Energy Efficiency and Savings: The under-utilisation of Europe's energy savings potential

Introduction

When considering the demands of sustainable energy security, it must first be considered whether we are looking at how we **use** energy today, or simply at how we can **replace** it. Energy choices are at the very heart of the environmental, economic and quality-of-life challenges we face. The sustainability challenge is well identified[1], and 'business as usual' will not get us there[2]. We urgently need a new appreciation of our energy choices, reflecting their true social and environmental costs.

Yet, the rhetoric surrounding the energy debate would make you think that we do not have any choice at all, that we are exclusively limited to supply-side solutions. That is one so-called "truth" to disabuse ourselves of. Another is the contention that the expansion of nuclear power generation is key to limiting climate change; it is more the case that a declining nuclear industry has seized on climate change as a means of reviving its flagging fortunes. There are faster, cheaper, more effective, more flexible and safer ways of getting our emissions down than embracing nuclear energy. More to the point, the biggest obstacle to sustainability remains consumer demand. The facts are stark:

- If the European Union reduced its energy consumption by just one per cent, 50 coal plants or 25,000 wind turbine equivalents would not be needed.[3]
- If the EU's 2009 Eco-design Directive[4] were to be implemented fully, the end-use energy savings by 2020 could alleviate the need for another 98 Fukushima-sized nuclear reactors (a lot, considering that Europe currently has only 143).[5]
- Whereas new generation techniques take years to come on stream, energy demand savings and efficiency improvements can be implemented today, with existing technologies and know-how.[6]
- To take one example, University of Cambridge researchers have recently shown that 73 per cent of global energy use could be saved by introducing "best practice" efficiency measures.[7]

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[1] IPCC 'Fourth Assessment Report of the Intergovernmental Panel on Climate Change' 2007, available at http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html

[2] DG Climate Action 'Leading global action to 2020 and beyond', available at http://ec.europa.eu/clima/publications/docs/post_2012_en.pdf

[3] COM(2011) 21 'A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy', p 4. Available at http://ec.europa.eu/resource-efficient-europe/pdf/resource_efficient_europe_en.pdf

[4] Directive 2005/32/EC, 6 July 2005. There have since been various amending acts. A summary of the legislation is available at http://europa.eu/legislation_summaries/other/l32037_en.htm.

[5] European Environmental Citizens' Organisation for Standardisation (ECOS) 2011. Delays in implementation of the EcoDesign Directive mean just 11 of the 41 named products groups covered by the directive have so far been approved. ECOS found that the implementation of the directive so far had saved around 340 TWh of end-use energy a year, the equivalent output of 62 such reactors. But the product groups that remain to be approved would save another 540 TWh of end-use energy, the same output as 98 ordinary reactors, or 49 of the more powerful European Pressurised Reactors (EPRs). More information on the calculations is available at http://www.euractiv.com/en/energy-efficiency/energy-savings-mothball-98-nuclear-reactors-news-503450.

[6] WWF, ECOFYS and OMA (2011) 'The Energy Report: 100% Renewable Energy by 2050.' Pg. 44. Available at http://assets.panda.org/downloads/101223_energy_report_final_print_2.pdf

While demand reduction is often mentioned alongside supply security,[8] it is rarely a priority for implementation, whether through policy, or through the search for innovation. A much higher political urgency for energy efficiency and savings is essential if we are to have any chance of meeting Europe's climate and energy goals.[9] The results will be lower energy bills for consumers – with potential savings, if we met the 20 per cent energy savings target, of up to €78 billion annually by 2020[10] (or approximately €380 per household), the creation of millions of valuable jobs and a massive boost to innovation in low-carbon industries and services.

An overwhelming body of research has shown that behavioural and cultural changes are the most powerful, cost-effective and fastest means to achieve a sustainable future.

A little efficiency goes a long way

While efficiency savings could cut world energy use by 70 per cent, only about a third of the action needed to put European Union countries on a path towards a low carbon economy is currently underway.[11] According to the International Energy Agency (IEA), if Europe continues to delay the pace of its de-carbonisation agenda, it will miss the most cost-effective opportunity in a generation to clean up its infrastructure.[12]

Of the options available to us, the efficiency savings potential in our built environment stands out. The potential efficiency savings are enormous, via widespread retrofitting of homes into passive and low-carbon buildings, with decentralised and renewable energy sources. Not only do statistics show that buildings account for 40 per cent of end-use energy consumption, and 36 per cent of the EU's CO2 emissions,[13] but for every euro invested in the sustainable refurbishment of housing, two euros *aren't* needed for the production of energy.[14]

Energy efficiency in the built environment offers many benefits for home-owners, tenants and housing associations, including more energy-efficient buildings (warmer), an attractive residential environment (better), and significant cost savings for users (cheaper). If we invest significantly in energy savings, the EU economy will not only be more resilient to fossil-fuel price fluctuations, but also benefit from additional growth and job creation in innovative sectors like the manufacturing and export of clean technology.

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[7] Cullen et al. (2011) 'Reducing Energy Demand: What Are the Practical Limits?' in *Environ. Sci. Technol.*, 2011, 45 (4), pp 1711–1718. Available at http://pubs.acs.org/doi/abs/10.1021/es102641n

[8] For example, European Commission, DG Energy (2010) 'Energy 2020: A strategy for competitive, sustainable and secure energy'. Available at http://ec.europa.eu/energy/publications/doc/2011_energy2020_en.pdf

[9] The goals are, by 2020: cutting greenhouse gases and increasing the use of renewables – by 20 per cent, based on 1990 levels, and cutting energy consumption by 20 per cent, compared to business as usual projections. A Citizens' summary: EU climate and energy package is available at http://ec.europa.eu/clima/documentation/package/docs/climate_package_en.pdf

[10] ECOFYS and Fraunhofer ISI (2010) 'Energy Savings 2020: How to triple the impact of energy saving policies in Europe' http://roadmap2050.eu/attachments/files/1EnergySavings2020-FullReport.pdf

[11] Climate Policy Tracker for the European Union (2010) 'Key findings'. Available at http://www.climatepolicytracker.eu/findings-2010

[12] International Energy Agency (2010) 'World Energy Outlook 2010, Executive Summary'. Available at http://www.worldenergyoutlook.org/docs/weo2010/WEO2010_ES_English.pdf

[13] European Commission, DG Energy (2011) Energy Efficiency in Buildings webpage, available athttp://ec.europa.eu/energy/efficiency/buildings/buildings_en.htm

[14] United Nations Economic Commission for Europe (2009) 'Better houses rather than more power plants'. Available at http://www.unece.org/press/pr2009/09env_p05e.htm

A slow energy transition assumes continued cheap energy resiliency

Unfortunately, the much needed energy savings are not materializing. According to recent estimates, the EU is likely to miss its modest 20 per cent energy reduction goals by half.[15] And in what could be said to be graphic example of the rebound effect, recent efficiency gains may have been offset by greater energy consumption.[16] (The rebound effect can be seen in operation in many fields. For instance, when new, faster, roads are built, drivers don't save time; they consume more miles).

This is a shame, because efficiency involves virtually no forfeiture or loss, unlike many supply side measures. Mundane though it may be, energy efficiency does some pretty heavy-lifting in the service of the EU's lofty energy reduction aims, when combined with efforts to prevent consequent increases in consumption. As the Coalition for Energy Savings highlight, if someone said there is an energy source which offers all this:

save millions of euros, no waste, less fuel poverty, innovation training, sustainable employment, safety, lower import bills, inexhaustible, address social inequalities, energy savings, enhance quality of life, reduced emissions, better health, education, energy security…

…would you support it?[17] Energy efficiency and savings offer all these, but clearly aren't given the sort of urgency and impetus they deserve. Despite clear evidence that we will fall short, by half, of the *non-binding* savings target, whilst being on track to meet the *legally binding* renewables and emissions targets, the Commission is continuing to delay making the energy savings target binding.

The risk is that we will miss our huge opportunity and enter a disappointing path of economic development with low innovation and low employment. What's more, not only do countries and regions which make early progress towards greater energy efficiency strengthen their competitive position,[18] but delaying the necessary transformation has the potential to weaken governance institutions, eroding the relationship between the governors and the governed.

In the short to mid-term, the smart approach to sustainable energy security must be local and incremental: an approach that focuses on getting the most out of existing infrastructure and opportunities. Energy savings and efficiency improvements are the credible policy strategy needed for speeding up Europe's low carbon transformation, and restoring public faith in our decision-making bodies.

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[15] Marie Donnelly, Director of energy efficiency and renewable energy at the European Commission (2010) Interview with EurActiv. Available at http://www.euractiv.com/en/energy-efficiency/top-official-eu-unlikely-meet-energy-efficiency-goals-interview-500661

[16] David Owen (2010) 'The Efficiency Dilemma: If our machines use less energy, will we just use them more?' The New Yorker. Available at http://www.newyorker.com/reporting/2010/12/20/101220fa_fact_owen#ixzz1K92o7FtE

[17] The Coalition for Energy Savings (2010). Available at http://dl.dropbox.com/u/4399528/BPIE/CES_EV_ad_fullpage_v09_25%2010%202010.pdf

[18] McKinsey (2009): Energy: A key to a competitive advantage. New sources of growth and productivity

The underestimated role of individuals

The age of cheap oil is over. Efficiency in both primary production and end-use energy consumption is the cheapest way to reduce our dependency upon fossil fuels and nuclear energy. Given that 20 per cent energy saving is roughly equivalent to the energy supplied by 14 (proposed) Nabucco gas pipelines,[19] we must seriously consider our existing priorities, and the necessary actions that will bring about genuine sustainability.

The problem is not technology, but our organisation and administration. We need to pull together and make it happen. We must also put faith in learning-while-doing, for there is strong evidence that by simply attempting new things, we become better at doing them.[20] Looking back, it will be hard to image that we collectively could not do this. In the words of Robert Schuman, one of the founders of the European Union, "it is no longer a question of vain words but of a bold, constructive act."

The Sustainable Energy Security programme at QCEA has identified the consequent potential that the public has in delivering on energy policy.

To this end, there are numerous Quakers who live out the Quaker testimonies -- to peace, equality, truth and simplicity -- in profound and courageous ways, many becoming involved in initiatives like the UK-based Transition Towns[21] and the Living Witness Project.[22] These adventurous souls embody the shifting of power away from vertically oriented, hierarchical power structures (as exemplified by centralised, top-down, proprietary and closed nuclear power stations), to distributive, collaborative and horizontal power networks. They are powerfully called to witness a world that is transformed, that is sustainable and that is just, challenging the rest of us to ask just how radical our vision is today.

As individuals, we can all share the joys of a sustainable lifestyle. To do so, we need to develop a new, closer relationship with the energy we use, which will encourage us to value our energy more, and to use it less. In sustainability terms, the key question is not whether we have to accept being powered by nuclear, coal or agrofuels, but how long we remain too comfortable to bring our careless consumption under control.

The challenges which face the world today - climate change, energy supply, growing economic inequality, global poverty, financial crises, food security, water stress and conflicts relating to many of these issues - are increasingly recognized as being interlinked. Minimising our impact on the planet and our use of its resources is the best option we have for a sustainable, peaceful and just future, in Europe, and the wider world.

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[19] WWF (2010) 'Internal review improves 2020 energy plan but big gaps remain'. Available at http://wwf.panda.org/what_we_do/how_we_work/policy/wwf_europe_environment/news/?196503/Internal-review-improves-2020-energy-plan--but-big-gaps-remain

[20] Jaeger et al. (2011): A New Growth Path for Europe. Generating Prosperity and Jobs in the Low-Carbon Economy Synthesis Report. Pg. 16-17. Available at http://www.pik-potsdam.de/members/cjaeger/a_new_growth_path_for_europe__synthesis_report.pdf

[21] The Transition Network helps communities deal with climate change and shrinking supplies of cheap energy (peak oil). This process, called Transition, aims to create stronger, happier communities. Available at http://www.transitionnetwork.org/

[22] Living Witness aims to support the development of Quaker corporate witness to sustainable living and explore ways of taking it to the wider community in Britain and elsewhere. Available at http://www.livingwitness.org.uk/

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Web references accessed April 2011