

HYDRO- ELECTRICITY



BUILDINGS

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Hydroelectricity

WHY?

Hydroelectricity is a very sustainable form of electricity generation: the water used passes through the turbine and back into the watercourse it came from. It is created by water flowing downhill through a turbine, which spins an electric generator.

Hydro is a very efficient method of generating renewable electricity and was, in fact, a very popular early form of electricity generation. Many modern hydro projects have restored and reused old hydro infrastructure; even waterwheels and old watermills can be adapted to generate electricity.

HOW?

Few churches will have land in the form of a farm or estate, so it is unlikely that you will own a suitable stream or river for a hydro scheme. However, if you are lucky enough to have a watercourse running through your community or through local common land – and can gather support – it may be possible to set up or support a community energy project to benefit your whole area.

HYDRO HAS MANY ADVANTAGES:

- It is a very efficient method of generating renewable electricity.
- The installation type and size can be tailored to exploit the benefits of different watercourses.
- Once installed, hydro turbines are relatively low maintenance (compared to biomass, for example) with a long working life, although they do need an annual service, and someone to keep an eye on them.
- Modern control systems do all the hard work of adjusting flow to achieve maximum efficiency, and can alert by text/email if the system needs to be checked,
- It is good at generating electricity in the winter (when there is less solar power available).



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THERE ARE SOME DISADVANTAGES:

- The most obvious is that you need a suitable stream or river, and either ownership of that land or permission from landowners.
- The rarity means there is a relatively high capital cost of installation and a limited number of specialist contractors.
- Significant preparation is required, including measuring water flows, environmental assessments and care in design to ensure that river ecosystems are not damaged.
- Hydro units typically generate less (or no) electricity in the drier summer months.

THINGS TO CONSIDER:

- The most common micro hydro projects across the UK are those run at community level, ensuring a degree of self-sufficiency and using a local natural free resource.
- A scheme will require planning permission and a water abstraction licence from the Environment Agency.
- Hydro systems usually require a significant amount of civil engineering infrastructure, so you will need a good project manager to ensure the work goes to plan, and keeps to programme and budget.
- Installers should be MCS accredited: <https://mcscertified.com/>

Some useful websites for more information:

- <https://energysavingtrust.org.uk/advice/hydroelectricity/>
- <https://www.renewableenergyhub.co.uk/main/hydroelectricity-information/>

If you are interested in the idea of community energy, these pages may be useful:

- <https://communityenergyengland.org/how-to-pages/how-to>
- <https://www.communityenergyscotland.org.uk/>
- <https://naturalresources.wales/about-us/what-we-do/energy/small-scale-hydro-energy/?lang=en>



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LONGER READS & OTHER RESOURCES

<https://www.british-hydro.org/> is a non-governmental trade membership organisation. There is a lot of information on their website including explanations of different types of hydro and a database of installers.

<https://www.renewableenergyhub.co.uk/main/hydroelectricity-information/>

CASE STUDIES

Western Renewable Energy provides a range of case studies:

http://www.westernrenew.co.uk/wre/case_studies

Please note: Eco Church cannot recommend suppliers. This link has been included in order to provide examples of how the systems work.

STRATEGIC DEVELOPMENT GOALS

Taking action on this topic will contribute to these UN Strategic Development Goals:

