

HYDROPOWER

Reduced flow of subsidies for Welsh hydro, but plenty of opportunity

There is plenty of life in Scotland's small-scale hydropower industry, but what is the situation in similarly rainy Wales? Here, Crispin Angood from renewable energy consultancy Dulas writes.



The Llys Y Fran project near Haverfordwest – a hydro scheme that controls the flow release to the Afon Syfynwy in order to support abstraction at Dyr Cymru's Canaston Bridge pumping station. The project has an installed capacity of up to 250 kW and the power generated will be exported to the grid via an existing connection.

Photo: Dulas

Wales provides great opportunities for hydropower development, a landscape of verdant hills dotted with streams, rivers and lakes with the potential to provide sustainable energy for local communities and the wider grid. Over the past couple of decades, Welsh hydropower capacity has risen to 163 MW, roughly 4% of all renewable energy generation in the principality.

While this may seem like a small fraction, especially in comparison with almost wholly hydro-dependent countries like Norway, it represents significant growth – the number of hydroelectric schemes has risen sharply, from 45 in 2000 to 175 in 2016.

It seems that this growth is destined to continue. The model of small hydropower projects providing power to local communities, alongside energy

storage, fits well into the government's 2015 *Well-Being of Future Generations Act*. Also, recent interest in hydropower has led to a series of government-guided consultations and a report led by Dulas on how to reduce the environmental impact of hydropower developments while growing opportunities for small-scale projects.

Alongside Welsh plans for 70% renewable energy by 2030, there is good reason to anticipate a boost in hydro installations over the coming decades.

However, despite these positive signs, Welsh hydropower faces challenges to its expansion in the longer term. For a start, feed-in tariff uptake is waning as policy and regulatory support at a UK-wide level has dropped in the past few years. Moreover, the complex environmental factors at play make it difficult to determine where – and how – hydropower can be developed without negatively impacting the local environment. Due to the difficulties in establishing environmental damage, hydropower projects often face long and costly planning procedures that disincentivise local parties from development.

Appropriate planning permissions

The question of planning is vital to Welsh hydropower. The majority of projects in the pipeline are likely to be new-build projects, meaning that they will require appropriate planning permissions. While the Welsh Government's 2016 report: *Energy Generation in Wales*, highlights the large number of additional sites available for hydropower, many of these are based in North Wales, where environmental regulations often complicate or forestall development.

After consultation, a recent

hydro storage development in Llanberis by Snowdonia Pumped Hydro has used underground cables to connect to the national grid instead of a pylon network. This is an essential move to avoid leaving a mark on picturesque Snowdonia, a UNESCO World Heritage Site, this type of restriction also raises project overheads and would make it difficult for smaller developers to raise the initial funds necessary to construct hydropower projects.

While some projects may avoid planning obstacles by developing existing reservoirs such as Dulas' recent 250 kW installation at Llys y Fran reservoir (pictured); the difficulty of gaining approval for schemes, particularly given the absence of subsidies to bring down initial costs, is prohibitive for many hydropower developments.

Nonetheless, this year has seen a move towards easier planning and development for hydropower schemes. In January, the Welsh government published findings from Dulas in a report: *Permitted Development Rights and Small-scale, Low Risk Hydropower*, with a view to identifying how Permitted Development Rights (PDR) could be introduced for smaller projects.

The study revealed that installed capacity is not a good measure of environmental impacts – a 1 kW low-head scheme that depends on a high flow rate may have a bigger intake structure and therefore pose more environmental risk than a 100 kW scheme running off a 200 m head with a lesser requirement for construction activity and materials, for example. It also provided ways in which legislation may account for environmental impacts while allowing PDR for hydropower, even in areas of outstanding natural beauty or National Parks.

A number of requirements can

be met to ensure minimal damage, including distance from residential properties of the powerhouse, preferred intake designs and length and width of pipelines. In general, these criteria are based upon siting, design and planning aspects that will enable a thorough understanding of the environmental impact of hydropower projects, and thus lead the way to revised planning restrictions.

Support programmes

Furthermore, a recent grant scheme by the Welsh government has opened up new opportunities for local communities to invest in hydropower. The grant offers 100% relief on business rates for community schemes with a rateable value of up to £50,000. In accordance with the *Well-Being of Future Generations Act*, this is a valuable step towards local energy independence and provides a chance for farming communities to supplement their income with energy provision to the grid, as Welsh farming markets are hit by a fall in lamb prices and the upcoming withdrawal of European Union subsidies post-Brexit.

While the Welsh government is yet to legislate to allow PDR for hydropower, it is a clear sign of

intention to support small-scale hydropower despite waning support for renewables across the wider UK.

If these regulatory changes are enacted, then it is likely that a rise in hydropower will follow. Among 30 hydropower stakeholders who responded to the Dulas report, including seven planning authorities and Natural Resources Wales, there was a strong positive response to PDR introduction for both domestic and non-domestic schemes. Although a slight majority of planning authorities disagreed with the move, overall around 80% of parties were in favour of introducing PDR. This suggests that not only is the Welsh government investigating small-scale hydropower with a view to greater implementation, but there is genuine interest in future development.

A promising year

All in all, 2018 has been a promising year for Welsh hydropower, and may yet prove to be pivotal in the future role of hydroelectric power as part of Wales' energy mix. Easing of planning regulation and grants are an encouraging sign for small-scale development, which may allow projects to take advantage

of Wales' substantial hydropower potential without running into environmental problems.

In general, the willingness of groups to collaboratively establish the factors holding back hydropower is a positive sign for future development, especially given that one of the largest historical problems leading to environmental issues has been a lack of consideration of construction techniques.

It is worth bearing in mind the benefits of Welsh hydropower: not only does it allow local communities an income supplement and energy independence, but it allows Wales to make the most of its vast amount of water storage to both provide and regulate renewable power across the country. Whether or not Wales will take full advantage of its impressive water resources remains to be seen, but 2018 has seen a move in the right direction. ●

Crispin Angood is a Principle Engineer with Dulas, dulas.org.uk

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