

MICRO HYDRO POWER FOR GENERATING SUSTAINABLE ELECTRICITY

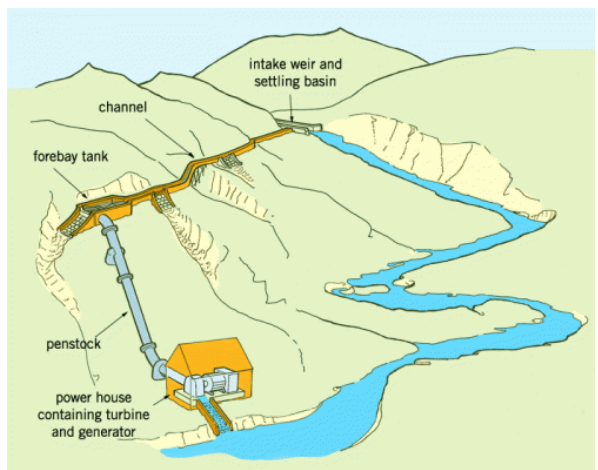
One of the winners of the [P2015 UK Ashden Prize](#) is the experience brought by TGV Hydro in generating sustainable electricity from micro hydro systems throughout several rural communities in Wales.

[TGV Hydro Ltd](#) (subsidiary of The Green Valleys Community Interest Company - CIC), has been working since 2010 in developing 23 micro-hydro sites across Wales. The sustainable approaches towards these hydro systems starts from scraps as costs and impact to the environment are reduced by involving site owners in construction works, local manufacturers and local materials. By working with local planning authorities in a number of different regions enabled also to create a model of micro-hydro that could be replicated elsewhere and demonstrate how micro-hydro projects have a low environmental impact. In addition, the generated renewable electricity can be also inputted into the national grid, so farmers and communities using and managing these hydro systems can also diversify their incomes. As an example of this statement, the micro-hydro sites built in Wales, have a capacity of generating 472 kW which in turn save 850 tonnes of CO2 per year.

Within this context, the prize recognized that TGV Hydro has played a game-changing role in creating a model for micro-hydro development in Wales and also proving that renewable energy can generate new income for rural communities. The Ashden initiative, by its international prizes and programmes, is also promoting [the micro-hydro technologies](#) to re-energize local communities in different countries of the world.

In fact, in rural areas, power from the natural flow of streams and small rivers can be harnessed to bring clean, reliable electricity to communities. Small-scale hydro schemes can bring electricity in the communities providing lighting and communications for homes, schools, health centers and community services, for purifying and pumping drinking water.

The electrical power generated can also support small businesses and this is a major benefit from these systems compared to solar home systems which provide less power. Adding to this is the low maintenance and running costs as electricity can be supplied for 24 hours a day. Compared with other small-scale electricity generating options, such as solar, wind and biogas, hydropower is usually the cheapest option per kilowatt-hour. That makes it appealing for rural enterprises that need lots of energy and a secure supply.



The development of micro-hydro systems in developing countries is supported by numerous and qualified international organizations. The [Practical Actio Initiative](#), for example, has developed micro-hydro systems within communities in Peru, Zimbabwe, Sri Lanka, and Kenya.

These technologies, which were popular in industrialized countries in the past and have been replaced with energy solutions with higher energy yield but high in environmental impacts, are now enjoying renewed interest thanks to a new awareness on the urgency of a low carbon transition. Nowadays many industrialized countries are starting up new or recovering systems of micro turbines in order to cover the energy needs of rural areas and also to encourage greater participation of local actors in their management.

The hydroelectric potential is huge. Today, globally 22% of all electricity is produced from water and according to the World Energy Conference the global hydropower production could triple by 2020. Within this context, mini hydro has great potentials to play a relevant role in several countries in their sustainable development path and processes. In Spain, for example, it is estimated that in 2010 there were 1135 operative mini hydropower plants recovered from the 1740 operating in the 60's. The Institute for Diversification and Energy Saving IDAE is considering the opportunity to recover the great potential of hydraulic mini dams in Spain.

From the impact and construction perspective, the mini hydropower plants do not require reservoirs and/or large constructions that alter or destroy the water source ecosystem as mini hydropower systems are much more environmentally friendly compared to larger dams as they adapt to the river conditions (water levels, flow power, etc..) resulting in low environmental impact. Besides the cost for its infrastructural development is low.

Amongst the main environmental benefits deriving from micro-hydro systems is the reduced greenhouse gas emissions and local pollution resulting from the reduced use of fossil fuels. This includes kerosene for lighting, diesel for running machinery, and fossil fuels for generating electricity. Further, small-scale hydro schemes take only a limited amount of water from a river or stream, have a small storage volume, and return the water a short distance downstream, and thus have very little environmental impact. As a matter of fact, several small hydro systems have less environmental impact than a single large hydro scheme supplying the same power.

In addition, these technologies can be developed with local materials, executed by local companies and can be managed by local cooperatives or communities de-linking them from major energy services providers.

Finally, micro-hydro systems are part of the new trends to encourage energy production across the territories, taking advantage of the full potential. Each area, in fact, has many potential sources of energy (water, sun, wind and waste) that can be developed through small-scale



systems, managed by local enterprises and communities, generating relevant environmental and economic benefits to the territory.

To know more

[2015 Ashden Prize](#)

[TGV case study Ashden 2015](#)

[TGVhydro website](#)

[Practical Action](#)

[Practical Action documents on hydropower](#)

[Article in greenarmonyhome.org](#)

[Mini hydro in energypedia.info](#)

[Mini hydro in Wikipedia](#)

[Manual in solucionessolares.blogspot](#)

[Article in nationalgeographic.com](#)

[Guide on minihydro energy - Spain](#)

[Article in renovablesverdes.com](#)

[Article in WWF Spain website](#)

[Article in ecologiaactual.com](#)

[Article in nordtrade.com](#)

