

North West Hydro Resource Model - Grant Awarded £290230

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Summary

Hydro power is a mature and proven technology that helped shape the landscape of North-West England but it is now viewed as a resource with limited opportunity. In the past it determined the location of industry and provided reliable power to carry out a range of tasks. However, since the end of the 19th century its importance has declined. The resource that supported the Industrial Revolution is still contained within the landscape and can still be harnessed to our advantage. With current calls for diverse clean supplies of energy, all resources should be examined and exploited wherever economically possible. This project will identify the potential capacity and define methods to circumvent the barriers to its development. North-West England has both suitable drainage systems and consistent demand making hydro and more especially low-head hydro, an attractive proposition.

There is no single barrier to the utilisation of small hydro power but several obstacles which together impede development. Indeed, the North-West currently does generate a limited amount of hydropower (~1.6 MW, or about 1.4% of the regions renewable capacity (0.6% of generation from less than 10 sites) and occasionally new sites are investigated, both by Utilities or private investors. The obstacles can be thought of as a series of questions that would be posed when deciding whether to develop systems or not. The questions require expertise from a number of disciplines to answer with sufficient confidence and their responses have to be integrated through an economic evaluation to produce a decision. There are a number of potential users of a resource model who will each have different perspectives.

These range from the Environment Agency who, as regulators, control the issue of licences for abstraction, are responsible for the chemical and biological condition and quality of the water, but are also mandated to encourage use of clean renewable power as mitigation for climate change. Large organisations such as United Utilities and Hyder may see the opportunity to exploit market potential, using the tool to target opportunities. At smaller scale, a number of NW organisations are keen to be involved in the expansion of a new system, these include manufacturers, civil engineers and design. Letters of support from several organisations are provided along with offers of help in kind and provision of data.

The project addresses research issues across a number of disciplines and is not designed simply to collate existing knowledge. It is intended

that it will form a framework on which other projects will hang to investigate new turbine designs, the impacts of climate change on NW hydrology, standardised environmental impact assessment and the dynamics of public attitudes. Some of these projects are already being proposed to other funding sources.