIGHTS

acknowledging that climate change “poses an immediate and far-reaching threat to people and communities around the world”.³ This and subsequent resolutions have been reflected in the United Nations Framework Convention on Climate Change (UNFCCC) process. And in Cancun in 2010, the UNFCCC Conference of the Parties emphasised ‘that Parties should, in all climate change-related actions, fully respect human rights’.⁴ If implemented effectively, this language can guide the development of a new international climate agreement and national climate change policies.

Implications for the post-2015 development agenda

Ensure human rights form the foundation of the post 2015 development agenda. Protection of human rights is fundamental to inclusive and equitable sustainable development. The rights to food, to life, to health, to water and to housing must be upheld by the international community and governments as the foundation of any approach to sustainable development. To date we have not adequately grounded our approach to development in rights. Now is the time to consider how to design a rights-based post 2015 development agenda, building on lessons already learned.

Consider equality as a self-standing goal. Progress made towards the Millennium Development Goals (MDGs) has been unequally distributed across and within regions and countries, and overall progress masks a rise in inequality within and between states. This has increased vulnerability and excluded

those most affected by hunger, under-nutrition and climate change from participating in decision making or holding their governments to account. There is growing support for the argument that it is feasible to have goals and targets around equality. By 2030 we need to have reduced global inequalities, protected the most vulnerable and thus secured the benefits of sustainable development for all.

Place gender equality at the heart of the 2015 development agenda. Widespread gender inequality has limited our collective ability to reach the MDGs because we consistently under use and undervalue women’s contributions. Women’s empowerment remains one of the most obvious, achievable and transformative strategies for tackling hunger and under-nutrition as well as enabling sustainable development and increasing resilience to climate change.

Make development more accountable to its beneficiaries. Accountability is central to human rights, to action on climate change and to development. At the international level, existing intergovernmental institutions could monitor progress on global development goals using a process similar to the Universal Periodic Review, which provides a peer review of all UN member states’ human rights records every four years. At national level, states should establish participatory accountability mechanisms to reflect people’s voices and independently monitor progress towards sustainable development objectives. Ultimately, much greater accountability must be provided to the beneficiaries of development policies and programmes.

Notes

■ ¹ International Food Policy Research Institute 2009. *Climate Change: Impact on Agriculture and Costs of Adaptation*, Washington DC. ■ ² See: UN Special Rapporteur on the right to food. *Agroecology and the Right to Food*. Report presented at the 16th Session of the United Nations Human Rights Council, UN doc. A/HRC/16/49, March 2011; and *The Future We Want*, outcome document of the United Nations Conference on Sustainable Development, endorsed by General Assembly Res. 66/288, para. III. ■ ³ Resolution 7/23. Human rights and climate change. UN Human Rights Council. ■ ⁴ Decision I/CP.16. United Nations Framework Convention on Climate Change.



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Local to national: putting local voices and priorities at the heart of national policymaking

Basing development support on local adaptive strategies and priorities supports tried and tested measures, and benefits from local knowledge. Lack of local voices in development planning has all too often undermined efforts to combat food insecurity, malnutrition and climate injustice.

Local people, especially poor and marginalised groups, often have little direct influence over policies that affect their lives. Policies developed at national level often do not give the rural poor the services and assets they need if they are to innovate and adapt to the interlinked challenges of food security, nutrition and health (see Box 1). This is particularly true in the context of a changing climate.

Valuable local perspectives and knowledge are too often excluded from formal planning

Box 1: Why local to national?

A local to national approach to policymaking can address an underlying cause of development challenges like food and nutritional insecurity and climate injustice – namely that local voices are rarely heard. By transforming development planning towards a more demand-led agenda, local people are better able to express the challenges they face from increasing climate variability, and their priorities for managing these impacts. Targeting resources locally, where the most severe climate impacts are felt, is one way to put the concept of ‘climate justice’ into action. The stronger their voices, the more likely it becomes that climate-vulnerable people can stake a successful claim on the resources they need for effective adaptation.

systems. Basing formal development planning on local strategies is effective, as it supports and strengthens measures that have been tested – and that work (see Box 2). Local people’s participation in planning and policymaking can reduce poverty, climate vulnerability and food insecurity by strengthening citizen rights and voices. Stronger voices influence policymaking, enhance local governance and make institutions more accountable and responsive. Emerging evidence is beginning to show that as governments develop expertise in facilitating greater participation, they also implement more appropriate public services and development interventions that better address the priorities of the rural poor.

But not all local participation in formal development planning is effective. The question of who is included and who is excluded from participatory planning and policy processes determines whether or not outcomes truly reflect a local consensus (including among marginalised groups). The reality is that while marginalised groups are the target of much development support, they are frequently excluded from development planning. Their exclusion can be active (if the process is commandeered by local elites) or passive (for example if workshops are held in urban centres or if language barriers, power dynamics and cultural practices exclude people). Broader questions of who convenes the participatory process and who frames the questions also shape the outcomes.

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Box 2: Scaling-up local innovations

Impoverished people all over the world are developing and testing innovative strategies to improve their food security and climate resilience. Governments and other institutions should find ways to enable these innovations and communicate them widely (horizontal knowledge transfer). Local innovation supported by formal institutions is a crucial tool for developing local and national adaptive capacity. Financing local people to innovate is key to facilitating this capacity.

Local to national policy processes

The benefits¹:

- **Better informed policies.** Good planning and policymaking requires diverse expertise. Local people, who use and manage natural resources, can often contribute important practical knowledge to environmental policies, helping ensure long-term productivity for the resource base.
- **More equitable policies.** Policies designed with attention to local people's needs are more likely to be equitable and fair, and are less likely to adversely affect the poor or other marginalised groups.
- **Strengthened transparency and accountability.** A participatory process can have a wide influence on government as it helps create an institutional culture of openness and service. The process also encourages greater public attention to how policies are implemented, promoting accountability.
- **Strengthened ownership.** Involving a broad set of stakeholder groups builds 'ownership' and support for interventions and policies, which can in turn help implementation.
- **Enhanced capacity for marginalised groups.** Valuing the views and priorities of marginalised groups (for example the poor, women, youth) in a formal policymaking setting can facilitate greater organisation and empowerment.
- **Enhanced government capacity.** A genuinely participatory process is often a new experience for local government actors, and can reveal the value of local knowledge and perspectives. The new experience and practical skills gained help in future interactions with local people.
- **Common understanding.** Participatory policymaking can help promote a common understanding around complex, misunderstood or even contentious issues, by establishing new channels for dialogue and mutual learning.

The challenges¹:

- **Time and resource needs.** Participatory policymaking takes longer and can be costly, especially when involving many stakeholders.
- **Creating conflicts.** The participatory process can trigger conflicts among different groups, by bringing opposing views and tensions into the open. But this can produce benefits when new avenues for dialogue and negotiation are created and supported over time.
- **Loss of independence.** Close involvement with a government-led process can lose (or appear to lose) local institutions and civil society organisations their independence – with serious repercussions for their credibility with the community.

Even when participatory processes generate locally appropriate development support, scaling up successful local strategies and innovations requires new bottom-up communication channels and forms of coordination that span different institutional scales and sectors.² The challenge is therefore to 'strengthen local voices and encourage more receptive ears', while strengthening the voices of government actors at the sub-national level (district or county) to articulate lessons learned to national policymakers (see Figure 1).

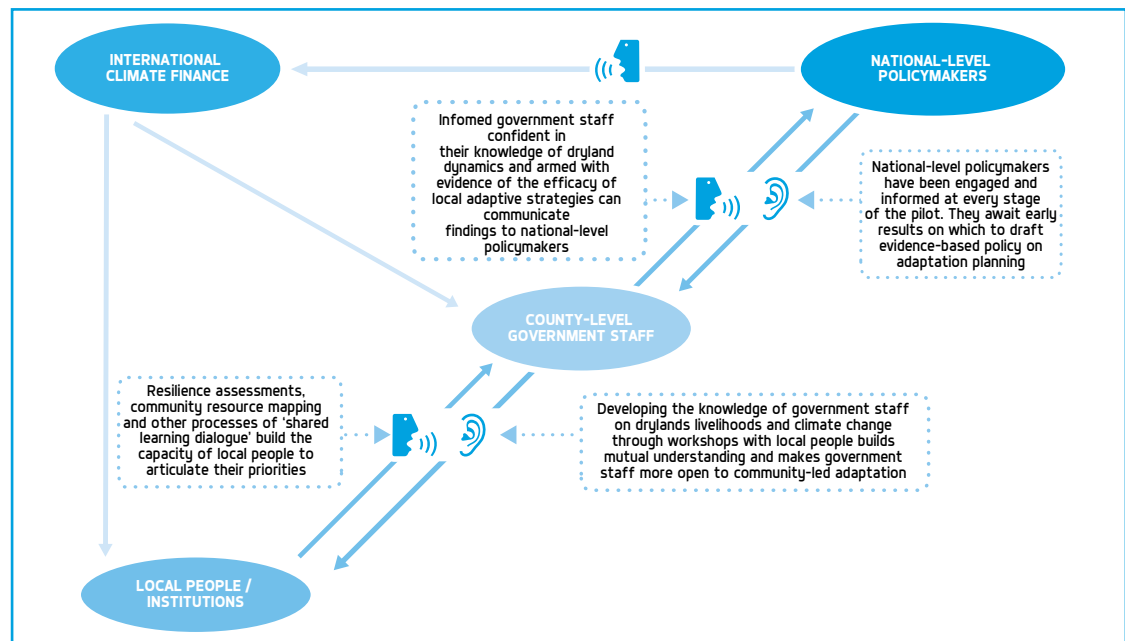
Local to national planning in action

The International Institute for Environment and Development (IIED) has a long history of partnering with communities and governments to support rural people's roles in development planning and policymaking (see Box 3). Collaborations in Kenya and Tanzania have been piloting ways to scale up effective local responses into county- or district- and national-level policy.

In the drylands of Kenya and Tanzania mobile livestock are the mainstay of local economies and contribute significantly to the national economy. In Kenya, a new constitution and realignment of local governance systems has provided an ideal opportunity to transform development planning and pilot an inclusive approach. Likewise, Tanzania's policy of 'decentralisation by devolution' provides a strong mandate for strengthening local people's role in setting the development agenda.

In both countries, a 'shared learning dialogue' approach is building adaptive capacity and climate resilience. A range of stakeholders have come together on an equal footing to discuss and analyse specific development issues. The dialogue is building knowledge around climate change, and is helping government staff appreciate the value of indigenous knowledge, as well as the rationales behind pastoral management strategies. It has

Figure 1.
Strong voices
and receptive
ears: how
local people's
perspectives and
priorities can be
incorporated into
county, national
and international
development
agendas



also built local people's capacities to explain their adaptation priorities to other stakeholders, and to understand the challenges and constraints faced by government staff (for example budgetary cycles and timely mobilisation of resources). These collaborations are ongoing, but are already making progress. In Tanzania, three districts have recognised that government-led sectoral planning is not aligned with community-led holistic planning and this is undermining climate-resilient development and adaptive capacity. Future plans will now address this weakness. And in Kenya, the pilot Climate Adaptation Fund (CAF) approach, which is beginning to finance investments in public goods chosen through ward-level participatory planning, has been highlighted in the Isiolo County Profile, which in turn has been picked up and included in Kenya's National Adaptation Plan.

Upward and downward accountability

Channelling resources into demand-led priorities fosters 'downward accountability' – of

governments and donors to local people. Upward accountability – to national policy objectives – is best ensured by establishing communication and information flows (across institutional scales) that feed evidence-based lessons into national policy processes. The work described in Tanzania and Kenya is at a relatively early stage, and IIED and partners will monitor and evaluate its progress over the next few years to see how well it contributes to climate resilience, food security, local governance and other key components of development. Put simply, the partners will be asking 'what works and why?'

But monitoring and evaluation (M&E) of adaptation in particular is often not simple, not least because the two domains of change – climate resilience and adaptive capacity – are not well defined. Both are now attracting significant donor spending, leading to a growing demand for frameworks and tools that can effectively track and assess investments' outcomes. 'Participatory' M&E is needed in the same way that participatory planning is needed. Participatory M&E assesses processes that involve many people or

Box 3. IIED's partnerships in East Africa

Tanzania. IIED has long worked with pastoralists in Tanzania, and since 2002, in partnership with the Resource Conflict Institute (RECONCILE), has been running a regional training course called 'Pastoralism and Policy Options in East Africa' (PPO). Since 2008 IIED has been collaborating with the Kimmage Development Studies Centre, the Tanzania Natural Resource Forum and other partners³ on a 'Strengthening Voices Initiative' in Longido District. IIED and TNRF are also promoting adaptation and climate resilience through devolved climate finance in Longido, Monduli and Ngorongoro districts.

Kenya. IIED was invited in 2009 to form a partnership with the Ministry of State for Development of Northern Kenya and Other Arid Lands (MSDNKOAL) to design and pilot an approach to 'mainstream' climate change into planning processes in Kenya's drylands. Five wards within Isiolo District (now Isiolo County) were chosen to develop and pilot an approach that became the Climate Adaptation Fund (CAF).

LOCAL TO NATIONAL

groups, each of whom is influencing, or is affected by, the changes being assessed. Negotiation leads to agreement on how progress should be measured and how the findings will be acted upon.

Implications for the post-2015 development agenda

The partnerships described above offer some broad lessons for the post-2015 development agenda:

- Local, customary and informal institutions play a vital role in bottom-up planning for adaptation and resilience. Local knowledge on adaptive practices, particularly on the management of natural resources, should be central to this planning.
- The different priorities and plans of specific vulnerable groups can be aggregated and proposed as components of local development plans at the county and national scale. In this way, local priorities and strategies are 'mainstreamed', first into decentralised and then into national development planning.
- Building a more coherent development planning system cannot be done through the standard international NGO 'project-type' approaches. These create parallel processes and structures, to the detriment of developing the local government capacity needed to ensure that planning and policy processes remain sustainable.
- For effective local to national policy development, funds must follow demand-led channels in national development systems that enable local people to identify their development needs and address their climate vulnerabilities.
- Inclusive policymaking based on local people's priorities and knowledge first needs shared understanding on the key issues between local people and local government staff. Achieving this shared understanding comes about through

sustained dialogue over considerable periods of time with a range of stakeholders. This allows participants adequate time for reflection and learning. Change, especially 'paradigm change', does not happen overnight.

These broad lessons resonate with the priority policy principles for accelerating progress towards the MDGs⁴ and highlight the need for a greater focus on local to national policy processes if development targets concerning food security, nutrition, health, resilience to climate change, and environmental sustainability are to be achieved.

Much criticism of the MDGs has centered on their narrow sectoral goals and quantitative indicators (which are beyond local government resources and technical capacity to measure). This has meant that measuring progress has been a major challenge throughout the MDG process. But the most important shortcoming of the MDGs' limited scope has been their failure to address key governance-related issues, such as development of robust government institutions, social welfare systems and an enabling environment for citizen participation.⁵ A greater focus on local to national policy processes and building local and national government capacity must therefore be central to the post-2015 development agenda.

The 'donor-centric approach' of the MDGs has done little to address aid dependence. Rather, this has been exacerbated as international NGOs continue to take on government roles, consolidating parallel channels for development support. For effective local to national policy development, funds must flow through demand-led channels in national development systems that enable local people to identify their development needs and address their climate vulnerabilities.

To achieve this, the current model of development assistance will require radical changes and an acceptance from donors and international NGOs that their role should often be one of capacity building rather than service provision.

Notes

- ¹ Adapted from: Veit, P. G., Wolfire, D. M. 1998. Participatory policy-making and the role of local non-governmental organizations, In: Veit, P (ed.) *Africa's valuable assets: a reader in natural resource management* pp. 155-184.
- ² The conference background paper for the 'Joined Up Approaches' learning circle highlights the importance of horizontal integration and harmonisation across sectors in addressing hunger, nutrition and climate justice.
- ³ Partner organisations: the Tanzania Natural Resources Forum (TNRF), The Tanzanian Pastoralists and Hunter Gatherer Organisation (TAPHGO), the Pastoralist Indigenous NGOs Forum (PINGOs), the Ujamaa-Community Resource Trust (U/CRT), the Pastoralist Women's Council (PWC), the MS-Training Centre for Development Cooperation (MS-TCDC), the Kimmage Development Studies Centre (KDSC), and the Resource Conflict Institute (RECONCILE).
- ⁴ Greeling, M. 2010. *Accelerating progress on the MDGs: country priorities for improving performance*. Paper prepared for the UN Development Group MDG Task Force. See: <http://www.ids.ac.uk/files/dmfile/AcceleratingProgressontheMDGs.pdf>
- ⁵ UNDP. 2010. Underscoring Democratic Governance. In: *Beyond the Middle Point: Achieving the Millennium Development Goals*. Chapter 3. http://content.undp.org/go/cms-service/stream/asset/?asset_id=2224013



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Joining up approaches to sustainable development

Hunger, malnutrition and climate justice are development challenges that cannot be effectively addressed independently. Instead, 'joined-up' approaches are needed to explicitly deal with their interconnectedness – to tackle both their linked causes and the effects that they have on other development goals.

By 'joined-up' we mean cross-sectoral or cross-departmental approaches that address complex cross-cutting themes and challenges that do not fit neatly into departmental boundaries, portfolios or tiers of government. Joined-up approaches tackle climate change, hunger and nutrition by developing a shared understanding and definition of their linked underlying causes, and a joined up analysis of possible solutions. The aim is to develop integrated and coordinated strategies, policies and investments. Ideally such approaches should consider the wider development contexts (such as security, population dynamics, globalisation) as well as development objectives across sectors (in particular agriculture, health, education, biodiversity and conservation, economic growth) and the links between these objectives.

Joined-up approaches can be developed 'vertically', between different levels (local, national, regional/continental, global) and 'horizontally', between sectors (such as health and nutrition, education, agriculture, energy), by involving different stakeholder

groups (such as citizens and their representatives, government departments, private sector, development organisations, science and technology or research organisations and funders). This paper focuses on joining up 'horizontally' across sectors.

Joined-up approaches can reduce vulnerability and support sustainable development

There is a growing body of literature on the organisational theory behind collaborative, joined-up working that emphasises the challenges around processes, structures, governance and accountability.¹ Yet the concept of using joined-up approaches to address vulnerability is not new. Organisations working with groups such as children, the elderly or people with disabilities have demonstrated that such approaches can effectively address the multiple challenges such groups face. Early successes and eventual changes in policies were possible through

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Box 1. Why joined-up approaches?

The underlying rationale for joined-up action is that no one level, sector or stakeholder group alone can identify and implement sustainable solutions to complex societal challenges such as hunger and climate change. Joined-up approaches are a pre-requisite for post-2015 sustainable development across sectors, as they can be used to identify and assess trade-offs between different development trajectories, policies and investments under different scenarios of climate change, population dynamics and environmental impact. For example, a joined-up approach in formulating a new or revised sustainable development goal on food, nutrition and agriculture could help address the interrelationships between agricultural and food systems and climate change, water, biodiversity, natural resources management and production of fibre and fuel.

JOINED-UP APPROACHES

strong advocacy by civil society organisations representing vulnerable groups, often pursuing a rights-based approach. Consequently, the concept is now generally accepted and increasingly integrated as a 'mainstream' part of policies and service provision for these groups. The approach has also increased accountability to service users.

Experience with similar 'mainstreaming' efforts, for example mainstreaming environment and related livelihoods concerns into economic planning, emphasises the need to link different cross-sectoral goals (such as climate change, biodiversity, gender) and to go beyond paper strategies to support processes of stakeholder engagement, from local to national level and across sectors. An enabling policy environment that supports and rewards such processes is an essential prerequisite.

In the global development context, joined-up approaches have been slow to emerge, not least because of 'turf wars' between agencies battling for limited resources. But recent years have seen something of a boom in local, national, regional and global platforms, networks, partnerships and alliances – all aiming to jointly tackle the interlinked challenges of food security, nutrition, health, sustainable agriculture, environmental sustainability, vulnerability and resilience to climate change. These initiatives have originated and operated at different levels:

Local level. This level is most conducive to joined-up approaches, as local people tend to 'naturally' think and act in a joined-up manner, considering trade-offs between different choices (but possibly with short time horizons). People-centred approaches that work with vulnerable households to plan for

and develop resilience are most likely to succeed. But more often than not, local systemic thinking and action are hindered by governments and development organisations designing and implementing narrow sectoral programmes and policies. Integrated rural development projects in the 1970s and 80s attempted to work in a cross-sectoral way at local and sub-national level, but sometimes without much engagement of local people and their representatives, or by other stakeholders such as the private sector.²

Decentralisation offers new opportunities for joined-up development planning across ministries' responsibilities, with stronger local engagement and ownership. And community-based adaptation (CBA) should be a key strategy for local action aiming to tackle food insecurity in the face of climate change. By building on existing practices and knowledge in agriculture and natural resources management, and by prioritising the most vulnerable groups, communities can effectively increase resilience and reduce hunger and malnutrition in the long term. Agroforestry can play an important role in this, for example by providing a climate-smart agriculture alternative that can increase food production and improve farmers' livelihoods. Similarly, enhancing agrobiodiversity on-farm can improve the food security, nutrition and livelihoods for vulnerable groups (see Box 2). However, such people-centred approaches remain marginal in most sectoral policies and investments – whether in climate change, agriculture or conservation.

National level. The 'classical' division of responsibilities between ministries still dominates government in most countries, often leading to competition for resources, poor coordination and

Box 2: Community-based adaptation: linking food security, climate change and biodiversity challenges

For vulnerable groups such as smallholder farmers, food security is about resilience to shocks (such as drought) as well as about productivity. Using new crops and resilient landraces, farmers make their farming systems more resilient and adaptable, while supporting low-carbon sustainable agriculture. For example, in the harsh karst mountains of Southwest China, where 70-80 per cent of farmers are women, landholdings are too small for people to grow enough food. But a maize participatory plant breeding programme initiated 15 years ago is enhancing both yields and resilience, by crossing modern lines with local landraces (and a spring drought in 2010 confirmed the value of local drought-resistant landraces). Farmers have also benefited from related livelihood activities such as seed fairs and support in supplying organic restaurants. By engaging farmers and crop scientists directly, these initiatives have started to raise awareness of the value of people-centred approaches among agriculture research institutions and policymakers, and of the need to conserve crop diversity in situ.³

Similarly, in the high Andes of Peru, where few crops grow, reintroducing native potatoes in a community managed 'Potato Park' has improved food security, nutrition and 'shock resilience' (for example to drought or pests). And economic collectives have provided a springboard for intercommunity organisation and income generation. This in turn ensures that genetic resources are conserved for longer-term food security and resilience, and that the most vulnerable in the community (such as orphans and widows) get some financial support.⁴

lack of coherence in development planning. It is at this level that efforts to improve integration have often concentrated, for example by developing inter-sectoral programmes and platforms aimed at better coordinating strategies and interventions. Examples include Poverty Reduction Strategy Papers, National Strategies for Sustainable Development, National Adaptation Plans for Action, cross-sectoral national gender strategies, disaster-risk reduction strategies, and territorial or landscape-based approaches. Such initiatives are most successful if developed from the bottom up, building on and strengthening local success stories. At the same time, agricultural and food security related policies need to be effectively integrated at national level with policies addressing climate change and adaptation.

But national level policy processes may struggle to integrate the 'bottom up' dimension (needed to ensure grounding in local realities, for example by integrating lessons from and support for CBA into national policy frameworks), and effective horizontal coordination within and between sector agencies (for example to endorse, or better still actively support, inter-agency collaboration down to decentralised levels). Experience with environmental mainstreaming shows that key strategies should include: enabling rural community and vulnerable groups' participation in national policy development; building on existing tools that work (for example environmental impact assessments); generating economic evidence to make the case; and influencing budget allocations of finance ministries.⁵

Regional and global level. The number (and size) of regional organisations with a development mandate appears to be continuously increasing, yet there are still few examples of effective cross-sectoral coordination, let alone joined-up approaches that address climate change and hunger. Most regional organisations focus on coordinating sectoral activities on a regional scale without necessarily taking a holistic, intersectoral approach. However, some have attempted to look beyond immediate agricultural production issues to overcoming hunger and developing sustainable, climate resilient regional systems. Examples include the Hunger-Free Latin America and the Caribbean 2025 Initiative, the Hunger-free Initiative for West Africa, and the Comprehensive African Agricultural Development Programme (CAADP).

At global level, a number of initiatives such as the Committee on World Food Security (CFS) aim to tackle global challenges in a joined-up manner. But the emphasis here is less on joint implementation, and more on joint analysis (including foresight), prioritisation and coordination.⁶ Although this is useful and needed, the 'acid test' is whether common understanding and increased 'global' coordination

leads to more joined-up action 'on the ground' – and such outcomes are not always obvious.

An important cross-cutting dimension at all levels is the leadership role of women. Empowering women is a cornerstone of fostering adaptation and addressing climate change impacts on nutrition security and health. Few initiatives have so far made the link between greater gender equity, women's capacity to address the health and nutrition risks of climate change, women's role in local food systems and climate-smart agriculture, and the links between nutrition and maternal and child health.⁷ However, the role of women is often recognised in projects that seek to promote agrobiodiversity as a strategy for improving nutrition and food security in the face of climate change (see Box 2).

Challenges for 'joining up'

The challenges for joined-up working at all levels are significant and integrated working requires time and resources because the complexities of issues like hunger and climate change bring potentially conflicting implications. On the one hand, and at least during the early stages of joining up - that is, when developing a joint understanding of the underlying causes and defining the challenge to address - there is a need to think broadly and involve a wide range of stakeholders and actors. On the other hand, such broad, all-encompassing alliances require huge (and potentially unaffordable) communication and coordination. Therefore, when screening and developing options for joined-up action, fewer key actors should take the lead and consult with others if and when required. It is also easier to mobilise individuals and organisations around specific, relatively clearly defined themes or challenges, to which each one can contribute something 'tangible'.

Another, possibly increasing, challenge comes from externally (and sometimes corporately) driven solutions to malnutrition, such as yield increases through genetic engineering and agro-technology (which may not consider wider ecological and social impacts), and large scale land acquisitions to produce food and biofuel. There is a danger that such approaches counteract joining up by just addressing one issue (increasing yield/production) without considering local control and resilience, or access to food and environmental sustainability. Access to food, and its availability and affordability are crucial. In many instances, increased agricultural production has not reduced hunger and malnutrition, and in some it has inadvertently contributed to them. For example, the takeover of vast areas of pastoralist land in the Horn of Africa by large-scale commercial farms, often in key strategic areas previously reserved for times of drought, was a key factor behind the famine in 2011.⁸

JOINED-UP APPROACHES

Last, but not least, it is a challenge to measure and attribute the benefits of 'joining up'. This is because the interrelated parameters are complex and there may be no 'unjoined-up' situation to compare with. So local communities, government agencies, research organisations and international agencies need to work together to document and analyse successful cases of joined-up thinking and acting, in order to scale them up via enabling policies, systems and processes.

Implications for the post-2015 development agenda

The first Millennium Development Goal (MDGI) addressed absolute poverty and hunger by focusing on a key developmental outcome: halving the proportion of people who suffer from hunger, as measured by (1) the prevalence of underweight children under-five years of age and (2) the proportion of population consuming less than the minimum level of dietary energy. As such, MDGI encouraged joined-up approaches, because the goal required combined efforts to: reduce poverty (for example by increasing employment and purchasing power); improve food availability (for example through agricultural and market development); and address secondary causes of malnutrition (such as water, sanitation and health).

But the MDG framework did not provide much guidance on making the difficult policy and investment choices needed to address a range of sectoral objectives simultaneously.

The post-2015 agenda is likely to focus both on (a)

defining and measuring sustainable development goals and (b) mapping out 'how' to achieve them. And while it is relatively easy to define sectoral targets (for example, around hunger, health and nutrition, carbon emissions), it is more challenging to define a strategy for achieving a series of goals that simultaneously advance all dimensions of sustainability – environmental, economic, social and governance.

Yet coordinating and integrating approaches to the combined challenges of hunger, malnutrition and climate change vulnerability – 'joining-up' – appears to offer promise. It is now more widely accepted that joined-up working, while increasing transaction costs in the short to medium term, can increase effectiveness in the long term. Governments are starting to recognise that existing economic development goals and governance systems with a narrow sectoral focus can contribute to and even cause hunger, malnutrition and climate injustice. What is needed now are more concerted efforts to:

- **'Mainstream' joined-up approaches and to scale up successful pilots**, with a particular focus on the needs and participation of vulnerable groups across sectors and levels.
- **Take a joined-up approach to a Sustainable Development Goal around food, nutrition and agriculture**, drawing on the experience with MDGI.
- **Secure the political will to overcome barriers to joined-up approaches in government** through public sector reforms that help provide the much-needed enabling environment and rewards for cross-sectoral work.

Notes

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Empowering a local community to address climate risks and food insecurity in Lower Nyando, Kenya

In erosion- and drought-prone Nyando, self-help groups affiliated to large umbrella bodies are working with extension agents, researchers and development partners to improve local livestock and diversify crops, to improve soil and water management, and to pool financial and labour resources.

Overview

In the Nyando Basin in western Kenya, climate change and variability are already evident. Droughts, floods and unpredictable rainfall have increased, affecting agriculture and food security. These problems are compounded by high poverty (about half of the population lives below the poverty line) and prevalent HIV (the adult infection rate is around 7.5 per cent)¹ leading to more widow- or orphan-headed households, lost productivity and labour shortages.

Farming is Nyando's primary source of income and food (a mixed crop-livestock system), but Nyando farms are not diverse and show few agricultural innovations.² Lower Nyando also suffers serious land degradation. Soil erosion is rampant in two annual rainy seasons, and run off forms deep gullies that affect about 40 per cent of the landscape.³

Poverty, lost labour and less diversified livelihoods and land degradation all make communities more vulnerable to climate risks, directly reducing household food supply and nutritional status. Up to 17 per cent of households are unable to meet their food needs for 3-4 months in a year.² Malnutrition is estimated to be 45 per cent among under-fives.⁴

To tackle these problems, people in Lower Nyando organised themselves into six self-help groups affiliated to a large 'umbrella' community-based organisation (CBO) called Friends of Katuk Odeyo (FOKO). Households join a group, contributing from

KSh100-200 (equivalent to US\$1.2-2.4) a month.

FOKO now has 20 groups, which comprise 600 households. Of these 20, two are women's groups. In the others, 70 per cent of the active members are women. Two other CBOs have sprung up – Kapsokale and the North East Community Development Programme. Each CBO is a legal entity and has a bank account used by the member groups. Together, they aim to use community empowerment to tackle food insecurity, malnutrition and increasing dependency rates. In the Nyando basin 1,170 households now belong to a self-help group, and 70-85 per cent of the active members are women.

Each self-help group is led by an elected chairperson, secretary and treasurer, and in most cases at least two of these are women. Representation for the groups within each CBO is based on geographical clusters (often villages). The CBOs, which are run by a five-member executive committee, are mainly responsible for linking communities with relevant government ministries, research and development organisations, and for mobilising resources, whereas local groups make decisions on capacity-building needs and activities.

Interventions and impacts

The self-help groups are empowering their communities through collective action. Initially, they simply pooled financial resources into a Rotating Savings and Credit Association (ROSCA) scheme and

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pooled labour (especially for planting and harvesting) based on principles similar to share-cropping. While this particularly helped widow- and orphan-headed households with subsistence food production and supply, many still relied on food aid during droughts. And limited access to improved farm inputs or better agronomic techniques meant food insecurity, malnutrition and land degradation persisted.

Consequently, farmers in Nyando have begun working with research development partners and government extension agents to test a portfolio of promising climate change adaptation, mitigation and risk management interventions. The main partners include the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS), World Neighbors, the Swedish Cooperative Centre's Vi Agroforestry programme, the Kenya Agricultural Research Institute (KARI) and the Kenya Ministries of Livestock Development and Agriculture. Each contributes their expertise to specific interventions, integrating these within existing community institutions and organisations.

Diversifying livelihoods

Livelihood diversification empowers households, giving them a range of livelihood options to draw on, making them more food and income secure. Interventions in Nyando include beekeeping, improved small livestock production (goats, sheep and poultry) and crop diversification with improved agronomic practices.

Improved beekeeping. A participatory process identified beekeeping as a livelihood diversification option. Traditionally, beekeeping was labour intensive and dangerous, using hollowed out log hives to attract bees. Harvesting excluded women and fostered a fear of handling bees within the community. Average yields were very low, about 5kg of honey per beehive per year compared to a potential yield of 90kg.

In 2009, the Ministry of Livestock Development and World Neighbors started working with five of FOKO's self-help groups. The partnership introduced improved beehives, and trained farmers to be more productive beekeepers. Now, 15 beekeeping groups have spread across seven villages affiliated to the three CBOs, with 175 beehives between them. Three of the 15 are women's groups, while the other 12 have 70 per cent active women members. Eight artisans are now trained and equipped to build affordable theft-resistant hives, and shared learning is empowering farmers to exchange knowledge within and across self-help groups. Average honey yield now ranges from 10kg per beehive per harvest. Harvesting is three times a year, with potential for

up to six harvests a year.

Improved livestock. From late 2011, CCAFS has been collaborating with World Neighbors, Vi Agroforestry and Kenya's Ministry of Livestock Development to work with farmers to improve productivity of small livestock. Small livestock (sheep, goats and poultry) is less labour intensive than cattle and gives women more control over livestock management and income.

The Ministry's extension services help farmers improve management practices including animal healthcare. Through the partnership, 16 community-based animal health workers, or 'para-vets', have been trained across the three CBOs. World Neighbors is identifying and sourcing improved breeds. Sixty faster maturing Gala goats and 10 Dorper sheep are being cross-bred with indigenous breeds.

Poultry improvement focuses on early maturing and disease-resistant indigenous chicken. About 400 improved local chickens were sourced from a government programme and distributed to 100 farmers. The total population of these chickens is now probably over 3,000. With improved housing practices, they mature two months earlier than conventional free-range chicken.

Overall, about 120 households in Nyando are now benefiting from interventions on small livestock. Of these households, 70 per cent are headed by women.

Crop diversification. CCAFS, KARI and the Ministry of Agriculture are working to empower farmers to manage climate risk through a combination of crop diversification and improved practices. They are introducing sorghum, pigeon peas, cowpeas, green grams and sweet potatoes to supplement the traditional maize, cassava and bean staples.

More than 250 households are using improved agronomic practices and KARI has started on-farm multiplication of an improved cassava variety (MH95/0183) that resists mosaic virus.

Youth are particularly involved in horticulture. About nine youth groups (not affiliated to the three CBOs) and 20 individual farmers are intensively growing onions, tomatoes, butternuts and watermelons. Average yields per acre range from 500kg for onions to eight tonnes for watermelon.

Mitigation interventions

Agro-forestry, land and water management are among the mitigation interventions employed to reduce greenhouse gas emissions in Nyando basin. The partnership has supported 22 tree nurseries, some owned by the self-help groups (more than half of all

Crop diversification can help manage climate risk



the nurseries are female-owned). More than 50,000 high-quality tree seedlings have been produced, each worth KSh10-20. About 23,500 multipurpose trees have been planted in homesteads with a 75 per cent survival rate and the local community is establishing a two acre demonstration woodlot.

To improve soil moisture retention and reduce erosion, the Ministry of Agriculture is working with farmers to promote contour farming and terracing, composting and conservation agriculture. Collectively, community members have also financed and built 40 new water storage 'pans' and rehabilitated 12 others.

Box I. John Obuom is one of 35 'champion farmers' within the Nyando Basin and a member of the Kowalla self-help group. Champion farmers practice sustainable intensification and proactively try new technologies. John's three acre farm has three water pans and a woodlot. He owns a manual pump and pipes for irrigation, and receives advice and support from extension agents for improved agronomic practices. In the short rainy season he grows maize, green grams, kales, tomatoes, butternuts and indigenous vegetables. He also grows perennial crops such as cassava, sweet potatoes, bananas and pawpaws. His livestock include improved dairy and beef goats, poultry and beekeeping. In future, he plans to reinvest in a dairy cow.

Building resilience

Through group savings and support from development organisations, the self-help groups affiliated to FOKO and NECODEP CBOs have established an agricultural supply shop at FOKO's resource centre along the Kisumu-Kisii highway. It offers farmers high quality inputs, affordable prices, advice and information and credit (for members of the CBOs). The shop seeks to make about 5 per cent profit and gets advice on the types and quality of the inputs to be stocked for every season from the Ministries of Agriculture and Livestock.

And Nyando farmers have built on earlier community saving and credit schemes, in partnership with Vi Agroforestry and World Neighbors. The three CBOs – FOKO, NECODEP and Kapsokale – each has capital of at least KSh250,000 (US\$3,000) that provides loans for self-help group members to invest in farming and other income generating activities. The scheme has made loans totalling KSh1,250,000 (US\$15,000) to Nyando households in the past 12 months.

Main achievements and challenges

Nyando's multi-stakeholder approach shows how research, development partners, extension agents and communities can work together towards a common outcome.

Community groups working with World Neighbors and the Ministries of Agriculture and Livestock

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Development have gained capacity in improved agronomic practices, beekeeping and livestock management, and this has often particularly helped women, who are well represented in community groups (7 of the 16 community-based animal health workers that have been trained are women). Some of the groups are already looking further afield. For example, some of the beekeeping groups have joined other organisations outside their CBO to improve market access and increase their bargaining power.

Households have gained better incomes, better nutrition and more control over their own food security. Crop productivity has increased while income from selling crops, honey, eggs, chicken and tree seedlings is providing extra income to meet other household needs.

Other advantages of the group approach include sharing income or products equally among members or reinvesting in other income-generating activities. Groups either share income or products equally among members, or re-invest in other income-generating activities. Horticultural groups, for example, invest some of their proceeds in other high-value traditional vegetables. Within livestock enterprises, the principle of 'passing on the gift' enables other community members to acquire the improved breeds.

Integrating livelihood diversification with mitigation interventions, for example by improving land management through agro-forestry, is another key achievement.

Interactions within and across groups and CBOs has driven knowledge-sharing and learning. Through the partnership, Vi Agroforestry, World Neighbors, Ministries of Agriculture and Livestock Development and KARI have expanded their extension programmes to meet increased demand.

Yet despite the achievements, challenges remain. Scaling out of the interventions and active participation

for group members still need to be strengthened. Adding value post-harvest is another challenge. Cereal crops need drying and storage facilities, horticultural products need cooling facilities, and beekeepers need equipment for processing and packaging honey. Collectively owned tree nurseries, horticultural enterprises and beekeeping all face challenges with basic record keeping for monitoring productivity as well as profitability. Pests remain a further challenge, especially for crops. Lastly, fodder and forage for livestock and beekeeping has been slow to establish.

Lessons

Farmers, researchers, development partners and extension agents all benefit from uniting around common interests. Participatory processes that involved all stakeholders in identifying and prioritising interventions have empowered community members to directly request and access information and services.

By forming umbrella organisations, self-help groups gain bargaining power and financial resources. The umbrella CBOs have been key to empowering individual groups. As such groups grow, they will become better able to access credit from formal financial institutions such as banks and micro-finance institutions.

By taking a 'gendered approach', community development efforts can contribute to women's empowerment. Diversification into beekeeping and poultry has particularly helped women, as such enterprises need little land (women face tenure problems in conservative societies like Nyando) and are not labour intensive. Ensuring that leadership roles in self-help groups are open to women is a further path to women's empowerment.

Overall, linking climate risk management, mitigation and adaptation interventions through a broad partnership has diversified enterprises, empowering farmers to become more resilient.

Notes

■ ¹ NACC and NASCOP. 2007. *National HIV prevalence in Kenya*. Government of Kenya, Nairobi. Also see Kenya National Bureau of Statistics (KNBS). 2007. *Basic Report on Well-Being in Kenya*. Based on the Kenya Integrated Household Budget Survey 2005/2006. Ministry of Planning and National Development, Nairobi. ■ ² Mango, J., Mideva, A., Osanya W., Odhiambo, A. 2011. *Summary of Baseline Household Survey Results: Lower Nyando, Kenya*. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark. Available online at: www.ccafs.cgiar.org; CCAFS. 2011. *Global Summary of Baseline Household Survey* ■ ³ ICRAF. 2008. *Baseline Report Nyando River Basin*. Western Kenya Integrated Ecosystem Management Project. ■ ⁴ World Neighbors. 2006. *From hunger to hope: Friends of Katuk Odeyo Community Development Program (FOCODEP)*, Baseline Survey Report.



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Biogas for climate justice: a story of change in Nepal

Switching from a wood-fuelled cooking fire to a biogas flame saves trees and time, reduces greenhouse gas emissions and prevents health problems. Community-based cooperatives in the Terai plains of Nepal are using carbon credits to fund micro-loans for families to install the technology.

Overview

The village of Madhuban lies in the fertile Terai plains of mid-western Nepal, an area covered with agricultural land and forest. As in many villages of Nepal, farming is the traditional occupation. In the past decade or so, villagers have started witnessing changing climatic patterns: the monsoons are later than usual and rainfall is more intense but lasts fewer days. With more climatic variability, Madhuban villagers have begun to see changes in crop productivity and have turned to their existing knowledge of climate variability to adapt.

The situation of Madhuban is typical in Nepal, one of the least developed countries in the world. With 80 per cent of the population¹ and 33 per cent of the GDP² relying on agriculture, climate change threatens food security and underscores problems of hunger and nutrition. The impacts on agriculture in a country where one-third of the population live below the poverty line³ have resulted in a cry for 'climate justice'. It is unjust that farmers in countries like Nepal, who have not contributed substantially to global climate change and its unprecedented risks, have to bear the brunt of the impacts.

Carbon offset markets are one mechanism for redressing issues of climate justice. Here we present a case study from a WWF programme where communities used revenue from the sale of carbon credits to help finance the installation of biogas energy in Madhuban and other villages. Introducing biogas for household cooking is a pathway to social change. It can empower local people, especially

women farmers, and contributes to food security, sustainable management of forests and mitigation of greenhouse gas emissions.

Initiated after a local stakeholder consultation process, the WWF programme builds on Nepal's long-term biogas programme jointly delivered by the Biogas Sector Partnership Nepal (BSP Nepal), the Alternative Promotion Centre (AEPC), the Government of Nepal, and local NGOs. This alliance has helped Nepali villagers to install more than 200,000 household biogas units since the early 1990s. This case study highlights how community-managed finance can play an integral role in empowering communities to make their own decisions on resource allocation and sustainability, reducing dependence on the external 'project'.

Interventions and impacts

Initial consultation. First, the WWF biogas programme organised participatory processes locally and nationally with civil society and community-based organisations, youth groups, women's groups, government authorities and banks to:

- understand demand for biogas among different groups within local communities;
- seek approval from communities for local implementation, as well as government approval;
- decide on sites, methods for implementation, the monitoring and evaluation system and the financing mechanism for both subsidies and soft loans; and

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- establish a process to empower the local communities in decision making, project implementation, monitoring and governance.

With the green light from the communities and further approval from the government, the project was initiated in 2007 and began installing biogas in villages such as Madhuban. Each biogas unit is attached to a toilet and produces the gas from a mixture of human waste and cattle manure. In the first phase, 7,500 units were installed in 39 VDCs and 2 municipalities across the Terai Arc Landscape region. A VDC is a local administrative unit covering many rural villages.

Financing of biogas units. The cost of a biogas unit – currently about US\$500 – is prohibitive for most farmers. As a solution, the government provides 25 per cent of the cost as subsidy, and for the next 50 per cent the WWF project has helped to set up community-based micro-financing cooperatives that offer soft loans at 8 per cent interest (a rate decided by the communities), repayable in monthly instalments over two years. The loan funds come from sales of carbon credits from the biogas programme, together with other fundraising. And as loans are paid back the communities select new beneficiaries. The remaining 25 per cent of the cost is borne by the communities either in cash or in kind.

Box 1. First glimpse of biogas benefits

The first biogas unit in Madhuban sparked a lot of curiosity among the villagers, especially with the women. Thagiya, one of the village's female farmers, left her chores one day to drop by Bikhu's house, where the biogas unit was installed, for a glimpse of the device. This demonstration unit was a starting point that spread biogas installation to other households. Biogas burnt with a blue flame, and Thagiya found it hypnotic. She was amazed at how quickly food cooked over the flame, and surprised at how clean and smoke-free the kitchen and house were. With her wood-fuelled stove she had been spending six-hours-a-day cooking. Firewood cooked food unmanageably, and the smoke emanating from it practically engulfed the entire house, leading to a lot of respiratory and eye illnesses for the family.

To top it all, Thagiya realised that she and her husband no longer had to spend countless hours in the forest in search of firewood to cook their next meal. The other villagers, too, spent several hours per day collecting firewood, mainly through illegal harvesting.



WWF Nepal

Extra time saved from collecting wood for fuel is used for income generation

Empowerment through local financial

management. To ensure good governance, local people hired by the cooperatives have been trained to account for, manage and audit the use of funds. Now the communities do not have to rely on private or government banks for these services. People who take loans are also introduced to an accounting process to make and manage credit payments. In addition, Nepal's Biogas Sector Partnership has worked with communities to coordinate quality control and monitoring of the biogas units, while also training community members and building their capacity.

Currently the cooperatives are managing more than US\$500,000 sustainably and will be able to invest the money in more biogas units. Communities sell shares in the cooperatives at around US\$1.3 per share to the local beneficiaries, thus creating a broad sense of ownership that prevents loan defaults.

Reaching scale. The sustainable community-based financing mechanism allows for up-scaling biogas installation in more villages. More than 20,000 new units are now being added, which, when added to those reached in the first phase, will bring biogas to a total of 81 VDCs.

Main achievements and challenges

Some 37,500 individuals now have access to clean, renewable energy from the first 7,500 plants installed by the WWF project. Local communities have gained the capacity to govern and manage the micro-financing mechanism, and through this



*Mohan Tharu
with his biogas
plant*

WWF Nepal

sustainable financing model around 40 per cent of households have accessed loans to install biogas units and manage their micro-credit portfolio. In May 2010, the government recognised Madhuban as the third 'biogas model village' in Nepal – a demonstration village and field laboratory where at least 80 per cent of households have biogas units.

In concert with other development activities, biogas use has produced a cascade of additional benefits for families and villages involved in this project.

- A research study looked into the **time saved** on collecting fuelwood, cooking and washing dishes. With biogas, a female child saves up to 59 minutes a day, a female adult saves up to 123 minutes a day, a male child saves up to 25 minutes a day and a male adult saves up to 85 minutes a day.⁴ Spending less time on household chores, villagers find more time for kitchen gardening, commercial vegetable production and other income-generating activities. Diversified crops, sustainable income from agriculture and consumption of safe and nutritious foods has improved the **food security** of farm families in the biogas programme.
- Research results also show that the majority of women have been using the time saved by biogas to undertake various income-generating activities.⁴ Saved time can also be used to attend literacy classes, listen to the radio or watch television, read newspapers, do social work, play

or study. **Women are empowering themselves as a result.** They take part in village meetings and participate in informal women's savings groups that also provide loans for income-generating activities.

- Slurry from the biogas unit can be used as an **organic fertiliser** in agriculture. Slurry manure is a safe product that lets farmers easily cut 25 per cent of their costs for chemical fertilisers.
- **Health issues** associated with firewood were serious in the past. Rural households in Nepal tend to have air pollution in excess of World Health Organization standards.⁵ Farmers can now breathe better, thanks to the smoke-free kitchen. In a survey of users, 95 per cent said that using biogas has reduced indoor air pollution. Almost 76 per cent reported fewer eye infections, 23 per cent noted a drastic reduction in respiratory diseases, 47 per cent reported fewer coughs and 36 per cent reported fewer fire-related injuries.⁴ Although there might be several factors causing a decline in health-related problems, reduced indoor pollution has a significant effect.
- Construction of toilets linked to each household biogas unit has given villagers better **sanitation facilities**, which mean fewer chances of illness. Open defecation was a key health issue in several villages.

The major weakness of the biogas programme

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is affordability. The government subsidy does not cover most of the up-front cost of biogas installation, so the poorest farmers who do not have enough monthly income to pay back soft loans are currently excluded from the scheme. In addition, a family must have land on which to install the unit, and at least one to two cattle to provide the manure input.

In the area of capacity building, helping communities understand the dynamics and technical aspects of carbon markets as a financing source still remains a challenge, but there is a willingness to learn. Advocating for attaching the biogas unit to a toilet was also not an easy task due to social taboos on the use of toilets; however, with time some people appreciated that better sanitation led to better health and lower health-related expenditures. A final challenge is that the technology requires a hot and humid agro-climate and hence its application in the uplands of Nepal is limited.

Lessons

Empowerment and sustainability. A bottom-up approach that empowers local communities to make their own decisions and control finance and outcomes is key to any programme's long-term popularity and success.

Affordability and inclusiveness. Technologies like biogas offer manifold benefits, but the overall impact at community level is limited by the high cost. To spread the rewards and prevent conflict, programme designs need to plan strategies to help cover some costs and ensure inclusiveness.

Carbon finance and climate justice. This project offers an example of how carbon financing can be used for greater climate justice. If carbon-financed projects are scaled up in low-income countries, the funds could help improve the livelihoods of poor communities.



WWF Nepal

Biogas is used for cooking in place of wood

Notes

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Getting a seat at the table: fisherfolk empowerment for policy change in the Caribbean

Across the Caribbean, people involved in small-scale fisheries (whether fishing, preparing or selling fisheries products) have organised themselves to advocate for policies that increase their livelihood and food security, and their resilience to risks, including climate change.

Overview

The insular Caribbean region is composed of 31 island nations and territories, varying greatly in size and wealth. Populations range from more than 11 million in Cuba to around 50,000 in St. Kitts-Nevis and even less in some territories. Per capita gross national income is around US\$22,000 in the Bahamas but US\$650 in Haiti.¹ But although the islands are also culturally and politically diverse, they have many features in common, not least their relationship with and use of the sea that surrounds them. As small island developing states, they are highly vulnerable to natural disasters, global economic shocks and climate change. Even in the wealthier countries, rural and urban poverty is widespread and persistent.

The islands are intrinsically food insecure: agricultural production is constrained by centuries of land degradation starting in the colonial plantation era, and constantly undermined by natural disasters such as hurricanes. Many of the foods in local diets are imported. Given their open economies, the countries cannot regulate import prices, and these can spike due to external market conditions. Fish have long been a staple, providing an important source of protein in Caribbean diets and a harvestable resource in straitened times. Fish also contribute significantly to income and employment, especially in coastal communities.² Declines in fish stocks or small-scale fisheries

production therefore have a direct and immediate impact on food security and nutrition throughout the Caribbean region.

Climate change is likely to affect the types and relative prevalence of Caribbean marine species, with potentially serious implications for commercial stocks and markets. Rising sea temperatures may drive some species out of their traditional habitats. More intense tropical cyclones will mean greater damage to fishing boats and infrastructure and fewer days at sea. The types of boats now used may not be suited to future conditions. Increasing carbon dioxide in the water adversely affects inshore marine species, and indirectly coral reefs and other important breeding habitats.³ Climate change thus represents a major threat to an industry on which the livelihoods of many coastal communities, and the food security of the region, depends.

Fisherfolk (used here to mean everyone involved in small-scale fishing, whether through fishing, processing or selling) have long been raising their voices collectively in times of crisis. In many countries, these experiences of coming together led to national fisherfolk organisations that could mobilise the community against threats. For example, the Antigua and Barbuda Fisheries Alliance was formed in the mid-1990s to oppose the threat from neighbouring countries' illegal fishing. These national organisations formed the basis for a regional network, the

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EMPOWERMENT

Caribbean Network of Fisherfolk Organisations, which has empowered fisherfolk to advocate for policies to address the threats of climate change.

Interventions and impacts

Getting organised. Over the years, some such national fisherfolk organisations became cooperatives or businesses in order to provide services and improve the sector's viability. This earned the organisations money that could be used to support fisherfolk. But other national associations continued to operate informally, often with little or no ongoing activity.

In 2002, the Caribbean Community (CARICOM)⁴ established the Caribbean Regional Fisheries Mechanism (CRFM) to support the sector's development. The new institution wanted to develop partnerships with stakeholders, including fisherfolk, but lacked the capacity to collaborate with stakeholders individually. It commissioned the Technical Centre for Agricultural and Rural Cooperation (CTA) to survey national fisherfolk organisations. That work gave these organisations the opportunity to come together, share experiences and discuss how they could support each other and the sector more effectively. With encouragement from the CRFM, the organisations decided in 2004 to create a regional grouping, the Caribbean Network of Fisherfolk Organisations (CNFO), choosing a network over a more rigid organisational structure promoted by CRFM. During the next three years, with CRFM and CTA support, the national organisations developed an agenda of strategic actions for CNFO to take to strengthen the national organisations.

CNFO's four areas of strategic focus are information, capacity building, policy advocacy and policy engagement. From the beginning, it has worked in partnership with others to achieve its overall aim of securing sustainable livelihoods for fisherfolk and viability for the sector. It has longstanding strategic partnerships with the CRFM and CTA (on participation in regional fisheries policy processes), the University of the West Indies' Centre for Resource Management and Environmental Studies (on knowledge generation and exchange), the Caribbean Natural Resources Institute (on capacity development and policy advocacy), the FAO (on sustainable fisheries governance), and several others.

Becoming empowered. Since 2007, CNFO has supported its members in structured capacity building, aimed at increasing their ability to support the sector and effect policy change. The focus has been on developing leadership and management skills including

advocacy and negotiation, policy analysis and development of common positions. This process has involved formal meetings, mentoring, information and practical exchanges, and peer-to-peer support.

Speaking out. As its members have gained knowledge and confidence, CNFO has become an increasingly effective channel for fisherfolk advocacy. While they have tapped knowledge and expertise from their partners, the main resource in developing their advocacy positions is the community's own considerable knowledge. A major route to empowerment has been the affirmation of fisherfolk's own scientific expertise, derived from days and years of being on the sea observing its processes and changes.

Food security has been an important advocacy issue from the start. CNFO and its members promote food sovereignty, whereby national food and nutrition requirements are met through local industries. In this way, regional food security and livelihood security for food producers become inextricably linked. The aim is to get politicians and decision makers to go beyond acknowledging the importance of fish and its nutritional value, to considering that value when making investment decisions that could affect the sector.

Climate change is a very real issue for fisherfolk, who are among the first to suffer from its effects. CNFO's engagement started by building the members' knowledge about climate change and its potential impacts on the sector. Members could then identify actions they needed to take in response to climate change, and also actions required of others, for example infrastructure to protect fish landing beaches from erosion induced by sea level rise. They have now crafted messages that offer practical policy directions to reduce the sector's vulnerability. Using an ecosystems approach, the messages highlight climate change's potential impacts on fisheries habitats and human livelihoods, and the need for adaptation responses by fisherfolk and other stakeholders. Such responses should take account of the social and cultural values of fishing; respect traditional practices; and aim for optimum sustainable use of fisheries-based goods and services.

CNFO's initial aim is to get national and regional fisheries policy to address current and anticipated climate change effects. The network would then like to stimulate adaptation planning processes involving all marine-related sectors and interests. CNFO realises that it cannot have a real impact, or even demand to be involved in adaptation planning processes, until the region's governments begin taking climate change more seriously. For most

Fisherfolk repair their nets at Claxton Bay, Trinidad and Tobago



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countries, it remains a niche issue dealt with solely by ministries of environment. There is no mandate or incentive for other agencies to engage, even those dealing with sectors that, like fisheries and agriculture, are already affected. And despite the need for cross-sectoral, multidisciplinary responses to climate impacts, there are still few if any effective processes of interagency planning and collaboration.

Main achievements and challenges

Accomplishments. CNFO is still far from where it wants to be, but it is getting stronger as a network, with greater fisherfolk participation despite the costs involved. Its proudest accomplishment is its growing cadre of strong leaders, which has in turn strengthened the member organisations. Many of the national leaders have become confident, knowledgeable and eloquent policy advocates who have earned the respect of policymakers in their countries and regionally.

With its growing ability to open doors and promote its positions, CNFO has increased fisherfolk influence on national and regional fisheries policy. It has contributed to drafting a CARICOM Common Fisheries Policy, gained observer status on the CRFM, and collaborated with the fisheries management agencies in many member countries. These accomplishments represent a major cultural shift for governments in the region, which have long resisted working in partnership with small-scale resource users. There is still a long way to go,

however, before governments have the desire and the capacity to institutionalise more equitable and stakeholder-driven ways of working.

Challenges. Fisherfolk are notoriously resistant to formal organisation, because involvement in an organisation takes time away from their work. So the issues that CNFO engages in, and the work it does, must bring members greater benefit than the high opportunity costs of involvement. While CNFO advocates for broader policy objectives, such as food security and better inter-sectoral coordination, it approaches everything it does from the perspective of the sector's survival and resilience. The strong partnerships that CNFO has developed, and the project resources that these have brought, have also partially overcome organisational costs.

A bigger challenge, because it requires change from others, is reforming the region's rigidly sectoral approach to policymaking, in which national policy and planning issues that touch on every aspect of peoples lives and livelihoods (such as climate change and food security), are consigned to a single department of government and barely considered by others. This structure has been impervious to change until now, and it will likely take more than the work of the CNFO to shift it. Many Caribbean countries have established multi-stakeholder fisheries advisory bodies that bring together some of the actors, but key sectors may be left out since membership is usually at the discretion of the relevant minister. Few if any countries have effective, formal intersectoral processes mandated by legislation.

EMPOWERMENT

CNFO is however not giving up, and hopes that by working with and through its diverse and influential partners, it can nudge the region towards a more integrated approach to policy and planning. Its vision is for national and regional inter-sectoral policy platforms dealing with the marine environment, where all relevant agencies and stakeholders, including the fisherfolk, have an equal place at a single decision-making table.

Finally, there is the continuing challenge of getting policymakers to give attention to the sector and take the time to listen to fisherfolk's concerns and proposals. The situation has been slowly improving over the past twenty years; one indicator of progress is the CNFO's observer status (though not yet full membership) in the CRFM. Other marine resource sectors, including large-scale fisheries, tourism, and oil and gas, remain more influential: they are better organised and have more money and power to promote their objectives. In contrast, fisherfolk sometimes have to pass up hard-won offers to participate in regional planning processes because the invitation comes without funding for travel.

The fisherfolk's positions are also often undermined by the scientific community, much of which continues to see marine issues through a conservation rather than sustainable development perspective. Views of sometimes ill-informed international senior scientists steer many major regional marine management projects, while fisherfolk's traditional knowledge is ignored or discounted. The result is projects that offer little for, and can sometimes actually threaten, fisherfolk livelihoods.

By becoming more empowered, fisherfolk are better equipped to confront these continuing inequities and biases, but much still needs to be done to sensitise other sectors to the value of small-scale fisheries for national development. One strategy has been to engage directly with the public to get widespread understanding of and support for fisherfolk objectives. In this, CNFO has built on members' successes in generating public support during past crises.

Lessons

Collective action is a powerful means of empowerment for marginalised people, but for people to engage, they must see a link to their own needs. Caribbean fisherfolk's primary motivation has been to foster change that can make their livelihoods more secure. Many such changes would also improve food security and climate resilience for the region generally. The CNFO and its members have been able to mobilise fisherfolk by demonstrating the benefits to them, in terms of knowledge, information, access to resources and policy influence.

Partnerships are crucial for empowerment processes. Partners must be strategically chosen and partnerships must be equitable and well-nurtured. CNFO's partners have provided many tools for empowerment, such as influence, mobility, information and knowledge sharing.

Effective leadership and clear objectives are essential to group empowerment. CNFO's investment in building leadership capacity has paid off in the growing assurance and strength of its voice. Its attention to strategic planning and programming has made it possible to measure, and take courage from, the progress it has made.

Groups can empower themselves to take effective action without being formally organised. Many of CNFO's member organisations continue to operate informally, with long periods of dormancy, yet can still mobilise when action is needed, and can still exert leadership and be repositories of knowledge.

Effecting change requires more than empowerment; it also requires a receptive policy environment. CNFO has got a 'foot in the door' in many places as it has gained confidence and knowledge. But its major goals have been stymied by the lack of processes and institutions capable of addressing the network's objectives in an integrated way: CNFO has demonstrated its right to a seat at the table, but the table itself is not yet adequate to the task.

Notes

■ ¹ Source: World Bank statistics. ■ ² CRFM. 2012. *Diagnostic Study to Determine Poverty Levels in CARICOM Fisheries Communities - Technical Document*. CRFM Technical & Advisory Document - Number. 2012 / 3. Volume I, 398p. ■ ³ Cambers, C., R. Claro, R. Juman, S. Scott. 2008. *Climate change impacts on coastal and marine biodiversity in the insular Caribbean: Report of Working Group II, Climate Change and Biodiversity in the Insular Caribbean*. CANARI Technical Report No.382. ■ ⁴ CARICOM is a political and economic grouping of 15 Caribbean member states and five territories that have associate status.



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Bangladesh's Enhancing Resilience programme

In Bangladesh, the Enhancing Resilience programme integrates asset creation activities with community training to build resilience among the rural ultra-poor, especially women. This case study illustrates how targeted and strategic efforts can empower individuals, enhance food security and nutrition, and help communities better manage natural disasters and climate change impacts.

Overview

Patharghata, a sub-district in southern coastal Bangladesh, suffered extensive damage from Cyclone Sidr in November 2007. The cyclone displaced millions, created long-term food insecurity and forced many people further into poverty. Patharghata remains at high risk of cyclones and tidal surges – which are predicted to be more severe in coming decades. Families live and farm on low-lying land vulnerable to floods, river erosion, rising sea-levels and salt-water intrusion. These climate-related hazards endanger people's health, safety and livelihoods and offset important socioeconomic gains. They compromise farming, and subsequently incomes and food security for the ultra-poor, who rely on agricultural wage labour and marginal farming.

To assist such communities along the southern coastal belt, and also those in Bangladesh's north western flood plains, the government and the World Food Programme is implementing the Enhancing Resilience (ER) programme across 43 disaster- and poverty-prone sub-districts of Bangladesh. In 2012 the programme provided 82,000 ultra-poor women and men with employment opportunities, benefiting 410,000 household members. This case study covers the 4,500 women and men from three communities¹ in Patharghata who chose to join ER in 2011.

WFP works primarily with the Local Government Engineering Department (LGED), under the Ministry

of Local Government, Rural Development and Cooperatives, coordinating with the Ministry of Food, the Ministry of Disaster Management and Relief, and the Ministry of Environment and Forest.

In Patharghata, WFP's local NGO partner – Shushilan – implements ER. In consultation with local government institutions and community members Shushilan identifies participants, facilitates local planning, distributes food and cash wages, and delivers training.

Background and history

ER works by engaging communities and individuals in planning and building community assets, such as embankments-cum-roads and canals, and by offering training in disaster risk reduction and climate change adaptation. It uses a combined food-and-cash-for-work and training approach in which WFP provides food and the government complements with cash. The goal is to strengthen beneficiaries' economic resources while also building community-based assets that protect development gains from natural disasters and climate change impacts.

ER aligns with the top priorities of the government's Sixth Five-Year Plan (2011-15) and complements its Climate Change Strategy and Action Plan, which identifies food security, social protection and health, infrastructure, and capacity building and institutional strengthening as key pillars.

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EMPOWERMENT

ER is strongly self-targeting. It offers low-paying employment, so attracts only the poorest individuals. ER recognises that women face additional barriers to income-generating opportunities and are more vulnerable to natural disasters than men. Due to social roles and poor mobility, women shoulder responsibilities at home, while men can leave in search of higher-paying work. Yet consistent evidence shows that cash transfers to women lead to increased household and family welfare, food security and diet diversity. The ER programme also aims to enhance women's socio-political empowerment. At least 70 per cent of ER participants are women, and mostly women are elected to lead the 'Users' Groups' that consult with Shushilan and help implement the programme.

Interventions and impacts

Patharghata has a poor water management system and frequently suffers from flooding, siltation and increased salinity. These affect agricultural productivity as well as the incomes of the ultra-poor marginal farmers and agricultural day-labourer households. With few alternative livelihood options they must often employ 'negative coping strategies' – eating less nutritious foods, reducing meal size and frequency, selling assets, taking loans, selling labour in advance and migrating to find work – to meet their immediate food and basic household needs, particularly during the agricultural lean seasons.

To enhance resilience for ultra-poor households and communities, and to break the cycle of reliance on negative coping strategies for reoccurring shocks, the ER programme provides short-term employment. This raises incomes and helps safeguard food security and nutritional status for participants and their households. At the same time, the programme addresses underlying vulnerabilities by constructing physical assets that improve flood control and access to arable land, or improve irrigation systems for better water management and increased agricultural productivity. This is combined with training to strengthen participant's capacity to prepare for, and respond to, natural disasters.

Local planning. Local planning teams involving government officials, NGO representatives and elected community people review, map and prioritise community needs, focusing on disaster risk reduction and climate adaptation schemes. During 2011 and 2012 these teams identified 25 canals, 3 embankments, 6 road-cum-embankments, 10 pond re-excavations and 11 homestead-raising schemes to be constructed with technical guidance from the LGED.

Food and cash for work and assets. Participants work for 15 to 18 days each month, earning an

average of 40 kilograms of diversified food and 1,000 taka.² The transfer value corresponds to two-thirds of average monthly incomes for ultra-poor households – on a par with other government employment generation programmes. The diversified food basket and cash wages fill a critical household income gap, and let participants provide enough nutritious food for their families, so reducing the negative coping strategies that lead to longer-term food insecurity.

Households particularly at risk of flooding and tidal surges were elevated by 1.5 feet to 2.5 feet (46cm-76cm) through homestead-raising schemes. These efforts, along with building embankments-cum-roads and excavating canals, are protecting homes and crops from annual flooding or tidal surges, so preventing loss of assets and displacement. The canal and pond excavations have meant improved water access for the community, and greater opportunities for cropping and fish-farming. The schemes will continue to support agricultural production in the dry season and improved food production for years to come.

Food and cash for training. During the wet season (when earthworks are more difficult) the participants join an average of 10 training sessions per month, receiving a monthly remuneration of around 22.5 kilograms of rice and 652 taka in cash. Training helps households improve disaster preparedness, response, recovery and climate change adaptation skills. It also offers marketable post-disaster skills. Awareness sessions for the entire household promote beneficial behaviours that address child under-nutrition, such as infant and young child feeding and hygiene practices. Other sessions tackle risky social norms such as girl-child marriage and pregnancy.

Training delivered to the whole community and to local institutions enhances capacity for disaster risk reduction and climate change adaptation.

Grants for new entrepreneurs. The ER programme has now added a third year of support particularly targeting women. In 2013, female labourers/trainees and the wives of male labourers/trainees can receive a substantial one-off cash grant (around US\$150) after submitting an individual business plan. Combined with savings accrued over the past two years, this grant can be invested in an income-generating activity. An allowance will complement the grant for 12 months – long enough to stabilise income and basic food consumption while the women engage in intensive entrepreneurial skills training to select, invest in and develop a viable income-generating activity.

Over this period the women will continue to receive intensive support from Shushilan including a locally

ER participants working at a canal re-excavation site. Once emptied of built-up silt, this canal will help prevent flooding of adjacent fields during the monsoon season, and provide water for irrigation in the dry season



WFP/GMB Akash

hired contact woman to ensure timely re-investment and encourage further growth and business diversification.

Main achievements and challenges

Innovative ways to address interactions between hunger, nutrition and climate change

The original two-year ER programme had significant benefits for ultra-poor households by stabilising incomes and smoothing food consumption. The households and communities are now well prepared, knowing how to respond when disasters strike, as well as how to adapt to climate change effects. New community assets protect households and businesses from natural disasters as well as helping rehabilitate agricultural land, so strengthening food production and income opportunities. Key achievements include:

Combining 'protection' with 'promotion'. After two years a platform for growth for the communities has been established and community assets developed. However, at the household level, benefits to the ultra-poor participants have remained largely indirect, and mostly through increased employment opportunities. The modest savings labourers/trainees accumulated over the two years are generally not enough for households to invest and build economic resilience and food security, hence the expansion to include an additional year of support. This expansion has drawn lessons from successful 'promotional safety net' models, and aims for more sustainable resilience to natural disasters and the effects of climate change.

Improved payment processes. Once heavily bureaucratic, cash transfer has been streamlined and participants are now paid on time. WFP continues to trial alternative cash transfer methods (for example, mobile phone cash transfers). For the 2013 'promotion' element, all participants have cash grants for investment transferred to individual bank accounts.

Knowledge sharing, empowerment and rights

The ER programme has a strong empowerment element, providing development opportunities to the poorest and most food-insecure people, who do not benefit from mainstream development. The contributing design elements include:

Prioritising women. The programme recognises women's pivotal position in tackling hunger and improving nutrition. With an opportunity to earn regular wages, and armed with new knowledge and skills, women are exercising more control over income and resources and are contributing to decisions that determine their family's future. ER participants understand the importance of education, and are sending their sons and also their daughters to school. And as elected leaders of the Users' Groups and Users' Committees, women play an important role in representing their peers.

Local level planning. The local planning process involves community members in a participatory bottom-up approach that identifies community needs and solutions. Shushilan facilitates the process, reducing top-down influence from powerful people in and outside the community, and enabling poor and marginalised men and women to help identify community priorities, so generating strong community ownership. Men's participation in the work phase is important to ensure both men and women feel ownership of the schemes.

Capacity building to reduce risk. WFP works closely with local government and non-government organisations through tailored training sessions, knowledge sharing workshops, close consultations and regular feedback. Together we develop joint risk reduction activities, and boost local communities' disaster preparedness and response capabilities.

Challenges and strategies to overcome them

Gender inequality. In Bangladesh extremely poor women have very low social status. As well as needing to earn income, they are responsible for childcare and household chores, have restricted mobility, and have limited control over household decision making. The ER programme incorporated several provisions to mitigate specific constraints faced by women, including: toilet facilities, access to clean drinking water, and childcare.

EMPOWERMENT

As the earthworks in the 'food-and-cash-for-work' element is labour intensive, the daily requirement per participant has been set quite low, to accommodate women's physical capabilities.

Opportunity cost. The work requirement of the ER programme is not full-time, so labourers/trainees can take on other duties and employment, as it is important that the programme should not disrupt long-established work and income generating opportunities for the poor. However, the opportunity cost for older men and for women is lower (particularly for rural women, who are even more likely to be unpaid contributing family members than rural men), which is why they often put themselves forward for ER.

Lessons

A human development approach. Human development encompasses much more than economic growth, it is also a process of enlarging people's choices and enabling them to live a long and healthy life, giving access to knowledge and education, and providing opportunities to participate in their community and contribute to the decisions that affect their lives. By a design where the most vulnerable self-select participation (those who benefit most from the programme), and by prioritising women, ER has encouraged participation in community's development. ER's Users' Committees also give participants an opportunity for local representation.

Local-level planning. Bottom-up approaches that emphasise participation by the local community, including in goal setting and the means of achieving goals, creates community ownership and commitment and adds accountability to development initiatives. Remote schemes with little community ownership usually suffer from poor maintenance efforts. By engaging male and female community members from the beginning the programme identified and responded to their different needs and capabilities, and to the community's aspirations.

Disaster risk reduction and preparedness. Resilience at one level does not automatically result in resilience at higher levels - that is resilient households do not guarantee resilient communities. Therefore, ER includes comprehensive training for

participants on disaster risk reduction, longer-term adaptation skills and climate change awareness; as well as workshops and training to engage and activate local institutions and community stakeholders and strengthening capacity for effective design and implementation of contingency plans; WFP liaises with the LGED and local authorities to ensure resources continue to be allocated and that schemes are maintained.

Partnership. Successful interventions require engagement and coordination from all sectors and stakeholders. There is a strong commitment from the government, especially the LGED, in design, planning, provision of technical expertise, contribution of cash wages and in the entrepreneurial support component. Strong local NGO partners manage how activities are implemented, though design of activities is largely community led. WFP also serves as a link that strengthens government partnerships with NGOs, other government ministries, departments and civil society organisations.

Food and cash. The combined food and cash approach has given households greater flexibility in spending while reducing the impact of food price fluctuations. This is in line with a 2009 study by the International Food Policy Research Institute (IFPRI), which concluded that a combination of food and cash is better than cash alone in meeting the food security and other needs of vulnerable households. ER provided a diverse food basket complemented by messages on life skills and nutrition that aimed to improve dietary intake and nutritional status. The cash grants are expected to provide economic stability and increase household resilience to natural disasters and climate change.

Women's empowerment. Throughout the world, women represent a substantial and under-utilised force for sustainable development. ER has prioritised women, particularly as recipients of entrepreneurial support, because of their acknowledged importance for family advancement. ER has empowered women to contribute to household income and the decision-making process, something that has consistently been shown to lead to increased household/family welfare and food security, and that also enhances women's status at both the family and community level.

Notes

■ ¹ Targeted communities include Charduani, Patharghata Sadar, and Kalmegha Unions. Unions are the lowest administrative unit in Bangladesh, often representing several small villages. ■ ² Exchange rate in February 2011 was US\$1 = 72 Bangladesh taka



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Promoting empowerment and knowledge through smallholder farmers' associations in Malawi

The National Smallholder Farmers' Association of Malawi has used its multi-tiered membership structure to build a 'knowledge chain', spreading conservation agriculture techniques to more than 37,000 farmers. Combining this effort with support for adult literacy is empowering farmers (particularly women) to both gain and use new knowledge.

Overview

Around 85 per cent of Malawi's population (which is approximately 15 million people) live in rural areas, and about 80 per cent of Malawians depend on renewable natural resources for their subsistence and household incomes, whether through agriculture, forestry, fisheries or tourism. Population growth is around 3 per cent a year. In the countryside, 90 per cent of people practice subsistence agriculture and around 97 per cent depend on wood fuel for energy – giving Malawi the highest deforestation rate in the southern Africa region (around 2.8 per cent per year).

This deforestation, driven by charcoal production, wood fuel and agriculture, coupled with poor land management practices and water conservation, has meant run-off, flash floods, soil erosion and sedimentation have become serious environmental threats.

Changing weather patterns, mostly in the form of droughts and floods, are damaging agricultural production, particularly for maize – the dominant staple. Dry spells are common and can cause losses of 20-30 per cent of total yield per hectare. Conversely, between 2001 and 2010 the number of districts classified as flood-prone rose from 9 to 14, and 15 per cent of the rural population now face flood risks. In 2012-2013 1.97 million people will have faced food insecurity.

These challenges contribute to both transient and chronic poverty in Malawi. The country's Poverty and Vulnerability Analysis of 2006 linked household size, poor education, low access to non-farm employment, poor access to irrigation, distance from markets and trading centres, and inadequate access to good road infrastructure to household poverty. Female-headed households, large families, orphans, the elderly, the chronically sick and those with disability are particularly vulnerable. Female- and child-headed households are less likely to own livestock and other assets, or to control land or gain access to credit and training. They are also more likely to work in the informal sector. An Integrated Household Survey in 2010 measured poverty rates among female-headed households at 57 per cent, compared with 49 per cent for male-headed households.

Clearly, the many causes of poverty intermingle, and tackling them will require integrated solutions.

Interventions and impacts

Given agriculture's dominant role in Malawi's economy, Conservation Agriculture (CA) – which aims for sustainable and profitable farming based on the three principles of (a) minimal soil disturbance, (b) permanent soil cover and (c) crop rotations – is one strategy that can help poverty alleviation and climate change resilience, as well as agricultural productivity. To achieve this, the National Smallholder Farmers'

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KNOWLEDGE

Box 1. The National Smallholder Farmer's Association of Malawi (NASFAM)

NASFAM, the National Smallholder Farmer's Association of Malawi, was established in 1998 and represents more than 100,000 farmers, most of whom farm on less than one hectare. It has a unique extension network formed from 'clubs' of 10 to 15 individual farmers. The clubs combine to form 'action groups' – the level at which most information dissemination takes place and where farmers can join together to scale up their crops. Groups of nine or more action groups combine to form associations.

Before 2000, women made up less than 8 per cent of NASFAM members, but that has now risen to 41 per cent. More than 50 per cent of the board members are women.

NASFAM intertwines commercial and development activities. Its commercial side markets inputs to farmers as well as promoting and marketing their produce at national and international levels. The development side looks to improve crop quality and quantity; enhance associations' performance; expanding member's livelihoods, and increasing smallholder farmers' influence on policy.

NASFAM complements the government's official agricultural extension system. A NASFAM Farm Services Manager (author, W. Kumwenda) and team of Farm Services Officers train Association Field Officers (AFOs) who work closely with government extension workers. But as numbers of government extension officers have fallen, NASFAM has introduced a farmer to farmer extension programme. AFOs train lead farmers and also provide material support, such as push bikes, stationary, inputs for farm demonstrations (seeds, fertilisers, measuring implements) and protective clothing.

NASFAM is an active member of the National Conservation Agriculture Task Force (NCATF), which coordinates promotion of conservation agriculture across Malawi.

Association of Malawi (NASFAM, see Box 1) is using support from Irish Aid to spread CA knowledge among 100,000 farmers across 19 districts.

Following on from a successful CA pilot project in 2008, Irish Aid is supporting a programme that will run until 2015. NASFAM's collective membership nature, and its wide national network of farmers, is the crucially important vehicle for this knowledge sharing, training and empowerment. The programme aims to widely share CA principles and practice, so helping smallholder farmers produce more food and cash crops despite challenges like soil depletion, climate change and high prices for commercial fertilisers.

The programme has strong links with work in Malawi by several CGIAR research centres – The World Agroforestry Centre, ICRISAT (the International Crops Research Institute for the Semi-Arid Tropics) and the International Potato Centre.

The main strategy is to train 'lead farmers', who then share their new knowledge, for example on crop diversification, with farmers clubs. Training for lead farmers emphasises not only new farming methods but also the importance of a diverse and nutritious diet, particularly for children and lactating mothers. And farmers learn about tree planting and water conservation, building their knowledge on how to become more resilient to longer-term climate change.

The project also documents 'best practice' and communicates this through the media (with regular slots on national radio, twice-a-week at midday and twice-a-month in programmes that have a specific focus on climate change). Demonstration field days provide another route to farmers. And a quarterly newsletter, disseminated at district level, keeps extension works informed.

Regular visits by project coordinators ensures information flows both from and to 'the field'. This model of participatory skills and information sharing is empowering and accountable because knowledge flows in both directions. Information passes from NASFAM head office, to regional and district level and from lead farmer to farmers in 'clubs'. But farmers also discuss their concerns and provide vital information 'from the ground', which is fed back to inform research on good practice, disease challenges and economic growth trends and changes.



George Ntonya

Lucia Saineti, a 32-year-old widow in her maize field



*Daniel Kampani
and his wife
Clara on their
conservation
agriculture
demonstration
plot*

George Ntonija

As well as training, the NASFAM programme provides practical assistance. The project helps farmers get quality inputs such as seed and fertiliser (through ICRISAT – see associated case study in this conference series, *Seeds for change: a certified seed project in Malawi is boosting local incomes and supporting emerging national agricultural policy*) and advises farmers on getting better prices in domestic and global markets.

Farmers report that the CA knowledge sharing has made a wide-reaching difference at household level, as children are better nourished, and income from selling produce has let more attend school.

But it is not just children receiving 'schooling'. It is clear that high adult illiteracy hinders efficient technology transfer. In rural Malawi 28 per cent of men and 51 per cent of women are illiterate. So in a shift from the normal NGO model of focusing on one or two development issues, NASFAM has developed adult literacy and numeracy classes, run at local schools. This project, which targets NASFAM members who are either illiterate or semi-illiterate, helps farmers to read about new agricultural practices and also do gross margin analyses to appreciate the benefits new practices offer.

Main achievements and challenges

Across the NASFAM, 97 per cent of members are now aware of conservation agriculture (CA) techniques,

Box 2.

A lead farmer, Daniel Kampani, lives with his wife and four children in Mchinji district, in central Malawi. He says climate change is bringing unpredictable rainfall across Malawi. Many crops are lost to extremes of either dry or wet weather. Insufficient crop diversification or work to retain soil fertility has 'tired' soils and led many farmers to rely on tobacco (as a cash crop) and maize (as the main food crop).

In 2001 Daniel joined NASFAM through the Mchinji Smallholder Farmers' Association, and by 2004 he had been selected by his fellow farmers as 'lead farmer', leading five clubs, with a total of 70 fellow farmers.

Daniel has established a Conservation Agriculture demonstration on a 0.1 hectare piece of land. He still grows maize as the main food crop but supplements it with groundnuts and soybeans to improve soil fertility and boost household nutrition. He rears pigs and poultry too. And better soil means better profits from his tobacco cash crop. In his first year, Daniel's maize production increased from 200kg to 350kg, and in his second year it rose again to 400kg.

He and his wife say their children are better fed, and all now go to school, paid for by selling surplus crops.

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and 37,589 farmers have adopted the approach (53 per cent of these are women). A total of 15,445ha is farmed with CA, 19,135ha now use organic manure (rather than bought fertilisers) and 11,677,850 new trees have been planted. With crop diversification, and water harvesting, farmers clubs report higher yields and more predictable water resources that will help them develop 'climate smart' agriculture. And poor rural women are more empowered to take control of assets and of marketing their produce as a result of literacy classes. Over 30,000 members have benefited from these and are now able to read, write and work out simple mathematics.

NASFAM's overall approach of using conservation agriculture, crop diversification, grain banking, seed multiplication and nutritional education to support food security is clearly working – and the project described here contributes to this success. NASFAM members are more food secure than average smallholder farmers. More than 55 per cent of rural Malawian households suffer from chronic food shortages in a normal production season as against 21 per cent of NASFAM farmers.

The project has also built awareness and understanding of CA both among district-level extension works and at national level in the Ministry of Agriculture.

Naturally, given the scale of Malawi's rural poverty, challenges remain. And agricultural behaviours can be hard to change. For example maize stalks are

traditionally burnt, whereas CA advocates laying them on the ground and planting new maize through them, thus retaining soil moisture and forming a natural compost. Changing this attitude is a key challenge to scaling up CA and NASFAM is working with traditional leaders to promote the CA 'recycling resources' approach.

Lessons

Large membership organisations (like NASFAM) can build a capacity-building knowledge 'chain' linking, national policies to district extension workers to lead farmers and then to collective farmers clubs or associations.

Knowledge sharing through networking, peer to peer training and good practice demonstrations can yield widespread and significant benefits. For example, smallholder farmers in Malawi report CA has brought higher and year round yields, reduced labour requirements, more climate resilient agriculture, raised incomes, better family nutrition and, indirectly, improved educational access for children.

Combining interventions can produce 'more than the sum of their parts'. Here, combining CA training with opportunities to improve literacy is helping farmers both access knowledge and use it to market their produce. Literacy and numeracy training is particularly empowering Malawi's rural women, amongst whom education levels are disproportionately low.



George Ntonya

From left to right, Daniel Kampani, John Chidzani, Mazengela Saka and Kazembe Moloso





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Less hunger, better health and more wealth: the benefits of knowledge sharing in Malawi's Orange-Fleshed Sweet Potato project

Agricultural researchers, NGOs and farmers in Malawi have pooled their knowledge and resources to develop and distribute new vitamin-enriched and drought-resistant sweet potato varieties, and to devise and promote new commercial activities that will help its spread.

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Overview

Hunger and malnutrition are common in Malawi, and the challenges are compounded by a changing climate that hampers agricultural production, in turn aggravating health and socioeconomic problems. In 2009, vitamin A deficiency affected nearly a quarter of infants aged 6 to 36 months. Vitamin A deficiency restricts growth, weakens immunity and eyesight and contributes to high childhood mortality. High though Malawi's 2009 figure was, it had fallen substantially from 60 per cent in 2001, partly due to government interventions to subsidise fertilisers for crops and to distribute vitamin supplements through health facilities.

But although these interventions have had some success, they depend on continued inputs and sustained government strategies. By contrast, promoting the vitamin A-rich orange-fleshed sweet potato (OFSP) offers a route that both taps and supplements an existing resource: local knowledge.

Growing sweet potato requires few inputs compared with other crops and relatively little labour, and it is traditionally a woman's crop. As women are the main care givers for young children, and together with those children are also the group most vulnerable to vitamin A deficiency, OFSP is a particularly appropriate intervention.

The project, which is funded by Irish Aid, is run by the International Potato Centre (CIP) in partnership with Malawi's national sweet potato programme and three NGOs – Concern Universal (in Dedza, Phalombe and Mulanje districts), the Millennium Villages Project (in Zomba district) and the Catholic Development Commission (CADECOM - Chikwawa district).

By 2012, the UN Food and Agriculture Organization (FAO), the Farmers Union of Malawi, Malawi's Wellness and Agriculture for Life Advancement (WALA) programme, and farmers' clubs in Salima District were all expressing interest in formally joining the OFSP project, taking the project's coverage to 15 districts in northern, central and southern Malawi.

Interventions and impacts

Sweet potato is already widely grown in Malawi. It is the third-most common food crop after maize and cassava, and it can produce more calories per unit of land than either of those, giving it great potential to tackle hunger. The whole sweet potato plant can be eaten, including the leaves, which for a green vegetable provide a useful source of protein (four per cent) during the 'lean months'. In short, nothing is thrown away.

But while all sweet potatoes are a good source of energy and vitamins C, E, K (and several B vitamins),

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most of the white-fleshed varieties, and even the commonly grown yellow-fleshed 'Kenya' variety, have no significant levels of vitamin A.

To redress this lack, the International Potato Centre has been working with the Malawi Ministry of Agriculture and Food Security (MoAFS), the Department of Agriculture Research Services (DARS), the Department of Agriculture Extension Services, NGOs and local communities to develop, cultivate and distribute new vitamin A-rich and climate-appropriate sweet potato varieties. These varieties are drought-resistant and can be grown throughout the year, meaning two harvests are often possible.

The ultimate aim is to cut hunger and improve nutrition, especially by increasing vitamin A intake among mothers and young children. Just 100g of OFSP a day meets the vitamin A needs of young children. The project aims to reach at least 70,000 rural households with young children.

Planting material. The project's start point is a variety named Zondeni, developed in 2008, and the initial phase was to multiply this and closely related varieties, often identified in collaboration with farmers who report what performs best in on-farm conditions. Thus CIP's expertise is combining with local knowledge to develop high-quality, disease-free planting material.

The project has so far released five new varieties of OFSP. Each initial stock is created at the Department of Agriculture Research Services' Bvumbwe Research Station (with support from CIP). Then knowledge on

how to propagate the variety is itself propagated out via secondary 'vine multiplication sites'. The project's NGO partners and government agricultural extension workers recruit lead farmers from farmers clubs. Once trained in planting techniques and improved production of the OFSP at the secondary sites, the farmers then cascade the information to further 'tertiary' vine multiplication sites.

Overall, more than 4,000 agricultural extension workers and lead farmers have been trained on vine multiplication, production, pest and disease management, and drip irrigation. The training has also widely shared other local knowledge, for example traditional techniques such as covering roots with sand to control sprouting and keeping tubers in the dark to extend storage times.

Building demand. A second and linked knowledge strand has been to build awareness of, and demand for, OFSP's benefits and uses. For example, the project supported a series of nine radio programmes promoting OFSP. The programmes went out over a nine-week period and were timed for broadcast when many women would be home and listening to the radio. OFSP has also been promoted in a song sung by village women at field and demonstration days and through dramas.

And the programme has shared knowledge on preparation techniques, for example drying OFSP or turning it into flour that can be sold. To complement this aspect, project partners worked with Universal Industries in developing a biscuit – and hence

Box 1. Fighting malnutrition and hunger: Martha's story

Martha Shaganti lives in Biyasoni, a village in Chikwawa district, where malnutrition is prevalent, especially among the under-fives, pregnant women and lactating mothers.

In the 2011-12 planting season Martha, who was pregnant at the time, received a voucher for 4kg of micronutrient-rich orange-fleshed sweet potato (OFSP) vines, distributed by the International Potato Centre and CADECOM. CADECOM also organised training to help women turn OFSP into nutritious and saleable products like juice, doughnuts and flour.

That year, despite losing part of her field to floods, Martha's family managed to harvest 6 bags of roots, selling 1.5 bags and sharing the rest with relatives and friends in the village.

Martha says, "My one year old son was underweight at first and got sick often. I clearly saw a big improvement in health when I started feeding him the products prepared from OFSP. His health card at the clinic testified such an improvement. Every mother in our community has observed that the products are appetising to children.

"OFSP also gives us adults adequate energy compared to other food stuffs. I had no problems with carrying it to the market as other members of the village bought from me right from my home. We have increased our land this year and we will even rent more land to increase products because of its multiple benefits."

Young children, pregnant women and breastfeeding mothers have the most to gain from the vitamin A in orange-fleshed sweet potato



Putri Ernawati Abidin

a commercial demand for smallholders' surplus OFSP products. Farmers can now sell all their excess and around 20 per cent of households who grow OFSPs are expected to earn at least US\$100 per year from OFSP sales.

Promoting health. Further, the project has worked with government and NGO health workers, training 'master trainers' who then pass their training on to many more field-level health workers. The training promoted the value of OFSP and provided health advisors with communication aids like seasonal recipe ideas and targeted messages that will help women get the best nutrition for their children from OFSP – for example by mixing it with other foods.

Local knowledge on food preservation. Sweet

potato farmers in some parts of Malawi store their harvested roots in a pit, covering them layer by layer with ash or dry sand, to keep them for the dry season when food is scarce. Stored OFSP roots from the Zonden cultivar can be kept for up to seven months this way and researchers have confirmed that they keep their vitamin value too. So this local knowledge has been promoted more widely through the project's training activities.

Reaching women. To ensure access to planting material, and partly to help ensure women can choose OFSP without needing control over household finances, the project has issued vouchers to smallholders. These are traded for planting materials from vine multiplication sites, and the smallholders running the sites redeem vouchers for

Box 2. Women and the OFSP project

Gender roles are quite strictly defined in Malawi, although there are significant differences between matriarchal and patriarchal communities in different parts of the country. Men generally dominate household decision making, and control household assets and the profits from produce sales. For example, women farmers in Chikwawa report that 'men get the lion's share' of income generated through sales of vines and OFSP products, even though sweet potato is seen as a 'women's crop'.

These culturally defined roles have made it hard to involve women in the OFSP project, despite the fact that they are the main intended beneficiaries: pregnant women, lactating mothers, and young children (who are cared for and fed primarily by women) are most at risk of vitamin A deficiency. For example, at a recent CADECOM training event only one out of 20 farmers was a woman. Disproportionally high illiteracy rates among women in Malawi add a further challenge, particularly when it comes to involvement in formal schemes. However, the project has aimed to recruit both men and women head of households from the very start. This focus, and strategies such as using vouchers rather than cash to subsidise planting material, has paid off. In 2011-12, 63 per cent of the 24,000 farmers supported through the voucher scheme were women. And overall, of the more than 4,000 agricultural extension workers and lead farmers trained by the project, 43 per cent are women.

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cash from the project. After four years, the project hopes to have given vouchers to 70,000 farming households.

The recruitment strategy for trainers also aims to involve both men and women head of households from the start. In some cases OFSP has helped women's economic empowerment in other ways, as women start to sell the food products themselves, including juice, scones, cakes, fritters and chips.

Main achievements and challenges

This project has become an integral part of Malawi's Agricultural Sector Wide Approach Programme, which is seeking to reduce smallholder farmers' vulnerability to climate change by diversifying and intensifying crop production and improving land and water management. It has encouraged smallholder farmers to use OFSP alongside maize, beans, pigeon pea, cotton, sorghum, cassava and Irish potato; sometimes intercropping to reduce pest infestations and because the roots and leaves can help reduce soil erosion and also conserve soil water.

The project has contributed to Malawi's nutrition action plans and has been widely adopted within the Scaling Up Nutrition (SUN) 1,000 Special Days Initiative (which concentrates on nutrition during the first 1,000 days of life, from conception to age two).

During its first year, the project produced 196,000kg of OFSP vines, but by 2011 that had risen to 650,000kg. In some areas yields have increased from 6 to 18 tonnes per hectare.

A recent assessment confirmed that OFSP varieties have become popular among households, bringing improved food availability and extending food supplies further into the 'lean' months. Households are now also more articulate on the nutrition benefits and presence of vitamin A, B and C in OFSP.

The biggest challenge has been how to set up and manage a system for multiplying and distributing the improved sweet potato vines, particularly given that

the propagated material is perishable. Establishing secondary and tertiary vine multiplication sites away from the Bvumbwe Research Station and closer to farming communities has helped.

Other challenges have included how best to 'spread the word' about OFSP given high levels of illiteracy among Malawians, particularly women, but this has been partially tackled with diverse and creative outreach activities and the 'train a trainer' approach taken to knowledge sharing.

Lessons

Strong partnerships can share knowledge 'vertically', feeding research and farmers' local knowledge into national strategies. Here, scientific research complemented by local experience and partnerships with NGOs successfully demonstrated a role for OFSP as a strong component of Malawi's food security strategies. And OFSP's influence is reaching even higher as the project's outcomes are shared at a global level through CIP and the CGIAR consortium.

But support is also needed to spread knowledge 'laterally' - between farmers, health workers and whole communities. Developing good OFSP varieties was not enough on its own. Success depended on 'spreading the news' through creative channels including radio, drama and recipes; and by providing commercial opportunities that appealed to smallholders.

The partnership approach has been a crucial catalyst for success. In Malawi the CIP, the MoAFS, NGOs and community groups have addressed and started to solve one of the key challenges for expanding OFSP production: how to develop and manage a vine multiplication system. These partners report that ongoing consultation and sharing skills with each other and with communities has been a rewarding experience. Project partnerships have also scaled up interventions from five to eight districts, and have drawn in many stakeholders from NGOs, government (especially the Department of Nutrition, HIV and Aids, which is a 'focal point' for coordinating nutrition projects in Malawi) and the private sector.

Further reading

Find more information about the project at the sweet potato knowledge portal www.sweetpotatoknowledge.org, including interim reports on the Rooting out Hunger in Malawi with Nutritious Orange-Fleshed Sweet Potato project (<http://sweetpotatoknowledge.org/projects-initiatives/sweetpotato-for-profit-and-health-initiative-sphi/rooting-out-hunger-in-malawi-with-ofsp>)



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Harnessing local innovation to improve food security, nutrition and climate resilience in Ethiopia

A watershed rehabilitation project, followed by a collaborative 'Operational Research' programme that harnesses local knowledge, is restoring natural resources, raising agricultural yields and improving food security in Tigray, Ethiopia.

Overview

The central and eastern parts of Tigray, a mountainous region of northern Ethiopia, are highly food insecure and were badly affected by famine in 1984. About 37 per cent of households typically eat less than 2,200 kilocalories a day.¹ Low annual rainfall and frequent drought makes farming difficult. Plots are small and often severely degraded. Yields are low, and many farmers are only able to plant one main crop each year.

Though peaceful now, recent conflict has left Tigray with many female-headed households. These often lack access to appropriate technologies and credit, and lack labour to intensify their farm production. They also find it difficult to access markets, making them particularly food insecure.

Added to that, climate models suggest an average temperature rise of 2.2 degrees by the 2050s,² increasing water stress for many crops. Rainfall patterns have changed in many parts of the region, starting later and finishing earlier, also becoming more erratic, intense and often damaging.

Knowledge gaps are an important aspect of these challenges. Past agricultural research and extension projects have not met farmers' needs in marginal areas. For example the varieties promoted were usually ill-suited to local conditions.

But that situation is now changing as the Tigray

Agricultural Research Institute (TARI), with support from Irish Aid, is fostering local innovation and knowledge sharing, with transformative results.

The story began when the Tigray government, donors, NGOs and farmers, started work on watershed rehabilitation in the eastern zone of Tigray. The project engaged local land users' knowledge and perspectives in ways that previous environmental interventions had not. Watershed rehabilitation made more water available to farms, improved soils and helped regenerate natural resources.

Farmers started asking for new crop, livestock and natural resource management technologies in order to test and adapt. New partnerships developed between rural households, local research institutes, and local extension agents, forming an 'operational research' project (see Box 1) that allows local knowledge and innovation capacity to flourish.

Interventions and impacts

Watershed rehabilitation. Tigray has a long history of failed interventions to reverse soil erosion and deforestation. But the regional government's area-based approach in partnership with Irish Aid involved careful consultation with farmers, and built awareness of potential benefits. And watershed rehabilitation has had profound effects. Hillside are now greener and groundwater levels have risen so farmers can build ponds and wells, and irrigate with pumps. For areas previously relying on one rain-fed

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Box 1. Operational research

Military planners first used the term 'operational research' (OR) but it is widely used by business and industry to find appropriate interventions for complex situations.

OR approaches can make a real difference for farming in marginal and resource-poor environments. Farmers Research Groups evaluate technology, participate in selecting varieties and screen potential interventions to fit with local farming systems and farmers' social and economic realities (in particular those of women farmers). This process of adaptation to local conditions is increasingly relevant as the climate changes for the worse.

crop per year this has been life-changing. Farmers grow irrigated potatoes, chilli peppers and tomatoes and a second-season irrigated maize crop. People now eat three times a day, rather than twice, and hungry periods are substantially reduced. Zero-grazing initiatives, together with enrichment planting and micro-catchment structures have helped regenerate the hillsides, creating abundant cut-and-carry fodder to support more productive livestock. This animal fodder, found close to farms, particularly reduces women's labour burdens.

Greener watersheds both reduce carbon loss through soil erosion, and lock up more carbon in vegetation, making a valuable contribution to a climate-resilient green economy – an important policy goal for the Ethiopian government.

Operational research. As natural resources in project watersheds began to recover, TARI, Mekelle University and other local partners (such as the regional Bureau of Agriculture and the Relief Association for Tigray) chose operational research (see Box 1) to enhance food security and improve nutrition through better access to appropriate crops, livestock and management techniques. OR prioritises the local context, and end-users' specific needs. It introduces external knowledge that local farmers evaluate and adapt. OR in Tigray began in two watersheds, Debre Kidan and Begasheka, in Hawzien and Kolla Tembien districts, respectively.

OR project partners jointly identified farmers' constraints and then carefully located test areas for technology solutions. These technologies were sometimes local innovations, such as a new form of beehive, and sometimes crop varieties grown in other countries with similar agro-ecosystems, such as wheat from dryland India.

For example, watershed rehabilitation has meant that chickpeas can now be grown in residual soil moisture after the main season maize crop. And the recharged groundwater from the watershed programme has also brought more natural bee fodder. Farmers (particularly women) have used the OR project to adapt local hives so they complement modern hives promoted through the agricultural extension system. Farmers also requested training in colony splitting, letting them add new hives to their farms and substantially increasing their incomes. Farmers share the technique with other farmers through local FRGs (see Box 2).

Farmers have used the OR project to test crops that help diversify diets, and raise incomes. These include potatoes, tomatoes, and other vegetables, and grains such as finger millet and sorghum. The project has introduced improved varieties of sheep, goats, and poultry, which offer new sources of milk, meat and eggs. These technologies have benefited female farmers in particular, through income from product sales and availability of nutritious food.

Participatory variety selection. Farmers now use participatory variety selection (PVS) to:

- identify the problems new varieties should address;
- manage a comparative trial;
- evaluate crop performance against their own criteria; and
- scale out new technologies through farmer to farmer seed exchange and farmer field days.

Box 2. Farmer research groups

The project organised Farmer Research Groups (FRGs), where farmers could share ideas, train each other and identify problems and analyse different solutions. FRGs have targets of at least 30 per cent female membership. For some technologies such as poultry and dairy goats, at least 50 per cent of FRG members are women. Across the two watersheds, 80 per cent of female-headed households have joined project activities.

Researchers trained farmers to collect and record data, and encouraged them to experiment, evaluate and share findings. Farmers specify their own assessment criteria. For example, farmers were interested not only in maize yields, but also in stalk wind resistance and value as animal feed.

An Ethiopian woman sells locally grown onions tomatoes and chillies



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PVS is reducing the time taken to identify and deploy an appropriate variety to around two years, compared with around five years for conventional testing first at research stations and then on farm.

PVS is identifying effective early maturing and heat and moisture-stress tolerant varieties of wheat and maize, so improving climate resilience. Communities that were previously reluctant to grow wheat have now adopted the crop. Farmers can grow a longer-maturing variety of maize if rains arrive on time, but have several early maturing options if planting is delayed.

Having sustainable sources of seeds is also essential, so farmers have been trained in seed multiplication. This is particularly appealing to female-headed households because the premium paid for seed (over a grain crop) means the same income is available from less land and with less labour.

Main achievements and challenges

The operational research approach has strengthened government institutions' accountability to farmers and rural households. It has also helped change the mindsets of farmers who previously distrusted government interventions but now apply modern agricultural research approaches.

But its biggest achievement is rehabilitating natural resources across whole watershed areas, raising agricultural productivity, fostering climate resilience and supporting better food security.

Box 3. A farmer and a scientist

Mr Kidanu, a farmer in Hawzien district, took part in several PVS trials for wheat and maize, comparing varieties with and without fertilisers, observing and recording details of germination, weeding requirements, flowering times, heading and maturation, and evaluating criteria he had selected: grain yield, moisture stress, disease tolerance and straw palatability for animals.

Following the trials, Mr Kidanu replaced all his traditional varieties with improved OR varieties, doubling and sometimes tripling his yields. He now grows seed for other farmers and also practices improved beekeeping.

Mr Kidanu says that in the past his family only ate enjera and shiro (Ethiopian traditional sour pancake and chickpea sauce). Now that he grows sweet potatoes and a range of vegetables the whole family have a substantially better diet. He has inspired other farmers with his capacity to experiment and innovate.

As the director of the regional research station acknowledged: 'He is not just a farmer, he is a scientist!'

A lasting impact has been that researchers in the Tigray Agricultural Research Institute, and the six Agricultural Research Centres it manages, have adopted OR, PVS and FRGs as standard good practice for technology research and popularisation. The regional extension system is also engaging with OR as local-level

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development agents work with researchers and farmers to spread technologies that farmers have evaluated and endorsed.

Initially, one challenge was distrust. Farmers' own sophisticated understandings of their conditions and needs meant that they were suspicious of government attempts to introduce new high-yielding seeds, which had previously often been designed for predictable, high-rainfall settings, rather than marginal environments.

However, the OR approach overcame this hurdle. Challenges remain, of course, including ensuring that institutions remain responsive and engage with local knowledge, rather than pushing inappropriate interventions. Maintaining innovation is important, but depends on external funding. FRGs, for example, may fold if researchers and extension agents lack resources to continue working in this way, or if senior management does not allow adequate time to work with farmers on local-level experimentation.

It is clear that supporting interventions can further complement local knowledge. For example, strengthening the agricultural extension network and developing new Farmer Training Centres, giving farmers information about markets and even building roads to improve market access can all take this work further. The next phase of OR will strengthen innovation networks, working particularly at the sub-regional level to build more effective linkages between research institutes, farmers and agricultural extension workers.

Lessons

Operational research is a valuable technique for harnessing local knowledge when addressing development challenges, but it requires collaboration and a sequenced approach. In Tigray, farmers' collaborative work with researchers, government, NGOs and donors to rehabilitate severely

degraded watersheds and re-vegetate slopes built a crucial foundation of trust, as well as increasing water availability. This let farmers move on to experiment with new crops and varieties, and diversify farming systems.

Local knowledge can help identify needs and problems. Farmers' priorities may not be the same as those of researchers. And technology choices for complex, risk-prone settings are likely to be very different to those for high-potential areas. The OR approach in Tigray gave farmers an opportunity to articulate their challenges, and choose what sort of development support they needed.

Unleashing women farmers' insights requires a targeted approach that understands their constraints (such as labour or market access). The Tigray programme showed how participation in projects like OR can build women's confidence to engage with government research and extension institutions and demand effective services. Targets for women's participation ensured female-headed households and women farmers have been active participants.

Farmers readily understand that diversification is crucial for climate resilience and sustainability. More varieties of key cereal crops give farmers more options for different rainfall patterns, especially when combined with better interpretation and dissemination of local meteorological forecasting. And a wider range of crops, including vegetables, benefits both nutrition and incomes. Livestock options such as poultry or goats and sheep can complement crop technologies. Beekeeping making use of bee forage in regenerated watersheds can offer a valuable income stream.

Participatory variety selection that fosters expertise and draws on local knowledge and processes can slash the time needed to test new varieties – Within the OR programme that time has fallen from five years to two..

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■¹ MOFED, 2012. *Ethiopia's progress towards eradicating poverty: an interim report on poverty analysis study (2010-11)*. Ministry of Finance and Economic Development. Addis Ababa. ■² See Conway D. and Schipper L. 2010. *Adaptation to climate change in Africa: Challenges and opportunities identified from Ethiopia*. *Global Environmental Change*. 227-237 and ACCCA, 2010. Understanding the climate variability and the indication of climate change in Tigray regional state, based on the long-term recorded rainfall and temperature data. Advancing Capacity to Support Climate Change Adaptation.



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Communicating seasonal forecasts to farmers in Kaffrine, Senegal for better agricultural management

Our project explaining seasonal forecasting to farmers in central Senegal built common ground between scientific forecasting and traditional knowledge. It helped farmers understand and use seasonal forecasts to improve crop strategies, and let farmers explain to meteorologists what seasonal climate information they most needed, in turn improving the forecasts' usefulness.

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Overview

Sahel is a place where climate is highly variable across many timescales. For example, the 1950s were very wet and farmers easily lived off their harvest. But a dry period followed in the 1970s, reaching its extreme in 1984. This affected most farmers, especially those living in Senegal's 'peanut basin'. Now we are experiencing a return to a wetter period but with new challenges: extreme wet and dry spells within seasons. In the Sahel region, more than 80 per cent of the population live off agriculture and pastoralism – and both of these depend on rainfall. This dependency affects food security, particularly when resources are scarce. And as climate change brings less predictable rainfall patterns, so it is more difficult for farmers' practices and knowledge systems to keep up with the rapid changes.

The next scientific report of the Intergovernmental Panel on Climate Change uses new scenarios of future emissions. In the new scenario RCP4.5 (a moderate scenario), the Beijing Climate Center's global circulation model projects a decrease in rainfall and an increase in temperature over the Kaffrine region in central Senegal in the 2020s. The likely increase in temperatures will create more evaporation, meaning more demand for water and more stress for the plants. Taking these scientific projections alongside local experiences of trends in climate, there is clearly a need for adaptation.

Interventions and impacts

Seasonal climate forecasts, communicated in accessible and meaningful ways to farmers, should provide invaluable knowledge for local agricultural decisions and livelihoods.

In Senegal, CCAFS are providing these through a multidisciplinary team of: farmers (unions and individual farmers); local extension workers; climatologists from the National Meteorological Agency; development workers from the Red Cross and from World Vision; agricultural advisers from the national agency for agricultural and rural advice (ANCAR); agronomists from the Ministry of Agriculture; an agroeconomist from the Senegalese Agricultural Research Institute (ISRA); and staff from the Climate Change Agriculture and Food Security (CCAFS) West Africa programme (which is run by the CGIAR Consortium).

The aim is to translate and communicate the seasonal forecast, and an indication of its probability, in easily understandable language, giving farmers the capacity to make informed farm management decisions. This is coupled with discussions on farmers' traditional forecast practices, providing space to share the different types of knowledge and so increase everyone's ability to make informed choices and good decisions.

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In the district of Kaffrine in central Senegal, agriculture is the primary economic activity. Although climate has varied a lot in the past 50 years, farmers don't use seasonal forecast information to cope with climate variability. We knew that to achieve our goal of a long-term partnership we would have to first build trust with the farming community. Scientific climate forecasts need to come together with farmers' own local knowledge of, and vocabulary for coping with, the climate. Inevitably there would be a language barrier as well as other communication challenges.

We started first by learning more about farmers' indigenous knowledge. We asked farmers to explain to us how they live with climate variability. Farmers have many ways of foretelling the climate, ranging from immediate rainy weather events to the behaviour of the season to come. For example, they recognise the approaching season by the wind changing direction, the appearance of stars shaped as an elephant, and by hot nights. Farmers predict a good rainy season from unusual appearances of snakes and frogs, a shooting star coming from a particular direction, or heavy rains preceded by strong wind and dark clouds from a particular direction. The end of the rainy season is announced by the appearance of dew and a higher sky.

Our approach was to listen and not to challenge, as this knowledge is a kind of legacy and heritage from farmers' forebearers. The signs are a mixture of coincidental events (such as shooting stars) and

actual facts. For example, in West Africa the rainy season is related to the establishing monsoon – a warm and humid southwesterly wind that takes the place of the northerly dry and hot winds. Animals feel this change, including snakes and frogs.

As our overall objective was to find common ground and an 'entry point' to the community, we selected signs related to science to introduce our seasonal forecast approach. For example the wind direction change farmers describe is related to the monsoon, and we added that we have a satellite which allows us to monitor the monsoon all year round and as far away as the Gulf of Guinea. So forecasts can tell when it is likely to develop. We also use farmers' common sense understanding. People go to the beach during hot days even though both land and ocean are heated by the same sun. So there is something special about the ocean: it changes very slowly in response to air temperatures, and therefore influences the climate months after these changes occur. In fact, 'ocean heat memory' is the basis for seasonal forecasts.

We gradually introduced seasonal forecasting to farmers, always relating this new information to their existing knowledge. Farmers are familiar with weather forecasts on TV and were able to differentiate seasonal variation (climate) and day-to-day change (weather).

Main achievement and challenges

It was clear to us after our first contact that, through links to some of their indigenous knowledge and our forecasts, farmers started accepting our new forecasting system. One could clearly see it in their faces, their laughter and the questions they asked. They wanted to know more and could not wait to see the first actual forecast. One challenge though was the probabilistic aspect of the seasonal forecast: how to explain probability and its interpretation when making decisions?

We were lucky that this particular community believes firmly that only God can make things happen and that human beings are fallible. It was easy to explain to them our forecasting model: rain comes from clouds, clouds from water vapour, water vapour from ocean evaporation, evaporation is controlled by sea temperature. The higher the sea surface temperature, the more likely it is to bring rain; it is as simple as that. To throw in some uncertainties, we asked them: "If during some years some baobabs grow early leaves and others don't, what will that tell you for the upcoming season?" After a rumbling in the room,



J. Hansen (CCAFS)



Farmers discuss the probability of varying rainfall levels

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they started saying it depends how many baobabs grow leaves, which ones, and so on. It was enough for us that they understand that error is possible in their traditional approach. We added that this is true for us as well: some parts of the sea can warm while others cool, and it would be difficult for us to tell the forecast for sure, but the strength of warming will help us to decide with some confidence. Our forecast comes with some degree of probability.

We introduced the interpretation of probability by putting three black (dry forecast) rocks and one red (wet forecast) rock in one bag and asking them will they likely draw a red (wet) or black (dry) rock. Then we shifted the probability and put two of each.

We also mentioned all the different technical ways of presenting the forecast information: the interval of likely values, the tercile probability categories, the probability that a threshold temperature or rainfall will be exceeded (probability of exceedance), and ensemble forecasts (that try to account for known uncertainties). After a long discussion between farmers and the local extension workers who helped them to interpret the forecast, farmers decided the best way to present the forecast is the probability of exceedance, which seems for them more useable in terms of choosing the right crop variety.

Another challenge was tailoring our forecast for farmers' specific needs. Our main question is: what makes farmers choose a particular agricultural strategy? We formed four working groups and gave farmers a hypothetical forecast. We asked them, based on a high confidence in the forecast, what would they do differently in terms of agricultural

strategies? We gave the four groups two dry and two wet forecasts. It turns out farmers were able to make good strategic crop choices and even challenged us on the difference between a good rainy season and a good cropping season. Rainfall total is important, but not enough, they said. They took things further, asking for more helpful information, which for them is the date when the rainy season is forecast to start. They told us this onset date is the most relevant piece of information in their decision system – so now the National Meteorological Agency can use farmers' preferences to tailor future seasonal forecast information for farmers right across Senegal.

Another challenge is the way we will get the forecast to farmers. We had an open discussion with the whole group and they recognised that rural radio is one way, but that the signal is weak when they are on their farms. Also, there are differences in how men and women get climate information – women often through personal contacts rather than formal channels. Overall, farmers wanted to have the information both from rural radio and through the agricultural extension agent who is permanently in contact with them. We chose the agricultural extension worker as our contact point and afterwards trained the rural radio journalist on climate forecasting.

Lessons

The main transferable lesson is the considerable scope for local knowledge and scientific knowledge to come together synergistically – both informing one other.

KNOWLEDGE

Farmers were able to develop adaptive strategies from climate information and choose a good strategy for dry and wet seasons.

A first evaluation of our partnership in the 2011 rainy season revealed that farmers who were given the seasonal forecast, (which was 'wet to normal' compared to the 'very wet' previous season), were able to plan better than farmers who did not receive any forecast and so simply adopted the previous year's strategy. In 2012 we gave them – as they specifically requested – a forecast of the onset of the rainy season, which helped them to

be better prepared, and saved their harvest from the first rain.

The lesson is that the process of local knowledge learning from science, and science learning from local knowledge, is iterative. It is important to invest time in building trust and a mutually respectful learning.

Last, climate knowledge is not the only thing that matters to farmers. We had a discussion on our limits and the need to expand the collaborative working group to include fertiliser producers, seed suppliers and insurance providers.



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Traditional forecasting takes clues from the natural surroundings, like this village baobab tree

Further reading

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The Rural Resilience Initiative: building a risk management market for poor farmers

Drought is one of the main climate-related risks for poor and food-insecure farmers in Ethiopia. The R4 programme combines four tools for risk management and offers drought insurance in exchange for work on projects that improve food security and community-wide resilience.

Overview

With more than 80 per cent of its population dependent on rain-fed agriculture, Ethiopia faces several climate-related food security challenges. Rainfall levels vary greatly by region and can be difficult to predict. During the past six decades, droughts have occurred every three to five years, and several serious droughts, either widespread or localised, have affected millions of people.

High population growth, conflict, and governance and institutional capacity issues exacerbate the droughts' impacts. All these factors have eroded households' and communities' productive assets and capacities.

Looking ahead, the Intergovernmental Panel on Climate Change (IPCC) predicts only a modest change in Ethiopia's rainfall patterns, but this could still adversely affect very poor small-scale farmers, especially if any decreases are concentrated in the growing season.

To tackle these challenges, Oxfam America with funding from the Rockefeller Foundation and Swiss Re, worked with local partners to put together a comprehensive risk management programme. Started in Ethiopia in 2007, the Horn of Africa Risk Transfer for Adaptation (HARITA) project included community works to reduce risks, as well as drought insurance, and credit and savings mechanisms to help drive investments in livelihoods. Implemented with local and international partners, this package of interventions offered effective assistance to

climate-vulnerable, cash-poor and food-insecure farmers.

In 2010, Oxfam America and the World Food Programme joined together to refine and scale up the model through the multi-country R4 Rural Resilience Initiative. R4 has now reached nearly 19,000 households in the Tigray region of Ethiopia (designed as a large-scale pilot project to test the approach) and is poised to expand operations into Senegal with the ambition of adding another two countries during the next three to five years.

Interventions and impacts

R4 refers to four risk management tools that are integrated into one resilience-building approach:

- community disaster risk reduction using food and cash for assets;
- prudent risk taking (credit and livelihoods diversification);
- risk transfer (insurance); and
- risk reserves (savings).

The programme is at its most advanced stage in the Tigray region of Ethiopia. Here Oxfam America and the Relief Society of Tigray (REST) have worked closely with the Government of Ethiopia to build an 'insurance-for-work' scheme into local branches of

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Box 1. The main actors involved

Integrating different risk management tools and sectors requires complex partnerships. But working with communities and other partners from the outset has helped R4 move towards scale in Ethiopia.

Community partnerships. In each village, a farmer design team of six or seven community members helps to develop insurance products and to design, monitor and evaluate R4's climate resilience-building public works. Participatory games, theatre and storytelling to educate communities about insurance have built trust and increased farmers' financial literacy.

Institutional partnerships. When HARITA was first launched, Ethiopian insurers served almost exclusively large companies and wealthy households in urban areas, insuring fewer than 300,000 farmers in a country of more than 80 million people. The regulatory and institutional environment to support micro-insurance was also weak. R4 has invested significantly in building partnerships between the public sector, private sector and community institutions.

Public-sector partnerships. Ethiopia's government-led Productive Safety Net Programme (PSNP – a 'cash and food for work' programme that supports poor workers by paying them to construct community assets – see case study in this conference series, *Scaling up an integrated watershed management approach through social protection programmes in Ethiopia: the MERET and PSNP schemes*) has supported the R4 programme at district and village level, developing capacity among PSNP staff in the process. The National Meteorological Agency provides technical support to R4's weather and climate data analysis, and the programme also works with Tigray's Regional Food Security Coordination Office, which is responsible for oversight of the PSNP in the region, and with the Tigray Cooperative Promotion Office, which helps to organise farmers at the village level. Such partnerships will be even more crucial in the future as R4 is scaled up further in Ethiopia and beyond.

Private-sector partnerships. Private-sector partners such as Nyala Insurance and the Africa Insurance Company in Ethiopia share the costs and risks of starting up the insurance market until it becomes commercially viable. Ethiopia's second largest micro-bank, the Dedit Credit and Savings Institution (DECSI), provides credit to participating households and educates local farmers about insurance. Swiss Re has helped to develop workable weather-based insurance models, in addition to acting as the programme's reinsurer. A number of national and international research institutes also provide technical support to the programme, such as Ethiopia's Mekelle University and the International Research Institute for Climate and Society (IRI) of Columbia University.

Ethiopia's existing 'cash and food for work' Productive Safety Net Programme (PSNP). Conventional insurance programmes, with high administrative costs and unaffordable premiums, could not bring drought insurance to the poorest in Ethiopia. But many of these food-insecure farmers participate in PSNP's regular cash and food transfers, which reach around eight million people across the country. In the R4 scheme, poor farmers have the option to work on small-scale, community-identified public projects in return for insurance cover through the PSNP. Farmers with more cash can also purchase this insurance outright. With affordable insurance plus social protection via PSNP, the poorest farmers can feel safer making investments to increase their productivity.

In the event of a seasonal drought, farmers receive automatic insurance payouts from R4's implementing partners if rainfall drops below a predetermined threshold. They can then afford the seeds and inputs necessary to plant in the following season and don't

have to sell off livestock, tools or other productive assets to survive.

By providing insurance against drought, R4 facilitates farmers' access to credit for investment in productive assets from micro-finance partners. This is because insurance decreases default risk or the risk that farmers are unable to repay loans if a drought causes crop losses. The R4 works projects help manage risk at the community level and build climate resilience and agricultural productivity – for example through improved irrigation or soil management. These projects complement the PSNP public works focus in these areas.

Weather indexing system. To be credible, the insurance-for-work scheme needed an accurate system for 'weather indexing' to assess the likely damage caused by poor rainfall and trigger insurance payouts. This was a challenge during the early stages of HARITA, as most poor and remote communities in

Farmers earn insurance through working on community risk reduction projects, for example building water harvesting structures



Mangesha Gebremichael for Relief Society of Tigray/ Oxfam America

Ethiopia are distant from weather stations and do not have enough reliable longer-term rainfall data.

During the pilot period, IRI worked with the communities and local partners to come up with an indexing system that combines modern technology with local knowledge. Weather indices were developed from satellite imagery, rainfall simulators and statistical tools. For each village, the indices are calibrated to the local crop calendar and rainfall amounts, and are set by local experts in consultation with the village's farmer design team. Payments are triggered by satellite image estimates of cloud cover, used as a proxy for rainfall levels. Automated meteorological stations have also been installed to evaluate how the satellite imagery performs.

Two different indices are offered, targeting weak or late onset of rainfall, and weak or early end of rainfall. This lets farmers who grow different crops and face different seasonal risks select appropriate insurance. They also have the choice of 'dry' or 'extra dry' plans, designed to yield a meaningful payout about once in four or five years or once in nine or ten years, respectively. In 2010, 93 per cent of farmers purchased the more costly dry option. The premiums are updated from year to year to capture changing climate trends, seasonal forecasts and longer-term risk.

Main achievements and challenges

An analysis of the project in five participating villages found impacts varied considerably from village to village and by type of household. In all villages,

farmers who bought insurance planted more seeds, used more compost, and seemed to be switching to high-yielding-variety seeds at higher rates, compared with non-participants. In the village of Awet Bikalsi, insured farmers realised 57 per cent greater teff yields, but effects on crop yields were not seen in the other four villages, possibly because the sample size for the evaluation (after only one season) was not large enough to distinguish the change from overall variation in yields. The signal may become stronger after several more growing seasons.

In addition, insured farmers tended to: use less family labour and more hired labour, diversify their income sources, and experience smaller losses of livestock. More farmers who bought insurance for the second time reported that they expect to plant different crops, use more fertiliser and obtain loans. Another follow-up survey will soon be available from the 2012 growing season.

Insurance premiums and payouts. R4's systems for setting and processing insurance premiums and post-disaster payouts are sensitive to the diverse needs and circumstances of farmers. Of about 19,000 farmers insured in 2012, 68 per cent were PSNP participants, who are among the poorest in their respective districts. These farmers had the option of insurance-for-work, whereas the other 32 per cent of participants were poor but relatively better-off farmers who paid in cash. The number who purchased insurance with cash – more than 6,000 farmers – represent modest but encouraging progress towards building a sustainable commercial insurance market in rural Ethiopia. Adjusted for landholding, all participating farmers have paid an average of around

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US\$12 in premiums per year, while Ethiopia's nominal annual GDP per capita is US\$324.

The first payouts went to 1,810 farmers in seven villages who experienced drought in 2011 when early rains failed in Tigray. In 2012, drought conditions in parts of the project region led to a second insurance payout to more than 12,200 farmers in 45 villages, totalling US\$322,772. This is the first time that a weather index insurance programme in Ethiopia has delivered payouts at such a large scale directly to small farmers. And the farmers received the funds when they needed them most, as the advanced satellite technology provided sufficient early warning for the payouts to be calculated and issued just as the crops were beginning to suffer.

Public works. The R4 community disaster risk reduction activities focus on restoring the fertility and resilience of degraded soil. These activities are designed to be complementary to those of the PSNP, and are identified and planned in coordination with the PSNP programme at the district and village levels. R4 communities are closely engaged in choosing projects and setting priorities through a participatory village-level vulnerability and capacity analysis. In 2012, 43 villages constructed water run-off diversion structures to irrigate 634 hectares of land, benefiting approximately 1,900 farmers; degraded communal catchments were restored in nine districts; a local variety of multi-purpose drought-resistant plants (beles) was supplied to 3,066 farmers; 1,776 female-headed households planted small backyard vegetable plots for household consumption and sale in local markets, and 2,591 farmers, extension agents and cooperative/administrative leaders received training on composting.

Care has been taken to include gender-sensitive strategies in the public works activities. Less labour-intensive projects that increase women's income-generating opportunities, such as the micro-gardens, are particularly emphasised.

Replicability. Swiss Re, USAID and Norway officials have assessed and endorsed R4's potential as a broader model for agricultural micro-insurance. R4 enrolled nearly 19,000 insurance farmers across 76 villages in 11 regions of Ethiopia during 2012, and will continue to expand across the country as the programme seeks to attract additional insurance and reinsurance companies to the agricultural market. The planning process is well underway for rollout of the Senegal pilot in 2013, to be followed by replication in two other countries.

The expansion of coverage is a key part of R4's longer-term strategy to gradually develop a sustainable insurance market for poor farmers in Ethiopia and elsewhere. A critical mass of farmers, spread over different climatic zones, will be required to make poor farmers commercially attractive to insurance providers.

Lessons

It is feasible to provide disaster insurance to the chronically poor, provided it is designed for their self-assessed needs and circumstances. The willingness of cash-poor PSNP participants to purchase insurance with their labour indicates that the demand exists, if an appropriate mechanism is created and well explained. R4 has shown that a number of risk management tools can be integrated.

Social safety net programmes can provide an effective and cost-efficient vehicle to make disaster insurance accessible to the chronically poor. The security provided by the insurance, combined with regular cash transfers and/or other mechanisms to protect assets against climate-related impacts, create an enabling environment for prudent risk-taking by poor households to increase and diversify their assets and income base. These mutually reinforcing measures also contribute to reversing asset erosion, a key barrier to getting out of poverty in places at high risk from recurrent disasters and climate impacts.

Further reading

Adapted from the case study *Ethiopia: Using a Social Safety Net to Deliver Disaster Insurance to the Poor*, to be published by the World Bank as part of its social protection/social safety net learning materials. For more information, contact Mirey Ovadiya – senior social protection specialist, World Bank, email: movadiya@worldbank.org



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Food security in the face of climate risks – Mongolian herders' experiences

Pastoralists in Jinst, Mongolia, have faced both climate-related shocks (such as droughts and winter freezes – dzuds) and rapid economic change. In response, they have taken collective action to reduce risks to their income, nutrition and wellbeing. Collective management has helped store animal fodder for hard times and diversification has raised herders' incomes, better-protecting food security.

Overview

Mongolia, with 2.87 million people living on 1.5 million hectares, is the world's most sparsely populated country. This remote landlocked nation experiences high solar radiation, low precipitation and wide-ranging temperatures that result in a dominant steppe ecosystem. Mongolia's climate and natural resources are most suitable for extensive grazing, and pastoral livestock production is a major economic sector. Mongolia has about 44 million head of cattle, horses, camels, sheep and goats, averaging about 15 animals for every person in the country. Seventy per cent of the population works entirely in pastoral animal husbandry.

Herder households generally eat enough calories from their wheat, meat and milk-based diet, but its poor diversity means micronutrient deficiencies are common. Extreme weather, in both summer and winter, also present high risks to nutrition and food security. Across Mongolia, average temperatures have increased by about 1.6°C during the past 60 years.¹ Droughts are common and climate change is already affecting water availability and range lands. But an even bigger hazard comes from winter disasters, called dzuds, in which extended and extreme cold, combined with repeated snowfalls, kills many livestock. These climate-related challenges are further exacerbated by low livelihood diversification². Large

portions of the population can become destitute and food insecure from one season to the next if livestock is lost. Poor households (those having 50 or less head of livestock – about a quarter of the total herder population) are particularly vulnerable.

Herders have also faced market price risks linked to the country's transition from a centralised planned economy to a free market economic system post-1990.

During the transition period, inadequate income and savings, coupled with an undeveloped market and high inflation rates, encouraged herders to sell their products cheaply or accept disadvantageous bartering through middle-traders. The situation worsened when the country experienced a series of severe and consecutive droughts and dzud disasters from 1999 to 2002.

However, overall the market price for livestock products, especially raw cashmere, remained stable and high until early 2008, when a further economic shock faced herders. Most livestock products dropped rapidly in price, and the value of cashmere halved. These falls cut the value per head of livestock, meaning herders had to increase herd sizes to maintain income. In 2009, the price for cashmere started gradually increasing, again encouraging farmers to rapidly increase their herds.

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This case study focuses on risk-reduction strategies in Jinst, an administrative area (soum) covering 531,264 hectares of mostly range lands and home to co-author Bayarmaa Baljinnyam. Jinst's population in 2012 was 2,115 people in 537 households. About 40 per cent of the population is younger than 18 years.

Bayarmaa's family belongs to the Orgil herder group, which includes 14 families who share the same pasture and grazing area. She lives about 40 kilometres from her nearest settlement (Jinst soum centre), which has a population of about 300. Her family of five mainly raises sheep and goats, which are the livestock best adapted to the semi-desert range land conditions. Her livelihood, and the family's food supply, depends entirely on her herd. What the family does not consume is normally sold in the market. Like all women in herding households, Bayarmaa is responsible for milking sheep, goats and camels to produce yogurt, Mongolian cheese and curds – the staple food items in the herder's diet. With a large enough herd, families can supply all of these staple food items throughout the year. Wheat flour, rice and tea are bought in local markets. A few families with smaller herds grow vegetables, such as potatoes, turnips, carrots and onions.

Herders raise a mixed herd in the new market economy, as it is too risky to tend the single species herds that were the norm during the collective period. However, from early 2000 herd composition has gradually shifted towards goats due to goat cashmere's rising market price. Goat cashmere, which is easier and cheaper to harvest, store and market than sheep wool, has become a main source of income, with sheep providing the bulk of a family's meat and domestic wool.

Poor families in Jinst were particularly affected by the 1999 to 2002 dzud. They lost proportionally more animals and had less access to resources including animal feed. Family food intake fell and its diversity declined. Families could not build up a store of dairy products or meat for the next winter, and faced the prospect of slaughtering their few remaining livestock. By spring 2002 all the cattle and horses and two-thirds of the sheep and goats (particularly female and young animals) had perished. Without lactating female animals to provide milk and dairy products, herder families faced deficiencies in essential nutrients and further nutrition-related health problems, especially among children, pregnant and lactating mothers, and elders. Access to and availability of essential non-food items and services such as candles, home-heating fuels, clothing, and education were also restricted. Some families lost all

their livestock and were forced to move to district centres to seek alternative employment.

For almost two years many households did not have enough milk and meat to consume, as they were trying to rebuild their remaining flocks (a challenge heightened by several poor breeding seasons with high mortality and miscarriage rates). Local Jinst soum statistics report the total number of livestock dropped from 125,185 in 2000 to 24,104 in 2002.

Interventions and impacts

The experiences of Bayarmaa Baljinnyam and her neighbours and family shows the kinds of strategies and practices herder households test and adopt to minimise the risks from ongoing socioeconomic and climate change shocks on food security and nutrition.

Families with larger herds and herders with greater livestock management experience were less affected by the 1999 to 2002 dzud. Their resilience can largely be attributed to better skills and preparation for the coming winter.

For example, setting aside a reserve pasture is a common traditional practice among Jinst herders. Studies have shown that access to such reserve pastures and storage of hay and hand-fodder helps herders to reduce risks and vulnerability to dzud.³

The households in Jinst agreed to jointly address their common issues of food security, nutrition and climate change by organising for collective action. Between 2003 and 2008 the herders in Bayarmaa's neighbourhood were part of a UNDP-supported Sustainable Grassland Management Project, implemented by the Ministry of Food and Agriculture.⁴ They rehabilitated winter shelters for livestock and received training on storing hay and hand fodder in preparation for any future dzud. They formed a community-based organisation to improve their livelihoods and regulate access and use of pasture land (for example a strict schedule for seasonal movements that helped ensure pasture could recover from year to year, and small reserve pastures kept to graze weak livestock and offspring in the spring or during blizzards). Herders had assigned tasks and roles within the group.

As a formal organisation, the group gained frequent interactions with local government and other external organisations, such as donors and non-governmental organisations. These interactions have helped herders mobilise small grants and technical assistance for well rehabilitation, development of common reserve pastures and alternative income-generation activities.



*Bayarmaa
Baljinnyam's
youngest
daughter with
their goat herd*

Bayarmaa Baljinnyam

Bayarmaa, for example, received training in producing handicrafts, felt boots and other felt products and this has increased her family's livelihood options. Along with other women herders, she can use sheep wool to make felt mittens and socks and sell them for cash to local people: "A few hundred grams of wool is required to make warm winter socks. In our soum, one kilogramme of wool is 500 tug (about 30-35 US cents) and about five to six products could be made from 1kg of wool. Normally in the winter warm socks are sold at about 2,000-2,500 tug (US\$2)."

In 2009-2010, Jinst herders experienced another devastating dzud, but its affects were less severe. Local leaders tell the story, saying: "Herders in our group established a small area for reserve pasture by fencing it and kept it from summer and fall grazing for several years. By December of 2009 the forage in the reserve pasture was very thick and almost one meter high and we used it in the critical time of spring 2010."

Another group leader mentioned that: "This time we didn't have much livestock losses, as we reserved pasture areas, collected hand fodder, and warmed up the livestock shelters. This helped a lot to overcome this year's dzud." One experienced elder shared that: "The main factor that saved our livestock during the past dzud is warm livestock shelters and constant feeding of younger and weak animals with hand fodder and supplemental feeds in the period from November to May, until young grass shoots. We occasionally grazed the livestock in the reserve pasture."

Main achievements and challenges

Community organisation has allowed herders to improve how they manage both climate and market risks – for example, by regulating land use and preparing fodder for winter, and by accessing training for vegetable and root crop cultivation, insect control, fertilisation and irrigation. The small-scale gardens families have established for household consumption have enabled them to diversify their diet.

Herders now also aim to raise more goats than other livestock – for the cashmere income value. There is a well-developed permanent cashmere market across the country, whereas the market for meat, dairy products and sheep wool varies depending on location and infrastructure development.

Community organisation has helped access training in value-added skills such as wool processing, felt making and maximising production of dairy products for outside markets. In 2007, several herders from Bayarmaa's group participated in an exhibition and trade fair in Uvurkhangai provincial centre. They had about 500 kilogrammes of dairy products that quickly sold out.

The process of group formation has been empowering for the herders and has strengthened their customary structures of cooperation. By being part of organised groups, herders can cooperate and network with local officials and trainers more often

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than before and their group leaders and activists can communicate their concerns and interests across multiple scales and networks. Bayarmaa, for example, was the elected chair of the local citizen representative assembly from 2008-2012.

Lessons

Traditional strategies for coping with risk may not, on their own, be adequate to deal with the increasing effects of climate change, especially when compounded by other stresses. For herders in Mongolia, drought and dzud were compounded by issues of globalisation, market liberalisation and resource degradation. Traditional strategies can still however, contribute much that is useful. For example, adaptive management of the livestock sector in the face of climate change can draw on pastoralists' own drought and dzud strategies.

Collective action helps to scale up good risk management practices. For example, the herders

have reduced their vulnerability by collectively harvesting and storing hay and fodder, establishing pasture reserves, improving livestock shelters and producing value-added livestock products. Small-scale gardens the families have established for household consumption have enabled them to diversify their diet.

Collective action spreads risk and builds social capital. Organising has allowed herders not only to pool resources among themselves, but also to draw on the resources of government agencies and non-government organisations to reduce their vulnerability to risk.

Being well prepared is a key risk management strategy. For herders, being well prepared for drought and dzud involves improving how local food and livestock markets function (aiming for easier buying, selling, transporting), as well as providing for future emergencies (for example, sites for simple slaughtering and processing, arrangements to use reserved areas).



Bayarmaa Baljinnyam

Bayarmaa Baljinnyam's family play shagai, a traditional game using bones

Notes

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15-16 April 2013 - Dublin, Ireland

The right to food security in a changing Arctic: the Nunavut Food Security Coalition and the Feeding My Family campaign

In Nunavut in the Canadian Arctic, Inuit are mobilising themselves and their government to address rising food prices and food insecurity; focusing on the right to a traditional way of life and the challenges brought by climate change and industrialisation.

Overview

About 160,000 indigenous Inuit live in four countries across the Arctic – Canada, Greenland, United States (Alaska) and Russia (Chukotka) and are represented internationally by the Inuit Circumpolar Council. All have faced significant cultural, environmental and economic changes over the past 60 years. The transition from a semi-nomadic subsistence culture to living in communities with mixed subsistence and wage-earning economies has tested both their resilience and adaptability. And while many changes are affecting Arctic ecosystems, brought primarily by climate change and industrialisation, the impacts on food security are fast becoming a central topic of conversation.

For Inuit, achieving food and nutrition security is about more than ensuring people are free from hunger, it is about the right to harvest and pursue a traditional subsistence way of life. In other words, Inuit view food security as a right that encompasses the cultural and environmental aspects of their lives.

For Inuit, the concept of 'food sovereignty' includes political, legal and other rights that add up to the right to make their own decisions about food and define their own food systems, including production, distribution and consumption.

Causes of food insecurity. Inuit communities' rich cultures centre on harvesting plants and animals for subsistence, and for hundreds of years Inuit have developed and adapted in response to the dynamic environments in which they live. But rapid climate change is threatening Inuit ability to pursue these traditional subsistence food sources.

For example, traditional food sources may be compromised when climate change alters animal migration routes, and some such impacts are already seen in eastern Arctic communities. Other environmental changes such as thinner ice, late ice freeze-up, early ice break-up, more variable snowfall, unpredictable weather, warmer temperatures, as well as more frequent and intense storms make hunting harder. Increasingly common extreme weather hazards, including high winds and blizzards, can also delay food shipments to communities that are accessible only by air except during the ice-free season, and this limits the availability of fresh food stocks in local stores.

Shifting socioeconomic conditions also threaten food security. International pressure for conservation in the Arctic is often at odds with traditional hunting livelihoods. This adds pressure to shift to a more industrialised society that means fewer active hunters are harvesting traditional food. Meanwhile, the cost of bought food is rising. The relatively

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recent shift to a cash-based economy among Inuit also brings challenges of money management skills, exacerbated by other household priorities such as the costs of fuel, power and rent, and this is compounding the issues of unaffordable food prices and low incomes.

Yet Inuit remain confident that as a culture they will not only survive these changes but thrive. Local solutions to mobilise communities to address food insecurity are emerging. This case study examines two such approaches in Canada, the Nunavut Government's Nunavut Food Security Coalition and a grassroots community mobilisation effort called Feeding My Family that is using social networking to raise awareness and discuss food security rights.

Inuit rights in Canada. Approximately 50,000 Inuit live in 53 communities in Canada's Arctic region. Canadian Inuit rights are conceptualised and codified in myriad ways at national and international levels, including treaties, land claims agreements, global Indigenous Peoples' rights, health rights, the right to food and nutrition, rights to access and own land, water rights, rights to the means of food production, and, more broadly, human rights. Achieving food sovereignty in the rapidly changing Arctic environment particularly requires that Inuit are empowered to shape global, national, regional and local decision-making processes related to biodiversity conservation initiatives.

Food insecurity in Nunavut, Canada. A visit in 2012 by the UN Special Rapporteur on the Right to Food Mission to Canada directed particular attention to the situation of Aboriginal Peoples in Canada, as well as food security considerations for rural and remote communities across the country – especially in the north.¹ In Nunavut, Canada, household food insecurity rates are five to six times higher than the national average. Researchers from the Inuit Health Survey (2007–2009) estimate that 70 per cent of Inuit pre-school children live in food-insecure homes and that Nunavut students are more likely than other Canadian students to go to bed hungry because there is not enough food at home. Community-based studies in Nunavut indicate rates of food insecurity range from 50–80 per cent. Poor nutritional quality, as well as food scarcity imposes an additional burden and associated consequences for Inuit health.

Interventions and impacts

Results from research on how to address food insecurity suggest that recognising and respecting Inuit human rights can reduce people's vulnerability to hunger, under-nutrition and climate change. Three

primary factors appear to influence food insecurity in Nunavut:

- **Knowledge and awareness.** Traditional knowledge and traditional food systems support both cultural identity and food security, but are declining.
- **Physical access.** Climate change effects and restrictions on harvesting rights are limiting access to traditional food.
- **Economic status.** Poverty is restricting people's pursuit of traditional livelihoods.

Developing a coordinated government and stakeholder approach. The Government of Nunavut has recognised the social cost of food insecurity in the territory and the importance of traditional food in the fight against it.

Because addressing this complex issue is broader than the mandate of any one organisation, the Nunavut government approach has been to embed food security actions within a larger mobilisation for poverty reduction. An integrated, coordinated and collaborative approach involving commitment and resources from many partners is deemed the only way to achieve meaningful impact on this profoundly important issue.

In 2011, the Nunavut Food Security Coalition (NFSC) was established to “develop a long term, ongoing, inclusive and sustainable approach to food security in Nunavut”. The NFSC draws representatives from seven departments of the Government of Nunavut and four Inuit organisations. Its goal is to engage a broad group of partner organisations and the public to create a collaborative strategy of programmes, policies and initiatives on food security. The focus is on identifying initiatives that can be undertaken within Nunavut, using existing resources. By ensuring all stakeholders have a say in developing the vision for food security in Nunavut, the coalition aims to ensure that the rights of Inuit in the communities are upheld.

Over the past year (2012–2013), the NFSC has held thematic discussions, organised public engagements, sought ongoing academic and expert advice, and in January 2013 held a symposium to bring together all interests. The coalition is now evaluating a draft strategy for implementation from spring 2013.

Grassroots mobilisation: the Feeding My Family Facebook group. There has also been a large community mobilisation around the issue of food insecurity in Nunavut, propelled by the Feeding My

Inuit view food security as a right that encompasses the cultural and environmental aspects of their lives



Sara Statham, Government of Nunavut

Family (FMF) group on the popular social media networking website, Facebook.² FMF was created by a mother (Leesee Papatsie), who wanted to raise awareness about the struggle Inuit face to feed their families (see Box 1). Since its creation in May 2012, more than 20,000 people have joined FMF, which provides an online discussion forum. Inuit understand hunger, and its stories and legends permeate their culture. FMF uses this innate understanding of the issue to get people talking about the high cost of food, to gain followers, and to work for change.

Main achievements and challenges

FMF has given Inuit people a place to voice their concerns and has empowered them to speak up for themselves – something that is against the traditional ‘norm’. FMF also promotes Inuit knowledge and traditions, like sharing food among the family, to tackle food insecurity.

The public pressure raised by FMF is helping ‘jump start’ faster collaboration between the Nunavut

Box 1. Leesee’s story

“One day I saw a person was taking a stand against the high cost of food in Nunavut right outside our local store. At that time, I was unable to join him but I supported what he was standing for. It inspired me to organise a campaign to stand together and speak with one voice on the high cost of food in Nunavut. Inuit are good at coming together for a common goal and have been working together to fight hunger for hundreds of years. I also knew that many Northerners³ use Facebook as a way of communicating with the outside world and that it would be a useful way of connecting people around the issue.

There are three people living in our household, we spend about 500 Canadian dollars per week to feed ourselves and others (Inuit will share their food among family members – this is the norm for us). For example, frozen concentrated juice can cost CAN\$8.59. We are lucky compared to other families as both my husband and I have jobs and we have a house. Nunavummiut (the people of Nunavut) struggle to put food on the table and a lot of people are trapped in a vicious circle – they get paid, pay the bills and buy food, but often have to borrow money for food before their next payday. Many households have one or two working folks supporting eight to ten people.

Changes in weather are also making it difficult for Inuit to harvest animals. One year, we tried to go fishing through the sea ice. The travel conditions were so poor, we had to turn back despite this time of year normally being a good time to travel and fish.”

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government and Inuit organisations, strengthening the public mandate for the NFSC. Existing programmes are being reformed and more food banks are being set up.

But the biggest challenge is still the failure of some community members to acknowledge the severity of food insecurity in Nunavut. "I don't believe this is happening in Canada" is a remark frequently posted on the FMF Facebook page. Another challenge is that dependence on social media as a platform for the Feeding My Family campaign means the message does not reach low-income families or those without access to the internet.

Yet FMF has demonstrated the effectiveness of taking an unexpected and non-traditional approach – that is Inuit voices speaking up for their rights, and being heard. Working together is an important tradition for Inuit and by doing so they are driving change in Nunavut.

Lessons

Food security is a complex issue with myriad influencing factors, and achieving it may require communities that are empowered to shape global, national, regional and local decision-making processes. In the rapidly changing environment of the Arctic, all these levels of decision making can affect Inuit food systems.

Recognising the right to food is an important step in triggering more sustained action on food and nutrition security by government and civil society. International human rights covenants can play an important role in informing and shaping policies at national and sub-national level.

Meaningful intersectoral engagement is needed to develop culturally appropriate solutions that improve lives and ensure the right to access safe and nutritious food in the context of a changing climate. Experience in Nunavut highlights the importance of strategic planning and advocacy, and of seizing opportunities for action when political will, research or public mobilisation raise the profile of an issue.

Inclusive participation and collaboration by all major stakeholders is essential. Government, NGOs and civil society in Nunavut are mobilising collectively and this promising process may yield the kind of collaboration that is needed to defend Inuit rights to affordable, safe and nutritious food. Citizens are encouraged to participate in decision making and strategy development and will play an important role in ensuring that the Nunavut Food Security Coalition implements its strategy.

Recognising traditional rights and culture is likely to have the most impact on food security, and to be the most cost effective. Achieving food and nutrition security is about more than ensuring people are free from hunger. For Inuit people it is about the right to harvest and to pursue a traditional subsistence way of life.

Unifying communities and encouraging them to speak up on their right to food can help lobby the government and private sector and raise household awareness on health, food and nutrition. By supporting community empowerment the Feeding My Family group has allowed Inuit to strengthen their voice and demand their rights.

Notes

■ ¹ 800,000 households are food insecure in Canada, despite the fact that Canada is a G8 country that often tops rankings in the UN Human Development Index (source: UN Office of the High Commissioner for Human Rights, 2012). ■ ² www.facebook.com/groups/239422122837039; www.feedingmyfamily.org ■ ³ Northerners is a term used to describe people living in the North.



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Women's land rights in a changing climate: a case study from Maradi, Niger

Women in rural Niger need access to farmland in order to feed their families during worsening droughts. The Women and Land Initiative is helping women claim land rights by engaging local leaders and raising awareness of the benefits that accrue when women hold land and grow food.

Overview

Over the past 30 years, Niger has experienced recurrent food crises. During these lean times, families rely on women as the pillars of household food security and nutrition. But in places like the Maradi region of southern Niger, where malnutrition rates are critically high, women themselves are increasingly vulnerable because they lack access to land for farming. Agriculture is the main activity for 85 per cent of rural households in Niger, providing food and an income. Without land, women cannot grow food or earn and control assets, and their ability to provide a complete and healthy diet for their children is undermined – with severe consequences. Between 10 and 15 per cent of Maradi's children under five suffer from acute malnutrition – a level considered 'serious' within the World Food Programme classification system.

And the situation is worsening. Periodic droughts are characteristic of the Sahel region where Niger is located, but the interval between the years of poor agro-pastoral production has shortened. Now, on average, one year in three is in deficit: 2005, 2009 and 2011 were all drought years. Each successive drought makes it more difficult for households to recover. In the Maradi region, climate change is having a serious impact on crop production, especially beans, an important source of protein.

In addition to the droughts and high levels of poverty, other compounding factors contributing to food and

nutrition insecurity include overgrazing, deforestation, soil erosion, high cereal prices, lack of access to markets and the limited attention given to effective strategies for risk reduction and food security in most local development plans. Rapid population growth is increasing the pressure on natural resources. Maradi has the highest population growth rate in the country (3.7 per cent per year, compared with 3.3 per cent in all of Niger), which has led to accelerated land degradation and, in turn, a decline in grain yields and per capita grain production, further preventing households from producing enough food even when rainfall is good.

Meanwhile, cultural practices and increasing land scarcity are keeping more women out of farming. A larger population means less land is available per person. This undermines the land rights of the most vulnerable, particularly women, because traditional regulations do not support their access to, and control over, land. Although modern and religious laws formally provide land rights to women, their weak and sometimes contradictory application adds to the problem.

Women are often prevented from participating in farming, and in some areas are excluded completely. Some landless young women live in seclusion (the practice called 'kubli' in the local Hausa language), rarely leaving the house and only with the permission of their husband. Traditionally, seclusion was only practiced by wealthy households where the husband had the means to provide for his wife (or wives)

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without needing her labour for farming. But this practice is now widespread, preventing women in poor households from generating the income needed to fulfil their households' food and nutrition needs.

Where women are given the opportunity, they have the capacity to produce crops with high nutritive and economic values, such as beans, groundnuts and moringa (the leaves of which are eaten during the 'lean season') millet and sorghum. However, because of their exclusion from some or all farming activities, many women are unable to make enough money to access technology and other inputs to increase their land's production. They are generally given the poorest pieces of land and struggle to fertilise and cultivate it without more sophisticated equipment.

Addressing the linked problems of food security, nutrition and climate change requires innovative responses, and improving women's access to land is one important pathway. Since 2010, the 'Women and Land Initiative' at CARE Niger has been working in Maradi to secure land rights for women with a view to significantly increasing their involvement in agriculture and reducing household vulnerability. This case study shows how a rights-based approach has helped women overcome the challenges posed by climate change, high population growth and land scarcity.

Interventions and impacts

The Women and Land Initiative aims to tackle the emerging trend of excluding women from agricultural land in Southern Niger. The principles for the rights-based approach are the inclusion of vulnerable women, participation of marginalised women in community discussions and decision-making processes, and gender equality and equity for access and control over resources such as land.

The project is working in southern Maradi with 3,000 women in 30 communities within six municipalities. In these communities women are organised in saving and loans associations, each of which has a woman leader. Most of the women are without access to land and experience food insecurity. The initiative seeks to improve their living conditions and to engage them with those who make land management decisions.

This means changing the behaviour of key stakeholders regarding women's rights to own land (see Box 1). There are two components to the project: (i) raising awareness of the benefits of women's land ownership and (ii) securing support from local leaders, including traditional, religious and state authorities.

Box 1. Stakeholders for women's land rights

Key land rights stakeholders in Niger include the national land commission, local authorities, and traditional or religious leaders.

The national land commission implements Niger's 'rural code' through local constituencies, who also issue land titles and establish user and management agreements for communal lands. The rural code supports the application of local conventions – agreements between people, groups or the community – which can be set for a limited or unlimited period of time.

Local authorities are in charge of making judgements when land conflicts arise and are part of the land commission.

Traditional and religious leaders who have a supportive understanding of women's rights are also key actors.

Awareness-raising campaigns are organised in all communities where there is a district-level land commission. Dramas are performed on women's inheritance rights to land, followed by discussion, questions and answers. Other methods used are frequent radio broadcasts, sermons by religious leaders, and debates between lawyers, rural women and other local stakeholders. This is an inclusive approach that encourages participation by many stakeholders, including local state authorities and leaders, and by both women's and men's leaders.

To gain backing from local leaders, meetings are organised during which religious leaders, state officials and other stakeholders announce their commitment to support women's access to land in their area. Both the meetings and the awareness-raising messages communicate the importance of supporting women in realising their right to access land, as local food security is dependent on women's ability to produce food.

Main achievements and challenges

A rights-based approach has enabled women to gain access to land and increase their resilience. As a result of the Women and Land Initiative, some women's groups have been able to lease community land for a certain amount of time, for example 3-10 years. In some villages the women's groups have received land for planting crops with high nutritive value through local land leases.



Women working on their agricultural land near the village of Mamoury, acquired through the local land convention

Alima Mamadou

More women have started securing access to land through different channels: by buying or leasing land or by exercising their rights to inherited land under Niger's Land Act. Community dialogue and negotiations have allowed women's representation on local land committees to double (from 10 to 20 per cent). These women are now advising other women on the advantages of securing their own land to increase their resilience to climate change and improve their households' food and nutrition security.

Local conventions have empowered women and improved food security. The rural code promotes the establishment of local 'conventions', or land-use agreements, in communities. Through the local land committees, women have opportunities to take leadership positions in establishing these conventions. This allows them to participate in negotiations on the management of communal land with a view to restoring the biological and physical productivity of the lands while providing women with income-generating activities. Through their new roles in the local conventions, women are able to place issues of hunger, nutrition and the impacts of climate change high on the agenda of the local government councillors.

Participatory and inclusive dialogues have promoted awareness of rights. The initiative has involved stakeholders at all levels by organising events and social dialogue meetings with the support and participation of local government. The participation of technical services and rights experts

who use legislative texts to support women's rights has also been important. These local dialogues have included traditional leaders and youth representatives, as they are seen as the key drivers of change at community level and central to discussions on rights.

Clashes between formal and customary law can impede women's access to land. A major challenge is that the application of legal (rural code) and religious texts, which are favourable to women, clashes with customary law, which is favourable to men. With support from women-influenced local land commissions and from positively engaged leaders, it has been possible for women in some communities to claim their right to inherit land under the formal laws.

Engaging local leaders is an ongoing priority. There is a lot more work to be done before every woman can claim her rights. This cannot happen without the involvement of key decision makers at district level and of traditional leaders who still have the power to make decisions on land regardless of regulations. Many of these stakeholders are not yet committed to addressing women's rights. Gaining their support could become more difficult in areas where land resources are very limited and competition is increasing.

Lessons

Drama can communicate how gender inequalities affect food and nutrition. When women's rights to land and other resources are not realised, there are knock-on negative effects on household nutrition.

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Box 2. Women begin to claim their family inheritance – Rahamou’s story

Rahamou is 35-years-old. She lives in Sarkin Yamma, is married with eight children, and her main sources of income are plaiting hair and knitting. When her father died 19 years ago, she did not know that she had rights to a share of his land. The Women and Land Initiative made her aware of her rights, and she claimed her share from her brothers. Now Rahamou is using her portion of the land to cultivate millet, sorghum and beans.

Awareness-raising campaigns through drama performances based on gender stereotypes are a good way to flag issues of gender inequality and encourage community discussions. These campaigns have been instrumental in changing decision making to allow women more access to, and control over, the land in Maradi.

A rights-based approach increases resilience. Communities are more resilient when rights are used to help implement national and religious laws. Improved access to information and facilitated dialogue empowers people to claim and exercise their rights and thus helps them to deal with food insecurity and undernutrition caused by climate change. An inclusive rights-based approach will focus on the communities’ needs and give them ownership over policy change.

Engaging local leaders and blending formal and customary law can help to realise rights. It has proven beneficial to involve religious leaders in training on how to apply the rural land code, and to



Alma Mamadou

Nana Moumouni lives in Garan Mahaman and uses improved seeds that produce crops faster

integrate religious views on national law as it relates to land. Participation by local leaders – traditional, religious and state authorities – is very important in changing cultural attitudes and practices with regards to women’s rights.

Once rights are established, additional support is needed to build climate change resilience and ensure food security. Rights-based approaches create opportunities for people to use their rights effectively. The Women and Land Initiative has found that women who have gained rights to land also need support in accessing improved farming techniques, such as drought-resistant, early maturing seeds and organic fertilisers. This allows to them to increase their resilience to climate change and to ensure their households’ food and nutrition security, even during lean periods.





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Linking local agriculture to national policy by studying climate change economics in Colombia

Participatory research, using the FAO's Aquacrop model, is investigating crop yields under several climate change scenarios, and feeding the findings in to a national, cross-sectoral economic model. Stakeholders, from farmers to national decision makers, are using the same model to guide their decisions. The project will contribute to a National Adaptation Plan for Colombia, and be scaled across farming communities.

Overview

Climate change impacts in Colombia are likely to be huge. To tackle the challenges ahead, the Colombian government undertook an Integrated National Adaptation Project (INAP) between 2006 and 2011, bringing together science, wide consultation and pilot projects among farmers and other communities. Studies under INAP found that Colombia is already feeling many climate change impacts, and important effects are expected in the future. These include: (i) changes in water resources across 50 per cent of Colombia; (ii) floods in vast areas of insular and coastal zones, and salinisation that could affect 2041km² inshore of the Caribbean coast; (iii) risk of desertification across 27.3 million hectares, including soils used for agriculture; (iv) effects on road, manufacturing, port infrastructure and hydroelectric generation; (v) deterioration of high mountain and coral reef ecosystems; and (vi) human health effects due to a higher incidence of transmittable diseases such as dengue and malaria. Dengue in turn can have long-term effects on nutritional status as it damages the liver of the affected person.

global warming. Climate conditions, and in particular changes in the availability of water, affect animal and crop productivity, compromising food security and livelihoods for the most vulnerable communities. According to GERMANWATCH, Colombia was the country third-most-affected by weather-related loss events (such as storms, floods and heatwaves) in 2010.¹ Colombian officials estimate that by 2050 climate change will threaten the livelihoods of 3.5 million farmers.² And for Latin America and the Caribbean, the International Food Policy Research Institute has calculated that per capita consumption of cereals and meats could fall 1 per cent by 2050 due to climate change, and that the availability of per capita daily calories would be reduced by 2.8 per cent.³

Farmers are already well aware of changes and have been expressing their concerns to government and research agencies (see Box 1). Consumers in the lowest wealth percentiles will bear the biggest burden of food price rises, as they spend the greatest proportion of their incomes on food. Nutritional outcomes are likely to suffer as people forego more expensive nutritious foods. This has major implications for social justice as well as knock-on effects for the national economy. One of the lessons from INAP is that better models and scenarios are needed to help farmers identify adaptation measures

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In Colombia, agriculture is one of the sectors most affected by climate and climate change, and at the same time the sector that contributes the most to

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that can reduce hunger and improve nutrition for themselves and for urban consumers.

In response to the INAP, Colombia's National Planning Department (DNP) is now coordinating a major project: the Economics of Climate Change Study for Colombia (EIECC). This project involves the public sector, research institutes, national and international universities, farmers' organisations and NGOs. Using a Computable General Equilibrium Model,⁵ the EIECC aims to quantify the economic cost of climate change impacts and determine the optimal responses that could be taken to protect the country's economy, particularly the livelihoods of people in lower wealth percentiles. Once these calculations have been made, the EIECC will propose and prioritise public policies that minimise the costs and maximise the benefits of adaptation and mitigation, taking into account their economic, political, social and environmental viability. In doing so, the EIECC will produce a short-, medium- and long-term national climate change agenda, which will be instrumental in shaping Colombia's National Adaptation Plan (NAP), which is due to be developed in 2013.

The EIECC project has held wide consultations through workshops and informal meetings where farmers are able to speak freely about their daily experience with climate factors and their concerns about climate change. As a result, the EIECC recognised the need for a sectoral model for agriculture that could be both reliable at the national level and accessible to farmers' organisations and other stakeholders at the local level. The FAO, DNP, the Ministry of Agriculture and Rural Development, and the Institute of Hydrology, Meteorology and Environmental Studies of Colombia (IDEAM) signed an agreement to jointly study the agricultural sector, using FAO's Aquacrop Model. Aquacrop has open-access software and covers a wide range of crops, though it needs calibration for national and sub-national contexts.

Intervention and impacts

The project has had four stages:

1. Crop selection and regional validation. Maize, rice, potatoes and sugarcane were selected as the first crops to consider, based on their economic and food security importance, availability of information and inclusion in Aquacrop. The crops were matched to production regions, where information about soils, soil use, type of agricultural practices and climate conditions was collected. FAO staff showed Colombian researchers how to adjust and calibrate the Aquacrop Model to the agro-climatic conditions of the different regions. This activity included constant work with farmers' associations and Colombian research institutes to validate the model for local conditions. Farmers' organisations were

Box 1. "My name is Maria Mosquera Rodriguez, and I am from Cundinamarca, Colombia. The majority of the products we grow here are taken to the markets in Bogotá and Villavicencio, which only leaves us crops like maize and some fruits to eat for ourselves. That means we are depending on the external market. We used to grow coffee, but because of the change in temperature it's not possible anymore.

We depend a lot on maize now; it is the main crop supporting us. The difficulty is that more and more during the summer we are left without water, which means we lose our maize crop. Sometimes we don't even have enough water to cook the food we do have.

My neighbours, friends and I have noticed how over the years the change in the climate has got stronger, especially in the summer. In this area we've recently had two very strong droughts, the first one in 1996 and the second one in 2006. We were left without anything to live on because our maize crops died. Some families had to get out of farming altogether and find another way to feed their children, and others even left for Bogotá to survive. Everyone here agrees that 20 years ago the climate was much more stable, and the river had much more water."

Adapted from reference 4.

crucial knowledge providers, often having access to the only reliable local data.

2. Learning to use Aquacrop. To ensure that people at all levels, including farmers, knew how to use Aquacrop, the project ran six workshops. One at the national level was for heads of farmers' organisations, the national meteorological service, universities and the public sector. Five regional workshops, covering different crops, were for local farmers and agricultural secretaries from local government. All workshop participants had a computer to learn and test the model by adjusting parameters.

3. Estimating crop yields using different climate change scenarios in order to include them in the EIECC. The project identified climate scenarios for each region; and simulated growth and yields for each region under different climate scenarios. Results suggest that La Niña events can cut sugarcane productivity by 10 per cent, while El Niño events can cut potato yields by between 62 per cent and 76 per cent, and rice yields by 13 per cent. The calibration process also revealed that water is not being used effectively to grow rice. Preliminary results suggest

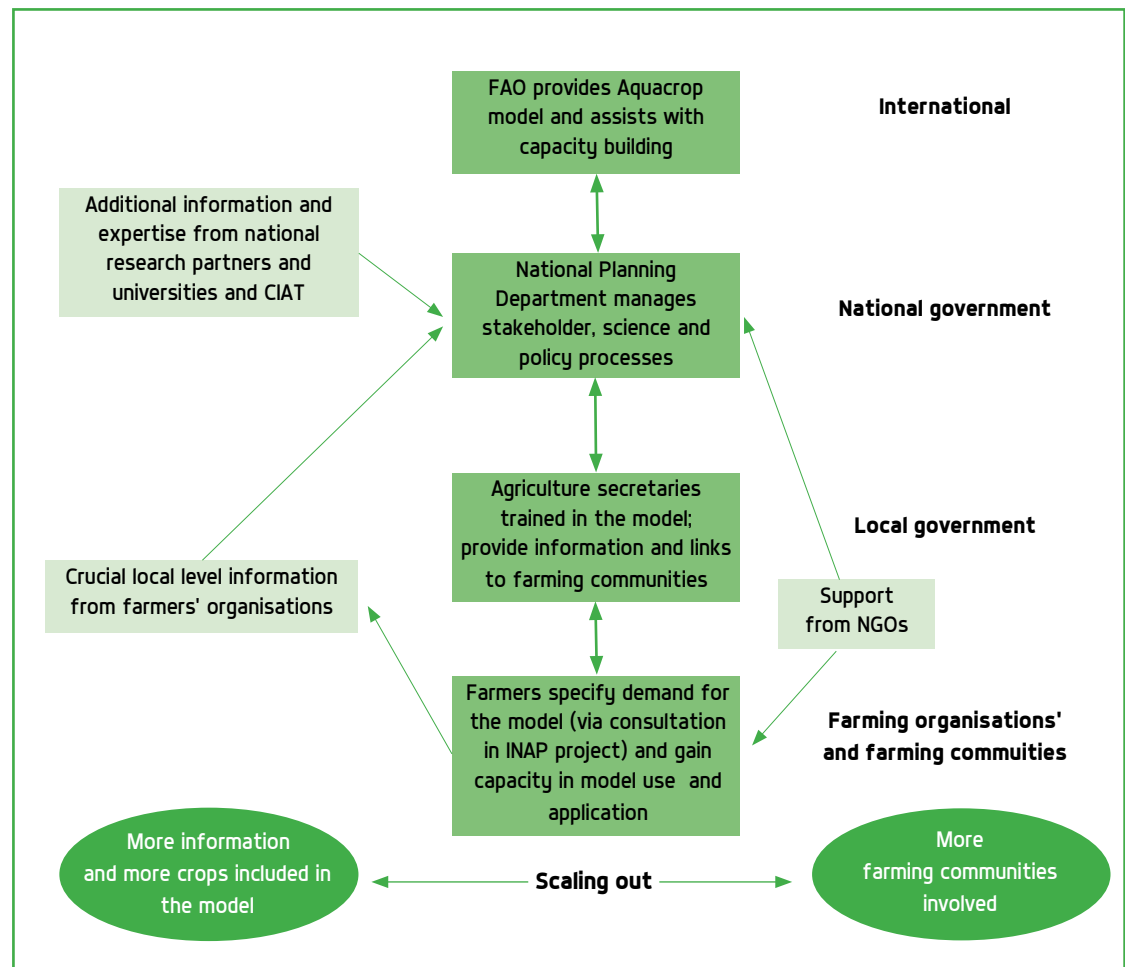


Figure 1. Linking local and national in the agricultural component of the EIECC in Colombia

that even with rapid economic growth, low population growth and many new technologies, a 7 per cent climate-related increase in food prices will drive the number of poor households up by 3.3 per cent by 2040, leaving almost two million more people in Colombia below the poverty line.

4. 'Scaling out'. The project has published a final report, including methodology, processes and results of the simulations; and has held two regional and one national workshop to disseminate the results among a wider set of participating institutions and other stakeholders.

Main achievements and challenges

Policymakers, researchers and communities have worked together to accomplish a common goal in the EIECC (see Figure 1). DNP has been a crucial player in this process – in charge of formulating inter-sectoral policy and allocating budget resources to the different ministries. The EIECC is an experiment in which academic researchers and specific interest groups (such as farmers) are interacting continuously with policymakers to formulate policies that can have real benefits for communities.

The EIECC's integrated cross-sectoral economic analysis reveals whether interventions or impacts in one sector could entail higher costs to the economy and thus result in falling national income, higher unemployment, or have other downsides such as increases in poverty that generate problems of hunger and nutrition.

Using FAO's Aquacrop model to understand how changes in climate variables can affect agricultural productivity – and hence foods prices, poverty and nutrition – has added an innovative 'bio-economic' aspect. This approach provided robust results that can be easily incorporated into the agendas of national decision makers and also into farmers' daily decisions. DNP plans to scale out the model to reach more farming communities. If possible, other crops that are important to farmers' nutrition and livelihoods, but that are not on the current Aquacrop list (such as plantain), will also be included. This approach has let the project contribute to better understanding of issues and responses related to climate change both at policy and grassroots levels.

The next phase of the EIECC will incorporate the results of the models into Colombia's National Adaptation Plan (NAP), now being prepared. The NAP

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consists of a set of tools to help ministries and local authorities include climate change in their daily decisions. One of these tools will be the EIECC and its results. The emphasis will be on demonstrating the effectiveness of addressing climate change in an integrated way across sectors. For the agriculture sector, a major outcome will be that farmers, farmers' organisations and agricultural secretaries in local government will be proficient in using exactly the same model as is being used for national policymaking.

Information rather than participation has been the main challenge. Generally speaking, data accessibility and compatibility were the serious hurdles. In particular there were obstacles in obtaining the necessary hydro-meteorological time series. Often, long time series simply do not exist, and in many cases the hydro-meteorological network did not cover locations needed for the analysis. Continuous dialogue with information providers proved crucial, as did drawing in information from others, such as farmers' organisations and other research institutes beyond IDEAM. Farmers were able to test the model using historical data sets and identify where better data were needed. In many cases they were then able to come forward with their own data sets, managed by farmers' organisations.

Crop differences were also apparent. For sugarcane, the model worked well, but for rice, where information was more of a problem, there was less success.

Lessons

Accountability and integrity of government agencies. For really effective linkages between local concerns and national policy, it is crucial that local stakeholders have faith in the mediating government agencies. DNP, the coordinating agency for this work, has taken a particularly collaborative approach. In collecting the data, and sharing and testing the model, it has been important for DNP to maintain

transparency and keep to promised outputs and ongoing engagement. This will be even more important as the exercise feeds into the NAP.

Emphasis on the very poorest. As the research has shown, poor consumers, in the lowest wealth percentiles, will bear the biggest burden of food price rises and nutritional impacts under climate change in Colombia. The EIECC has been designed to include detailed analyses of outcomes for different wealth groups, so that future policies, particularly the NAP, can directly address the needs of the poorest.

Simple messages versus detailed tools.

Governmental communications with the public frequently take the form of simple memorable messages (for example, the '5-a-day' nutrition message in United States, United Kingdom and Germany). The EIECC takes a different approach, putting farmers' organisations in full command of the analytic tool (Aquacrop) that will guide national policy. There are pros and cons of each approach. Simpler approaches are less costly and reach a wider portion of the population, especially the very poor. But they can be paternalistic and exclude participation. More complex and participatory processes are empowering, but may lead to unclear conclusions (for example, how the Aquacrop model expresses climate uncertainty, or copes with crops for which the data are poor).

Ongoing engagement versus over-burdening local participants. A potential shortfall of project approaches is that local participation and capacity building may be limited to one-off consultations (for example the national-level and regional-level workshops on the Aquacrop model). To provide effective local empowerment, government agencies need mechanisms for ongoing support and engagement. On the other hand, there is a fine line between stakeholder engagement and over-burdening farmers with too many demands for information, feedback and attendance at meetings.

Notes

■ ¹ Harmeling, S. 2011. *Global Climate Risk Index 2012. Who suffers most from extreme weather events? Weather-related loss events in 2010 and 1991 to 2010.* GERMANWATCH <http://germanwatch.org/de/3667> ■ ² Ministerio de Ambiente, Vivienda y Desarrollo Territorial (MAVDT), Institute of Hydrology, Meteorology and Environmental Studies of Colombia (IDEAM) and Programa de las Naciones Unidas para el Desarrollo (PNUD). 2009. *Diálogo Interministerial de Cambio Climático.* ■ ³ Nelson, G.C. et al. 2009. *Climate Change: Impact on Agriculture and Costs of Adaptation - Food Policy Report: Series 21.* IFPRI. DOI:10.2499/0896295354 ■ ⁴ Quiroga, A. et al. 2011. *Impacto del cambio climático en la seguridad alimentaria de Bogotá y en los medios de vida de pequeños productores.* International Centre for Tropical Agriculture (CIAT), Managua, Nicaragua and Cali, Colombia. ■ ⁵ Computable General Equilibrium Models simulate the flows of incomes and expenditures of an economy.

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*A New Dialogue : Putting People
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15-16 April 2013 - Dublin, Ireland

Seeds for change: a certified seed project in Malawi is boosting local incomes and supporting emerging national agricultural policy

A project working with farmers to multiply improved and certified legume seeds for Malawi's seed merchants is bringing income and food security to local participants but also widespread benefits – through links with national subsidy programmes for agricultural inputs and strong partnerships with Malawi's smallholder farmers' associations, government policy forums and the private sector.

Overview

Agriculture remains the main source of growth and exports in Malawi. With 85 per cent of the population residing in rural areas, the sector accounts for more than 80 per cent of the country's employment, over one-third of the gross domestic product, and about 80 per cent of merchandise exports. Yet around 8 per cent of Malawians are at risk of food insecurity each year,¹ often because of poor harvests due to erratic rains and dry spells, and limited alternative income sources.

Many farmers struggle to meet even their annual consumption requirements. Land and water management remains poor and much agricultural production uses degraded soils, leaving crops prone to water and low-nutrient stresses. Even where production is good, poor roads have often prevented surpluses reaching markets.

Between July 2012 and March 2013 an estimated 1.97 million Malawians will have been at risk of food insecurity – the highest number for many years.

In the 1970s Malawi exported more than 50,000 tonnes of groundnuts per year, but in the 1980s the exports stopped and the area cultivated declined by two-thirds. This was partly because government pricing

at the time favoured hybrid maize seeds, and because legumes (like groundnuts) are largely grown from home-saved seeds, meaning there is little scope to improve varieties and so maintain yields. Malawi is working to diversify its predominantly maize and tobacco-based production systems, and to engage traditional (often subsistence) smallholder farmers in more market-oriented agriculture through better market access and integration into agricultural value chains.

Crops like groundnuts, pigeon peas and beans offer high nutritional value and potential income sources for poor farmers, but good quality seed is rarely available, partly because of a self-reinforcing 'vicious circle' in which seed producers believe there is no market for improved seed as farmers sow saved seeds.

Since 2008, ICRISAT (see Box 1) has been running the Malawi Seed Industry Development Project (supported by Irish Aid) to improve legume seed production and multiplication, with the aim of increasing food security and household income among poor farmers in Malawi.

Legume crops are especially important in Malawi because of their potential to both improve soil fertility (by fixing nitrogen and reducing erosion) and help to overcome nutritional deficiencies (supplying protein, oils and vitamin A).

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Box I. The International Crops Research Institute for the Semi-Arid tropics (ICRISAT)

ICRISAT's staff of over 30 people operates from Lilongwe. The institute focuses on agricultural research and technology transfer, and helps link small-scale farmers to markets. ICRISAT ensures that new innovations are passed on to farmers through farmers clubs and field demonstration days. Crop varietal research and development is just one of the institute's research activities.

The project's objectives are to:

- develop the capacity of existing and potential local seed companies;
- improve the policy environment for the seed trade; and
- strengthen the commercial distribution network for improved seeds, complementary inputs, and resulting crop outputs.

To reach as many smallholder farmers as possible, ICRISAT works in partnership with the National Smallholder Farmers Association of Malawi (NASFAM), which is the largest agricultural membership organisation in the country. NASFAM comprises small local farmers clubs headed by a lead farmer, which feed into large associations also led by local elected leaders. Its aim is to build capacity of small-scale farmers and it has introduced conservation agriculture to drive increased climate change resilience (see *Promoting empowerment and knowledge through smallholder farmers' associations in Malawi*, also in this conference series). Besides NASFAM, ICRISAT also works with big contract growers and other smallholder farmer groups that are independent of NASFAM but organised for collective action.

Interventions and impacts

Once a new seed variety is developed, seed multiplication stages involve farmer organisations and the private sector under the regulatory authority of the Malawi Government's Seed Services Unit. Smallholder farmers are given technical support and seed on credit, with the expectation that the premium price they will be able to command from seed distributors (K350 per kg – equivalent to US\$0.91 – for a harvest of improved seeds compared with K250 per kg – US\$0.65 – for the usual crop) will enable the farmers to become self-financing producers of high-quality seed. This distribution process ensures that any new variety is quickly

made available to benefit farmers. NASFAM, ICRISAT and Ministry of Agriculture and Food Security (MoAFS) teams introduce farmers to improved legume production technologies by helping them set up demonstration plots. The plots give farmers opportunities to choose one or more varieties as well as different crops like sorghum or rice, to suit their needs and their agro-ecological conditions. The technical support team meets with small farmers clubs on a quarterly basis to capture information on local experiences and the challenges legume seed and crop production throw up.

In the 2008-2009 season the project recruited 235 smallholder farmers (46 per cent of which were women). In the 2011-2012 season, 1,736 farmers joined the scheme (35 per cent women) and by then the total number of participants had risen to 4,431, (45 per cent women overall).

The first year of the project produced 250 tonnes of quality-certified groundnut seed and this kept on rising – to 1,679 tonnes produced during 2011-2012. In 2011 alone national legume production increased by 19 per cent.

Initially, the aim was to multiply certified seed to sell to seed companies, so they could make more good quality seed available to grain producers (once harvested, the agricultural merchants market the seeds under a new nationally recognisable brand: MASA – Malawi Seed Alliance). But ICRISAT's aims have widened as it has continued to encourage local seed companies and farmer groups (in agricultural associations or cooperatives) to take over their own production and marketing. The broader aim is now to ensure that smallholder farmers across the country have continued access to the legume and selected cereal certified seed so that there are increased yields per unit area and improved food security and incomes. Most of the certified legumes seeds produced are channelled to smallholders' farmers through the Government of Malawi's Farm Inputs Subsidy programme (FISP), distributed by the private sector. The FISP targets approximately 1.5 million smallholder farmers, who can each access a 2kg pack of certified legumes seeds, so improving crop productivity and nutrition.

The project approach has been to work in partnership, in a local to national 'value chain' that connects farmer beneficiaries, training institutions (and the research wing of ICRISAT), the private sector and finally the Malawi Government. In this way, local experience can be passed through the 'chain' to eventually inform policy. The project has deliberately sought strong partnership links and its Project Advisory Committee includes the former special



George Ntonja

Meeting with
Chiosya farmers
club

Box 2. Legumes bring local benefit

The Chiosya farmers club in Mchinji district is just one NASFAM group that has been involved in the Malawi Seed Industry Development Project. Smallholder farmers like Mr. Augustino Sailes Gwizima report improved legume seed and crop diversification (for example adding soy beans, sunflower and intercropping with cassava) has boosted household nutrition. "Our children are fatter, stronger, have more energy and more are going to school", say the farmers. Proceeds of seed sales as well as of surplus produce has increased savings, helping to buy household essentials like salt or sugar as well as assets such as a bicycle or livestock.

Farmers reported a marked lessening in soil erosion due to the legumes' 'creeping' root system. And soil fertility has improved as a result of nitrogen fixation and crop rotation, meaning less reliance on bought inorganic fertiliser. Improved drought-tolerant legume seeds also mature faster than local varieties, increasing resilience to unpredictable rainfall.

In the past farmers used local saved groundnut seed and yields were 400-500kg per hectare. Now that has risen to 800-1,000kg per hectare.

advisor to the president on agriculture (who currently chairs the committee), the retired chief executive officer of the National Seed Company of Malawi

(now Monsanto Malawi), representatives from the Grain Traders and Producers Association of Malawi, ICRISAT, Irish Aid, the Ministry Of Agriculture and Food Security's Seed Services Unit, and the Seed Traders Association of Malawi (STAM).

Main achievements and challenges

Through its partnerships with the MoAFS, NASFAM, and the government's Seed Services Unit (who provide quality testing and monitoring), the project has contributed to a wide uptake of certified legume seed among both smallholder farmers and Malawi's private sector seed companies. Through links with agricultural merchants, the project may also extend its influence beyond Malawi's borders. The project has particularly focused on working in concert with the Malawi Government's Farm Inputs Subsidy Programme (FISP) to encourage crop diversification and to make quality seeds more available within the country. In the 2010-2011 farm season, for instance, the FISP provided smallholder farmers with vouchers for 2kg of improved legume seeds from participating merchants. Around 395,000 farmers now have access to certified seed.

ICRISAT chairs a Legume Platform Committee on legumes production,² which provides a strategic platform to inform lessons that feed into nationwide policy. Legumes are now a key feature of the National Exports Strategy for Malawi (launched December 2012). And separately to the FISP, the project partners have routed 316 tonnes of groundnuts and 50 tonnes

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of rice certified seeds to Malawi's Presidential Initiative on Poverty and Hunger Reduction, which has a special component on legumes.

The project still faces challenges though, for example achieving financial sustainability for smallholder seed growers. After the initial distribution of seed on credit farmers were expected to save enough money to start buying seed for multiplication after two years. But in practice proceeds from seed sales are often used for household expenses rather than saved. ICRISAT is now considering replicating a savings scheme model that a partner organisation has successfully introduced to rice producers in the north of Malawi.

Lessons

Engaging with national policy can rapidly scale up the impacts from smaller projects. The Malawi Seed Industry Development Project's engagement with the Government of Malawi's Farm Input Subsidy Programme meant it could contribute to policy development, promoting crop diversification on the basis of established research findings. This synergy has resulted in rapid scale up of certified legume seed multiplication and distribution.

Integrating research findings and local knowledge provides a powerful and effective input to national efforts to improve food and nutrition security. The four year Malawi Seed Industry Development Project is evidence that introducing crop diversification using high quality improved seed can result in higher yields, better markets, increased household income and improved nutrition for poor farmers.

Integrating research outcomes into private sector development can help support economies. In Malawi, the private sector adds value by processing, packing and distributing certified legume seeds (the FISP operates through private sector outlets). The seed trade has also benefited from complementary inputs such as technical support and research.

Working with farmers associations, especially those that reach from local to national scales, provides both crucial local knowledge and a route to rapid and widespread dissemination of 'climate-smart' agriculture strategies. The project's partnership with NASFAM captures important farming knowledge and has facilitated extensive outreach to many farmers clubs and associations.



George Ntonya

From left to right: Augustino Gwizima, his wife Elizabeth and Teddie Chirwa (ICRISAT Senior Research Technician) in the Gwizima's groundnut garden.

Notes

■ ¹ As determined by the Malawi Vulnerability Assessment Committee's annual assessments. ■ ² Malawi's Legume Platform has been formed to strengthen national multi-stakeholder partnerships within the legumes sector. One of the key sub-committees of the platform is the legumes production development committee, which is chaired by ICRISAT.





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*A New Dialogue : Putting People
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Scaling up an integrated watershed management approach through social protection programmes in Ethiopia: the MERET and PSNP schemes

In Ethiopia, a local-level participatory planning approach has ensured success for social protection schemes that provide payment in exchange for work to build public assets. The successful MERET (Managing Environmental Resources to Enable Transitions to more sustainable livelihoods) programme, which concentrated on integrated watershed management, has informed the broader Productive Safety Net Programme (PSNP), heralded as a leading example in the fight for food security and inclusive development.

Overview

In Ethiopia, land degradation is a major cause of the chronic food insecurity widely experienced by the country's largely rural population. In rural (mainly highland) areas, around 50 per cent of land is classed as degraded. In the Tigray region, one estimate suggests 30-50 per cent of soil productive capacity has been lost in the past 500 years. Recent studies report soil losses of 10-80 tonnes per hectare per year (well above the normal regeneration rates of 5-7 tonnes per hectare per year).¹

Ethiopia is ranked the ninth most susceptible country in the world to natural disasters and weather-related shocks² and climate change is likely to exacerbate this situation, making extreme weather events more frequent and intense, increasing water stress and further reducing agricultural productivity. And Ethiopia's population is growing, further increasing the difficulty of improving the food and nutritional security of the poor. At current rates, 270 people will need to gain a living from each square kilometre of arable land by 2050, compared with 125 per square kilometre now.

After the droughts and food shortages of the 1970s

and 1980s, the Ethiopian Ministry of Agriculture (MoA) and the World Food Programme (WFP) began to exchange relief food aid for 'work' in drought-affected areas, focusing on rural land rehabilitation (for example terracing hillsides). Early successes included afforestation, increased livestock feed, soil and water conservation efforts, and restored agricultural productivity. However, the adopted watersheds proved too large to monitor and manage, while the top-down planning methodology lacked community input and the restoration was less effective than had been hoped. Food shortages and out migration remained a feature of rural areas.

Interventions and impacts

In the late 1990s the Tigray Bureau of Agriculture and Natural Resources piloted an integrated community-based watershed management approach (with support from Irish Aid) that drew training and experience from successful participatory watershed management in India. A key insight was the economic benefits that arose for communities once the upper catchment areas of a watershed were rehabilitated. Rehabilitation led to a recharge of groundwater in the lower catchment. Areas that previously depended

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on unreliable rain-fed production were transformed by a rapid and substantial growth of micro-irrigation as farmers sunk their own wells, in some cases investing in small motor pumps or treadle pumps. Other contemporaneous water harvesting approaches that did not build on this community-orientated and integrated approach (such as microdams covering up to 100 hectares and farm-level lined ponds to collect water) were generally unsuccessful.

Complementary government investments also played a part. In Tigray there has been a move towards land certification, providing tenure security that serves as an incentive for investments both in irrigation and in tree crops. Extension support for irrigated vegetable and fruit tree production as well as for cereals, and supplying improved beehives and providing improved breeds of chickens, has also helped create a 'virtuous cycle' of increased incomes and increased investment.³

Building on the initial pilot, the government of Ethiopia and the WFP merged farmers' priorities with technical specifications for watershed and soil management. The result was a Local Level Participatory Planning Approach that, in 2003, developed into the MERET programme (Managing Environmental Resources to Enable Transitions to more sustainable livelihoods). The programme now covers over 450 watersheds in 72 chronically food-insecure woredas (districts) across five regions (Amhara, Oromiya, SNNP, Tigray, Somali) and Dire Dawa Administration, reaching approximately 640,000 beneficiaries per year.

Over the years, more than 400,000 hectares of degraded land have been rehabilitated under MERET, helping households raise their incomes in absolute and relative terms, as well as increasing agricultural production.

A recent impact evaluation⁴ found that two-thirds of all MERET households (compared to less than half of the control site households) have escaped from poverty during the past ten years, that is MERET has delivered a 20 per cent reduction in poverty in its project areas. MERET has similarly reduced participating communities' dependence on emergency relief.

The interventions have also improved food security. MERET households consume a more diverse diet, and significantly more MERET households consume 'acceptable' diets compared to control site households.

In 2005, the government of Ethiopia, with funding from nine development partners, expanded the

approach further, introducing a new way of helping chronically food insecure households while building assets through public works schemes. This Productive Safety Net Programme (PSNP) covers several thousand watersheds in 319 chronically food insecure woredas (districts) in six regions (Afar, Amhara, Oromiya, SNNP, Tigray and Somali) as well as in Dire Dawa and Harari urban administrative areas. It includes, but goes beyond, MERET's successful projects, taking chronic food insecurity as its focus rather than watershed management. With an annual budget of approximately \$US450 million, the programme targets around 7.8 million people in a normal year (and that rose to around 11.6 million during the regional drought of 2011). The PSNP

Box I. Benefits from PSNP's public works⁵

A recent impact assessment showed the PSNP public works:

- reduced sediment in streams by 40-53 per cent in areas closed to grazing and cultivation (Closed Areas);
- increased woody biomass and forage production three to four-fold;
- increased water availability and quality;
- increased ground water recharge and improved downstream base flow of streams;
- lessened damage from seasonal floods (by soaking up rain water through Closed Areas);
- enhanced down-stream crop production through soil and water conservation interventions;
- stored carbon (estimates from just two of several thousand watersheds calculated over a million tonnes of CO₂ equivalent had been sequestered);
- increased biodiversity;
- increased social cohesion by improving livelihoods; and
- improved access to social services (for example 3,900 schools and 450 health posts have been constructed or refurbished).



*Cash payments
can help tackle
food insecurity*

Sujwla Pecio/World Bank 2011

delivers 46,000 public works 'projects' every year, as well as providing the poorest and most vulnerable households with regular, predictable support (typically cash transfers). PSNP restores local environments degraded by years of overuse and poor management, and builds social infrastructure such as education and health facilities for the local community.

The principles and approaches developed for the MERET community-based and participatory watershed management projects are now embedded in both programmes, and form a core part of the government of Ethiopia's approach to natural resource management.

Main achievements and challenges

The PSNP has developed a global reputation for delivering transformative improvements to Ethiopia's natural resource base as well as comprehensive social protection. It has successfully scaled up MERET's local 'watershed community' approach to soil and water conservation into a national safety net programme tackling hunger and reducing vulnerabilities to climate change.

The principles and approaches of community-based participatory watershed development and commitment to community capacity building are now viewed as a model that truly changes livelihoods in severely degraded environments. While MERET leads on physical and biological, soil and water conservation measures, the PSNP scales out natural resource

management activities, for example including more afforestation and area closures. Both approaches are of sound technical quality and have contributed to environmental improvement. And both the PSNP and MERET have a strong emphasis on national capacity development, national and regional technical training, and community-based participatory planning.

Communities are now more resilient to climate-related shocks and employ a wider variety of preparation and adaptive strategies. When they experience shocks they can generally meet their household food needs and are better able to cope because they have a wider array of income sources and soil and water conservation skills.

This approach to tackling land degradation and food insecurity has evolved with strong government of Ethiopia leadership, through the Ministry of Agriculture, and is well integrated in local and national policy and implementation practice. The Government has extended these principles and approaches to other flagship natural resource management programmes, such as the Sustainable Land Management (SLM) programme. With support from various donors⁶ and leadership from within the Ministry of Agriculture, the Government has developed and published national community-based participatory watershed development planning guidelines.

The main challenge facing MERET and the PSNP has been finding sufficient capacity at all levels of government (federal, regional and district) to scale out

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the programmes to the full extent needed. Technical, administrative and financial capacity have all been built substantially, but there is much work still to be done, given the scale and variety within the country. The Government of Ethiopia is rightly heralded as a leader in the fight against food insecurity, and is championed for putting in place a comprehensive social protection system that leads to inclusive growth. Yet ensuring that the social protection system remains effective and efficient remains an ongoing challenge. Unless this challenge is met, the gains of the past decade could be lost, together with the institutional capacity to respond adequately to potential threats. The government has made significant progress in developing both a disaster risk management policy, and a social protection policy, both of which conceptualise the continuation (and in some areas the expansion) of a safety net such as the PSNP, and now is the time to consolidate that work.

Lessons

Delivering a national-scale social protection instrument that addresses widespread but local underlying causes of food insecurity and poverty is possible. Ethiopia's much championed and large-scale PSNP has been built on the success of the smaller (but still substantial) MERET programme, as well as experiences from other programmes on social protection, disaster risk management and food security.

It is essential to root such an approach in a good contextual understanding of vulnerability and to use a local 'unit of community' as the basis for planning. Ethiopia's success with MERET and PSNP is in contrast to earlier less effective large-

scale programmes to rehabilitate degraded land, and this success has depended on the programmes' local level participatory planning approach, which sees smallholder associations and community leaders as key stakeholders.

Continuous engagement at multiple levels (donor, government, institutional, community and household) is necessary and requires dedicated resources. Expecting coordination and sustained engagement to simply materialise is unrealistic. Dedicated and ongoing resources (such as time and personnel) are essential to maintain effective engagement among local people, programme workers and staff in relevant government institutions and departments.

The technical capacity development needed for a large-scale programme requires dedicated resources and will not develop without such support. Requirements should be realistically appraised and anticipated, and should not be 'bolted on' to existing interventions.

Long-term success will depend on continued government and donor commitment, and ongoing policy goals. Despite MERET and PSNP's undoubted success, the scale of the problem, and the exacerbating effects of climate change, mean that planning for long-term continuation of such programmes is essential.

Donors can play a catalytic role by supporting innovative pilot projects. Irish Aid's support for the Tigray Bureau of Agriculture and Natural Resources in the late 1990s was a 'seed' that grew into the much larger MERET and PSNP programmes.

Notes

■ ¹ Figure from USAID and the Government of Ethiopia, Livelihoods Integration Unit, 2009. ■ ² Sida, L., Gray, B. Asmare, E. 2012. *Real time evaluation of the humanitarian response to the horn of Africa drought crisis*. Interagency Standing Committee (IASC), Ethiopia. ■ ³ Chisholm, N., Woldehanna, T. 2012. *Managing watersheds for resilient livelihoods in Ethiopia*. Development Cooperation Report. OECD DAC ■ ⁴ Sutter P. et al. 2012. *MERET Impact Evaluation Report*. Technical Assistance to NGOs. TANGO ■ ⁵ Report commissioned from Peter Sutcliffe et al. 2011. PSNP. ■ ⁶ Donors include the Canadian International Development Agency, the German Agency for Technical Cooperation (GIZ), ILRI, USAID, the World Bank and the World Food Programme.



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Lessons from Lesotho: how a 'joined-up' approach, centred on keyhole gardens, is tackling linked issues of hunger, nutrition and poverty

In Lesotho, communities, organisations and agencies are taking a joint and complementary approach to promoting household gardens that grow year-round food and cash crops despite a harsh mountainous climate.

Overview

Lesotho, locally called 'the mountain kingdom', is a small landlocked country completely surrounded by its much larger neighbour, South Africa. A high percentage of Lesotho's men work in South Africa as migrant mine workers. HIV is prevalent in the country (23 per cent across ages 15-49, and 60 per cent of those with HIV are women and children). This leaves many elderly women heading households, and often caring for several orphaned grandchildren.

The country experiences hard winters, bringing frost and snow. During the past decade drought has also become increasingly common, undermining rural agricultural production and eroding rural households' livelihoods (60 per cent depend directly on agriculture as their primary income source). Staple crop production has consistently declined since 2004-2005. There was a slight reprieve in 2009-2010 but 2010-2011 brought floods, followed by a severe drought in 2012. In August that year the prime minister declared a food security emergency.

These growing challenges have led to the inclusion of Lesotho in the Consortium for Southern Africa Food Security Emergency (C-Safe) project, led by international NGOs Care, the Catholic Relief Service (CRS) and World Vision.

Initially set up to tackle food insecurity in Malawi,

Zambia and Zimbabwe, C-Safe started work in Lesotho in the mid 2000s in collaboration with local NGOs (including the Lesotho Catholic Bishops' Conference, Good Shepherd Sisters, Sisters of Charity, the Rural Self-Help Development Association, and the Serumula Development Association), and with the government (particularly the Ministry of Agriculture and Food Security).

The project, which uses 'keyhole gardens' (see Box 1) as a strategy to integrate 'joined-up' support for food security, nutrition, education, income generation, savings and community, has since expanded to include UN agencies (FAO and WFP) and other government ministries.

The approach focuses on helping the most vulnerable households affected by HIV and AIDS, in particular households with elderly or chronically ill people and with orphaned children. The project has multiple aims:

Better nutrition. Household gardens in Lesotho are generally small and grow one or two crops, often maize or potatoes. The keyhole gardens aim to help households grow more varied produce such as spinach, onions, carrots, rape and beetroot to support family nutrition and health.

Food security. Keyhole gardens improve household food security year-round, producing vegetables even in

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JOINED-UP APPROACHES

Box 1. Keyhole gardens

The basic keyhole garden is a circular, raised-bed made up of layers of soil, ash, manure and other organic material that retains moisture and nourishes the soil, making it more productive than a conventional garden, even during dry or cold months. The gardens can produce vegetables for a family of five year round. In Lesotho, the garden is usually walled with local stone or brick that retains daytime heat, alleviating low night time temperatures. The raised structure also makes access easier for the chronically ill or elderly. Size can vary, but the basic garden measures 1m high and 2m in diameter.

A keyhole-like 'cut out' or walkway design gives growers 'arms-length access' across the garden. 'Grey' water from household washing is added through a central composting basket, watering the garden and continuously infusing the soil with nutrients.

Once built, the garden requires little maintenance and, if cared for appropriately, can produce food for up to five years.

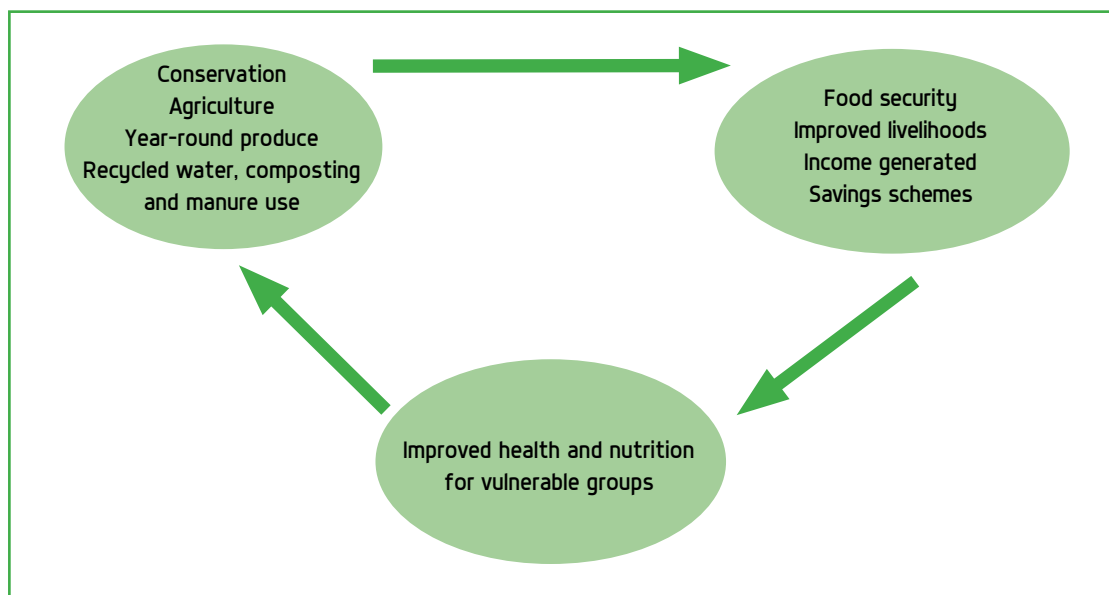


Figure 1. Keyhole gardens provide a simple and easily replicated route to better food security and improved health that 'catches on' among communities

winter. In Lesotho, night-time frosts are common, but the gardens' stone-walled design helps retain heat.

Climate resilience. Watering through a compost container using household 'grey' water from washing helps plants cope with drought.

Income and savings. Gardeners save money from their food bill and also generate income by selling surplus produce, so supporting other household needs.

Education. These savings often pay for children's school fees.

Community development. Creating the gardens has helped reinstate and sometimes form Matsema (social cohesion) groups based on local cultural norms of unity and cooperation. These are helping vulnerable households work with neighbours to build keyhole gardens throughout the community.

Interventions and impacts

Since the project began in 2006 the partnership has built 23,150 gardens across the country in eight districts reaching an estimated total of 111,590 people.

Joining up issues. Approaches to addressing food security for families should be comprehensive and multi-layered to ensure the best outcomes. To achieve this, training modules have been added to the garden building scheme to help communities preserve vegetables, so saving food for periods of flood, drought and snow. This 'joined up' approach now offers nutrition and food preparation training to young mothers and families with children under five years old. Basic marketing training has also been incorporated, helping communities see keyhole gardens from a business perspective and encouraging households to sell surplus vegetables to increase their income.

*Mothunyane
Motsoteng
demonstrating
how the keyhole
gardens work*



S McLean

Gender roles are quite clearly defined in Lesotho, so that while men are involved in building the gardens, women are responsible for maintaining them, and the gardens have empowered women to form stronger community structures. Savings groups are helping community members learn basic money management and planning skills, for example collective savings to buy inputs such as seeds.

Joining up agencies and organisations. The keyhole gardens take an integrated development approach, working closely with Ministry of Agriculture and Food Security extension workers and community and district stakeholders, including local authorities, traditional leaders, faith-based organisations, teachers and health workers. This 'joined-up' approach has allowed training and technical support to be introduced at district level community centres, schools and small rural clinics. The overall aim is to ensure longer-term sustainability of keyhole gardens within communities.

The approach is popular and self-supporting. Data collected by CRS suggests as many as 15 per cent of 'non-project' households in intervention areas replicate the technology for themselves with the help of project participants. One assessment study of 13,000 C-Safe project beneficiaries found that 91 per cent were still maintaining and caring for their gardens two years into the project.

Field monitoring consistently demonstrates that more than 80 per cent of gardens meet the project's initial construction and maintenance standards.

Beneficiaries say that children 'are fatter' and ask for carrots to snack on because they understand the health benefits of eating fresh vegetables.

But information does not flow only one way. Local knowledge and participants' accumulated experience has led to adaptations over the years, improving the garden's productive capacity – for example by using manure and manure 'tea', and using chilli peppers, garlic and intercropping with marigolds to help pest control. Participants also share their experiences with other community groups at agricultural demonstration days.

Main achievements and challenges

The keyhole garden project's wide-ranging and 'joined-up' approach has led to its inclusion into official food security policy in Lesotho. Close collaboration with government officials and advocacy to members of parliament has ensured a place for homestead gardening in the strategic plans of the Ministry of Agriculture and Food Security, the Food and Nutrition Coordinating Office, and the Ministry of Health.

The collaboration has also led to conservation agriculture being included in curricula at the Lesotho College of Education and the Lesotho Agriculture College, and CRS staff have joined the National Conservation Agriculture Task Force, a group of NGOs and government officials led by the Ministry of Agriculture and Food Security.

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But the approach has reached much further than just Lesotho. In 2011 CRS led a four-day 'Home Grown Keyhole Gardens for Disaster Risk Reduction Learning Initiative' that brought participants from universities, government offices, and research institutes in 18 countries together with international NGOs, and UN agencies. The workshop covered the high-level impacts of keyhole gardens, research on best practices, and practical examples of implementation. Having learned the garden's concepts and principles, participants then returned home to build, study and adapt the ideas to their own countries. Fifteen of the 18 countries have integrated keyhole gardens in their disaster risk reduction or development initiatives.

Naturally, this success has not come without challenges. Some were opportunities to adapt the approach. Keyhole gardening began at the height of HIV/AIDS in 2006 and initially aimed mainly to address food deficiency in households affected by AIDS. However, the project found fear of the stigma associated with HIV infection reduced uptake, so criteria for participation were dropped, and all households within a target village became eligible. There were also difficulties in ensuring maintenance or renovation for retaining walls and the central compost and watering basket, so more education and training was incorporated. Further, not all communities had access to the same materials and so the strategy was adapted to use suitable local alternatives – for example turf 'blocks' where stone is not available.

And there were also challenges in working with many different agencies and stakeholders. Sometimes, initial technical support and training was insufficient, so that communities were not convinced that the new technique was effective, and did not continue with the gardens.

In some of those communities, CRS and the Ministry of Agriculture and Food Security extension workers have now retrained people and have also worked to include or form Matsema (social cohesion) groups, based upon the Basotho cultural norms of unity and cooperation. Several successful Matsema groups have gone on to develop a 'Community Fundraising Mechanism (CFM)'. This helps communities to pool resources and buy seeds in bulk for sharing.

Lessons

Demonstrable success and 'joined-up' involvement from a wide-range of expertise can give a project a large ripple effect, in this case acting both at the local level, where community groups have spread the technology, and at international level where the keyhole garden approach has spread to many other countries.

A joined-up or integrated approach should incorporate both issues and organisations/agencies. In Lesotho, keyhole gardens link the issues of food security, nutrition, health, education, income generation, savings and community development; drawing support and action from NGOs, community groups, faith leaders, government officials and academics.

A major benefit of the joined-up approach is the strong 'outbound' links it builds, for example the firm integration of homestead gardens within national food security policy and inclusion of conservation agriculture techniques in the curricula of agriculture training colleges in Lesotho.

A joined-up approach also benefits from 'joining up' to traditional knowledge and thinking, for example incorporating local pest control techniques and building on traditional values and institutions (through Matsema).



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*A New Dialogue : Putting People
at the Heart of Global Development*

15-16 April 2013 - Dublin, Ireland

Enhancing climate resilience in Ecuador's Pichincha Province and the Jubones River Basin

Ecuador has begun to implement a project to build climate resilience and enhance food security in four provinces. The project links local communities and authorities, several arms of the national government and the United Nations World Food Programme. Its two-pronged approach is developing community awareness and concrete plans for adaptation actions, set within an ecosystem-based approach.

Overview

Ecuador's geographical location and rugged topography make it particularly vulnerable to climate change impacts. Already, rainy and dry seasons have shifted or become longer and more intense, moorlands are degraded, glaciers have receded (losing 30 per cent of their mass in the past 30 years), and ecosystems' ability to regulate water supply is constantly challenged. Climate variability and change threaten livelihoods, food and nutritional security and communities' food sovereignty. It is expected to make challenges from extreme weather events more frequent. In the past decade, Ecuador has lost more than US\$4 billion from droughts alone¹, and the country lost US\$70 million to flooding in 2012.²

Climate-related disasters affect key sectors such as agriculture, water resources, fisheries, infrastructure and tourism, and especially affect rural areas with large populations of indigenous and Afro-Ecuadorian people. Climate variability, including more frequent and intense El Niño and La Niña phenomena, combined with pockets of food insecurity and poverty, have led Ecuador to prioritise sound planning and replicable implementation models to address these threats.

Ecuador's central and regional government has developed a project in cooperation with the United Nations World Food Programme (WFP), supported by the UNFCCC Adaptation Fund, to build community and ecosystem resilience, and reduce climate vulnerability, with special attention to food insecurity.

Four provinces, Pichincha, Azuay, Loja and El Oro have been selected, containing two important watersheds. The prioritised area covers 12 cantons, 50 parishes, approximately 120 communities and 15,000 families. It encompasses varying ecological systems, cultural traditions, ethnic composition, and dependency on natural resources.

The project, which began in 2011 and runs until 2016, aims to gather more and better climate information, but also to identify communities' priorities for climate change adaptation and to build environmental sustainability. It is organised around two broad components:

- develop community-level awareness and knowledge on climate change and food insecurity related risks; and
- increase adaptive capacity for climate change and

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Box I. Who's who? Key players in Ecuador's climate resilience project

The Ministry of Environment (MAE) is responsible for interagency coordination and implementation, including awareness raising and education. It is the national entity in charge of climate change responses and has the capacities not only to implement the project but also to ensure climate change expertise is developed across the provinces.

The Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) is responsible for agricultural policies, including management, regulation and training for food sovereignty. MAE and MAGAP are working together to align all project activities with the government's decentralisation policy.

The World Food Programme (WFP) provides technical support to national and local governments on vulnerability analysis, food security assessments and risk management, and is helping develop a project framework that integrates food security, adaptation to climate change and gender issues. WFP brings an international perspective to the project and is technically and financially responsible to the Adaptation Fund.

The Public Consortium of the Jubones River Basin (CCRJ) is formed by local, provincial and municipal governments in the provinces of Azuay, Loja and El Oro and is responsible for managing water resources for present and future generations.

The Autonomous Decentralized Government of the Pichincha Province (GAD-PP) is the local authority of Pichincha Province. Its role includes poverty reduction, food security, water management and enhanced environmental quality.

climate variability, and so reduce recurrent risks facing highly food-insecure communities.

water availability. Ensuring that multidisciplinary teams participate in developing project baselines has helped to build local capacities and broaden understanding of climate risks in the project area.

Interventions and impacts

Developing cross-sectoral approaches and mainstreaming gender issues are key strategies in the project, requiring involvement and commitment from many stakeholders across central government, provincial, canton, parish and community levels. Thus national entities must engage strongly with local actors. The Ministry of Environment (MAE) and WFP are working closely to design and implement the project through a transparent and inclusive consultation process, involving all stakeholders at all levels. The participatory planning approach is building strong horizontal and vertical links across sectors and stakeholder levels. MAE, as the national executing agency, has a central role ensuring that the consultation process considers national priorities right down to the local level, and also that local priorities are well reflected in all planning and implementation processes.

With leadership from MAE, stakeholders at all levels have developed a methodology to study vulnerability: providing a key tool for identifying climate change risks related to food security and gender. Together, and with coordination led by MAE, stakeholders have jointly analysed climate-related risks and prioritised implementation in cantons with high levels of chronic malnutrition and high risk of fluctuating rainfall and

The project has also developed a capacity building plan and, with support from UN Women, a gender mainstreaming strategy (so broadening the partnership base). In addition, a number of National Secretariats, including Risk Management, Water, International Cooperation, and Planning and Development are engaged in various ways that ensure a cross-sector sense of ownership for the project's implementation. These links help build coordination among national and local entities that work directly with communities.

At the provincial, canton and parish levels, the CCRJ and the GAD-PP have direct contact with the different local governments and communities and so are central to successful project implementation. They provide a coherent vision for action, consistent with local risks and priorities.

MAE is also implementing six other adaptation projects, and is drawing in lessons from these, particularly on suitable methodologies, for example when developing the vulnerability assessments. The Ministry's experience with community planning approaches and a Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL) methodology is also contributing to the project.

Ecuador's rugged topography includes the Leon River in the Jubones area



Verónica Alvarado, WFP Ecuador

Developing community awareness of climate change and food insecurity related risks.

This component of the project supports the national strategy for climate change by addressing local exposure to climate change risks and high vulnerability, in particular to food insecurity. It also strives for gender equality. It is designed to ensure that MAE, MAGAP and local governments mainstream climate change adaptation with local level plans and strategies. Activities include integrating climate change threats into local planning and educating local government staff and communities about climate change adaptation, food and nutrition security, food sovereignty and women's empowerment.

This component recognises the importance of traditional knowledge in addressing climate change risks and for generating and using climate information. Participatory methodologies, tools and planning approaches are being developed, which should also eventually find broader application in other Ecuadorian watersheds.

Increasing adaptive capacity and reducing recurrent risks. This component focuses on implementing adaptation actions, designed with community members to be in line with canton and parish priorities. Adaptation actions are expected to:

- increase women's participation in decision making and in asset creation activities;
- bolster community organisation and social cohesion (for example by reducing local migration rates);

- increase capacities at all levels to protect and manage natural assets;
- increase incomes for vulnerable families (for example by reducing climate-related losses, raising productivity or identifying environmental goods and services such as timber and water); and
- improve food and nutrition security of rural communities.

Environmental benefits will play an instrumental role and adaptation actions will support ecosystem management. For example, access to good and stable water supplies may be improved by tackling soil erosion, using native and adapted species to help degraded land to recover, or implementing better management systems for using water. Such approaches support livelihood, food security and food sovereignty objectives both for direct participants and downstream water users.

Main achievements and challenges

This large and 'joined up' project is still in its early stages, fostering extensive interaction among the five main partners: MAE, MAGAP, WFP, GAD-PP and CCRJ. Meetings, workshops and studies were initially promoted by WFP but have now come under MAE's leadership.

A main achievement has been that this project was designed and is implemented by all partners: national government, an international agency, local

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governments and communities. But such partnerships also bring challenges, particularly in the form of limited experience in implementing adaptation actions at local government level.

To address this, MAE has organised training sessions to develop capacity and transfer skills to local government staff and community members, drawing on MAE's own experience with methodologies used in other programmes.

Such awareness raising and training provides a route to combine communities' practical experience with technical knowledge, so identifying climate change impacts and prioritising activities to address them. It is already clear that such training, which has a strong focus on gender equity and women's participation, will be valuable – and easily replicable – in different parts of the country.

But even with shared objectives, the partnership has faced challenges establishing clear roles and responsibilities. Consultations and a dynamic collaborative process are underway with national and local organisations to clarify roles and define responsibilities based on recognised capacities. For example MAE is now in charge of capacity building, drawing on a detailed and agreed plan. MAE is leading and coordinating vulnerability analyses and local food security adaptation plans, with MAGAP providing advice on food security policy. Local partners are in charge of implementing the adaptation actions defined in the plans, with the full coordination and participation from communities.

Another challenge has been to distinguish between development and climate change actions – partly because of political pressure when it comes to prioritising community actions.

Overall, and perhaps not surprisingly for such a 'joined-up' project field, implementation remains challenging. Knowing the national adaptation framework is important because as more information is generated, policies will change and be strengthened. At present, the community-based approach is not always understood or prioritised by national or local government agencies.

Finally, implementing food security adaptation actions within an ecosystem approach is difficult because the project is still building knowledge of what will work best in different local conditions, and is still developing institutional arrangements that will allow targeting and implementation of activities at the watershed and micro-watershed level.

Lessons

Effective collaboration requires ongoing communication, review and adjustment of roles and responsibilities. Strong coordination and communication among stakeholders is a key factor for a successful project. This can only happen with clear communication procedures and predetermined processes, as well as clear roles. An important lesson is that these procedures, processes and roles must be established before the start up of a project and must be reviewed constantly to make sure that they are still appropriate as needs and capacities evolve.

Collaborative approaches require considerable time and investment. It is very important to involve all stakeholders in the different stages of design and implementation to make sure of effective participation and commitment. Although the results of the project are likely to be more appropriately designed and sustainable because of the multi-stakeholder approach, the time and costs involved in these approaches should not be underestimated.

Joined up approaches require attention to both vertical and horizontal levels of collaboration. This project seeks to achieve collaboration across disciplines and scales, from local to national. One of the main roles of MAE has been to bring together the perspectives and knowledge of different stakeholders through an iterative process of consultation and planning.

Multi-stakeholder collaboration requires ongoing negotiation and trade-offs. This project has been working hard to balance the differing priorities of the main stakeholders.

Notes

- ¹ National Committee for Climate, Ministry of Environment. 2001. *Vulnerability adaptation and mitigation to climate change in Ecuador: compendium of actions, strategies and profiles of projects in the energy sectors, forestry, agriculture, coastal marine and water resources*. Ecuador. ■ ² Ministry of Agriculture, Livestock, Fisheries and Aquaculture. 2012. *Emergency in the Ecuadorian coast*. Government report.



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*A New Dialogue : Putting People
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Building resilient cities from the community up: lessons from Manila

In the Philippines, a grassroots organisation (DAMPA) has helped vulnerable communities in flood-prone urban areas tackle issues of food insecurity, under-nutrition and climate change. Diverse but mutually reinforcing interventions are helping communities organise to help themselves, and to participate in local decision making that feeds through to (and helps implement) national policy.

Overview

Manila, the capital of the Philippines on the eastern shore of Manila Bay, is bordered by the cities of Navotas and Caloocan. Its total population is approximately 1.6 million inhabitants, making Manila the country's second most populous city behind Quezon City.

Climate change is already affecting weather in the region. Rainy seasons are unpredictable and bring sustained heavy rain, causing severe flooding in the cities' streets. Large areas of Manila, and neighbouring cities like Quezon and Navotas, have high-rise buildings built on reclaimed land. This worsens flooding as it lengthens flood waters' path to the sea.

Poor and overcrowded communities living along the banks of the cities' rivers and creeks are particularly vulnerable as many of them live in overcrowded conditions; often three or four families living together in one house.

Frequent rainy season flooding makes water too polluted to drink and also makes it difficult to deliver safe drinking water to vulnerable communities. Communities are exposed to illness and disease such as diarrhoea (children and older people are particularly vulnerable), damaging their nutritional status.

But families also struggle to access adequate clean drinking water during the dry season. Most people living in these areas do not own the land their house is on and have no legal right to piped water. They must buy containers of water costing 10 pesos (US\$0.2) each. A family can spend approximately 100 pesos per day (US\$2) just to ensure they have enough clean water to drink.

More frequent storms during the rainy and typhoon season bring additional hardship to fishing families. Dangerous weather conditions that prevent local fisherfolk from fishing mean less money to buy food.

Flooding and poor weather conditions that damage vegetable plantations also reduce supply and drive up the cost of food, so people cannot afford to balance their diets with vegetables and fish. During sustained flooding, most of the urban poor depend on a diet of noodles and rice.

These rising costs and the climate change impacts on family incomes undermine vulnerable households' ability to get enough nutritious food, causing malnutrition, particularly in children. This problem is even worse for pregnant women, for whom inadequate nutrition causes dangerous malnutrition in newborn babies.

In response, local communities in Manila and

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neighbouring cities are taking action. This case study looks at the way people living in the Parola Compound have responded with support from DAMPA – a grassroots federation of people's organisations. The study highlights how such grassroots organisations can help create more responsive local and national decision-making channels and how joined-up approaches let communities improve food nutrition and water security, and access to services, so creating more resilient communities.

Interventions and impacts

DAMPA's association with the Parola Compound group started in 1996 as a response to the community's insecure land tenure. Since then, DAMPA has worked with community leaders, focusing in particular on management training that shows leaders how to organise as a community and make that organisation sustainable. DAMPA has helped link the Parola community to external stakeholders, such as government agencies or barangay officials (a barangay is the country's smallest administrative division, equivalent to a village, district or ward). Through such 'local to local' negotiations and dialogues, the Parola Compound community has been able to resolve some of its problems.

The Parola community's approach to tackling issues of food insecurity, under-nutrition and climate change is multidisciplinary, that is with support from DAMPA it responds to the many challenges facing vulnerable households through a range of diverse but mutually reinforcing interventions, including:

Savings and loans. People can save money in their community organisation, and can also borrow when needed, for example for tuition fees and at times of disaster. Repayments are over a 3–4 month period, with 1 per cent monthly interest. This empowers people to support family education or medical needs even when household income might be reduced.

Climate adaptation, disaster preparedness and early response. The community is improving its resilience to climate change by building flood-resistant housing. An early warning system has also been implemented, using older community members' local knowledge of flood prediction. And some community members have been tasked with the responsibility of joining a Quick Response Team that is trained to raise the alarm and help people move to evacuation centres. This team is well trained, physically fit and knowledgeable on preparedness, relief mobilisation and first aid.

Income diversification. Developing alternative income sources is an essential part of increasing resilience to climate change related shocks while ensuring food and nutrition security. One example is growing food in urban gardens. These gardens are carefully located on higher ground and are managed by the community – with men, women and young people getting involved. They grow medicinal plants and vegetables and the initiative helps nutrition in several ways. Families can get free or low cost nutritious fresh vegetables close to home, reducing travel needs and freeing up time and resources, particularly for women, which can bring better food security and nutrition for the whole household. The DAMPA training team also supports women community members by teaching new ways to earn money, for example making and selling bananacue – a popular snack that can earn sellers between 300 to 400 pesos a day – or cold drinks for sale during the dry season – such as Sago at Gulaman made from tapioca starch and jelly.

Safe drinking water. The community is working with local authorities to provide clean safe drinking water, for example by using community savings to leverage matched local government investment.

Food security and nutrition. The community is creating community food reserves for emergencies as part of their disaster risk management strategy. It is also setting up a feeding programme to assist vulnerable families that do not have enough to eat, and have been cutting out meals to make their supplies last longer.

Health. A local community pharmacy makes it cheaper for people to buy medication and vitamins because travel costs are cut.

DAMPA and the community are also working with partners to take advantage of national policies that support local action – and to hold government accountable for delivering these. The Philippines Climate Change and Disaster Risk Reduction Acts give new community rights. DAMPA provides awareness training on these and how communities can be involved through their Barangay Climate Change Council and Barangay Disaster Risk Reduction Council. This feeds into both local and national government and involves local government officials who can work with the community to build its resilience.

DAMPA also works to raise community awareness that 5 per cent of local government spending should be allocated to disaster risk reduction and climate change adaptation, working closely with the community and local government, religious and other



*Drinking water
for sale on the
streets of Manila*

DAMPA

organisations to find local solutions and ensure these inform emerging policy.

Main achievements and challenges

In working with the Parola Compound community, DAMPA has built on its expertise in linking grassroots communities with key decision makers to address hunger, nutrition and climate change across various sectors.

And by engaging with local communities on health, nutrition, food security, water and education issues, DAMPA brought actual demand-based proposals into discussions with local government.

Speaking as one voice, local organisations were better able to tap into the local decision-making processes, providing a previously missing link between local and national policymaking. Over time, these community decision-making processes help strengthen local government's responsiveness and accountability to people's needs and demands.

DAMPA has always taken a joined-up approach to engaging with communities, varying its practices depending on partners' specific situations and needs. This joined-up understanding means DAMPA can foster integrated solutions within communities, achieving impact across sectors including women's

empowerment, access to loans, income diversification and overall community resilience.

Examples are DAMPA's work to empower women with training that supports income-generating opportunities, which in turn benefit families' food security and nutritional status. In addition, DAMPA's work on community gardens has given communities access to a more balanced diet through locally available freshly grown vegetables and an income stream that allows families to supplement their diets with alternative food sources.

Organisations like DAMPA also play a crucial role in ensuring new rights and knowledge emerging from national policies are effectively communicated and applied throughout the country. Following awareness-raising on the new Climate Change and Disaster Risk Reduction Acts, communities are participating in decision making through their council barangay representatives, in turn connecting the local to national levels.

DAMPA is now promoting a platform of community practitioners on climate change and disasters risk reduction. These practitioners have agreed with some local officials at barangay level to collaborate and work together for climate change adaptation and disaster risk reduction. This inclusive and participatory approach is a good strategy that

JOINED-UP APPROACHES

DAMPA



Members of a local water cooperative with their water supply

helps local people and government jointly build resilience. DAMPA has been key in promoting quick response teams that can prevent and manage risks during times of extreme weather and disasters. It is now working with communities in other regions, replicating this work further afield.

Of course, DAMPA still faces many challenges. Despite national laws, DAMPA finds local actors can be unwilling to take action. This is partly due to government funding constraints on implementing the Climate Change Act locally. In addition, some communities and local officials are still not aware of the new laws, and so are unlikely to spontaneously mobilise or support DAMPA's actions.

Communities themselves also face challenges when forming grassroots organisations, working across disciplines and when joining up practices between rural and urban areas. Firstly, climate change related disasters reduce poor communities' capacity to bounce back and build resilience. Secondly, DAMPA observes a lack of political will for resilience building. And because there is little knowledge of best practices, and methods differ widely across disciplines, it is very difficult to promote interdisciplinary approaches. There is a particular lack of practices and approaches exploring links between rural and urban areas. Finally, men's patriarchal attitudes and women's inadequate rights remain a challenge to ensuring full and equal ownership of community resilience-building activities.

Lessons

People's inclusion and participation when local and national governments develop policy is necessary to secure support for building resilient communities. But to participate effectively and implement adaptation measures, communities must be organised and work together to address food security, under-nutrition and climate change.

Collaboration and partnerships with networks and allies (for example different sectors and the government) are needed to improve people's food and nutrition security while creating resilient communities.

Responsive policymaking that takes a joined-up approach to food, nutrition and climate change is essential to ensure appropriateness, ownership and sustainability. But to form sustainable organisations, communities need basic knowledge of community management and strong leadership.

Grassroots organisations, like DAMPA, can bridge the gap between policymakers and communities as they can represent a diverse set of stakeholders and are flexible enough in their approaches and capacity to innovate. They are ideal partners with whom to test and evaluate the successes, and potential trade-offs, of joined-up approaches. In the future, an organisation's capacity to monitor cross-sector benefits and trade-offs will play a crucial role when working to reduce hunger, support nutrition and mitigate or adapt to climate change.





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