



Green Centre News

Latest News

- The Green Centre is planning monthly 'themed' displays.
- Organized to coincide with its usual Saturday opening hours, the next of these is on Saturday 4th May, when to celebrate Composting Week, we will have several Master Composters on hand to answer any questions on getting started.
- As mentioned in January's newsletter, our rent is to double this year. This is a big drain on resources we'd rather use for campaigning—so if you're able to help, or have ideas for how we could raise funds towards it, we'd love to hear from you.

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Seaweed, our new Black Gold? by Phil Corlett and Cat Turner

On Thursday April 11th, Dr Chris Greenwell and colleagues from Durham University gave a public presentation on the potential for converting beachcast seaweed into energy.

At present, it costs thousands of pounds each year to remove seaweed from Douglas beach alone— so the possibility of using it in generating electricity for which we are currently importing gas at prices over which we have no control, is appealing; and it could have real benefits for local economic development. This is particularly true because the technology is as-yet still new enough not to have been tied up by large, established firms.

There are, of course, challenges: seasonality can be an issue, as seaweed starts to grow in February, and is generally at its optimal level of growth in August-September. Once cut or beachcast, it decomposes very quickly – and so to ensure a supply year round, needs preserving. Drying it is expensive so at Durham, they've patented technology which keeps wet weed viable for up to 15 months. Water content is another potential problem; however, anaerobic digestion to provide biogas can be done using wet weed under Durham's proposals.

This is all good news: it means that beachcast (or even, to ensure regularity of supply, specially cultivated) seaweed can be used as an energy crop that doesn't conflict with land based farming, can be used wet to generate biogas and can now be harvested and stored for a year if need be, to ensure smooth supply. It's been done in Japan and is proving successful.

Using the same technology, other waste products could also be put to good use: for example, that from the creamery, brewery or sewage plant. In fact this would actually improve both energy resilience, and energy output. (Cont'd page 3).

Veggie Recipe: hot & sour mushroom soup by Cat Turner, IoM FoE

For 4-6 people you'll need:

- 30 to 40 mixed mushrooms: common (button) are fine, shiitake/oyster if available
- 1 1/2 qts. clear vegetable broth
- 2 baby pak choy, stems thinly sliced crosswise and leaves halved lengthwise.
- 2 tbsps thinly slivered fresh ginger, divided
- 1 large hot chilli, seeded and thinly sliced
- 2 tbsps rice vinegar
- About 1/2 tsp chilli sauce
- 1 teaspoon toasted sesame oil
- 3 green onions, thinly sliced
- About 1/4 cup loosely packed parsley.

This takes about 30 minutes.

1. Slice the mushrooms, and put in a pot with the broth. Bring to a boil, covered.
2. Reduce the heat and simmer until mushrooms are almost tender, which should take about 5 minutes.
3. Add the pak choy, 1 tbsp. ginger, and the chillis and simmer for 2 minutes.
4. Remove from the heat. Stir in the remaining 1 tbsp. ginger, the vinegar, chilli sauce and sesame oil.
5. Top with green onions and cilantro, and enjoy.

Renewable Energy Targets *by George Fincher of MEAC*

Many countries and regions are now setting aggressive targets and moving toward full 100 percent integration of renewables into their electricity supply. Some are even suggesting greater renewable electricity generation to meet not only electricity supply but also heat and transport.

Today wind turbines generate nearly 30 percent of Danish electricity. The Danes have also been building hundreds of biogas digesters and waste-to-energy plants as well. Together, wind and biomass provide 44% of the electricity consumed by Denmark's nearly six million inhabitants. On 20 March, just after midnight, Denmark's wind turbines alone were generating more than 100 percent of the country's consumption. The list of countries, states, and regions with 100 percent renewable targets is growing.

In spring last year the Danish energy minister and then holder of the EU Presidency, Martin Lidegaard issued the country's [100 percent Renewable Energy Declaration](#). Denmark proposes to meet more than 50 percent of its electricity supply with renewables by 2020, 100 percent of electricity and heat by 2035, and 100 percent in transport by 2050. "I think it's doable, I think it's necessary, and it's also good for the economy," said Lidegaard in the declaration.

The German state of Schleswig-Holstein has set itself a target of 100 percent of interior electricity consumption by 2020. The states of Rheinland-Pfalz and Brandenburg have set their targets of 100% renewable for 2030. [Brandenburg](#) expects to meet its target in part by [decreasing electricity consumption 1% per year and setting aside 2% of the state's land area for wind energy](#).

Germany has the objective of generating 80 percent of its electricity from Renewables by 2050. The debate has now shifted to how much sooner can they reach that target and at what will be the cost in doing so. This autumn, the city of Kassell will host the 5th 100 percent Renewable Energy Regions Congress. Organizers note that more than 130 regions and municipalities have set themselves the target of providing 100% of their energy supply with renewable energy in the medium to long term."

The Austrian state of Upper Austria has set a target of 100 percent renewables in heat and electricity by 2030. Scotland has set itself the ambitious target of 100 percent renewables in electricity supply by 2020 mostly from wind energy. And in Europe all members of the European Union have binding - not aspirational - 2020 renewable targets. Advocates are now suggesting that Europe itself could move toward 100% renewable energy by 2050.

Jacobson, a Stanford academic, the World Wildlife Fund, and others have shown that the world could produce 100 percent of its energy needs by 2050 with renewable energy.

Meanwhile, the IOM is still just about managing to cling on to a target of 15% of electricity generation from renewables by 2015. Many expect this target to be missed. Wouldn't it be nice to be leading the pack rather than making excuses about why the 15:15 target is too hard to achieve?

"I think it's doable, I think it's necessary, and it's also good for the economy."

Solar arrays should be automatically included in energy strategies—even in less sunny climates, such as ours!



Seaweed – a new Black Gold? *Cont'd*

This is because seaweed is predominantly a sugar-based crop, ie composed of carbon and oxygen. The microbes that carry out the anaerobic digestion prefer a balanced diet, with other nutrients such as nitrogen and phosphorous; so it's a good idea to "co-digest" waste streams – and in tests, creamery wastes have been used to good effect – and there are plenty of other possibilities. The output of the anaerobic digester are biogas (a carbon dioxide/methane mix), a liquor and a sludge. This sludge can be treated to release back some nutrients and reduce its volume further, and used on the land to improve soil fertility..

From an economics point of view, this is important. The team estimate that biogas generation from seaweed can be made to "break even" without the need for subsidies – but this is best achieved, of course, if the money made from this new source of electricity generation comes by using waste streams that would otherwise cost significant amounts for disposal. Whilst further analysis is needed, it's possible that the not-insignificant costs to Douglas Corporation of clearing the beach, and the discharge certificates needed for creamery waste, could make for a viable economic model here on our Island.



So why would Durham choose the Isle of Man to carry out trials? The speakers pointed out that there's increasing global interest in seaweed as a bioenergy crop: as well as the Japanese project, the UK - mostly via the Crown Estates – and the EU (especially Norway & Portugal) have also already been carrying out their own experiments. However, they suggest that our Island has arguably one of the best potential locations around. For one thing, it has a long coastline relative to its land surface, offering plenty of potential for weed harvesting or even cultivation. Further, it has, in the Manx Electricity Authority, a vertically integrated energy authority, a range of potential co-digestates, and a maritime community well used to using the sea as a resource.

On top of all this, we own the immediately surrounding sea bed ourselves, so might well find that some of the the barriers to development were (relatively) easy to overcome. In addition, as most readers will appreciate, we suffer from elevated energy prices because of our island status, and we have a population of a size where biogas could make a significant contribution to renewable energy targets. All told, Dr Greenwell suggests that "if we can't make the economics work here, it's unlikely to work anywhere!".

The team at Durham have obtained some limited funding to develop their ideas further, potentially enabling them to establish seaweed cultivation trials through their research group, here on the Island. It's already apparent that from the Island's perspective, we need to be doing our bottom-up planning for better integration of sewerage, electricity, waste management and gas processes – so that the next time we need to invest in these utilities, we can do so in an optimal way. Further, we clearly need to make better and more thoughtful use of the natural resources we have on and around our Island. These trials could make a really valuable contribution to all of the above objectives – with the additional potential spin-offs of a viable cluster of firms in food, biomedical and tourism activities. On this basis, it'll be exciting to see what happens next!

A note for permaculture advocates: For our permaculturist readers, it's interesting to note that this approach is highly consistent with permaculture principles – specifically:

- let the problem be the solution (a seaweed problem becomes a part solution to the cost of electricity)
- produce no waste (the waste seaweed, creamery products and sewage outputs stop being 'waste' and start being useful fuel)
- for every critical process, have multiple potential solutions (having these biological contributors to our electricity gives us added resilience and security, helping create diverse energy sources which can protect us in the event of the loss of any one of them) and
- for every process, have multiple outputs (some of the by-products of biodigestion can also be used on the land to improve fertility as well).

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You can find the
Government's new
Waste Strategy on
the Department of
Infrastructure's
website.
Alternatively, we
have a few hard
copies in the Green
Centre.

Campaigning for the Island's environment

The Island's New Waste Policy *by Muriel Garland, Chair of ZWM*

The Government Policy Review Report back in 2000 included a policy statement to develop an integrated waste management plan embracing reduction, re-use and recovery, recycling, incineration with energy recovery and landfill. So far so good - although the term 'waste management' implies that we'll carry on producing rubbish, and our main problem will be to dispose of it.

The report then went on to specify programmes and projects to be pursued by the Department of Local Government and the Environment. These included a Waste Management Plan for the island, an integrated incinerator (and yes, they did call it an incinerator back then!) and ensuring there was adequate landfill capacity and other items such as the creation of civic amenity sites and of a separate Waste Management Board, separating operations from regulation, which never came to fruition.



I suspect that few people outside Tynwald and DLGE ever read the Waste Management Plan, which was produced in November 2000 and designed to cover the period 2000-2020. It includes charts where figures for waste arisings were largely unknown. There was no indication of how the general public would be educated about waste, although there were going to be 'waste minimisation initiatives in all government departments'. We must have blinked and missed that one!

They did however appoint a recycling officer within DLGE Waste Operations Management Unit WOMU. It also stated that the Waste Management Plan should be subject to major review and update every five years in 2005, 2010 and 2015.

So Zero Waste Mann was very disappointed when 2010 came and went without any review being carried out. Meanwhile, waste management has been moved to the Department of Infrastructure - where it appears as part of Operations on their website. There are a few tips about reducing waste and recycling. The very enthusiastic and energetic former recycling officer, Stephanie Gray, has moved to another department and has not at the time of writing been replaced.

In fact, we had to wait until 2012 for the Department of Infrastructure to review its waste policy, and we were invited to attend a couple of meetings to put our point of view. The Waste Policy and Strategy 2010-2022 emerged quietly - you might even say silently - earlier this year. No fuss, no publicity, no discussion, no reaction. But from our point of view, there was a measure of success, because it states that the department's ambition can be defined as 'Towards Zero Waste'. So we seem to have had an effect on paper, if not on the ground. Now we're looking forward to the implementation of this ambitious target, and to making zero waste a reality here on the Island.

If you would like to read the revised policy and strategy you can find it on this link:-
http://www.gov.im/lib/docs/transport/operations/waste//22552infwastepolicyandstrategy_.pdf
Pdf. Alternatively, you can access it via the DOI's website, and for those who don't have access to the Internet, we also have a few printed copies at the Green Centre.