

USING WATER TO FIGHT POVERTY: A multiple-use systems approach to food security and productive uses of water

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Building the second economy

Many rural households in South Africa continue to struggle against hunger, malnutrition and lack of income. Great strides have been made towards eradicating the backlog in water supply for basic human needs but, increasingly, President Mbeki is asking rural people, "How are you using your water to be economically active?" In South Africa, we have started talking about 'water for productive uses by the poor'.

Research by the non-governmental organisation (NGO), the Association for Water and Rural Development (AWARD), in 13 villages in Bushbuckridge showed that where villagers had more water, the economic activities of many poor households in the village doubled. Typical examples of productive uses would include brick making activities, watering of cattle and goats, small home-based industries such as hair salons, beer brewing and ice making, and backyard or community gardens.

Promoting economic activity of poor households is a very direct strategy to hit poverty right where it is felt! Providing water for productive uses enhances people's livelihood options, and makes significant additions to household food security and nutrition. It can also generate income, especially when markets are available for goods that poor people can produce at home.

A number of questions arise in seeking to take these ideas forward. Questions such as: How much water is required to enable productive uses of water by the poor (over and above that to supply basic domestic needs)? Where is this water to come from? Who will provide and pay for it?

What is a Multiple Use System (MUS)?

Providing water for both domestic and productive purposes does not always mean that more water needs to come out of the same pipe. Rather, we need to think creatively about how a range of different water sources in a village can be harnessed to supply the range of water needs of households. Thus a new approach to planning for water is emerging, in which the domestic, irrigation, livestock watering, etc. sectors collaborate, asking that we think about *multiple-use systems* (MUS).



So, a MUS approach is one that says that people have *multiple uses* of water, which can come from multiple water sources, which people can access using *multiple technologies*. In planning for this we must seek an appropriate match between use, source and technology. So, for example, for drinking water we need to be careful of the quality of the water, while for washing clothes or watering the garden different standards apply.

For farming, every source of water is used

Clean water is usually more expensive to provide: bulk water for domestic use must be purified, underground water is often clean but must be pumped, and pipes are needed to bring drinking water close to where people live.

Rainwater run-off from the yard, stored in a large underground tank, is perfectly good for backyard gardening or brick making, and can complement household needs met from the domestic supply system.

Those promoting a MUS approach have found that the overall sustainability of water services improves when people's needs for water for productive uses are met simultaneously in these different ways, because people use domestic systems for multiple uses anyway, e.g. through unauthorized connections to piped water systems. This then reduces overall water availability within the system, leaving some people without any water, with consequent conflicts between users and with water services providers. Similarly, irrigation schemes are otherwise 'illegally' used for domestic purposes.

Food security and income: a case study from MaTshepo

"The 'ten fingers' principle that Eva told me about really works. The proof is in my back yard, because I applied the principle and now I have spinach, beetroot, tomatoes, green peppers and cabbages in my backyard."

– Rural woman, Strydkraal Village, Sekhukhune District

The International Water Management Institute (IWMI), together with Water for Food Movement (WfFM), studied the food production practices of MaTshepo Khumbane at her home near Cullinan (Pretoria) in the winter season of 2002. They found that in winter alone, she produced almost a ton of vegetables on her small household plot, which is laid out in such a way that it leads rainwater straight into the vegetable beds every time it rains. A lot of this she could sell and earn enough money (R2 000) to buy maize meal for the family for half a year. In summer she produced even more, so it was clear that 'backyard' production was not 'backward' at all! In fact, she has taught many people how to develop a 'five-year food security plan', using only their yard and their 'ten fingers'. Eva Masha is one of the women who learnt from MaTshepo, then taught her neighbours.



Emily Masha says, 'We have buried our hunger'

Table 1: Food and income from MaTshepo Khumbane's backyard – Winter 2002

Crop planted	Land planted (square metres)	Food harvested ¹ (kg)	'Months of food' for a family of six people ²
Beetroot	30	120	7
Broccoli	23	90	3
Cabbage	12	96	8
Carrots	12	50	4
Cauliflower	10	35	2
Lettuce	20	30	1
Onion	50	225 ³	42
Peas	43	52	4
Spinach	14	126	4
Other	8	34	
TOTAL	222 ⁴	858 ⁵	

¹ Where the harvest exceeded top commercial yields, the values were adjusted downwards accordingly.

² This is the number of months that six people would each be able to eat a portion of this food per day from the harvest. Actual use can extend over more months, provided the food is successfully stored. Alternatively, excess produce can be sold fresh or processed.

³ The actual value of the onions produced on 50 m² in Winter 2002 was R2 000, which was enough income to buy at least six months' supply of maize meal for a family of six.

⁴ The total planted area of 222 m² is approximately one-tenth the size of a normal rural homestead yard, and therefore accessible by virtually all households.

⁵ Calculations of run-off and crop water requirements indicate that this level of food production through rainwater harvesting is achievable almost throughout the country in most years, even in low rainfall areas. Therefore, this need not depend on municipal water supplies.

Update on rainwater harvesting

"I am so sorry that this knowledge about rainwater harvesting comes when the age is catching me. All these years we have been crying for water while it was running past us."

– Rural woman from Vhembe (participating in a Mind Mobilisation workshop hosted by Water for Food Movement at MaTshepo Khumbane's farm near Cullinan)



"I have dug three holes and filled it with organic matter to plant vegetables, but no water. At the same time, I was crying about my neighbour's roof water that is gushing into my yard! Now I realise this is gold!"

– Another participant from above workshop

Small scale farmers harvesting rainwater in Bushbuckridge

There is a range of water sources and technologies that can be used to make extra water available to households. Rainwater harvesting is one that is once again becoming popular, after being neglected during the time when it was thought that big dams would solve all our problems.

More than 60 different rainwater harvesting techniques are used in East African countries, but at the moment the three most popular ways for poor rural people in South Africa, are:

- (i) To lead rainwater directly into trenched vegetable beds in the backyard. This is called 'run-on'.
- (ii) To build underground water tanks in the yard to catch and store rainwater for later use. People can build these underground tanks with cement blocks or other materials themselves.
- (iii) To channel water in the maize fields into earth semi-circles or bunds, called 'in-field rainwater harvesting structures', so that all the rainwater is concentrated onto the crops (instead of running out of the field and causing water loss and even erosion).

People are also interested in aboveground rainwater tanks (Jojo or cement tanks) next to the house to catch rain from the gutters, because this roof water is clean enough for drinking. Underground tanks provide about four times as much storage space for the same money as aboveground drinking water tanks. A mix of the two would provide for different uses.

One of three rainwater harvesting tanks at Mahashe Secondary School



Planning for MUS – a case study from Bushbuckridge Local Municipality

AWARD has been piloting the implementation of MUS in Ward 16 of the Bushbuckridge Local Municipality (Limpopo). AWARD is using a community-based approach, working closely with the Municipality and the local offices of the national departments of Water Affairs and Forestry (DWAF), Agriculture, and Social Development. This consists of a participatory assessment of people's water-based livelihoods, and the water services and water resources available within the villages in that Ward. The approach is known locally as Securing Water to Enhance Local Livelihoods (SWELL). Based on the assessment, a joint planning process is followed, which links up with the Municipal integrated development plan (IDP) process.

In Ward 16 community structures, departmental officials, officials and councilors from the Municipality and NGO staff jointly analysed the water situation in the Ward, and together developed strategies and agreed on projects to be taken forward. The group prioritised some immediate refurbishment of infrastructure, while noting that operation and maintenance capacity must also be upgraded, management improved, and communication channels opened up. Funds have been allocated from the IDP to refurbish the water infrastructure on the basis of a detailed technical and management assessment of the entire water system, undertaking awareness raising and training at the same time.

One of the sources of water identified was small earth dams for cattle. Many of these have silted up, and cattle owners are watering their cattle from domestic systems, leading to over-use. The Department of Agriculture has committed itself to clean up the dams, and villagers identified the need to take anti-erosion measures so as to protect dams from silting again. In this way, the pressure on domestic systems can be reduced. Rainwater harvesting was also identified as a water source to be further explored.

It was found that it is of key importance to bring community-based approaches together with the reality of municipal planning procedures and mechanisms which are, after all, there to enable integration and cooperative governance. SWELL is being taken up enthusiastically as a tool to improve the IDP, water services provision, and communication and coordination between stakeholders.

The work in Ward 16 will now focus on implementation and monitoring, working closely with the stakeholders to not only solve the water problems of Ward 16, but also to learn lessons together in order to improve IDPs and water planning and implementation.

Policy and programme support for productive uses of water

DWAF is in the process of developing a policy document and guideline on the provision of domestic water for productive purposes. The first draft was finalised towards the end of 2005. The intention of the guideline on Water for Small Scale Productive Uses is to assist water services authorities (WSAs) in planning and providing water for multiple uses.

The WSA needs to lead an integrated approach to planning, to bring together the efforts and resources of different departments such as DWAF, the Department of Agriculture and the Department of Social Development. While cooperative governance is essential, it is important to allocate roles and responsibilities clearly to enable monitoring and accountability, and to structure collaboration in a way that avoids delays in implementation. More work still needs to be done to ensure smooth collaboration with the local economic development (LED) programmes in municipalities, as part of the transfer of water services functions to the local level.

In 2005, the Minister of Water Affairs and Forestry approved a subsidy scheme for households to build water tanks in their backyards to catch rainwater. This is to allow communities to store water for their own uses, and so enjoy the economic benefits shown by AWARD, that come with a greater supply of water.

The Department of Agriculture also provides grant funding – specifically for agricultural infrastructure – through the Comprehensive Agricultural Support Programme (CASP). This can cover a range of water-related infrastructure from rainwater tanks to livestock watering troughs and dams.

Sector interest

A national workshop was held on MUS in August 2005, attended by national government departments, research institutions and NGOs. It mapped out current initiatives in the areas of policy, research and implementation on MUS. The need for continued work and cooperation was agreed on, and that this needs to take place at local as well as at national level. Information on the initiatives and the forum can be found on the Water Information Network-South Africa web site (www.win-sa.org.za).

FOR MORE INFORMATION

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