

## Henfron Farm, Elan Valley

Henfron farm is a traditional mountain sheep farm in the hillsides of mid Wales. Tony and Angela produce only mutton, not lamb. Producing mutton has several environmental advantages. For example, feed does not have to be imported (silage is produced on the farm) and lambing can occur outdoors. The owners of the farm have also taken considerable steps to reduce the farm's impact on the environment by producing their own power, reducing their energy consumption, and promoting biodiversity of local wildlife.

The hill farm consists of 1,700 acres, most of which is unfenced moorland. The farm is off grid, so producing power is a necessity as well as an environmental choice. The farm has a 24 V battery storage system that is charged by a diesel generator, solar panels, and a wind turbine. Storage batteries are usually very expensive (£650 each), but Elan Valley managed to buy their 12 batteries for £25 each from ebay. The batteries are connected to an inverter which charges the batteries while the generator is running and converts the 24 V power back to 240 V AC when the generator is stopped.

The wind turbine is a Future Energy FE1024 with a 24 V, 1 kW permanent magnet alternator. The turbine cost £600. In order to save money, the tower and base were made in the farm workshop from second hand steel. The turbine is mobile so that it can be removed from the field during harvest. Second hand armoured cable connects the turbine to the battery storage system. The turbine only reaches maximum efficiency during windy weather, so it is estimated that the turbine provides about 20% of the farm's electricity over the course of a year.

A significant amount of Elan Valley's electricity production comes from solar panels. The farm received a grant for 50% of the value of the panels, so they were able to buy a 1.7 kW solar array for about £4,500. During the summer months, the panels provide about 90% of the farm's electricity. During the winter, however, the solar panels are almost useless.

Elan Valley's renewable energy sources have significantly reduced the price of their electricity. When the farm used a diesel generator to produce 8 hours of electricity per day, the cost of the farm's electricity was approximately £2,500 per year. The cost per unit including fuel, depreciation and maintenance was 60p. Adding a 1.5 tonne battery storage system halved the generator usage to 4 hours per day and provided the farm with 24-hour electricity at a reduced cost of £1,500 per year (36p per kWh). Adding the solar array and the wind turbine reduced the generator usage even further so that it was only needed for calm periods during the autumn. Taking into account the fact that the wind turbine has



a forecasted life of 5 years and the solar panels have a 25-year warranty, the cost of electricity reduced to £500 per year (22p per kWh).

Despite the fact that Elan Valley reduced their electricity costs by over 60% by using a battery storage system and renewable energy sources, their cost of electricity is still much higher than national grid prices (currently at about 9p per kWh). Until the price of wind turbines and solar panels go down, setting up a farm to run off renewable energy sources can be quite expensive. Tony recommends that "the best thing to do is just cut your energy usage in the first place. It's simple things you can do, like not staying in the shower for too long, and making sure lights are turned off when they're not needed. You don't have to live on a hill in the middle of Wales to save energy."

Elan Valley also reduce resource consumption by using horses on the farm, reusing waste paper as bedding for the dogs, having paper bags instead of plastic bags, recycling plastics at the community recycling centre, and composting biodegradable waste.

To encourage local wildlife, the farm owners have put up 1,000 bird boxes and have created a pond. They have also been working on regenerating the old woodland and have been replanting the hedgerows.

Future plans for the farm include increased mutton refrigeration that will require additional electricity. To compensate for this, they intend to install a 300-Watt water turbine that will produce an additional 5 kWh per day that will more than cover the additional electricity required.

For further information, please visit their website at [www.elanvalleymutton.co.uk](http://www.elanvalleymutton.co.uk), or contact them at Elan Valley Mutton Co, Henfron Farm, Elan Valley, Rhayader, Powys, LD6 5HE, T: 01597 811240

Soil Association  
Trade and producer support team  
**South Plaza, Marlborough Street,  
Bristol BS1 3NX**  
T 0117 914 2400  
F 0117 314 5001  
E [ff@soilassociation.org](mailto:ff@soilassociation.org)  
W [www.soilassociation.org/foodandfarming](http://www.soilassociation.org/foodandfarming)