



Ipaishe Masvingise opens and shuts sluice gates to direct water along the right channels to plot 64 where her first ever crop of wheat nears harvest. Ruti Irrigation Project, Gutu District, Zimbabwe, September 2011. Photo: Oxfam / Annie Bungereth.

IRRIGATION SCHEMES AND WEATHER EXTREMES

The challenge for Zimbabwe

Smallholder farmers in Zimbabwe have always faced extreme weather variability, periodically throwing lives into disarray, ruining livelihoods and increasing poverty. Yet with the right kind of support, hard working smallholder farmers can achieve remarkable increases in production, realize great improvements to their lives and become much more resilient to weather extremes.

Climate change, however, is going to bring more shocks in the shape of even greater extremes – both more frequent and serious droughts and more intense rainfall. This case study of an irrigation project implemented by Oxfam and the government of Zimbabwe in Ruti, in Gutu district of Masvingo province, indicates that local adaptation efforts can go a long way, but there is still a danger that people may lose out and their efforts be frustrated unless they are part of a wider supportive political and economic framework.

FARMING IN RUTI: A RISKY BUSINESS FOR SMALLHOLDER FARMERS

Gutu District in Zimbabwe's Masvingo province is a semi-arid area with pronounced inter-annual variations in rainfall, erratic distribution and regular prolonged mid-season dry spells, often leading to severe drought, crop failure and food insecurity.¹

The Zimbabwe Meteorological Services Department (ZMSD) says the 30-year average rainfall total for the season has been on a downward trend, the start of the rainy season is occurring later in the year, and the mid-season dry spell is getting longer.²

As well as these overall trends climate change is expected to increase the number of dry and wet extremes and, indeed, the season of 2013–2014 was 'a different year altogether...one of the worst years of recent times' according to Mr Lovemore Chisema, Gutu Assistant District Commissioner. There was a major drought as the rains did not start until late December and January, over a month late, and when the rains came they were extraordinarily intense.

Poor smallholder farmers are highly vulnerable. They must wait for the rains to start before planting; if the rains are late then maize, their staple crop, will not have time to ripen before the dry season. Worse still, maize is highly susceptible to rainfall variations at critical times in its development, especially flowering, such that a prolonged mid-season dry spell can ruin yields.

IRRIGATION AND HARD WORK OFFER HOPE

The residents of Gutu have, however, the potential to cope better with aridity and erratic rainfall because their district includes the Ruti dam, on the border with neighbouring Buhera district.

The intention to use the dam to supply irrigation water to local smallholder farmers, as well as sugar estates downriver, had not been realized, but the government and Oxfam saw the potential. Since 2009 Oxfam and the community have worked together to create a 60-hectare gravity-fed³ surface irrigation scheme which now directly benefits 270 households. The smallholder farmers contributed their labour to clear the trees and shrubs, level the ground, dig canals, lay the pipelines, build toilets and set up drinking points. Each scheme member has 0.25 ha of irrigated land and received start-up support in the form of seeds, tools, fertilizers and pesticides, and training in improved farming methods, soil conservation, agribusiness and marketing. A key feature of the project is that women gained access to land and nearly half the farmers are

women. Oxfam's work was completed in 2012 when running the project was devolved to the Ruti Irrigation Management Committee of 14 farmers.

IRRIGATION BOOSTS YIELDS, HELPS FARMERS COPE WITH CLIMATE VARIABILITY

With water available throughout the year, farmers were no longer solely dependent upon the rains. They were able to grow two or even three crops a year instead of one (maize, sugar beans, potatoes) and some expanded into growing wheat as a cash crop. By the end of 2012 farmers on the irrigation scheme were producing three times as much as on their (larger) dry land plots – 3.9 tonnes per hectare compared to 0.18 tonnes per hectare. Household incomes increased by 286% for the very poor, 173% for the poor and 47% for the middle wealth groups. Even the very poor were able to consume more than their minimum daily calorie requirements. There were significant improvements in the amounts of money parents were able to spend on their children's education and school attendance.⁴

People were hugely optimistic. Farmers described how they expected through irrigation and their own labour that they would finally achieve food security and the ability to create a decent life for themselves. They would be able to buy ploughs, cattle, good houses, granaries, and help others. Many of them have gone a long way to achieving these things.

BUT EXTREME DROUGHT AND EXTREME RAIN BRING NEW PROBLEMS

However, the irrigation scheme ran into problems in 2013. The 2011–2012 rains came late and then there was a mid-season dry spell that lasted for seven weeks. The 2012–2013 rains were poor then it did not rain all year until the very end of 2013.

By mid-2013 the level of the lake had fallen dramatically. The water pressure was so low that only a trickle of water was flowing to the farmers' plots. Then the problem for the irrigation scheme participants was made even more acute when the Zimbabwe National Water Authority (ZINWA) decided to allocate the available water to sugar estates in Chipinge District, Manicaland Province.

Farmer Mr Savious Murikitiko said: 'The dam dried by September 2013. That's an entire cropping season lost. From as early as July through to December last year we could do nothing'.

The combination of low water pressure, allocation decisions and late rains meant farmers at Ruti harvested their first crop but their second

crop was poor and their third crop ‘a complete write-off’. The farmers had depended on selling their first crop to pay for the inputs for the second, and so on, so the situation became progressively worse. They seemed, they said, to be back to square one – indeed, some said they were even worse off than dryland farmers.

Then after the drought came extraordinarily intense rains. The water levels behind Ruti dam rose so fast that the water exploded over the spillway one day in January. Fishermen collecting fish below the spillway had to flee for their lives; 10 of them had to be rescued by government helicopters. Furthermore, the flood waters tumbled boulders against the irrigation pipeline, cracking it. Water has been shooting out, thus reducing the water pressure in the pipeline, which could affect cropping prospects for 2014 unless it can be repaired.

The exceptionally heavy rains throughout the country have come as a great blessing to the farmers and nationally, and a bumper harvest is in prospect. But they also caused a humanitarian disaster in Masvingo province when water piled up behind the Tokwe-Mukosi dam, flooding large areas up and downstream. Oxfam was one of the agencies assisting in the emergency relief effort by helping more than 18,000 displaced people with clean drinking water, latrines and hygiene assistance.

Ipaishe’s story

Ipaishe Masvingise has been one of the leading smallholders in the irrigation scheme since its beginning. In interviews over the period she told Oxfam: ‘I come from a long line of farmers but it’s unusual for women to own land, so it’s just been a dream. Our land was fertile and we used to get good harvests but then the weather changed. The rain is really erratic. You work and work but get nothing back if there’s no water. But now we have plots in the irrigation scheme we have got our lives back. We can be farmers again.

‘For the first time I was given land to work on. For two years I had money for hospital treatment for my mother and for school fees. I had a granary built and a chicken run. I have a five-year plan and my goal is to build a house ‘in town’ and let it out so we have income.

‘But 2013 was so bad we had to go to the people in the dry lands and buy food off them. They thought we were mocking them! Finally in December and January I had nothing to eat at all. Fortunately my mother was a beneficiary of food aid from Christian Care and the government, so we survived. But I didn’t have money for my mother’s treatment – I felt so sorry for her – and it was a struggle to pay school fees for my sister’s kid.’

Despite the setbacks Ipaishe is optimistic that the rains will enable her to have good crops this year and once the river has gone down, that the farmers working together will work out a plan to get the irrigation pipeline fixed. ‘My five-year plan is still on track,’ she says.

LESSONS TO BE LEARNED

The impressive results from the first two years of the scheme show that with irrigation, people are much less affected by regular weather extremes. Dryland farming can be an all-or-nothing gamble on the success of a single crop. With irrigation smallholders can grow up to three crops per year. On the other hand, in 2013 the severity of the drought was so great that it reduced the operational effectiveness of the gravity-fed system. And then ultimately, the farmers were unable to obtain any of the water that was still potentially available because of decisions taken from far away and outside their control. Fortunately now the dam is full the prospects for 2014 look good, provided the pipeline can be repaired.

It is not the purpose of this paper to say whether decisions on water allocation were good or bad, right or wrong. But as the world warms due to carbon emissions, there are likely to be more extreme weather events which will place further stress on access to water and other natural resources. Decisions will always have to be made about who among multiple users has priority access to water in times of scarcity. But the poorest are always liable to lose out as those who pay more or are considered more important usually get more – and the poorest have little say in the decision making process.

The success of irrigation schemes such as that at Ruti also depends on other factors outside the control of the farmers. The results would be even more impressive if smallholders had better and more consistent support from government in the form of agricultural advice and access to seeds and fertiliser, and prompt payment for their produce, such as wheat, from the Grain Marketing Board. The lack of functioning markets in the surrounding area also limited the scheme's ability to contribute to wider food security, although casual labour opportunities have benefited neighbouring Buhera district.

In the face of external threats such as extreme weather, it is also important for smallholders to be able to diversify their livelihoods via off-farm initiatives. Farmers who had access to extra income from non-agricultural activities, such as tailoring, thatching or painting, were able to buy at least some inputs and get some harvest despite the drought.

CONCLUSIONS

Every country needs a framework that acknowledges climate change as a real threat that is growing ever more intense; that analyses the nature of the risks it poses; and plans and implements strategies to make people less vulnerable and more resilient. Policies must recognise that poor people have the least to fall back on and the most to lose; their situation must have priority. And they must have the right to speak, participate and influence decisions that affect their lives.

As Zimbabwe develops its Climate Change Response Strategy, the policy formulation process should capture the voices of people like Ipaishe in order to build the resilience of smallholder farmers who are the backbone of the nation's agriculture.

For further information of Oxfam's GROW Food and Climate Justice Campaign see <http://www.oxfam.org/en/grow>

NOTES

All web links were last accessed in May 2014.

¹ H. Hamandawana et al. (2005) 'Population driven changes in land use in Zimbabwe's Gutu district of Masvingo Province: some lessons from recent history', *Applied Geography* 25: 248-270.

² Oxfam research has shown that the phenomena of rainfall occurring in heavier bursts in a shorter time, thus reducing the length of growing seasons, is reported by farmers worldwide. Changes to seasonality may be one of the most profound and damaging effects of climate change, but under-reported because less dramatic than extreme events. See e.g. S. Jennings and J. Magrath (2009) 'What Happened to the Seasons?: Changing seasonality may be one of the major impacts of climate change', Oxford: Oxfam GB, <http://policy-practice.oxfam.org.uk/publications/what-happened-to-the-seasons-changing-seasonality-may-be-one-of-the-major-impac-112501>

³ It also incorporates solar water pumping in the final phase.

⁴ D. Bishop (2012) 'Effectiveness Review: Ruti Irrigation Project, Zimbabwe', Oxford: Oxfam GB, <http://policy-practice.oxfam.org.uk/publications/effectiveness-review-ruti-irrigation-project-zimbabwe-247851>

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This case study was written by John Magrath with the assistance of Lynnette Tshabangu, Sekai Mativenga and other staff of Oxfam Zimbabwe. It is part of a series of papers and reports written to inform public debate on development and humanitarian policy issues.

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The information in this publication is correct at the time of going to press.

Published by Oxfam GB for Oxfam International under ISBN 978-1-78077-592-0 in July 2014.

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