

Feasta / Smart Taxes

Submission to SEAI re Draft NREAP

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Neglect of Mid-Scale Renewable Energy production and Consumption Systems is a serious Failure of the Draft NREAP

Electricity Generation

Ireland set a target in 2007 of 40% electricity consumption from renewable sources by 2020. According to the NREAP, Ireland achieved 14.4% electricity from renewables in 2009 and is on track to exceed the national target of 15% in 2010. The significant growth in electricity from renewable sources in recent years is largely attributable to onshore wind. As Ireland moves towards achieving 40% electricity from renewables by 2020, the Irish grid is increasingly coping with the challenges posed by large amounts of intermittent power.

Here we see a significant divergence of the government's plan from a formula for energy resilience. The electrical generation, transmission and distribution system is the old model of large centralized generation and remote consumption. The existing grid system and electricity industry globally is in the midst of profound and comprehensive change, including a return to the local and neighborhood scale in which the industry's early history is rooted. As Amory B. Lovins¹ of the Rocky Mountain Institute, proved in his seminal *Small is Profitable* work, central thermal power plants in the US, can no longer deliver competitively cheap and reliable electricity through the grid, because the plants had come to cost *less* than the grid and had become so reliable that nearly all power failures originated *in* the grid. Thus the grid linking central stations to remote customers has become the main driver of those customers' power costs and power-quality problems - which became more acute as digital equipment required extremely reliable electricity. The cheapest, most reliable power, therefore, is now electricity produced at or near the customers.

¹ Lovins, A.B., Datta, E.K., Feiler, T., Lehmann, A., Rabago, K.R., Swisher, J.N. and Wiker, K., 2006, *Small is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size*, Rocky Mountain Institute

The governments current plan is to compound this sunk cost in an outdated and increasingly expensive to maintain grid transmission system by asking it to accommodate to large-scale intermittent remote wind energy. Renewable energy from large wind arrays does not fit easily into the existing transmission grid that has been designed for constant or controllable electricity generation. Large-scale wind turbines require a large-scale transmission grid over a large geographical area so that it always imports wind generated electricity from somewhere. The best terrestrial wind sites are invariably in remote areas often with high biodiversity value. Some of the proposed wind farms which have both planning permission and connection offers are in areas now designated as Natura 2000 sites with vulnerable bird migration patterns or upland bog habitats and carbon stores. Resilience cannot be built at the cost of biodiversity or reduction in natural carbon stores.

Large-scale wind developers have succeeded in persuading the government to prioritise their interests in the NREAP in other words, to divert scarce resources to an obsolete model. This policy will starve investment from smaller scale energy *embedded* generation that does not have the same requirements for radical comprehensive grid upgrade.

This is not to say that large scale wind, perhaps offshore or perhaps combined with hydro storage as in the 'Spirit of Ireland' model does not have potential, rather that the promoters should internalise the ancillary grid upgrade costs in their projections and compare the returns against a *modern distributed energy* model not the existing obsolete electricity generation and distribution system so that other renewable energy developers (and consumers) should not have to cross-subsidise them.

The NREAP goes on to state that the introduction of a robust framework for the development of a vibrant microgeneration sector is an important component of building societal acceptance and participation in achieving national renewable energy targets.² There is nothing to disagree with here, except the absence of consideration of mid-size systems as a category with a particular character and potential. Micro generally describes as home, farm or small workshop self-generating 5kw to perhaps 100kw - the size of a domestic wind-turbine, PV array or modest biomass CHP. This mid-size is discussed indirectly and tangentially in relation to "Small renewable low carbon generation" which is facilitated by connection outside the 'gate' process. The excluded scale moreover, is the scale of a functionally complete human settlement of 60 - 2000 homes, village, industrial estate using roughly 100kw to 3MW of electricity.

Mid-size or 'small' renewable energy generation serving a village or industrial estate would be greatly facilitated by access to a 'private wire' the electrical

² *ibid*

infrastructure necessary to supply electricity directly to 3rd party located on the same site as the generator, independent of the national transmission / distribution system. The NREAP is downright unenthusiastic about private wire citing the need for careful consideration of technical standards and sharing of costs and charging 'among other things'. It then kicks to touch noting a provision under Directive 2009/72/EC warning darkly that owners of a private network must be able to allow full third party access for alternative suppliers through its network. Translated this means mid-size generators must sell their energy into the monopoly that is ESB Networks owned and operated by the dominant energy supplier, the ESB and cannot use long-term exclusive purchase agreements with customers to fund their investment in plant. Or as one frustrated mid-size renewable developer put it "it's like selling bread to a baker".

In answer to the question whether there are regional and local energy strategies the report states only "Regional and local renewable bodies have many initiatives underway and plans and strategies in place." These initiatives were not important enough to outline or include in their central strategy. A listing of local network of local energy agencies is provided whose actions are described as a 'soft' measure targeted at business and the public but not at local authorities who have responsibilities for settlement planning and services. In short, the NREAP does not recognise mid-size generation as an essential element of Irish energy resilience, provides no assistance with 'private wire ' and gives no particular role to local authorities in the development of energy resilience.

Transport

The bias against mid-scale and local collective initiatives is also apparent in respect to transport. The NREAP draft (at page 109) proposes that the Electric Vehicles Scheme will be a grant aid scheme, for up to 6,000 vehicles over a two year period commencing in January 2011. Those purchasing a full battery electric vehicle will be grant aided by up to €5,000, depending on the price of the vehicle. As my colleague James Nix of the Transport and Spatial Planning Network, has calculated, assuming the average purchaser draws down a grant of €3,300, the total cost of this proposal is some €20m over 2 years, the scheme will benefit 6,000 purchasers. In contrast, a scheme focussing on a local shared car scheme - €15m (of the €20m) could be put to purchase 600 electric cars (economies of scale lowering the cost per vehicle to €25,000). If these 600 electric cars are deployed to 120 car share points many rural villages and city neighbourhoods, would have access to a pool of 5 shared electric vehicles. A hire scheme allows families to shed second cars as they can rely on the shared vehicles. Shared electric car would be used more than individually owned cars which will be parked for long periods when their owners do not

need them; therefore the environmental gains per share car are much higher than individually owned car. Social security and thus resilience would be enhanced as access to non-fossil fuel transport would be open to a wider section of the population - particularly important in times of emergency.

Energy Efficiency in Buildings and Settlements

The new standards in Building Regulations as regards energy use are a significance advance for which the government should be congratulated. Extension of higher energy standards to non-residential buildings especially public buildings should be advanced in a new Green Public procurement programme.

However, again we see that emphasise on individual buildings under the Building Regulations means that opportunities to make very significant energy savings in groups of buildings are lost. Embedded energy i.e. combined heat and power for groups of houses is not treated / facilitated under the Regulations. Nor are collective mid-size or group responses to sewage and bio waste food and garden waste) collection and processing treated in the government energy reduction or production programmes.

Local authorities have the responsibility for waste management, treatment and processing but not for managing this function in such a way to minimise energy use and maximise renewable energy generation. It is left to large private waste companies to drive innovation and investment in waste systems. They respond crudely to incentives and operate within a regulated monopoly over large areas. Thus their investment projects tend to large scale and single purpose for instance, to generating electricity from bio-waste without recovering useful nutrients nor assisting agriculture manage farm wastes.

The NREAP displays the silo thinking of various technical experts in their fields. Programmes for energy generation are not linked to programmes for environmental pollutant and emissions reduction nor for water conservation. Energy transport programmes are not linked to spatial strategies or local renewables. There is an over-focus on wind electricity at the expense of biogas and bio-energy generally. A strategy to integrate these issues at local level - for mid-sized systems of every kind of renewable energy source - would have overcome departmental, administrative and professional barriers.

Conclusion

System theory warns of very serious implications for resilience if management does not include consideration of complex adaptive systems at every scale of scale distribution of such systems. Functional groups across size classes

maintain ecosystem resilience³. There are benefits to acting on the local scale - local ecosystem and local governance unit.⁴ Ecologists have noted that during reorganisation after disturbances the potential for input of a diversity of species directly determines the rate at which the system may self-organise toward a community that reflects local conditions⁵. For species substitute diverse energy systems.

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³ Gunderson, L.H., and Holling, C.S., 2002, *Panarchy – Understanding transformations in human and natural systems*, Island Press, p.p.397

⁴ Norberg J., James Wilson, b. Walker and E. Ostrom, *Diversity and Resilience of Social-ecological systems*, Complexity Theory for a Sustainable Future, 2008, Columbia Press New York

⁵ *ibid*