

Institution: Glasgow Caledonian University		
Unit of Assessment: 13 - Architecture, Built Environment and Planning		
Title of case study: Fuel poverty and energy policy		
Period when the underpinning research was undertaken: 2011 – present		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Keith Baker Rohinton Emmanuel Mark Phillipson Ron Mould	Role(s) (e.g. job title): Researcher Professor Senior Lecturer PhD Researcher	Period(s) employed by submitting HEI: 2010 - present 2008 - present 2003 - present 2012 - present
Period when the claimed impact occurred: 2016 – present		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact <p>Baker and colleagues have long established the complex and hidden geographies of fuel poverty especially in Scottish rural areas. This research directly led to the plugging of a rural fuel poverty blind spot in the Scottish Government's Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 via the inclusion of a financial 'uplift' for rural and island householders and the adoption of a Minimum Income Standard-based measure of household income (Section 3(6)). This will directly benefit 17% of Scottish households (418,000 households) in areas where fuel poverty levels are significantly higher than the national average of 24.9% (in 2018).</p>		
2. Underpinning research <p>Emmanuel, Baker and Phillipson entered into a Framework Agreement with the Scottish Government's Community Analytical Services Division (CASD) in 2011 that led to detailed reviews of the energy efficiency policy landscape, [G1] highlighting the weak targeting of the fuel poor in Scotland [R1]. Together with other work funded by ClimateXChange/SNIFFER [G2], [G3] this fed into the first-ever detailed study of the fuel poverty landscape in Scotland on the basis of actual energy consumption (as opposed to modelled) [R2], [R3]. Supplemented by the lived experience of the fuel poor [R4], [R5], [C7], Baker and Mould re-conceptualise fuel poverty as a complex problem, with previously unreported geographies of fuel poverty (urban vs. rural), thus challenged commonly used assumptions, metrics, and approaches to policy making.</p> <p>Key findings include low-income rural households in Scotland spend significantly more on energy than their urban equivalents and spend more on heating than those on higher incomes. While the influence of rurality on fuel poverty levels is now acknowledged in official statistics, Baker and Mould were able to show that the metrics used to quantify fuel poverty (including the income domain of the Scottish Index of Multiple Deprivation – SIMD) has led to a bias against rural fuel poverty. They were thus able to show fuel poverty alleviation responses are based on approaches that are insufficiently sensitive to local geographies and the influences that underlie the condition in rural Scotland [R3]. Extrapolating these findings across several rural and island localities in Scotland, Baker and colleagues were also able to show the 'real' distributions of</p>		

household fuel use are heavily skewed towards lower expenditures in rural and island areas, with long 'tails' towards very high expenditures [G4]. This means reporting median for fuel poverty statistics may be misleading. Conversely, they also found expenditure on all energy needs increases disproportionately with income for those using electric heating mainly due to other (non-heating) energy use [R4]. Given the empirical and unique nature of these findings, these studies attracted international attention (such as <https://www.energypoverty.eu/publication/uncovering-hidden-geographies-and-socio-economic-influences-fuel-poverty-using-household>), as well as an invited article in Nature Energy [R6].

These outputs were disseminated to policy makers via direct emails, responses to consultations and calls for evidence (30 submitted from 2017 onwards); policy papers published by Common Weal; contract research (Citizens Advice, Calor Ltd); articles in the media (including The Herald, The National, The Scotsman, The Conversation); and interviews on the BBC, STV News [S1]. These efforts enabled us to influence the Scottish Government's Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 that directly led to the inclusion of a financial 'uplift' for rural and island householders and the adoption of a Minimum Income Standard-based measure of household income in Section 3, Subsection 6 of the Act [C1]. Although the actual effect of such a financial 'uplift' is yet unknown (the Act obtained Royal Assent only in July 2019), it is likely to benefit 17% of Scottish households (418,000 households) in areas where fuel poverty levels are significantly higher than the national average of 24.9% (in 2018).

3. References to the research

- [R1] Baker K., Emmanuel R., Phillipson M., 2011. Final Report: Support for RPP2 Housing Futures, Reference: CXC1109-01. Report submitted to Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) on behalf of ClimateXChange. Available at: https://www.climateexchange.org.uk/media/1722/housing_futures.pdf (Resulted from a Framework Agreement with the Scottish Govt where the Research Group was ranked 1st in 'Energy' category)
- [R2] Mould R., Baker K., Emmanuel R., 2014. Behind the definition of fuel poverty; Understanding differences between the fuel spend of rural and urban homes, Queen's Political Review, 2, 2, p. 7-24 <https://queenspoliticalreview.files.wordpress.com/2014/10/article-1-behind-the-definition-of-fp-p7-24.pdf>
- [R3] Mould, R., & Baker, K.J., 2017. Uncovering hidden geographies and socio-economic influences on fuel poverty using household fuel spend data: A meso-scale study in Scotland. Indoor and Built Environment, 26, 7, p 914-936, 23 p. DOI: <https://doi.org/10.1177/1420326X17707326>. (Clarivate Journal Impact Factor in 2019 = 1.9, top half of journals in 'Construction and Building Technology')
- [R4] Baker, K.J., Mould, R., Stewart, F., Restrict, S., Melone, H., & Atterson, B., 2019. Never try and face the journey alone: Exploring the face-to-face advocacy needs of fuel poor and vulnerable householders. Energy Research and Social Science, 59, p. 210-219. (Clarivate Journal Impact Factor in 2019 = 4.771, top quintile journal in 'Environmental Studies')
- [R5] Mould, R., & Baker, K.J., 2017. Documenting fuel poverty from the householders' perspective. Energy Research and Social Science, 31, p.21–31. (Clarivate Journal Impact Factor in 2019 = 4.771, top quintile journal in 'Environmental Studies')
- [R6] Baker, K.J., Mould, R., & Restrict, S., 2018. Rethink fuel poverty as a complex problem. Aug 2018 in Nature Energy, 3, p. 610-612. DOI: <https://doi.org/10.1038/s41560-018-0204-2>. (Invited paper in a high impact journal, Clarivate Impact Factor = 46.495)

Research underpinning the impact were funded by the Scottish Government, SNIFFER and others:

- [G1] 2012-13 – Review of the Energy Assistance Package (EAP), Scottish Govt, CASD, Directorate of Housing, Regeneration and Commonwealth Games, £4,200
- [G2] 2011 – Support for RPP2 Housing Futures, Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) on behalf of ClimateXChange, 2011, £5,180
- [G3] 2012 – RPP2 Abatement: Built Environment Sector, Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) on behalf of ClimateXChange, 2012, £2,010
- [G4] 2016 – The Speird Project (Eaga Charitable Trust), 2016, £23,254

4. Details of the impact

Background work preceding the Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 relied in part on the work of GCU researchers. For example, the report of the Scottish Fuel Poverty Strategic Working Group to the Cabinet Secretary for Communities, Social Security and Equalities [C2], citing Baker's report co-authored with CAG Consultants for Citizens Advice Scotland (<https://www.cas.org.uk/publications/taking-temperature>) states that "there are significant differences between modelled and actual outcomes. This is exacerbated in Scotland by its diversity of geography, climate and housing stock, which does not lend itself well to standard modelling".

Additionally, the Scottish Government's review of the definition of fuel poverty [C3] cites the research: "Scottish publications in this domain include those of Baker and Mould, who point out that, while a key strength of Boardman's definition is its rootedness in robust evidence from building science, an unintended consequence is that the definition is insensitive to the human realities of being fuel poor [R3]. Consequently, Scottish discourse related to energy vulnerability focuses on alternative concepts such as exposure to fuel poverty, sensitivity to its impacts, and a household's adaptive capacities for coping with it" [R5]. And: "In the past, determining eligibility for assistance from Scottish fuel poverty programmes has relied on proxies. These have most commonly been: age of occupants; location in an area of deprivation; type/age of building; rural location; receipt of passport state benefits; type of heating system; modelled energy costs needed to attain a satisfactory heating regime. Whilst these are all significant correlates of fuel poverty in Scotland, the strength of correlation seldom exceeds low-to-moderate [R2]. For example, there is no statistically significant relationship between income as measured for the Scottish Indices of Multiple Deprivation and the distribution of fuel poverty at small area level based on Scottish House Condition data [R5]."

The evidence trail to the Group's research is embedded in the Scottish Parliament's Stage 1 Report on the Bill [C4], which quotes verbal evidence given by Baker to the Local Government and Communities Committee [C5]: "There is a question about whether we need a remote rural adjustment in the definition. Is the condition of fuel poverty in rural areas and, in particular, remote rural areas significantly different from its condition in urban areas? It is very clear that the answer to that is yes... and the new SHCS stats show that the increase in fuel poverty over the past year has been proportionally higher in rural areas."

Further evidence of impact, within the limits of what the Committee can say publicly, is corroborated on a request for information to the Clerk of the Committee: "I note that the Committee decided to quote Dr Baker's views at paragraph 107 of their report. Joining the dots, you can also see that evidence from various sources, including Dr Baker, will have helped the Committee, and then the Scottish Government, move towards a position of supporting a distinct rural minimum income standard."

The plugging of this 'blind spot' in the legislation was further evidenced by members of the Communities, Social Security and Equalities of the Scottish Parliament. A Committee member stated: "Dr Keith Baker's research was vital in highlighting the issue of rural poverty. It was his work that made the Scottish Government pay attention to this issue, in particular, inclusion of a "rural uplift within the Fuel Poverty Scotland Bill [C6]" [C8]. This was further confirmed by another member of the committee [C8].

Going forward, the Research Group's work is being incorporated into political party platforms of future work. In particular, a motion to establish a Scottish Energy Development Agency was passed at the SNP's 2019 National Conference [C9] and the establishment of a SEDA was included in the Scottish Green Party's Scottish Green New Deal manifesto 2019 General Election manifesto [C10].

Our work will improve the statistic in terms of capturing more genuinely fuel poor householders whilst excluding those who are on high incomes but are deemed fuel poor due to being assumed to be heating large properties. Furthermore, the links with international networks (the European Energy Poverty Observatory, the Centre for the Evaluation of Complexity Across the Nexus, The Transnational Institute) have enabled this evidence to reach audiences far beyond Scotland.

These, together with the ongoing development of detailed dynamic, risk-based metrics for fuel poverty using real (as opposed to modelled) energy data have changed the discourse around the issue in Scotland to one that highlights the significant inequities between householders in rural and island areas and those in urban areas.

5. Sources to corroborate the impact

- [C1] A portfolio of sources to corroborate dissemination of findings to policy makers, responses to consultations; policy papers; articles and interviews in print and electronic media.
- [C2] Scottish Government, 2016. A Scotland without fuel poverty is a fairer Scotland: Four steps to achieving sustainable, affordable and attainable warmth and energy use for all. Report of the Scottish Fuel Poverty Strategic Working Group to the Cabinet Secretary for Communities, Social Security and Equalities. October 2016. Available at: <http://www.gov.scot/Resource/0050/00508195.pdf>
- [C3] Bramley, G., Fitzpatrick, S., Liddell, C., & Webb, J., 2017. A new definition of fuel poverty in Scotland: A review of recent evidence. Scottish Government publication. Available at: <http://www.gov.scot/Publications/2017/11/7715>
- [C4] Scottish Parliament, 2019. Stage 1 Report on the Fuel Poverty (Target, Definition and Strategy) (Scotland) Bill. Available at: <https://sp-bpr-en-prod-cdnep.azureedge.net/published/LGC/2019/1/29/Stage-1-Report-on-the-Fuel-Poverty--Target--Definition-and-Strategy---Scotland--Bill/LGC-S5-19-02.pdf>
- [C5] Scottish Parliament, 2018. Official Report of the Local Government and Communities Committee, 05 December 2018. Available at: <https://www.parliament.scot/parliamentarybusiness/report.aspx?r=11831&mode=pdf>
- [C6] Scottish Government, 2019. Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019. Available at: <http://www.legislation.gov.uk/asp/2019/10/enacted>
- [C7] Scottish Government, 2020. Lived experience of fuel poverty: evidence review. Available at: <https://www.gov.scot/publications/evidence-review-lived-experience-fuel-poverty-scotland/>

- [C8] Testimonials by two members of the “Local Government and Communities Committee” of the Scottish Parliament.
- [C9] SNP, 2019. From baby steps to giant leaps: SNP National Conference Agenda, 2019. Not publicly available; Common Weal, 2019, Developing Energy. Available at: <https://commonweal.scot/developing-energy>
- [C10] Scottish Green Party, 2019.Scottish Green New Deal. Available at: <https://greens.scot/sites/default/files/GreenNewDeal-Web.pdf>; Source News, 2019, Patrick Harvie: SNP must do more to boost renewable industry and build case for independence. Available at: <https://sourcenews.scot/patrick-harvie-snp-must-do-more-to-boost-renewable-industry-and-build-case-for-independence/>