

## Green Housing

or walk softly upon the earth

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When Brendan asked me for a piece on Green and housing, before returning to the essence, my thoughts immediately went to the alarming statistics which true or false will be in everyone's minds:-

- In my grand-mother's lifetime as many humans were born as in all history beforehand.
- The numbers and consumption mean that humans are now living off the capital and no longer out of the interest in terms of resources.
- Even George Bush Junior seems to acknowledge this might be true.

and, closer to home:-

- 80% of the food eaten in Greater London comes from overseas.

Do remember that all pollution - whether noxious fumes, CO<sup>2</sup>, heat or light - represents resources and thus money going to waste. There is no conflict between environmental and economic considerations, only defects in the way that financial markets operate.

The essence however is what we could do with our house in Highgate. Firstly to dispose of actual generation of power: even the Centre for Alternative Technology (CAT) in Machynlleth advises that this is not an economic prospect for existing houses in towns where winds are fickle and photo-electric cells inefficient. This may be exacerbated by the grid not charging for the balance of electricity bought in, but paying a pittance for what sold to them while still charging full rate for what the consumer buys in. Turbines conventionally available have to be connected to the grid, although CAT can advise on ones where surplus generation can be fed into batteries or storage heaters. Car batteries are not appropriate being designed for rapid depletion and recharging.

Solar heating for domestic hot water on the other hand can make a real contribution to heating and its costs, especially in summer when a main boiler can be left off. It doesn't suit our house, because the available roof-slopes face either too far north or to the street where I would rather defer to appearance. The panels should face within 45 degrees of south and not be shaded by trees, but do not have to be on roofs. If this might suit you, beware of over-priced offers. Never sign up under pressure; always get more than one quote; Get advice from for instance an Energy Efficiency Advice Centre 0800 512012 or [www.eec.org.uk](http://www.eec.org.uk).

Heating by wood can be renewable, absorbing as much carbon dioxide as it grows as it releases when burned. Where wood is not readily available locally there is still the option of wood-pellet burning stoves with automatic feeds available with solar-water heating for summer, but the cost may be twice that of a condensing gas boiler. Condensing gas boilers are dependent on increasingly imported supplies, but are surprisingly energy-efficient.

Water run-off in town should be mitigated by permeable paving at ground-level, and by green or brown roofs. The roofs act as insulation as well as moderating water

run-off. They vary from green sedum roofs with little benefit to biodiversity, through wild-flower meadow planting to brown roofs which replicate the bomb sites of the second world war colonised by Black Redstarts. Such roofs and their added weight are unlikely to suit existing buildings, but lightweight inverted roof insulation can often be added to flat roofs to improve performance and slow down degradation by way of thermal movement or condensation.

On mains supplies in towns water is wasted with potable water being flushed down the loo or filling baths. Taking a shower in a bath with the plug in place shows how little water and power is used. Modern taps are easy to turn off and on, and from hot to cold, saving what may have been wasted leaving turn-handle taps running, and water butts perhaps on out-building roofs can serve ground floor wc's as well as other uses with 'grey-water'.

New timber windows now perform as well as upvc or aluminium and with two big advantages. Firstly their manufacture does not have the terrible environmental impact and, secondly, they can when necessary be repaired by a carpenter on site rather than thrown out and replaced. They also look incomparably better.

But I am not talking here about new buildings, I am looking at what can simply be done to our own existing house. Firstly, leave it alone. 20 or more years worth of energy in use is represented by the embedded energy that is expended in demolition and rebuilding. What next?

- Like most houses we have 100mm (4") of loft insulation but (a) none over the loft hatches allowing heat to rise freely into the winter sky, (b) none around the shaft up to a single-glazed sky-light similarly and (c) present recommendations for new building would be 250mm (10"). This shortfall can be addressed by rigid insulation fixed up between the rafters over the attic now with integral vapour barrier to the warm underside preventing condensation previously a risk. More insulation over the attic floor would hide the joists that you have to step on and cover electrical wiring which might then overheat. Also, obviously, insulation in the attic around the shaft and, when the roof is re-slatted, a double-glazed replacement roof-light. In the meanwhile we do set a twin-skinned translucent plastic sheet 'lay-light' at ceiling level in winter.
- I have never checked in the in the 24 years we have been here, but I suspect that our predecessors never continued loft insulation under the original and now redundant but vast galvanised water tank in the rear extension loft. It would be easier to drop granular or quilt insulation into it than to cut it up and take it out.
- The front door is inset with an exposing the underside of the floor above without insulation. Although heat rises there will be heat loss by conduction which should be reduced by a panel of rigid insulation to the recessed porch ceiling.
- The front ground-floor bay window has a metal-lined trough in the roof drained out to one side which could easily accommodate external 'inverted' roof insulation of expanded material with closed-cells not to fill up like a sponge.

- Ground-floor insulation might be added between floor joists by lifting boards next time the carpet is renewed.
- A terraced house has relatively small areas of external wall and heat loss will principally be at two points. One where the temperature is greatest, behind radiators, we have addressed with the foil-faced thin flexible insulation available from any DIY place. Obviously, also, do not place furniture between the radiators and the rooms to be heated.  
The other is the long north-facing two-storey flank wall to the rear extension, all only one-brick, 225mm (9") thick. External insulation masking the facing brickwork which may or may not be acceptable as being less than a 'material change of appearance' requiring planning consent. Internal insulation may be an easier alternative still of some benefit. The proprietary product 'Sempatap' is promoted by energy-saving agencies is a flexible layer of foamed material that can be applied like wall-paper before redecorating. It does not explicitly claim to have the internal vapour-control layer recommended, especially in bathrooms or kitchens, and it may do more for comfort than heat loss but this would still be valuable, and reduce temptation to increase air-temperatures to compensate for low surface temperatures in the rooms.

It is not surprising that our spare bedroom with its thin north-facing wall and beneath the un-insulated attic floor below the old water tank is the coldest room in the house.

- Thermostatic radiator valves, long overdue, fitted to all of the radiators during the summer shut-down will avoid the need to heat the whole house to the temperature needed only in a few rooms.
- A condensing gas boiler will be significantly more efficient, saving money as well as carbon emissions, than the current one which resolutely fails to go wrong after 25 years of neglectful use. A new boiler is notifiable under building regulations.
- Preferably the new boiler would be accompanied by twinning the heating circuit controls, so that the bedrooms but not the living rooms are heated for mornings when we go out to work and the living rooms but not bedrooms during winter days at home, but this might be done manually with thermostatic radiator valves.
- Windows that we have are for the most part vertical sliding sashes. All would benefit from simple secondary glazing in winter, removable in summer. This made a real difference in the flat we moved from which had a prevailing wind through it from north to south. Each of the habitable rooms has a fire-place providing the necessary trickle ventilation which should otherwise be provided by hit-and-miss units drilled through the timber. The fire-places have baffles opened in summer for ventilation and should a fire be lit in winter, but appreciably closing off the draft in winter when shut.
- However sash windows can also be draft-proofed with white neoprene replacements for the parting beads which run vertically at the sides between the upper outer and the lower inner sashes, and with normal strips to top of the upper sash and to bottom and to outside of the head of the lower sash.

- Cooling is not a problem, although before being shaded by next-doors crab apple tree we did have to draw the curtains at bed-time over the east-facing patio doors to prevent the whole house being over-heated by early morning summer sun. A replacement for the sky-light, currently single glazed and fixed shut, would also be openable in summer for added ventilation from cool air drawn in at ground level.

However things could change. Temperatures in Britain are predicted to rise by 1 degree by 2020 and 6 degrees by 2080. As central London night-time temperatures can already be more than 6 degrees higher than in adjacent rural areas, the combination may deprive London and its buildings of the current natural diurnal cooling capacity.

These are all things that easily could and should be done in the normal course of events. You would be right to ask why I have not done them before now, but I would rather you did not.

Welsh post-script:

Things are strangely different in our house in Monmouthshire. Water diverted to the house from the spring returns to the ground and eventually into the same river. Wood grows outside the front door and, with coppicing, faster than we could burn it, at least once we have an efficient wood-burning stove rather than the open fire-places. And it is both necessary and easier to wear warmer clothes around the house. Renewable electricity from a wind-turbine for emergencies and feeding night-store heating when we are away, to be warm when we arrive, is a very attractive idea. So far the good news – on the other hand, although there are two pubs within walking distance, the nearest shop and bus stop would be six miles away. The mileage driven by country people thanks to cheap fuel can be phenomenal.