

Wood waste biofuel could cut greenhouse gas

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A sustainable biofuel made from Norwegian forest wood waste could help transform the shipping industry and reduce global greenhouse gas emissions.

Alternative sustainable fuels are urgently needed in the marine transport sector due to stringent upcoming regulations demanding reduced sulphur and carbon content in diesels and oils from January 2015.

Aston University scientists are involved in the ReShip project, which will use low quality [wood](#) waste, chippings and unmerchantable wood left in forests after logging has occurred to produce new biofuels. Via the process of fast pyrolysis, where material is heated in the absence of oxygen, the wood will be converted into crude pyrolysis oil. Compared to petroleum-based oil, however, crude pyrolysis oil cannot be used for direct use in diesel engines as it is too unstable.

To counter this, the Aston team, led by Professor Tony Bridgwater, will look to stabilise freshly produced pyrolysis biofuel through mild, rapid, low temperature catalytic hydrogen treatment. In cooperation with the Paper and Fibre Research Institute in Norway they will also seek to blend the bio-oil with conventional diesel and surfactant to form a multi-component fuel.

The most promising fuels will then be engine tested to assess their quality and use for potential marine transport.

Professor Bridgwater, Director of the European Bioenergy Research Institute at Aston University, said: "This project will establish a knowledge platform for cost-effective production of all new [sustainable fuels](#) which have the potential to completely alter marine travel. All of the wood sourced will be from Norwegian forests, which represent a significant resource for bioenergy production. There is a net positive increment in biomass in Norway – it is growing faster than it is being consumed.

"We hope to pave the way for large-scale biofuel production by 2020, in a way that is completely sustainable and doesn't impact on land usage. Aston University's experience in fast pyrolysis and biofuel production technologies for biomass and biofuel products will contribute considerably in making that goal a reality."

In Scandinavia, fast pyrolysis oil production is rapidly becoming commercialised. Energy company Fortum is to invest €20m in an integrate bio-oil plant, while Swedish packing firm, Billerud, received €32m from the European Commission to build a new biofuel plant based on forest residues.

Provided by Aston University

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