

Pioneering engineers turn destructive plant into valuable carbon

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Researchers in Scotland and Cuba are ridding the Caribbean nation of a major ecological problem while producing one of the world's most sought after substances.

Research led by Professor Peter Hall, of the University of Strathclyde's Faculty of Engineering, has found that Marabú – a type of hard wood shrub that has invaded over 1.5 million hectares of land in Cuba – can be used to produce highly valuable activated carbon.

Activated carbon is most commonly used to produce batteries and has many uses from water and gas purification to sewage treatment. It can also be used as a medical tool to treat poisonings and overdoses.

However, its purification properties are the most valuable as Cuba currently imports £5 million worth of activated carbon for use in rum production – a crucial part of the country's economy.

Professor Hall said: "Cuba appears to be the only country in the world that has such a serious ecological problem with Marabú. It is invading the terrain throughout the country at an alarming rate, destroying the environmental landscape and effectively sterilising what has historically been the world's most productive agricultural land.

"However, our research has shown that we can use it to produce an extremely high quality version of [activated carbon](#) worth more than £1,200 per tonne. We have already been able to demonstrate water pollution control using Marabú and aside from the obvious benefits for

Cuba's economy, this research could provide good quality drinking water for developing countries throughout the world."

The Strathclyde researchers are using technology on campus to process the Marabú, and the same technique will be deployed in [Cuba](#) to convert the Marabú on a much greater scale.

Havana [Energy](#), a renewable energy company working in partnership with the Cuban Government has played a key role instigating and leading the research and delegates visited the University this week as part of the ongoing project.

Mr Andrew MacDonald, Director and CEO of Havana Energy, added: "The journey began when with our Cuban partners, we were trying to identify a secondary feedstock for the bagasse power plant we are developing together since there is a window of the year when sugar cane can't be harvested. The marabu project is truly unique turning a pest into value energy source...its a true win-win all round."

Researchers at Strathclyde, with funding from the Engineering and Physical Sciences Research Council (EPSRC), have also used the Marabú to produce energy storage devices, in particular Li-air batteries and ionic liquid supercapacitors.

Some countries, including China, already have some city buses running on supercapacitors and the government there want all buses in major cities to use these devices.

The business/academia link between the industry project funders Havana Energy, Reactor Technologies and the University of Strathclyde was brought about through a scientific mission funded by Scottish Development International that introduced Scottish agricultural and carbon experts to Cuban government ministers.

Provided by University of Strathclyde

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