

# Majd al-Mashharawi, the Palestinian Engineer Making Bricks Out of Ash



Majd al-Mashharawi. Photo AFP

The construction sector in the [Gaza Strip](#) suffers from an acute shortage of construction materials as a result of [Israel's tight import restrictions](#). Cement, sand and gravel used to manufacture bricks are in particularly short supply.

But necessity is the mother of invention, as the saying goes. In collaboration with [Rawan Abdullatif](#), 24-year-old engineer Majd al-Mashharawi from Gaza City has succeeded in [converting ash into bricks](#). The first of their kind in the Arab world, the bricks are made from cement mixed with coal and wood ash instead of sand and gravel.

'Green Cake' bricks, so called because they re-use ash that would otherwise go into landfills and are much lighter than concrete, also have good soundproofing and insulation properties and are cheaper than normal concrete blocks.

Al-Mashharawi and her friend, both graduates of the Faculty of Civil Engineering at the Islamic University, came up with the concept after brainstorming ideas to tackle Gaza's high [unemployment rate](#). They also wanted to provide an eco-friendly solution and reduce the high costs of building materials in the enclave.

Speaking to Fanack Chronicle, al-Mashharawi said that the bricks will reduce the [environmental pollution](#) in Gaza, because ash is usually disposed of either by burying it in the soil or dumping it in landfills. Both methods are harmful because ash can pollute groundwater.

Through the project, al-Mashharawi received technical advice from experts in the construction sector, in addition to obtaining financial support to cover some of her start-up costs.

She attributes her success to her strong will and determination to work, in addition to her refusal to give up. At the same time, she said she would not have got as far as she has without for the support and encouragement of her family, especially her father, Gazan businessman Ismail al-Mashharawi, who was her inspiration and role model.

However, she admits that her journey has been far from smooth. As a woman entering the male-dominated construction industry, she faced considerable social resistance. She also confronted technical challenges. The first brick samples she produced failed the initial tests. She continued to experiment with different mixtures, eventually perfecting the material that became Green Cake.

In 2017, the project won bronze in the research and development category of the [Emirates Award for Energy](#). The prestigious award, which is presented every two years by the United Arab Emirates, recognizes efforts to promote the best use of energy resources. It aims to highlight best practices and pioneering work in the fields of energy efficiency, alternative energy, sustainability and environmental protection.

Speaking about her reaction to winning the award, al-Mashharawi said, "I was so happy and sad at the same time. I was happy because I was the first Palestinian woman to win this prestigious award in the field of energy and environment. I was sad at the same time because my family could not share with me the happiness of winning...My family did not have a permit to pass through the Erez crossing. I was honoured alone, without my family, which made me feel sorry for myself because I wanted to see the joy and pride in my father's eyes as I received the award."

In addition to the Emirates Award, al-Mashharawi won first place in the [Japan Gaza Innovation Challenge](#), enabling her to travel to Japan and share her pioneering with other young entrepreneurs. She said the visit was a unique opportunity to experience Japanese innovation first hand as well as learn about different industries and cultures.

In addition to Green Cake, al-Mashharawi is also turning her attention to renewable energy technologies, starting with an off-the-grid solar kit called SunBox. Harnessing Gaza's almost year-round sun, the kit generates **1 kilowatt of electricity**, enough to power four lamps, two laptops, two phones, an internet router and a TV/fan/small refrigerator for a full day, before needing to be recharged. In a place that is plagued by frequent power outages, al-Mashharawi hopes the kit, which sells for \$450, will offer Gazans a better quality of life and opportunities for economic growth.

If the launch goes well, al-Mashharawi hopes to raise the financing to expand beyond Gaza, including into **West Bank** refugee camps, **Syrians in Jordan** and off-grid **Bedouin** communities throughout the Middle East.

On her plans for the future, al-Mashharawi said, "I hope I can introduce more solutions to the problems facing the Gaza Strip, help as many people as possible in the field of energy and environment as well as succeed in making deals and commercial partnerships with foreign and international companies to develop my business...and transfer my experience about eco-friendly building bricks to most developing countries."

She continued: "The Palestinian youth should not feel despair because of the current circumstances, and they should always be patient because there is no easy and fast way to achieve success in life. Everything needs time and patience, and failure is always followed by success, which requires us to try again and again until we can achieve our goal in life."