

Catching Rooftop Rainwater in Gaza



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Steven Hunt

[Photo: Eric Schiller fills his cup in Gaza.]

A roof is not just a means to keep rain off our heads. In parched regions such as the Middle East, it can also be used to bolster drinking water supplies.

That's the theory behind a recent Canadian-Palestinian research project in the Gaza Strip — an area plagued by water shortages because of arid conditions, ground water pollution, and political instability. During the winter of 1995-96, 11 rooftop rainwater catchment systems were tested in Gaza with support from the International Development Research Centre (IDRC), as a follow-up to work initiated as part of Canada's contribution to the Middle East Peace process. The project looked at their technical and economic efficiency, as well as the social acceptability of rooftop water.

Water sources

Rainfall varies widely in the Gaza Strip, which measures 42 kilometres from north to south and less than nine kilometres in width. Southern Gaza receives about 250 millimetres of rain per year — not enough for unirrigated agriculture — while the north receives almost 400 mm, which is barely enough. The area relies primarily on water drawn from local aquifers or piped in from Israel. But the aquifers are becoming undrinkable as sea water and agricultural pollutants enter the water table, which is sinking from over pumping. Moreover, Israeli supplies are expensive. Meanwhile, the population is growing at six percent per year.

With funding from IDRC, scientists from the [University of Ottawa](#) and the Palestine Hydrology Group investigated a variety of small-scale rainwater catchment systems to determine the most practical and cost-efficient designs and materials. Like eaves troughs, the system they built catches rainwater as it falls off a roof. The water flows through plastic pipes and into a large cistern, which can store enough to supplement the drinking water supply of a family of six for several months.

Reducing contamination

Although rainwater is potable, it can become contaminated by the dust or bird droppings that collect on rooftops. To reduce contamination, the catchment system features a first-flush device — a system that diverts the first rainfall and associated debris to a reservoir. When the reservoir fills up, the rainwater bypasses it and enters the cistern.

Everything is quite easy to build, says [Ron Droste](#), a Professor of Civil Engineering at the University of Ottawa. For example, the pipe is made of simple plastic and the cistern is made of ferro-cement around chicken wire.

Old idea

Catching rainwater is not new, adds his colleague, [Eric Schiller](#). "This idea comes from ancient history. The Greeks and Romans were using [catchment systems]," he notes. Today, this technology is used elsewhere in the Middle East, including the West Bank, although it has never been tried before in the Gaza Strip because of its arid conditions.

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