



## PROFILE: CRDC



# ONE MAN'S WASTE...

**An innovative company is turning plastic waste into building material, and it's got big plans for South Africa. By ANTHONY SHARPE**

**C**anadian-born builder and entrepreneur Donald Thomson knows a lot about reusing plastic. A 2010 beach cleanup in an impoverished part of his adopted home of Costa Rica led to the creation of an award-winning company that manufactured plastic bottles which could be flattened into building tiles.

As the project progressed and he started investigating ways to tackle the waste stream at a greater scale, Thomson says he began looking into concepts like regenerative design and the circular economy. "We developed our own business model named REAP, which stands for recover, enrich, appreciate, prosper – a pure biomimicry model."

"Only three types of plastic are typically recycled," he explains. "PET plastic, from which plastic bottles are made; high-density polyethylene; and a little polypropylene. The rest of it doesn't get recycled; it ends up in landfills or gets incinerated. We wanted to create a product that could sequester waste for a long time, while making it appreciate in value, and at the end of it all be recyclable."

### AGGREGATING WASTE

Thomson and his partners started the Center for Regenerative Design and Collaboration (CRDC), with the goal of creating a sand

particle to be used as a building aggregate. "We're from the construction industry, so we designed this product for the construction industry." The particle had to simulate sand perfectly and adhere well to concrete. "We patented the rough, pumice-like shape for the particle. It has little pieces of calcium hydroxide and ash in it, which chemically stick to cement.

"The process involves extruding a blob of comingled plastic, blasting it with vapour to create an open-cell form, then breaking it into the right size and gradation, just as you would with rock." The result is a product called RESIN8 – so named because it uses all the plastic resins 1-7, and is itself a sort of eighth. "As soon as we knew we could make a stronger, lighter, visually benign product out of recycled material, we knew we had something to offer the concrete industry."

Thomson says that as enormous as the plastic industry is, the construction industry is so much larger. "If we took all the plastic manufactured in the world and turned it into our aggregate, that would account for only 2.8 per cent of what is used in construction."

### THE SOUTH AFRICAN CONNECTION

Thomson entered a joint venture with a Costa Rican concrete company before his travels on the green building speaking circuit brought him to South Africa.



"I have a specific interest in social housing, and there is such need in the townships in South Africa, so we tried to figure out what we could do to make a real impact there."

CRDC set up a pilot plant in Cape Town, and Thomson says the project has gained a lot of momentum in South Africa, and they're in the process of establishing a full-scale plant with a major local construction company.

CEO of the company, Brett Jordaan, says CRDC is focusing on multiple sectors in South

Africa, including social housing, large-scale infrastructure projects and roads. "We have engaged with the Western Cape government so far and found them very amenable towards collaboration, especially regarding possibilities whereby CRDC can source waste from under-served communities, thereby assisting localised environmental remediation and job creation.

"We are sourcing post-consumer waste from waste management companies, post-industrial waste directly from some commercial entities and environmental waste from NGOs, and we are currently engaging with entities in the informal sector to help us build up and maximise supply from under-served communities." ■

### ARE WE RUNNING OUT OF SAND?

Sand's role as an essential component of concrete has made it the world's second-most-consumed natural resource after water; in 2015 the International Monetary Fund estimated that the construction industry worldwide uses a staggering 40 billion tonnes of sand annually, a figure that will only have grown. According to a report in the journal *Nature*, as desert sand granules are too smooth, most construction sand is mined from rivers, with potentially wide-ranging implications for ecology and the billions of people living near rivers. Growing demand for sand has also fuelled a black market, with illegal mining taking place in 70 countries.