

MADE IN MALAWI: A QUIET ROOF THAT LASTS

Martin Kamkwamba, production manager at DecorPave in Lilongwe, Malawi, knows he's making the best school roofs in the country. In contrast, he remembers what school was like under a traditional tin roof when he was a child.

"Every time it rained, the teacher would have to stop teaching, it was so loud," he said. Tin roofs also heat up the classroom like an oven in October. That's a lot of lost learning and teaching time each year. So in 2003 when DFID (the British Department for International Development) began to assist the Malawi Ministry of Education in constructing schools, they looked for an alternative roof material.

They found it in micro-concrete tiles, locally called Parry tiles after their designer. The Parry tile is strong, durable, and much friendlier for learning. Since the tiles are made in Malawi by eight small businesses, they also represent a new, potentially lucrative local industry.

Introducing the new technology in Malawi at first met with resistance. Some school communities were reluctant to give up the status of a shiny tin roof. Second, concrete tiles got a bad name in construction in the 90's in Malawi, when a clay and cement-mixed tile was introduced that was brittle and unattractive.

The Parry tile has been used with success commercially in four other African countries, including Gambia and Tanzania. It is made of cement (tested for quality) mixed with sand and water. The technician spreads this on

a flat rubber sheet, which is then vibrated by an electric machine to smooth and flatten the mixture. The rubber sheet is placed on a mould where it hardens for two days. Then the tiles must cure for two weeks in tanks of water, which strengthens them.

Decorpave makes the tiles at construction sites.

"We work at remote sites where transportation of the tiles would be difficult," says Kamkwamba. "Also, we can oversee the quality until every tile is hung, and local workers who learn the technology can maintain them."

Three skilled workers form a team with three local workers at the site. With two machines at the site, they can produce about 270 tiles a day, completing four school blocks in about 13 working days. Once installed, the roof is strong and can be repaired one tile at a time. Unlike a tin roof, the Parry tiles will not be lifted off by high winds.

Suppliers found they had to refine production for use in Malawi. In some tropical areas where it's hot and humid, the tiles can be air cured, but in Malawi, it is often too cold. Water-curing the tiles solved the problem.

At Dedza Pottery, where production is done at their factory, transporting the tiles without breakage was a challenge. They learned to pack them well using tarps and plant hulls, and now, contractors report less than 5% breaking.





Dedza is also producing a tile that children applaud: decorative tiles for the walls. Every new classroom has hand-painted tiles of the alphabet and maps that feature Malawi wildlife.

With 200 classroom blocks completed and roofed and 300 more soon to be occupied, the success is now visible. Communities and contractors recognize a solid and attractive roof. Children are learning in rooms that are quiet and comfortable.

The new roofs are good for learning and good for Malawi's economy. Much of the cost of a tin roof goes out of Malawi in import and foreign exchange costs. Parry tiles are produced here using local labour and mostly local materials, so the cost of production stays in the country. As the word gets out from many satisfied clients, suppliers hope to grow a new Malawi industry of beautiful and durable roofing materials.

Note: School construction is just one way that DFID aims to support the Malawi government's efforts to increase access for all children to an equitable and high quality education. DFID also supported Malawi's 316 teacher development centres, community-based centres that provide ongoing teacher development in all districts.



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