



# **BHA** **Small-scale hydropower in the UK**

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Generation for generations

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British Hydropower Association

[www.british-hydro.org](http://www.british-hydro.org)

# WHAT?

- Hydropower is the world's leading renewable energy source and the, most efficient and long-lasting method of harnessing clean electricity **(See figure 1 on the back page).**
- Up to March 2017 1,063 UK FiT hydro schemes had been accredited (0.2% of the total) with an installed capacity of 184MW (3% of the total) and estimated annual generation of 767GWh per annum (8% of the total). Hydropower punches above its weight.
- We estimate that hydropower developers have spent c£1billion on building FiTs schemes and continue to spend c£30M annually on their operation(1) with 60-90% from UK supply chain.
- We estimate c£100M of this was on the grid connections(1) making a significant contribution to the upgrading of the grid infrastructure in often remote rural areas.
- The development of hydropower schemes requires additional surveys and licences and the primarily civil nature of the construction means that it can take 2-5 years to realise a new scheme.
- Technology and construction costs are not falling for the hydropower sector and the bespoke nature of each site means that the benefits of scale are low.
- The current UK hydropower capacity is around 1.8GW and there could be up to 2GW remaining to be developed(2)



Example 1 - 15kW community scheme in Sussex - screw turbine fitted in a redundant sluice.

# WHY?

- Every hydro scheme built now should still be generating in 2050 (and 2070), contributing to the 80% CO2 reduction target. This is not the case for any other power generation technology.
- In the UK, Hydro-generated output is heavily biased towards the winter months, when energy is most needed.
- Where topography allows, hydro with a reservoir is the most efficient way of storing dispatchable energy.
- Run-of-river hydro is relatively predictable (i.e. it varies only slowly with river flows), and can be available 24/7, so can be relied on to help with the daily peaks.
- Maximising hydropower's position in the energy mix will become increasingly important as we move to a future of greater renewable energy penetration.
- It massively outperforms other renewables on both 'energy payback' (less than 1 year for the energy generated to exceed the energy used to build) and lifetime CO2 reductions per kW installed(3) **(See figure 2 on the back page).**
- There is an opportunity for remote hydropower schemes to support the planned electrification of the transport network by providing both much needed generation in often remote communities and with the co-location of vehicle charging points in areas where it may otherwise not be financially viable.
- The UK hydropower industry supports 7,400 jobs(4) and as the majority of the UK hydropower schemes have been located in relatively remote rural areas so their construction and operation is supporting local employment, businesses and supply chain.
- Small-Scale hydropower has the highest UK public acceptance among all renewables.
- Tackling climate change is a top issue for 18 to 28 year-olds(5) in the UK and the Government has provided no evidence that consumers are unwilling to pay the <1£ per household, annually required to continue support for the hydropower element of the FiTs(6).
- Operational hydropower plants produce no hazardous waste streams, they do not lead to contamination issues and schemes can be decommissioned with minimal cost.



100kW community scheme in North Wales - low visual impact infrastructure.

## HOW?

- If the Government is serious about having a UK hydropower industry we need a level playing field with fossil fuel generators. This must include recognition of the damage caused by the CO<sub>2</sub> emitted by these generators.
- A long-term strategy for a sustainable renewables sector, including hydropower, is urgently required. For the small-scale hydropower industry to survive this should include:
  - A future revenue stream which is sufficient to support a long-term investment. This could include the wholesale price, carbon pricing and ancillary services combined with a supported guaranteed route for market (at a bespoke level for the hydropower sector).
  - Increase of route to market opportunities including the removal of 'red tape' around 'peer-to-peer' trading to allow additional value for both generator and local consumers.
- Access to long-term low-cost finance – such as via local authorities through the Public Works Loan Board, the Government or Utilise national and green banking structures which recognises the longevity of hydro assets.
- Create a level playing field through implementing appropriate changes to the planning system, business rates and water abstraction license fees.
- Provide recognition of the cost of grid network upgrades associated with new hydropower developments.

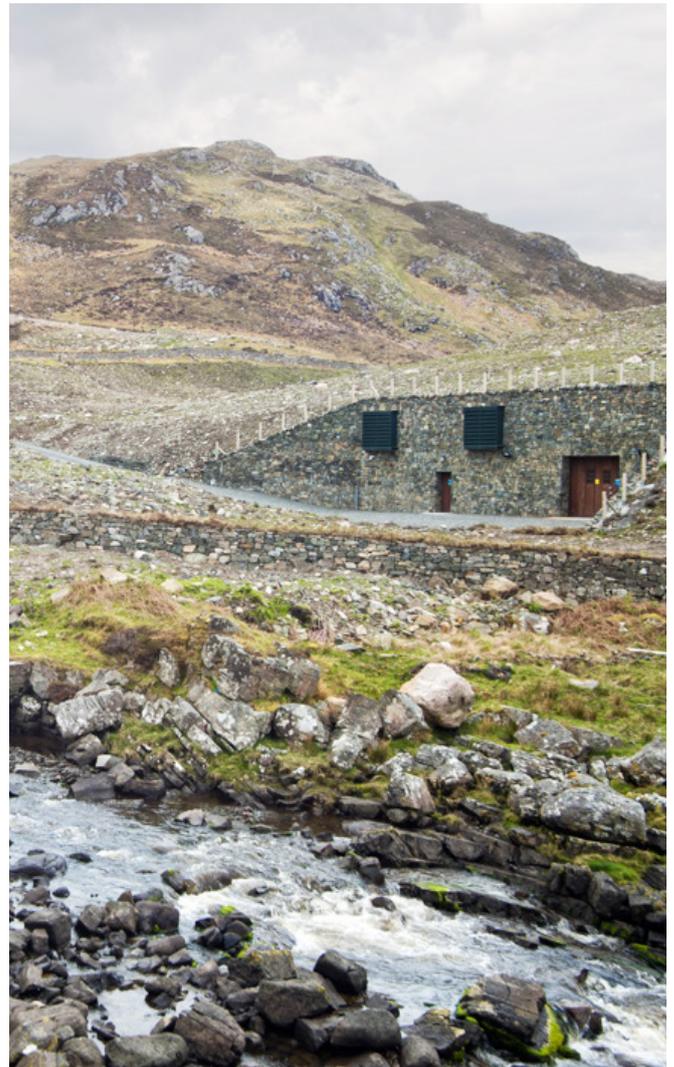
**In the meantime there needs to be an extension to the FIT scheme to mitigate the imminent cliff edge of the 31 March 2019 until there are alternative mechanisms in place.**

**The hydropower industry needs your support.**

## IF NOT...

- If support does not continue for the industry further UK hydropower deployment beyond April 2019 will cease.
- There will be no new projects, companies will fold, UK expertise will be lost. It really is as bad as that.
- All of this impact on job losses, the crippling of an industry and the increased CO<sub>2</sub> emissions is for the sake of a future saving of 1£ per household, annually required to continue support for the hydropower element of the FITs. How can that possibly be described as an "undue burden on consumer bills"? (6)

**New 4,000kW hydro scheme with buried pipeline and powerhouse utilising water from an existing loch which has been raised using a small dam to create a storage reservoir.**



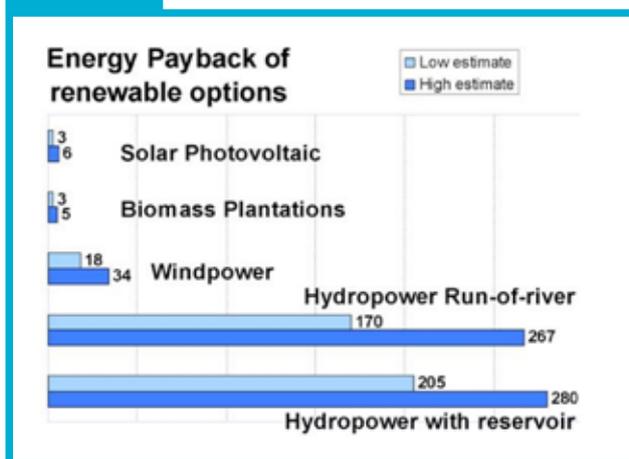
# References

- 1 Estimated from the BHA commissioned the Poyry report [2015]
- 2 Hydropower and Dams 2017
- 3 Civilisation and energy payback, Luc Gagnon, Energy Policy Journal 36 (2008), Elsevier 2008.
- 4 Department for Business Innovation and Skills – 2015 – ‘Size and Performance of the UK Low Carbon Economy’.
- 5 2017 survey by the Times newspaper.
- 6 BEIS Feed-in Tariff Consultation Impact Assessment 2018.



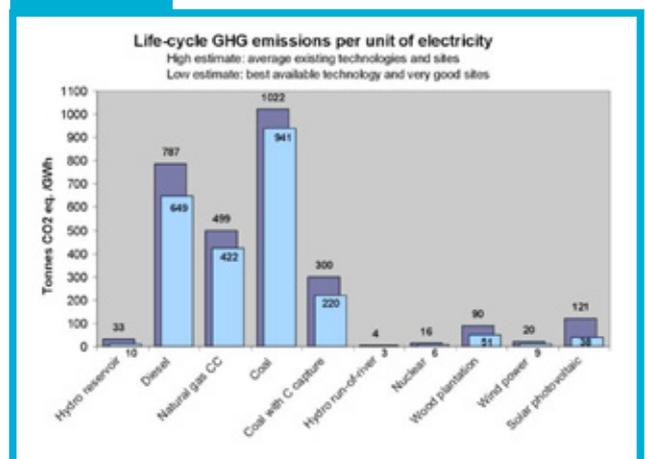
Modern 350kW hydro scheme in Scotland located on a poplar walking path and directly connected to an Electric Vehicle charger.

FIGURE 1\*



\*Reference 3

FIGURE 2\*



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