

Adoption and Use of Household Microgeneration Heat Technologies

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ABSTRACT

The development and rapid household adoption of smallscale, low and zero carbon microgeneration technologies are key elements of UK and EU strategies to meet the challenge of climate change. Microgeneration heat technologies, including solar thermal hot water, heat pumps and biomass heating systems, have an especially important role in reducing the carbon emissions from buildings. But despite government policies to promote microgeneration, adoption by UK householders is very slow. Surveys by the Open University and Energy Saving Trust examined why over 900 UK householders decided to adopt these technologies and why many do not. These surveys describe the niche market for microgeneration heat as largely confined to environmentally concerned, older, middleclass householders, mainly living in larger properties off the mains gas network. Although these pioneer adopters are generally highly satisfied, for microgeneration heat to expand beyond its market niche, several issues need to be addressed, including: price reductions and subsidies? independent information on the suitability, performance, payback and effective use of equipment? 'one-stop' support from consideration to operation? improved system compatibility with smaller properties and existing buildings and heating systems? and more userfriendly and informative controls.

KEYWORDS

Microgeneration, Domestic Heating and Hot Water Systems, Renewable Energy, Consumer Surveys, Usercentred Design and Marketing, Energy Policy

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References

- [1] HM Government, "The UK Renewable Energy Strategy," Cm 7686, Stationery Office, July <http://www.officialdocuments.gov.uk/document/cm76/7686/7686.pdf>
- [2] DTI, "Meeting the Energy Challenge, a White Paper on Energy," Department of Trade and Industry, London, May <http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/energy/whitepaper/page39534.html>
- [3] HM Government, "The UK Low Carbon Transition Plan. National Strategy for Climate and Energy," July <http://www.officialdocuments.gov.uk/document/other/9780108508394/9780108508394.asp>
- [4] House of Commons, "Local Energy— Turning Consumers into Producers. HC 257 First Re-port of Session 2006-7," The Stationery Office? January <http://www.publications.parliament.uk/pa/cm200607/cmselect/cmtrdind/257/257.pdf>
- [5] Energy Saving Trust "Generating the Future: An Analysis of Policy Interventions to Achieve Widespread Microgeneration Penetration," Committed by Department for Business, Enterprise and Regulatory Reform (BERR), London, November <http://www.energysavingtrust.org.uk/uploads/documents/aboutest/MICRO.pdf>
- [6] The Energy Saving Trust in partnership with the Open University and industry and government stakeholders, is undertaking the UK's independent field trial to evaluate the technical performance, user experience and carbon emissions of domestic heat pumps in private and housing, with initial results published in September 2010 [20].
- [7] DTI, "MicroGeneration Strategy: Power from the People," Department of Trade and Industry, London, March <http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/whatwedo/energy/sources/sustainable/microgeneration/strategy/page2759>

- [8] HM Government, " Building a Low-carbon Economy: Implementing the Climate Change Act 2008," HM Treasury, April http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/bud_bud09_carbon.htm
- [9] Element Energy, " The Growth Potential for Microgeneration in England, Wales and Scotland," Report commissioned by Department of Business Enterprise and Regulatory Reform, NGOs, Energy Saving Trust and Industry, Element Energy, Cambridge, June 2008. <http://www.gov.uk/energy/microgenerationresearch>
- [10] DECC, " Renew-able Heat Incentive. Consultation on the Proposed RHI Financial Support Scheme," Department of Energy and Climate Change London, February 2010. <http://www.decc.gov.uk>
- [11] R. Roy, S. Caird and J. Abelman, " YIMBY Generation. Yes in my back yard! UK householders pioneering microgeneration heat," The Energy Saving Trust London, June 2008. http://oro.open.ac.uk/10828/1/24660_EST.pdf
- [12] J. Watson, R. Sauter, B. Bahaj, P. A. James, L. Myers, and R. Wing, " Un-locking the Power House: Policy and System Change for Distributed MicroGeneration in the UK," Universities of Sussex and Southampton and Imperial College, London, 2006. <http://www.sussex.ac.uk/sexenergygroup/128.html>
- [13] Y. Hirai, Y. Morita and N. Elokia, " Evaluation of Usability Methodologies in the Universal Design Process," Proceedings International Conference Engineering Design ' Design for Society: Knowledge, Innovation and Sustainability' (CD ICED' 07/91), Paris, 28-31 August 2007.
- [14] S. Sorrell, " The Rebound Effect: An Assessment of the Evidence for Economy-wide Energy Savings from Improved Energy Efficiency," UK Energy Research Centre, London, October 2007. <http://www.ukerc.ac.uk/support/tikiin-dex.php?page=ReboundEffect>
- [15] E. Shove, " Gaps, Barriers and Conceptual Chasms: Theories of Technology Transfer and Energy in Buildings," Energy Policy, Vol. 26, No. 15, 1998, pp. 1105-1112.
- [16] S. Caird and R. Roy, S. Potter and H. Herring, " Consumer Adoption of Household Renewable Energy Technologies," Report DIG10, Design Innovation Group, The Open University, Milton Keynes, December 2007. http://design.open.ac.uk/research/research_dig.htm
- [17] C. Fischer and R. Sauter, " Users as Pioneers: Transformation in the Electricity System, MicroCHP and the Role of the Users," Proceedings International Conference on Human Dimensions of Global Environmental Change, Environmental Policy Research Centre, Berlin, 2004, pp. 319- 337.
- [18] J. Foster, " Solar Water Heating in Queensland: The Roles of Innovation Attributes, Attitudes and Information in the Adoption Process," Promoting Innovation, Vol. 11, No. 2, December 1993, pp. 219-233.
- [19] G. Guagnano and G. R. Hawkes, C. Acrelido and N. White, " Innovation Perception and Adoption of Solar Heating Technology," Journal of Consumer Affairs, Vol. 20, No. 1, 1986, pp. 48-64.
- [20] BERR, " Microgeneration Strategy Progress Report," Department of Business and Regulatory Reform, London, June 2007. <http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/energy/sources/sustainable/microgeneration/index.html>
- [21] Energy Saving Trust, " Getting Warmer: A Field Trial of Heat Pumps," The Energy Saving Trust, London, September 2007. <http://www.energysavingtrust.org.uk/Generateyourownenergy/Heatpumpfieldtrial>
- [22] J. Dobbyn and G. Thomas, " Seeing the Light: The Impact of MicroGeneration on the Way We Use Energy," The Hub Research Consultation Sustainable Development Round Table, London, October 2005. <http://www.sd-commission.org.uk/publications.php?id=239>

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