



## Original research article

## Coal fires, steel houses and the man in the moon: Local experiences of energy transition

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## ABSTRACT

Energy transitions involve long-term structural change and are generally presented and discussed in ‘grand narrative’ terms: low carbon, sustainable growth, smart systems. Yet demand for energy services has always been highly distributed and local considerations are also becoming more prominent on the supply side, with developments in distributed electricity generation and heat networks.

This paper is based primarily on interviews and observations with low-income householders and their energy advisers, carried out in a district of central Scotland whose economy had depended on coal and paraffin shale mining for over a century. Many older residents had experienced a transition from belonging to fuel-producing communities and handling solid fuels to becoming ‘consumers’ in uneasy and uncomprehending relationships with distant suppliers of gas and electricity. Their stories add texture to ‘grand narratives’ of energy transition, demonstrating, for a particular place and time, some of the complexity and path dependencies of energy systems and how they play out in social and distributional terms. They show how local resources, institutions, social networks and built environment can affect energy services and responses to them, highlighting the role of ‘middle actors’ in an energy advice service as guides to transition.

## 1. Introduction

Stories have been used throughout history to make sense of both extraordinary and everyday phenomena, and to shape our responses to them. The term ‘story’ can be understood as a fiction, something out of place in rational discourse. Yet stories or narratives are a constant in research literature: almost every paper opens, like this one, with a few paragraphs that situate what is to follow in terms of some narrative, such as that Earth’s climate is warming, enzyme deficiency contributes to a disease, indoor air quality is a growing problem in modern housing. Such introductory sentences help readers make sense of what is to follow (or warn them to avoid it), by linking it to narratives that will already be familiar.

This paper starts from two premises: that energy transition operates at many levels or scales and can be understood at many levels; and that transition is not a uniform process but one influenced by both geography and history [1,2]. It offers extracts from residents and energy advisers’ accounts of energy transition in a particular locality and uses them to illustrate the value of personal and communal stories for energy research and policy. In particular, the stories illustrate ways in which geography, history and politics have shaped the built environment and patterns of energy supply and demand, the impacts of change on relatively vulnerable citizens, and the role of energy

advisers in helping them to cope. They show how energy transition stories can emerge from lived experience and social learning, as well as from a policy blueprint or high-level scenario: transition is enacted, experienced and expressed in personal and local terms, not only as a grand progress of technological innovation and adoption. The paper demonstrates how individual and localised stories can contribute to analysis of topics such as utility–customer relations and social adaptation to changing circumstances; and it supports the argument for attending to the role of ‘middle actors’ in energy transition [3], not least because of the interpretive skills of these actors and their ability to communicate between actors and channel resources. In a special issue dedicated to storytelling, these personal accounts of energy transition complement the oral histories and interpretations of home heating and comfort by Goodchild et al. [4] and Goodhew et al. [5, in this special issue].

Personal stories can be viewed as peripheral to the serious business of energy policy and transition, optional ornamentations of the research literature. Here, it is argued that they can offer essential contributions to debate on the future of energy systems with their ‘horizontal complexity’, path dependencies and intense governance challenges [6], challenging standard policy narratives [7].

Much of the material in the paper is drawn from a study carried out in 2000–2001 in a deprived area of lowland Scotland, part of a broader

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enquiry into the value of energy advice and the role of social learning in residential energy use [8–10]. While the study is not recent, the stories remain open to interpretation and new insight, while the issues they raise are still relevant for energy transition research, particularly in relation to deprivation and fuel poverty [11].

## 2. Scene-setting: geography, economy, housing and the local authority energy advice service

West Lothian District covers an area of 426 km<sup>2</sup> to the west of Edinburgh, the Scottish capital. Based on an ancient county, it has a population of roughly 180,000. The largest settlement is the new town of Livingston with over 50,000 residents, which played a major part in housing newcomers from Glasgow since the 1960s<sup>1</sup>; the rest of the population live in five smaller towns and a scattering of villages.

The western part of the District overlies coal deposits, while the east sits on paraffin shale (oil shale), discovered in 1858. The West Lothian Official Industrial Handbook for 1965 notes that ‘about 75% of Scotland’s energy, lighting and space heating requirements are based solidly on coal and known reserves ensure that this indigenous source of power will be available far into next century at least...the range of free-burning solid fuels available from existing shafts is not surpassed in any other coalfield... Polkemmet (in West Lothian) is perhaps one of the finest and most technically efficient pits in Britain’ (p. 39). The handbook tells how Livingston New Town and other industrial centres were to provide outlets for locally-mined coal: for example, the town of Bathgate was home to a car factory that employed 6000 workers and to the North British Steel foundry, with a 2.5 MW furnace running on offpeak electricity. The South of Scotland Electricity Board had a seven-year, £360m + expansion programme under way to meet rising demand in the area.

This expansionary activity did not last long. The Polkemmet mine closed in 1986, as the Conservative Government pursued a policy of closing British pits. Production at the Bathgate car works also ended in 1986. A condenser company with over 1400 workers closed in the early 1980s, as did hosiery factories and two gas works<sup>2</sup>; the steel industry was virtually gone by the turn of the century. Unemployment in the town of Bathgate reached 24% in 1984 and although an American electronics firm set up a plant there in 1992 that employed over three thousand workers, it closed only nine years later. At the beginning of the 21st century, West Lothian was still seen as significant for Scottish manufacture but had been badly shaken by industrial decline and insecure employment. Health indicators were close to the Scottish average and household income was slightly higher than average [12], but the District contained pockets of serious deprivation, particularly in the southwest [13].

With public housing as with industry, outcomes had fallen short of policy ambitions. The 1965 Official Industrial Handbook stated proudly that ‘Housing in West Lothian is concerned with people, not just bricks and mortar. Whether it be in their own extensive building programme, or in approving private developments, the County Council’s first consideration is the provision of attractive modern homes, as opposed to the mere provision of “living space”’. While the Council buildings may have been thoughtfully designed by the standards of the time, some of the materials and techniques left a cold, damp and even flimsy legacy. One of the energy advisers told me of a neighbourhood where a middle-aged woman had been able to punch a hole through the rendered asbestos wall of her home to vent her tumble-drier.

The West Lothian District Council had set up advice services to assist citizens in navigating their way through financial, legal, employment and other difficulties. One of these was the West Lothian Council Energy Advice Project (later WLC Energy Services, or WLCES), estab-

lished in 1994 as part of a national programme to promote economic and social development in deprived areas. 75% of the funding came from central government and 25% from the District Council. The mission statement and aims of the Project were:

*To initiate and administer activities likely to reduce fuel poverty<sup>3</sup> levels in the Urban Programme areas of West Lothian.<sup>4</sup> This will be done by providing a proactive and responsive information and advice service, targeted at the residents of the designated areas..... To implement the following general aims:*

- *improve access to information and advice and in particular raise awareness of energy related matters*
- *increase household disposable income through either maximising income, ensuring*
- *maximum benefits take-up, or minimising expenditure by reducing fuel bills*
- *improve comfort levels in homes and therefore the health of the residents*
- *encourage landlords to adopt an effective policy on energy efficiency and fuel poverty*
- *promote the re-utilisation and conservation of resources’. (Initial plan for WLEAP, 1994)*

The service was comprehensive: free, confidential and impartial advice on all fuel-related issues.... heating use, payment methods, cutting down fuel bills, insulation, billing problems, energy efficiency grants ... and ‘new tenant advice’ (a proactive service to help tenants manage energy in their new homes). Advisers were trained to negotiate with fuel suppliers and help arrange individual payment plans, to carry out home visits, and to give talks and training to community groups and organisations.

Take-up was high: in 2001–2002, at the time of the study reported here, the programme reported dealing with 7725 enquiries. This made it by far the most significant provider of energy advice in the area. Personal contact between advisers and clients was also a feature: 1933 of those enquiries led to the opening of case files detailing a series of contacts and casework, and 1696 home visits were carried out [14].

Advice giving and progress-tracking were tailored as far as possible to individual needs and it was striking how little printed material was used. Face-to-face social contacts appeared to shape client awareness and know-how far more than written information. None of the clients interviewed had a computer – perhaps not surprising, at the turn of the century – but they did not mention TV or radio as sources of useful information, either.

Tracking progress was a central part of the service for those with the most difficulty in paying their fuel bills, as noted by one of the advisers:

*[The service] provides tailored advice, usually through a home visit within two days of contact. An initial fuel meter reading is taken when the client first contacts the project. Following the visit [when a second meter reading is taken] clients phone in weekly with readings for four weeks in order to check whether they are achieving savings and for further advice if needed... It is possible to pick up clients who are falling behind their targets for reduction while the weekly meter readings are being taken, by checking against the pattern of use based on the first two readings. Readings are phoned in until the customer and adviser are satisfied that ‘consumption is consistently within [the customer’s] means or target. (Personal communication from the Advice Centre manager, 2000)*

<sup>3</sup> The term ‘fuel poverty’ is here used as a state in which a household is unable to afford adequate energy services. While the definition is contested, there is wide agreement on three contributory factors: the energy efficiency of the home and its appliances, household income, and unit costs of fuel and electricity [24].

<sup>4</sup> Some 30,000 in 12,000 households. The unemployment rate was estimated at 15%, with over 30% of the population in fuel poverty and 40% in receipt of state housing benefit.

<sup>1</sup> <http://www.westlothian.gov.uk/article/2093/Information-and-Statistics>.

<sup>2</sup> Producing ‘town gas’ from coal.

**Table 1**

Percentage of enquiries to WLCES relating to payment, appliances, building characteristics and other issues (case files raised).

Source: WLCES annual reports, 2000–2002.

Enquiry category	1999/ 2000	2000/ 2001	2001/2002
Paying for fuel (debt, disconnection and disputed bills)	30	16	10
Appliances (heating use, payment methods and faults)	18	33	16
Building (dampness, inadequate heating and insulation)	40	41	69 <sup>a</sup>
Other (requests for video, leaflets, talks and training)	12	10	5

<sup>a</sup> This high percentage relates to an initiative to insulate homes in the most deprived areas on a street-by-street basis, with over half of the installations accompanied by advice visits.

The service was notable for its willingness to support learning over time. The coordinator in 1997 stated that *‘Energy advice is about people, not buildings. People can learn from the experience of saving energy with one appliance and apply the principles to other things in their life or household’* (pers. comm.) This ethos, which helped to win the service an award from Energy Action Scotland for the quality of its work, was still in evidence at the time of the study. Table 1 gives an idea of the main issues that were driving West Lothian citizens to ask for advice. The categories are not tightly-defined but show that, while damp and cold dwellings were the main issues, affordability and heating controls were major concerns. Many clients clearly had pressing problems with debt, disconnection and disputed bills.

The WLCES advisers had access to funding that could make a substantial difference to home life. For example, ten of the 12 former clients interviewed had had some physical efficiency measures installed, and four acquired gas central heating following their contact with the advice service. Other physical changes included low-energy light bulbs, loft insulation, draughtproofing, radiator panels, thermostatic radiator valves and a humidistat. As indicated below and in Darby [8,9], there were also changes in ability to heat and power the home at lower cost through better understanding of domestic systems, appliances and their controls. The recorded benefits from contacting the advice programme had been considerable in almost all cases. For example, six of the twelve interviewees had recorded annual fuel savings of between £150–400, with two further estimates of £400/year and approximately 50% of the annual fuel bill. Given that average energy costs among the lowest income decile in the UK were in the region of £500 [15], these savings were substantial. Nine respondents reported increased comfort – dramatically so for six of them [8].

This brief account of how the advice service operated forms an introduction to some stories and story-fragments that illustrate energy transition in relation to life transitions. At the beginning of the study, though, there had been little conscious intention to gather stories as such. I had appreciated that it might be valuable to investigate history, geography and community dimensions of the energy advice programme a little, to provide context. But it was only later that the value of the stories as oral history and pointers to different types of analysis started to emerge.

### 3. Study aims and method

The West Lothian study formed part of a wider attempt to develop a framework for understanding how people learn about domestic energy use [8]. It aimed to describe and analyse how a group of people in the area had come to ask for advice, what had happened in the process of giving and receiving advice, and what the outcomes had been.

An introductory visit to West Lothian in November 2000 involved interviews and informal discussion with three advisers employed by

West Lothian Council Energy Services; also the opportunity to observe them at work, including three home visits and an event to publicise the service among elderly day-patients at a local hospital. A second visit in June 2001 was an opportunity for further conversations with the advisers but the main purpose of the visit was to interview a sample of householders who had been their clients. The Advice Centre staff had sent out a letter to 40 clients with closed case files, of whom 12 agreed to be interviewed. Advice Centre case files were consulted, in confidence, to check that the interviewees were broadly representative of clients who needed the more in-depth type of help that WLCES provided. (They were.)

Most of the interviewees (nine) were women. Nine were retired from work through age or disability and at least eight were limited in what they could do by ill-health. Most had lived in West Lothian District all their lives and all had started life within a radius of 45 km of their current homes. All had been Council tenants for most of their lives, though two had recently bought their homes under a national right-to-buy programme and one had had his tenancy transferred to a housing association.

The choice of a combination of interviews and observation was guided by a belief that both advisers and clients would be able offer valuable insights into the development of energy awareness and know-how through formal and informal knowledge exchange. If people's understandings of energy are a valid subject for enquiry, conversations are needed that allow for some ‘sense-making’ through the generation and interpretation of stories. The semi-structured interviews with the clients, each lasting between 45 and 75 min, were central to the data collection in West Lothian. A basic structure for the interviews was needed, but one that left space for the unexpected. As Piaget recognised when carrying out his interviews with young children: *‘It is so hard to find the middle course between systematisation due to preconceived ideas and incoherence due to the absence of any directing hypothesis!’* [25].

Ten of the twelve interviewees agreed to be audio-recorded; the rest of the data consisted of notes from the interviews with the other two clients and from interviews, conversations and observations with the advisers as they went about their work.

The client interviews generally began with pleasantries and the making of tea, followed by a very brief explanation of the research. There would then be an introductory question about what interviewees remembered about homes they had lived in, and how they compared with their current home. As Goodchild et al. also found, an inquiry about early memories proved a good way of prompting reflections on more recent events. Later in the interview, if the topic had not already come up, there would be a few questions about the interviewee's experience of the advice programme: how had they come to contact it? What had they learned from the adviser and what had been achieved? Had they passed on anything they had learned to family or friends?

The interview transcripts and notes were coded and analysed using a grounded theory approach in which themes were drawn from the material and explored singly and in relation to other elements of the study. Coding was therefore based on themes that had already been identified through the research literature and observation, and also on new themes identified in the course of the analysis [16,17]. ‘Aloneness’ was one of these new themes, as illustrated in the section below on social networks and sources of support.

The interviews and observational material in this paper fall short of in-depth ‘energy biographies’, with their potential for close and detailed examination of transition experiences [18,19]. But the aim is to let some voices speak to the reader and encourage reflection on the places, resources and experiences that inevitably influence the understanding, form and timing of energy transitions. The voices do not belong, as is so often the case, to individuals who have been subjected to an ‘intervention’ designed by experts to make them behave differently or to adopt new technologies. They belong to people who, prompted by necessity and often by suffering, asked for help with specific energy-related difficulties, and to the advisers who did their best to respond.

#### 4. The stories

The coding of interview and observation material is inevitably somewhat subjective: the same material could of course be ordered differently. So what follows is not intended in any way as a definitive interpretation of what the advice service clients and their advisers had to say. It is offered to illustrate five types of narrative, a selection from many that could be constructed from these individual stories. Thus the first type is based on personal housing and fuel histories, while the second takes as its theme the influence of geography and economic history on perceptions of community and local resources. The third is based on experiences of being a tenant or owner-occupier and what can lie behind that simple categorisation. Narrative four explores the significance of social networks and the experience of being the only adult in a household, and the final story type concerns relationships between customers and the utilities that supply them with electricity and heating services.

Between them, the narratives (sometimes overlapping) touch on critical life-events, technological and political developments, status and agency, access to formal and tacit knowledge, actor-networks, and relationships between households, commercial bodies and local government. Readers may identify other topics or themes of interest and that is part of the reason for setting out these stories: they can help to illuminate both themes and gaps in existing energy transition narratives, and to stimulate fresh thinking.

##### 4.1. Housing and fuel history

Several of the interviewees had been through major changes in their energy systems and several had had direct connections to the mining industry. One woman in her sixties (WL7) told of her upbringing in a mill in a steep-sided valley. The family had drawn water from their own well, lit the house with paraffin lamps [from the local shale deposits] and burned logs from the trees that her father chopped up. ‘You get a sweat twice from wood: first by chopping it, then by burning it.’ They burned coal only rarely, because it had to be brought by hand down the steep track to the mill. There was a big cooking range in the kitchen/living room and they also had paraffin stove. The house was always cold, she remembered, even in summer, with 2-m thick walls. Later in her childhood, her father became a shale miner and the family lived in miners’ houses, each equipped with a single electric plug. After marriage, in 1963, she and her husband had lived at first in a coal-fired house owned by the company who ran a nearby shale mine. They later moved into a Council house later moved into a Council house. The outside walls and loft had been insulated a decade ago and the Council had offered her a choice of coal or gas-fired central heating. Her husband, who had heart disease and disliked ‘dry’ heating, had chosen coal. They had run into difficulties when her husband contracted lung cancer and they could no longer pay their quarterly fuel bills, and at that point the energy advice service managed to find government funding for a conversion to gas central heating, installed two months after her husband’s death. The adviser had also sent someone to teach her how to use the new heating system and had phoned regularly to check that all was well. The Council had installed double glazing three years previously and extra loft insulation plus radiator reflector panels very recently, as part of routine refurbishments. All in all, she was very satisfied with the comfort she now enjoyed, the much-reduced cost (from £24 per week for coal to £15 per month for gas), and the support from the energy advice service, whose phone number she kept to hand in case she needed help again.

An older interviewee – a widow in her eighties living in sheltered Council housing – had been born into a miner’s family with six children. The eight of them had lived in a ‘room and kitchen’ typical of the area and the period: a kitchen/living room with a bed recessed into the wall where her two brothers slept, and a bedroom. There was gas lighting, a fireplace in the kitchen with an oven, but no hot water. They had been

‘lucky’ in having a flush toilet outside in the yard. Coal was supplied at a cheap rate to miners and the family kept it in a coalhouse across the street; one of her brothers had been killed by a bus on his way back from the coalhouse. At the age of 16, when she left school and went out to work, the family had moved to a ‘four apartment house’ with a living room, three bedrooms, kitchen and indoor toilet. There had been the luxury of fires in the living room and two of the bedrooms, electric light and hot water. On marrying, she moved in with her mother-in-law for almost five years before she and her husband were able to rent a two-bedroom apartment from the Council. Her next and final move was into sheltered housing, where she had nonetheless still needed to seek from the energy advice service after being massively overcharged by her supplier. The adviser had been able to secure a refund and also to put her on the priority service register of vulnerable customers. Again, the story tells of a progression from relatively harsh living conditions to greater comfort, but here there was evidence that, even if modern energy systems are highly reliable in terms of supply, the ‘back office’ functions of metering and billing can go seriously wrong. When this happens, those responsible are not always easy to understand or challenge.

These two brief energy histories show personal energy transitions in several respects, highlighting the crucial roles of Council and energy advisers in opening up access to shelter, fuel, physical labour and know-how. These are not, of course, cost-free: the Advice Centre’s case notes show that the first woman’s case had been very time-intensive and that it had only been possible to carry out the conversion from coal to gas heating in her home because the adviser had been able to redirect excess funds from another application. But both stories illustrate the significance of the local authority employees as middle-actors, contributing knowledge and skills that would traditionally have been either unnecessary or provided by family and friends.

##### 4.2. Geography and local economic history

As shown above, the local economy relied heavily on coal and oil shale. Even at the turn of the 21st century, a local coal merchant (who happened to own the guesthouse where I stayed while carrying out the interviews) was still delivering ‘concessionary coal’ to ex-mining families who were provided with five tonnes a year by their former employers. This coal was considered a better deal in terms of heating value than the alternative of £200 a year to pay for gas central heating.

The bitter miners’ strike in 1984–1985, when the National Union of Mineworkers took on the National Coal Board and (indirectly) the government, was a defining event in the lives of many West Lothian citizens. In addition to the poverty faced by strikers and their families, and the tensions between strikers and strike-breakers, there was the practical problem of how to keep warm in coal-fired homes with hearths:

*... When they had the miners’ strike and everything, people were going up there and digging for the coal in the ground. And the smell in West Lothian was absolutely disgusting, because they were obviously turning up some gases. People were desperate for coal ... so I went to my sister-in-law. Her father was a miner. And they found it very difficult. And they actually broke the strike, because families were suffering so much. I mean, friends against friends ... Sharing a block of coal ... and everybody had the same idea, to get wood and things. Because everybody had coal fires. Without that we had no water, no heating, there was nothing. (WL10)*

The coal trade did not disappear, though, even if prices rose steeply during the strike. The coal merchant commented that the miners’ strike had been the most profitable period for his business, partly because he had foreseen the likely turn of events and had struck a deal with an Irish peat merchant. In addition, coal deliveries had continued to some extent during the strike because merchants would give the night-time pickets money to go for a drink and would then enter the depots and



stock up with coal. So there were shortages of coal, but not a complete drying-up of the supply for households who had the money to pay inflated prices and were not personally involved in supporting the strike.

The accounts of the strike and of steady decline in the coal trade – though not its disappearance – act as reminders of the significance of the unexpected in energy transitions. The strike was perhaps an unavoidable outcome of conflicting interests at a time when the government was keen to reduce trade union power and reliance on British coal, but no policy maker could have accurately predicted its impact on life in West Lothian. Alongside the disruption to the coal industry, though, there was an element of continuity. Many homes still had the infrastructure for burning coal, many people were still entitled to concessionary coal as ex-miners, and so the planned transition to gas as the main fossil fuel source, with its lower carbon impact, took longer than might have been expected.

#### 4.3. Housing tenure

There were many references to the relationships, possibilities and constraints of tenancy in the course of the interviews. All the householders interviewed had at some stage been Council tenants and two had been registered as homeless and in need of emergency shelter for short periods; reliance on the Council as landlord had influenced everyone's thinking to some degree.

Developing an ability to use Council services and programmes could be crucial. One woman, now in her forties, had been brought up in a steel-framed house<sup>5</sup> that was tolerable in winter only because it had fireplaces in the bedrooms as well as in the living room. These offered a degree of autonomy in terms of the choice of fuel, something that was later denied her mother when the Council 'improved' the heating:

*I liked the coal fires. And [the warmth] lasted all night. We'd wake up in the morning and it'd still be going. And we used logs, because they used to fell the trees at Middleton ... the wood was free. We used to go up and put the wood in the boot of the car. ... it gave us fantastic hot water. And then they [the Council] put in new heating. One of these Rayburn fires ... worst heating we ever had...It was expensive because we had to have special fuel. And my mum was widowed and couldn't really afford it. So a lot of the time we just couldn't afford to use the fuel. And [the glass door in the stove] used to blow out and it used to burn the carpet. You couldn't have it on and then go out. It was terrifying. (WL 10)*

On leaving home as a young woman, she had moved into a Council flat with 'blow heating': warm air blown through ducts close to the floor of each room. This arrangement allowed sound to travel between rooms and

*We had a dreadful problem there, with the wet on the windows. We used to get up in the morning and the curtains would be absolutely drenched... the mould was unbelievable. We used to put towels along the windows at night and along the skirtings<sup>6</sup> as well. And the towels would be soaking in the morning.*

I: Did you, did people keep asking the Council to do something about it?

*Yes. And the reason they did do something was because when the system broke down they couldn't get parts for it any more. There was nobody manufacturing them. And when they were, they were expensive. It was going out of fashion, so they had to change it. They had to do that...they didn't have any choice. (WL10)*

Not only did she feel impotent at times in relation to the Council;

they too relied on manufacturers who, in transition, changed their products from time to time. Later in life, the woman had to deal with failures in her central heating boiler, leaking pipes, debt and the bills of £300–400 per quarter that eventually led to her seeking help from the energy advice service: that is, a service set up by the Council that supplemented its role as landlord.

Tenancy could induce frustration, resignation and gratitude towards the landlord in varying degrees. An elderly widow who had relied on the Council all her life for housing, had recently had new windows installed and noted that it had been necessary to show great patience with the landlord:

*The Council have been doing all the houses up. Before that, you were frightened the windows were going to come in, because the wood was all rotten. Really bad ... My son, he wanted to complain, go down and kick up a row about it, but I said 'No use doing that. You're not going to get anywhere with them.' But they came and put them ... took a long time but every year they were going to do it, then it was cancelled. Finally got it done. (WL12)*

Maintaining a good relationship with Council housing officers was clearly important: they were gatekeepers to renovation and repair work. But these relationships could be strained at times, as indicated above, and the energy advisers saw themselves as bridging a gap between housing officers and tenants to some extent, combining expertise in diagnosing energy problems with an understanding of what could be achieved in a given situation by a tenant. Here, an adviser presents himself as less judgemental than a housing officer and, by implication, more accessible and able to help:

*I think a lot of tenants know that if a housing officer goes into the house and sees the condensation and sees a Calor gas heater,<sup>7</sup> they'll specifically blame that heater [for condensation]. I wasn't blaming [this tenant] for having the heater ... I just tried to explain ... that the excess moisture's making it harder with the heating and so forth ... (WLCES senior adviser).*

The social housing stock was however gradually shrinking in West Lothian, as tenants exercised the 'right to buy' introduced by the Conservative government in 1980. Two interviewees were now owner-occupiers and one expressed his contentment vividly in terms of what he could now do with his flat, happy to be in charge of his own home. However, both he and the other homeowner maintained links with the Council and saw it as an important factor in their lives, for example when they were considering renovation:

*When I had heard about this from the neighbours ... they're all going to get double glazing and new doors ... I went to see the Council and I said 'Look, when the [Council-owned] houses are done in [my street], I'm quite prepared to pay my share, if I can be put on the list.' (WL5)*

This wish for a trusted authority to arrange for retrofit remains significant for as long as the housing stock is in need of refurbishment and efficiency improvements. As Killip [20] notes, refurbishment is as much a matter of service quality as product quality; people naturally look towards standards and providers that they can trust.

#### 4.4. Social networks and sources of support

A strikingly high proportion of the West Lothian interviewees were the only adults in the household. All except three had been on their own or single parents at the point of asking for advice, and two of those three had been caring for a terminally ill partner at the time so that they were effectively on their own as decision-makers. The senior adviser commented that he could probably count the number of home visits he had made to non-single householders since 1994 on his fingers and toes.

<sup>5</sup> That is, a home that would be continually conducting heat through the walls: inherently cold.

<sup>6</sup> Also known as baseboards or floor moulding.

<sup>7</sup> A portable heater using bottled gas

This strongly suggests that there may often be difficulties in addressing an energy-related problem simply because there is no-one at home to define and discuss it with.

The importance of social networks was an important theme in the interviews, usually brought up spontaneously. Friends and neighbours could make difficult living conditions tolerable, as demonstrated by one interviewee who remembered years spent in a tower block – ‘High flats. It was lovely. Lovely neighbours, we were all from Glasgow overspill, we were all going great’ – before recounting the state of those flats:

*We'd gas central heating, when I moved to the high flats. Yes ... but it was on 'blow'... warm air come out. Terrible. The story goes is, they used a cheap material on plastering the walls and the fungus ... it wasna just damp, it was black everywhere ... They come up and they said, 'Oh, you have to put your heating up full'. I said, 'My heating's up full'. And they said, 'But you have to keep your windows open.' I said 'Don't talk silly. I can't do that.' I couldn't afford that. This is what we were told. And the condensation was really terrible, in the flats. Lovely view, a nice view. But ... yes, it was bad. (WL12)*

Gas central heating was also interpreted in social as well as functional terms. It meant more affordable comfort, but a shift away from coal could mean the loss of an opportunity to talk with the neighbours, as when coal was stored in a shed away from the home and

*... we all helped. And everyone had coal fires ...and you were no different to the rest of your neighbours. That was the place to meet when you were out getting the coal from the cellar. We had some great blethers<sup>8</sup> out there. (WL10)*

Informal social networks could often be a first line of help with everyday problems, but there would be occasions when these networks would not be able to supply the necessary knowledge, or when the problem was not one that someone wanted their neighbours to know about. It could take extraordinary hardship before a householder sought professional help, with long periods during which they did not have the support they were entitled to. An elderly widow told how

*I just got [gas central heating] in when my husband died three years ago. And what a shame [it did not come earlier]. He was frozen, you know. So I got a [bottled] gas fire and they told me I shouldnae be using it because of causing condensation. But I wasnae fussy about condensation when you had the man lying dying in front of you ... [The adviser] said there was a lot of funds that I'd be entitled to, which I didn't know about. So he sorted it all out because it was going to cost me £1400 to get [central heating] myself. Yes. And there's no way I could have afforded it ... no-one told us about what we were entitled to, I think. (WL9)*

Another interviewee, also a widow, had moved into her home following a year in a homeless unit. She had only partial sight and hearing, suffered from arthritis and internal ailments and had been spending up to 19% of her income on fuel (case notes, WL12). Her account gives an indication of the delays that can arise when seeking assistance when in serious distress, the way in which non-energy actors (that is, non-energy specialists) can become a part of energy transitions, and the value of having joined-up social services:

*When I come in here at first, it was terrible. Had storage heaters and some of them didn't work and for two years in the wintertime it was freezing. There were no heaters in the hall. The one in the spare bedroom didn't work. The one in my room worked but there wasn't one in the toilet. It was really, really cold, like. And to heat up here [living room] you spent a fortune. Big big big bills...They [the Council] wanted me to pay over £3,000 to get gas central heating in and I said no. I said, 'Every house in this area has got gas central heating, with the Council, free'. I said, 'Why should I?' ... The woman that was in the house before didn't*

*want central heating. I said, 'But that's not my fault. I can't afford to pay that'.*

*... I think it was somebody like, the doctor, the social security, could see the storage heaters and they were disgusting and they were old things ... She visited me and the next thing I knew they put in, and I got it through ... I think, charities thing I think it was. They paid for it. [The energy adviser] helped me to get [the central heating]... the doctor and the social security, they got it. It took a long while, though. Well over a year...before I had the central heating. (WL12)*

Many of the energy advisees faced multiple difficulties. For example, a young single father (WL8) had faced difficulties included fuel debt, high bills, damp and mould, along with administrative confusion from having changed gas supplier in 1998. Addressing these difficulties involved the energy advice service, a money adviser and the Council's housing officers: personal contacts had clearly been very important, between advisers and advisee and between the various professionals.

At the extreme end of the spectrum of care, the energy advice service acted almost as surrogate family to their longest-standing client, an elderly woman who claimed that ‘I never see my neighbours. I could be dead’ (WL3). Her accounts of advice visits had the ring of encounters between an adult son or daughter and a change-resistant parent. For example, the interviewee strongly resisted using default settings on her central heating time, or programming it at all, and so her adviser had decided at some point to arrange her timer for manual use, so that she need only press a button three times for ‘on’ and once for ‘off’. This is not the ‘optimal’ solution that the heating control designers may have had in mind, but it was workable. With failing eyesight and memory, she forwarded her fuel bills, unopened, to the Advice Centre, not trusting her supplier any more after a bad experience several years previously. She fortified her relationship with the energy advisers through phone calls, the occasional home visit and written correspondence including Christmas cards (‘I say, Whatever you do, don't even think of giving up here. We need you. Don't ever leave!’).

This sort of relationship is unlikely to be mentioned in grand narratives of energy transition. Neither are the modes of learning that operate informally and through personal contact, even when that contact has some formal structure. All UK energy utilities have a customer service that offers phone contact and written advice, but there are many situations where it is only possible to understand the nature of a housing or energy problem by being in a building and discussing it – and related matters – with the occupants.

#### 4.5. The remote utility

Several of the interviewees indicated that energy supply had become more difficult to understand over their lifetimes, with shifts from locally-mined or harvested fuel to the less visible and tangible supplies of natural gas and electricity. If something went wrong with these supply processes, it could be difficult to understand what the problem was, to communicate with the utility, or to understand the utility's response.

Supplier mistakes and the breakdown of supplier-customer relations made up a considerable part of the advice service workload: 10–30% of enquiries in recent years had stemmed from debt, disconnection and disputed bills. The size of some mistakes shows how easy it is for remote suppliers to fail to realise that they are sending out wildly inaccurate bills, as was the case when an interviewee received a huge bill for heating her two-bedroom apartment:

*... when I was first going to Energy Advice and they were looking at billing and things they said 'You cannot possibly burn £400 worth of energy in three months. You cannot do that. You know, that would be impossible in a small flat' ... Well, I said to [the adviser] 'That's what it looks like.' And he said, 'That is what they're saying ...'*

I: And the company couldn't pick that up ... I suppose they don't

<sup>8</sup> Chats, discussions.

know what the flat's like?

*They wouldn't send a representative out.* [Although, as noted below, the company sent a representative into her home in her absence to install a prepayment meter.] (WL10)

In another instance, there was a lack of effective communication about the 'white meter' tariff for cheap rate electricity. The householder had storage heaters in his poorly-insulated house and they tended to run out of heat towards the end of the day. He claimed that his electricity supplier had not been able to understand his problem and arrange for his heating to be boosted in the early evening:

*I couldn't understand how I had an electrical supply and I couldn't have warmth. And I was told [by the supplier], oh it didn't come on until 11.30pm and it was done by outside and it was a signal sent from Radio Four.<sup>9</sup> And the wee man in the moon said that you had to ... oh, the stories they expected me to believe! When common sense tells you that if you've electrical power coming into your house then it's not the hardest thing in the world to get heating from it... So the Advice Centre got me the booster. A guy came in, put a new meter in for me, what have you, and it comes on ... I sit and watch the telly a lot at night.* (WL1)

Much of the energy transition literature is primarily concerned with changes in supply infrastructure and these changes are, of course, a crucial part of transitions. Yet these brief narratives from householders and energy advisers show how transition is a social and relational process involving demand-side actors and artefacts. It is obvious to a utility that electricity is more expensive to supply at peak times, especially in the early evening, than in the middle of the night, and this man, their customer, had an arrangement in which storage heating, tariff and meter formed part of a package. But it was not at all clear to the customer, whose physical comfort and general well being were affected by whether he was able to keep warm in the evenings and to understand how his energy service operated. Peace of mind emerged as a theme in the course of the interviews, with several respondents commenting on their satisfaction that they could if necessary call upon the advice service at any time: *'If I ever have a problem I just phone [the adviser] and he phones me back in 15 minutes. Sorted!'* (WL1).

The sense of control that came with increased understanding and the support of advisers could make a dramatic impact, perhaps best summarised by the woman who had been through so many difficulties with both housing and poor health and had emerged with a sense of agency and ability to cope with future problems:

*I think that Energy Advice have given me the confidence to take control and say, 'Look, this is my heating, these are my bills, I'm paying them and I am going to take control here'. Because before Energy Advice came, I felt as if they [her supplier, whose employee had entered the flat in her absence to install a prepayment meter] were in control and I had no say ... I did feel on my own with the problem.* (WL 10)

## 5. Summary and conclusions

The title of this paper promised a tale concerning coal (geography, culture, local economy, resilience, community); steel houses (building materials and techniques); and the man in the moon (remoteness/immediacy, communication, technologies). The material in it comes from a brief history of a locality and interviews with a group of people who had requested help at times of particular difficulties in their lives. It is highly specific, yet it deals with people, dwellings, artefacts and places that were caught up in transitions that affected millions. Indicating the need for and possibility of dialogue between the particular and the general through these narratives has been, in a way, the point of the paper. Although the stories offered by the

interviewees and supported by observation are specific, they offer some valuable insights to energy transition research and point to areas for further research and action. For example, they support Goodhew et al.'s advocacy of 'building literacy' [5, in this special issue], a concept that takes into account the crucial interactions between buildings and their residents and the ways in which these can change over time.

Perhaps the main lesson to emerge from these West Lothian stories is that, even when energy supply is largely in the hands of large corporate businesses and regulated nationally, demand remains stubbornly localised, influenced by the state of housing, employment, income and the transfer of knowledge and skill between individuals and organisations. Geography matters to energy policy, not least because energy transitions reconfigure spatial patterns of economic and social activity [1] and influence local 'natural' and built environments. Gas and electricity may be the same in any place, but they are not bought, used and understood in the same way in any place: housing, climate, demographics and social networks, all place-specific, are important in influencing how energy is captured and used. All these considerations make it clear that energy transition is more than a sequence of developments during which average people in average buildings meekly and unproblematically adopt new technologies and adapt to new infrastructures.

The interviews also illustrate some of the communal and social significance of energy issues and the ways in which hardship may be addressed through personal and institutional support and learning. The transition from belonging to a fuel-producing community (poorly-housed as it mostly was) to being a solitary consumer of fuel and electricity from distant sources and in an uneasy relationship with a distant utility was one that many people in the area had experienced. To talk with them, and to read case histories in the Advice Centre, was to encounter many 'horror stories' but also many 'learning stories' [21]. While the need for new skills and formal education finds its way into the energy transitions literature, the transmission of everyday know how tends to be ignored; yet these stories show how essential it can be in enabling everyday transition from incapacity to competence, isolation to inclusion, and novelty to 'new normal' [22].

West Lothian offered a fine example of an area rich in fossil fuel that had largely stopped using this local supply and now relied on nationally-based and regulated gas and electricity systems. The middle-actors of the advice service and their colleagues had acted as guides in this adjustment, offering material and social support to citizens whose experiences with housing and heating took new forms as new housing was built, old homes were retrofitted, and gas central heating became normalised. The advice service not only offered concrete solutions to particular problems, but seemed to have contributed some resilience to new modes of housing, heating and electricity use. Clients not only needed information (also available to some extent from their supplier), but interpretation, advocacy and confidence-building.

The voices recorded in this paper encourage reflection on places, resources and understandings that influence the form and timing of energy transitions. They point to some of the less-acknowledged realities within energy research, eloquently discussed by Moezzi and Bartiaux [23] in their plea to 'liberate energy analysis'. They help to bring into focus the 'all but invisible' higher-order social patterns such as expectations, political systems and historical trajectories [23, p. 151]. The voices also beg some quite fundamental questions: for example, if a major aspect of energy transition does not work for the fuel poor, what needs rethinking? If there is strong evidence that middle actors are crucial in bringing about change in energy systems, why is so much of the research literature couched in binary terms of supplier/consumer?

These stories mainly concerned transition from traditional to modern housing and from coal-fired heating to gas or electric heating. But energy transition is never finished and continually throws up new questions: for example, can distributed energy developments that rely heavily on connectivity (demand response, in particular) work without some understanding and acceptance of how the connectivity works, and

<sup>9</sup> See <http://www.radioteleswitch.org.uk/>.

for whom: something beyond a baffled, derisive and frustrated perception of ‘man-in-the-moon’ remote control? The experience of trying to interpret the West Lothian stories points to a conclusion that we need to plan for and evaluate energy transitions with the help of narratives as well as measurements,<sup>10</sup> remembering that personal and organisational energy stories have much to tell us about stability and change, the significance of the physical and social, understandings, competencies, and agency. Without these, grand narratives of transition lose meaning and power.

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<sup>10</sup> Something that is now used in some forms of realist evaluation.