

Turning poop into plastic at Paris climate talks

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Technology on display at the COP21 climate talks in Paris showed how excrement can be turned into plastic or fuel

A small piece of dung was on proud display at global climate-saving talks in Paris, just a few steps away from being transformed into a plastic bottle or fuel for a car.

Along with scraps from slaughterhouses and dinner tables, it is the raw material for an innovative process to turn waste into a range of new products.

"This is the third Industrial Revolution. It changes the world from using oil products to using biomass," Regis Nouaille, founder of biotech startup Afyren, told AFP at the UN conference where 195 nations agreed a historic climate rescue pact.

His company was one of dozens that showed off pioneering green technologies, including a wood chip-powered generator and an inventive device for bringing electricity to remote villages.

Nouaille explained that waste like dung, animal parts or sugar beet leftovers can be doused with a cocktail of 50-100 naturally-occurring micro-organisms to prompt a chemical reaction.

The process produces natural compounds, which Nouaille called "building blocks" that are extracted in a process pioneered by his company.

Once the substance is refined—in a process similar to the one for oil—it can then be used as the raw material for making plastic, petrol or even cosmetics.

Though the technology is a pilot effort, Nouaille said the goal is to roll it out on an industrial scale.

Just down the aisle in the sprawling convention centre was the incongruous scene of a thatched hut flanked by a several-metre tall metal pole topped with a streetlight and solar panel.



Dung, animal parts or sugar beet leftovers can be doused with a cocktail of 50-100 naturally-occurring micro-organisms to prompt a chemical reaction and create natural compounds

It was part of a system called nanogrid that its developers say could help bring light into the lives of some of the more than 620 million Africans who do not have electricity.

"So with electricity they will be able to develop new businesses and to develop themselves," said Boris Durand, a product manager with nanogrid's maker Sunna Design.

"We give them the tool and after people create their own development."

'Trash into treasure'

At the system's core is a solar panel that generates power both for the attached streetlight—which Sunna says provides both safety and a social centre in remote villages—and the nanogrid.

Durand said the system produces enough power to light up eight homes that would otherwise have been lit only with candles. The company provides the equipment and installs it.

"They (users) pay 10 cents per day to get electricity at home," said Durand.

Weaning humanity off oil, gas and coal while moving towards a low-carbon future was a key element of the Paris talks. It turns out you can start doing that with a few unwanted logs.



Solar panels in the Somali town of Wisil provide enough energy to charge mobile phones

A machine showed off at the conference heats up fuel such as woodchips or nutshells to the point where they give off highly-flammable gases carbon monoxide and hydrogen, but do not actually catch fire.

"The flame is essentially a waste of energy," said Sara Norris, an engineer and saleswoman with the machine's maker All Power Labs. "We're basically just harnessing the smoke."

Those gases then become the fuel for the machine's generator, which pumps out enough electricity for four or so energy-guzzling American households. In the developing world the device would run up to 10 homes.

Materials such as wood are not as densely packed with energy as fossil fuels. So about 10 kilos (22 pounds) of woodchips in the machine would create about the same amount of power as four litres (a gallon) of diesel.



Unwanted logs can be converted to gases for electricity generation

But making your own [electricity](#) requires a substantial investment, with the cost for the machine, installation and training for its use topping \$30,000 (27,300 euros).

They have about 60 of the machines making power in various places around the world including several in Liberia and another on a remote island in the Philippines.

"You are essentially turning trash into treasure," Norris said.

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