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## [A quiet water revolution](#)



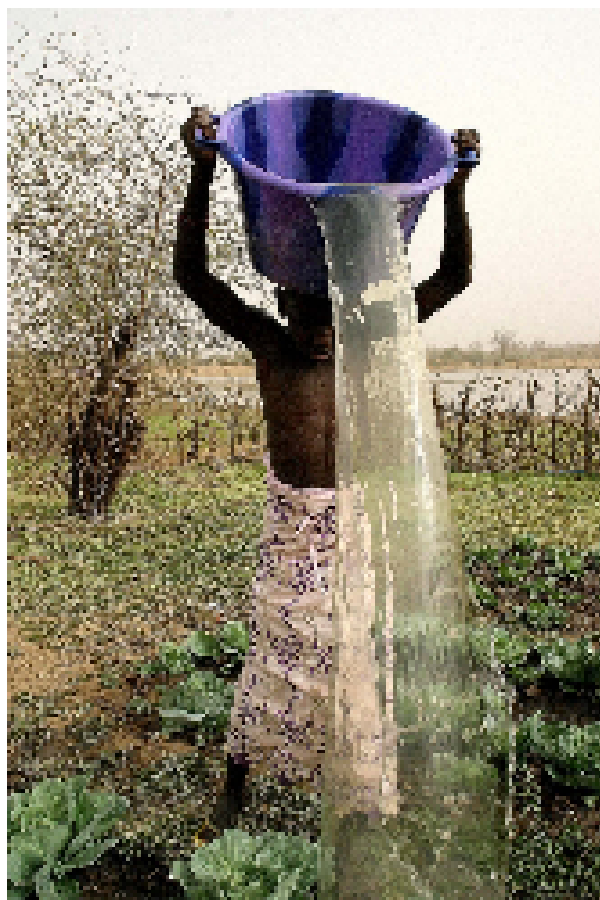


Photo: Pierre Holtz/IRIN

Most farmers in developing countries rely on buckets and watering cans

Quietly, a revolution to develop cheap ways to draw water for irrigation is unfolding in small villages and rural regions in sub-Saharan Africa and South Asia, a new three-year [study](#) has found. This movement has the ability to turn agriculture around in the developing world.

The study – by the Sri Lanka-based International Water Management Institute (IWMI), a nonprofit research centre – found that small farmers, tired of waiting for governments to deliver aid, have found ways to access motor pumps, build reservoirs or ponds to harvest rain water to improve their crop yields. And it is paying off.

“We were amazed at the scale of what is going on,” said IWMI’s Meredith Giordano, who coordinated the initiative. “Despite constraints, such as high upfront costs and poorly developed supply chains, small-scale farmers across Africa and Asia have moved ahead using their own resources to finance and install irrigation technologies. It’s clear that farmers themselves are driving this trend.”

Surveys carried out in Ghana, Ethiopia and Zambia found that more than 80 percent of all owners of small-scale irrigation equipment had used their own or their family’s savings to buy it. Banks or microcredit organisations rarely lent money to buy the equipment, and help from NGOs or donors was uncommon.

Buckets and watering cans used by most farmers in sub-Saharan Africa are handy for watering small plots and are rather cheap, with negligible operating costs. A treadle pump can cost up to US \$100, with families helping out, and the cost of operating it is also zero. Prices for motorized pumps can reach up to \$250, but Giordano told IRIN that many farmers had found a way to manage this cost. For instance, in parts of India, a farmer will buy a pump and then rent it out to other farmers when not using it. There are also pump-on-a-bike hire schemes, where cycling entrepreneurs tour rural areas, renting out pumps strapped to their bicycles.

“The proliferation of small-scale private irrigation is an established trend in South Asia that is now gaining ground in sub-Saharan Africa,” said the study. “In many African countries, private irrigation by farmers is already much more significant than the public irrigation sector,” said Giordano. For example, in Ghana, private irrigation by smallholder farmers employs 45 times more individuals and covers 25 times more land than public irrigation schemes.

### Paying off

The results are becoming apparent. In the Indian state of Madhya Pradesh, farmers who have constructed ponds to irrigate crops have seen their incomes rise by 70 percent. A similar initiative in Gursum, an area in Ethiopia’s Oromia region, has been so “successful that it is now known as the ‘No-pond-No-wife’ sub-district,” said the study. Rainwater harvesting was introduced by the Oromia government in 2002, with ponds being built with elastic sheets. Farmers, however, scaled up the initiative by improving the water-holding capacity of the ponds by joining two plastic sheets,

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ultimately improving crop yields – so much so that “farmers without ponds are said to have difficulty finding a wife, hence the area’s nickname.”

The study also found that in Tanzania, half of the dry-season incomes of smallholders come from growing irrigated vegetables. In Zambia, the 20 percent of smallholders who cultivate vegetables in the dry season earn 35 percent more than those who do not.

**Enormous impact**

The researchers also examined how each of these technologies – use of motorized pumps, small reservoirs, community-managed river diversions could reduce poverty. They found the growth and impact of these technologies would be enormous. Motorized pumps, for instance, could be provided to at least 185 million people in sub-Saharan Africa, generating a revenue of \$22 billion annually. The study took variables such as access to markets, investment costs and availability of natural water sources to calculate benefits.

The findings are not surprising considering only three percent of sub-Saharan Africa’s water is drawn for irrigation, according to the UN’s Food and Agriculture Organization, and only four percent of its arable land is irrigated. The IWMI study found that more than 80 percent of the farmers in sub-Saharan Africa use water cans and buckets to draw water for their food crops. Small farmers across the ocean in South Asia have similarly relied on low-tech for irrigation, such as depending on monsoon rains to water their crops.

Yet the study warns that there are also risks to unchecked expansion of smallholder water management. “The poorest farmers, especially women, will still struggle to find the resources needed to access new technologies, which may lead to greater inequities. And if farmers engage in a free-for-all, supplies in some areas could dwindle past sustainable levels.”

The study recommends that governments and local authorities engage with what is happening on the ground and support it with policies that increase access to loans and improve agricultural extension services i.e., teaching improved farming methods.

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Author: [Marc Mcilhone](#) Marc Mcilhone joined the AfricanBrains team as Editor in November 2011 sourcing news and features content and overseeing the work of the site’s contributors. Marc’s work is informed by his technical background in architecture having worked for some of the UK’s leading practices on projects within the education, healthcare and housing sectors. Marc has a particular interest in how African innovators are creating sustainable solutions that have a positive impact on people’s everyday lives. Please email press releases and news to: [editor@africanbrains.org](mailto:editor@africanbrains.org)

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