

Clue: A major city



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Britain's water mills given role in clean energy generation

Alok Jha, green technology correspondent

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A salmon jumps Could weir on the river Tweed in the Scottish Borders. Photograph: PA

Britain's iconic water mills, some of which date back to the 11th century, are to become a major force in the fight against climate change.

Mill owners around the UK have started to refurbish their old buildings and install turbines in order to show that they can be used as a source of clean electricity.

Government figures suggest that if the resource is fully tapped, small-scale hydropower from the old mills and weirs could provide up to 10,000GWh per year - 3% of the UK's electricity needs.

"There are a number of hydropower groups that have become established in the country and we're all in the process of installing micro hydropower to generate electricity," said Anthony Battersby, the head of the Somerset-based Mendip Power Group. With more than 20,000 mill sites across the UK, the potential is huge. If government predictions are correct, the transformation of the water mills would save almost 5.5m tonnes of carbon dioxide a year from entering the atmosphere.

Battersby has spent £450,000 on work to convert Tellisford Mill on the river Frome so that it can generate 60kW of power at peak output, enough for more than 50 homes. With a group of local mill owners he has plans for dozens of other conversions over the coming months. There are similar groups across the UK, with several dozen projects in various stages of planning or construction.

"At the moment, most of these are old historic mill sites, which have been used for corn grinding, dye mills, edge-tool mills," Battersby said. "The Domesday Book has in it about 5,600 mill sites, one of which is ours. Water has been harnessed as a source of energy here for over a thousand years."

Environmental campaigners have welcomed the move to convert mills, but warned that a wide-scale adoption of the technology will be hampered unless key elements of the government's energy bill are strengthened when it is debated for the final time by MPs on this week.

"We think the idea of taking the remnants of the last industrial revolution and giving them new life in a future green industrial revolution is incredibly exciting," said Dave Timms of Friends of the Earth. The campaign group says that conversions could provide a useful income stream for local communities whilst helping the UK to meet its climate change targets.

UK homes are responsible for 27% of the country's carbon dioxide emissions. According to the Energy Saving Trust, up to 40% of the UK's electricity could be generated by small-scale renewable energy systems such as hydropower.

The energy from rivers and streams can be harnessed relatively easily using propeller-based turbines with minimal disruption to the flow of the water. Most individual systems would be small, probably no more than 50KW.

David Williams, the chief executive of the British Hydropower Association, said mill sites had been overlooked for too long. "The interest has just ballooned recently. What we are seeing is that it's community interest - people are more willing to work together now. Rather than developing a hydro scheme on their own mill, if they do it as a community, they get better grants and they're looking at it more holistically."

One example of a community scheme is Settle Hydro, a 50KW electricity plant paid for by a local community in Yorkshire. Shares in the scheme cost £1 each and the £300,000 plant will generate enough electricity for 50 homes.

Mill owners are now planning to work together nationally to launch a network of hydropower operators called River Power Microhydro. This will encourage the conversion of mills into electricity generators and members will include community schemes for hydropower, water companies and public bodies such as English Heritage or the Environment Agency who own or control weirs or mill sites.

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