Attitudes to District Heating Focus Groups

Newcastle

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Report by
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District Heating Focus Groups

Background

The Institute of Ageing and Health (IAG) based in Newcastle undertook focus groups on attitudes to District Heating for the Tyndall Centre for Climate Change Research, University of Manchester as part of a larger, PhD research into District Heating. The researchers, Chris Jones and Paul Upham worked with Dr Lynne Corner, at the Institute of Ageing and Health to develop the attitudes focus groups. Participants in the focus groups were recruited through Voice North, a data-base of North East people over the age of 50 who have expressed an interest being involved with research.
The aim of the attitudes research was to discover, in the context of people's attitudes and practice in heating their homes, how they feel about District Heating in general and about some of the features of it. The focus groups presumed no prior knowledge of District Heating; a presentation was made as part of the focus group sessions.

Methodology

The Institute recruited to two focus groups through its Voice North data-base. The Voice North data-base comprises older people (over 50) who register individually on a voluntary basis. Where they participate in a group they are given a £10 Eldon Square voucher and are eligible for reimbursement of travel expenses. The aim was to have between 8 and 10 people in each. Volunteers were sought with an email request, which stated the subject was home energy. Those who volunteered received a further email immediately before the session, which said that there would be discussion on District Heating, but that no prior knowledge of it was needed. It stressed that fuel costs were not the subject or a strong focus of these groups. The groups were set to run for two hours each, including a presentation on District Heating from Chris Jones, led by a facilitator (Elaine Rodger) who was independent of the researchers. Two focus groups were held as a check on consistency/ differences. A script was developed (see appendix 1) which led into the District Heating section, through questions on home/hot water heating practices generally. The subject introduced on the day as how we can make better use of heat in UK and recycling waste heat for heat and hot water in domestic houses.

Participants were assured of anonymity in the final report and an explanation of the purpose of the research was given on the day. The discussion sessions were recorded and have been transcribed in full: the transcriptions are available to the facilitator/report, the researchers and the IAH only. To achieve anonymity in this report, quotations are referenced G1 or G2 (for the group) and M (male) or F (female) where it is clear.

There was no difficulty in recruiting to the two focus groups. 9 participants took part in group 1 and 7 in group 2. All 16 were over 55 and no longer working. Approximately half were focus group experienced. Group members provided details of their previous employment, age band (5 year groupings), housing tenure and place of residence. Current home heating arrangements were ascertained through discussion.

Both groups had a good balance between the sexes. Ages were across a range from 55 to 85. In terms of socio-economic analysis, on previous occupations, all participants apart from one in G1 who was long-term disabled, were from professional or skilled backgrounds. However, as all were on occupational and state pensions/benefits, incomes were limited.

Focus Groups: Participants

Gender

	Group 1	Group 2	Combined
Men	4	3	7
Women	5	4	9
Total	9	7	16

Ages

	Group 1	Group 2	Combined
Under 60	2		2
60-70	2	3	5
70-80	4	3	7
80+	1	1	2
Total	9	7	16

Socio-Economic Backgrounds

	Group 1	Group 2	Combined
NSSEC 1 & 11 (Prof)	4	3	7
111 a) & b)	3	4	7
IV, V, & VI	1		1
	8 (households)	7	15

Housing Tenure

	Group 1	Group 2	Combined
Private, owned	6	7	13
Social rented	2		2
Total	8	7	15

Housing tenure was more mixed in G1 than G2. Within G1 there was one married couple, so that references to G1 households will total 8 rather than 9. This gives percentages of 75% (69%) privately owned and 25% (17.9%) in social rented housing. The figures for England as per 2009 Shelter fact sheet * are in brackets. There was no representation of private rented housing in either group. All 7 participants in G2 owned their properties: thus over the two groups the privately owned sector was over-stated at 86% (69%), and the social rented understated at 13% (17.9) with the private rented sector, the smallest group nationally not present – 0 (12.73%). There was a spread of place of residence; predominantly Newcastle-upon-Tyne and Gateshead but also covering North Tyneside, County Durham and Northumberland. No-one lived in a very rural situation; typically it was urban but not city centre. All except one had access to mains gas; in the case of the person who did not this was a restriction from the developer of the block of flats in which he lived. Household size and type of property were not collected from participants (and perhaps should have been) but from responses covered a range from large houses, to more compact ones including small terraces and bungalows and flats. Households seemed to be small, with many participants living alone or being one of a couple. Nationally the modal household size would be slightly larger.

** Shelter Fact Sheet:*
http://england.shelter.org.uk/professional_resources/policy_library/policy_library_folder/housing_tenure_factsheet

Existing Heating Practices

Space heating

Equipment

13 of the 15 households represented within the two groups had gas central heating. 2 had electricity (1M in G1 and 1M in G2). Those using electricity had not had a choice. In G1 the participant was in rented accommodation equipped with Economy 7, which he disliked.

> ***Yes the house is all electric and Economy 7 is not cheap because you're nice and warm when you're in bed when you don't want it kind of thing but come mid afternoon about 4 o'clock the whole system is cold (G1M)***

In G2 the electricity user lived in a new flat where only electric systems/appliances were fitted/could be used. He was more satisfied; his flat was warm and there was an overall controlling thermostat.

> ***The new development gave no choice at all it was electric or no heat.... I think it is a lot more efficient than I anticipated and certainly out of proportion to what I knew in my working life (G2M)***

11 participants had gas combi systems and were either satisfied or quite satisfied with these. One did not specify his boiler type. Another (G1F) had not had a combi installed when she replaced her boiler as it she was told fitting would be more difficult

> ***It would have been a massive job of re-piping if I had gone for a combi and so I replaced it in exactly the same place with very little pipe work involved. And also I personally quite like the idea of a bit of warmth in the kitchen when it's on as well and so you're getting some residual heat.***

Many had had their boilers replaced within the last 5 years.

> ***Gas, one of those new boilers (G2i)***
>
> ***A combi boiler it's been in 18 months (G2ii)***
>
> ***It's a new one yes and one or two new radiators I had as well (G2iii)***

Almost all had some supplementary heating, most commonly in the living areas, but sometimes to warm other areas such as bedrooms. There was a mixture of gas and electric appliances. One participant had open fires in the dining room and kitchen. The supplementary heating appliances were used to heat cold spots, to provide a focal point in the living rooms, to provide extra heat and for instant heat.

> ***Because of the way the house is laid out and all the cool areas I've got an oil fired radiator, which I would use in the winter. (G1M)***
>
> ***We have a combi boiler, gas central heating. We do have an electric fire in the living room but we don't use it. It's like you say for show. (G1F)***
>
> ***Yes I have got a fire which I must admit I've used probably more this winter than I have done ever. (G2)***
>
> ***...there have been times when I'm in and out of the house and it's not worth putting the central heating on and I will put the fire for half an hour if I'm going out soon. (G2M)***

Temperature and Control

Most participants had a degree of control through their heating systems in terms of timers and overall thermostats, thermostats on individual radiators and thermometers so that they could monitor and adjust the system manually.

> ***I've got the thermostat set to override the time clock that it would come on if the temperature dropped below 13. (G2M)***
>
> ***…I haven't got a thermostat on this heating it's controlled by each radiator with the thermostat you know 1 to 6 on there. (G1F)***
>
> ***I'm not very good on those but I have a thermometer, it's one from the Gas Board, and it tells the different room settings. It tells you when it's too cold that it's dangerous and you could get hypothermia. The next one is it's cold turn your heating up. And the next one is just sort of fine and then regular and then you go onto too hot and turn the heating down. (G1F)***

A number, especially those living in the larger houses, did not heat some of the space or only to prevent frozen pipes. Many would rely on how they felt and quite a lot described themselves either not liking to be too warm or easily feeling the cold. One participant referred to their partner, who was a diabetic and felt the cold. The Economy 7 participant was least satisfied with the adequacy of his system and degree of control. A few referred to solar gain and made allowance for this.

> ***Yes well I don't like it too hot and so mine is always inclined to be on the lower side (G1M)***
>
> ***We live in a small bungalow and so the house tends to be warm. But my husband suffers from diabetes and he feels the cold terrible. He wants to turn it up and he will switch it maybe up to 18 to 20 and it's really, really too hot for me …(G1F)***
>
> ***During the last winter the temperature in the flat has never gone below 17 degrees even with no heating on overnight. And so I've got a very highly insulated flat with a lot of solar gain. (G2M)***

Use of heat – daily temporal

Most participants put their heating on twice a day. Those who had it on for the whole day, say 7 to 11, would rely on the thermostat to turn it down when the required temperature had been reached or would have it on low. One person in each group had it on three times, with a boost at lunchtime. The Economy 7 participant could only have 7 hours of heating per day. The Staywarm tariff had encouraged 2 participants in G2 to keep their heating on, but whilst the tariff and arrangement had seemed initially attractive they had discontinued it and found cheaper ones. Some had summer periods where they re-set it or even didn't use it at all. Conversely, some reported that during the coldest periods of winter they had it on all the time.

> ***Well on a normal day it's on for a couple of hours in the morning and then it comes on at about 5/half 5 until about 11 at night time. (G1M)***
>
> ***You get your 7 hours between 12 and 8 (Economy 7) and it all depends whether it's British Summer Time or Greenwich Mean Time kind of thing but you get 7 hours, between 7 and 8 it all depends. (G1M)***
>
> ***…they (Staywarm) gave me a deal that gave me £60 a month for as much energy use as I wanted and so I became very profligate. And so at the end***

of that year I decided that I really ought to change and I stopped it and I went onto one that you know I pay for whatever energy I use. (G2F)

I mean it's off now, end of March it will be off. Last year I got to December before I put it on, before I put any heating on. (G2F)

I did during the bad times from 7 to about 11 at night when it was really bad. (G1F)

Cost, comfort and control

All participants were clear that comfort came before costs in the way in which they used their heating. They would not be cold and would put it on if needed. Costs were clearly an issue and they worked hard to keep the bills in check. The discussions on ways of doing this in both groups were quite lengthy.

And putting extra clothes on

I put woollies on in the house

I put extra clothing on

I was going to say that (G2)

Tariffs featured in the discussions of both groups although participants were not specifically asked about these and were discouraged from discussing costs. Many members of both groups had changed tariff. In Group 2, 5 participants reported changing tariffs in the last three years. One member had used *Which* comparison tables to help with the decision. Many had dual fuel deals for gas and electricity.

This year they (NPower) said we're going to put it up to £75 and I said I reckon I'm only using just over £60 a month for gas and electricity. And she checked through and she said yes actually it is it's averaging at £62 would you like us to put us down to £62 rather than £75 a month. Yes please I would. (G2F)

Apart from costs, which were the pre-eminent factor, there were some other influences on which supplier people contracted with. Dual fuel, reducing the number of bills coming in was one. Two others referred to the source of the fuel and the standing of the company. One participant in G1 was with Ecotricity and liked this: he was interested in ecology and liked the thought that his fuel use did minimal harm to the environment. Another participant had been with a French owned firm but was pleased to have changed to a company she perceived as British.

I think it was just before Christmas I saw an article in the newspaper about an eco firm, for example Ecotricity, which says that it will do as much as it can to get eco friendly power to you, this firm said that all its gas was eco and so I switched. (G1M)

EDF to NPower. One reason was EDF's bills were going up and it was annoying that it's a French company. I mean I know they're all foreign companies, which is quite disgusting really. But NPower we felt was British. And also they gave us as you say for duel fuel we got £100 plus another £100 and so we had £200 for the first year. (G1F)

Water Heating Practices

Most people preferred showers to baths; although a minority preferred baths or liked the occasional soak. One participant in G1 and 3 in G2 had dishwashers, although these were

not always used every day. As most people had combi boilers, they were able to separate water heating from general heating quite easily. A few, including the Economy 7 user, had immersion heaters for water and used these to heat their water either all the time or when needed. One kept his immersion water heater on all the time as this was not expensive, since once the water was up to temperature it only needed topping up. One participant had had solar panels fitted approximately three and a half years ago for environmental rather than cost saving reasons (he had not even worked out payback) and they provided all his requirements.

> ***Well you can have water alone but I don't think you can have heating alone; certainly I can have water alone. (G1F – non-combi)***
>
> ***I make my grandsons wash up and they do believe it or not! (G2)***
>
> ***We did it because we wanted to do it yeah. It gives you fantastic hot water because it goes through the gas boiler if it's not hot enough. You flick a switch, there's a valve that reroutes it, and so if it's not hot enough from the sun it just goes through the gas in the normal way. But of course the gas doesn't have to bring it up so far. Even in the winter it never drops below about 15/20 degrees centigrade. As long as it's pretty light it is getting some heat exchanged, if it's sunny it's even better. (G2M)***

Attitudes to heat supply

Both groups were clear that comfort came before costs, though costs were important. Control was also a factor. When G1 was asked for one word on their highest priority for heating cost form a choice of cost, reliability, convenience, controllability and environmental impact of heat supply costs came up for 1, reliability for 4 and efficiency for 2. Only one person highlighted the importance of environment unprompted, saying that she would favour environmentally-friendly methods, providing it did not cost too much. Once the topic had been raised there was a general discussion. Nuclear power was not liked by one participant who said she did not mind wind farms although she was aware of the debate. One participant enthused over hydro-electric power. Participants in G1 were asked if they knew the source of their power. Knowledge was limited although most knew it from natural gas and thought that some of this still came from North Sea supplies. One participant was aware that some natural gas supplies now came in liquefied by tanker from the Middle East.

> ***That's why it's efficiency, you've got control of it. My daughter has got night storage heaters and I mean at this time of the year it's absolutely tremendous the temperature in her house but she can't do anything about it (G1M)***
>
> ***Well I'm not very keen on nuclear things. I do realise they are efficient but I'm not keen on the idea. And I'm quite keen on wind farms even though some people think it's unsightly. (G1F)***
>
> ***I mean for a lot of years they've had hydroelectric schemes in Scotland and I think they've just completed a major one in the last sort of couple of years. Now that is phenomenal and it's there for free. It took a lot of money to build it (G1M)***
>
> ***One thing they're actually bringing it in by tank from the Middle East, they're actually liquefying it and bringing it in tankers and bringing it to Milfordhaven where it warms up kind of thing. (G1M)***

Presentation on District Heating

Both groups were asked if they had ever heard of District Heating, prior to the session. There was little knowledge in G1. In G2, rather more had heard of it – 3 of the 7 and they

cited local examples – the Byker (Newcastle) scheme the Farringdon scheme that ran in Sunderland. The Byker scheme was known as much for the public health controversy that had been caused by used ash, subsequently found to contain Dioxins from the incineration plant on local allotments.

> ***I mean when it was first built the actual cost of the fuel was nothing because they were burning rubbish…But it caused problems though because there was toxic ash (G1M)***

Chris Jones gave the PowerPoint presentation on District Heating. Both groups had some queries, in G1 early questions these related more to how the systems actually worked, consistent with their lower level of initial knowledge. One question required clarification that the hot water that was used was in a closed system. Another related to bursts in the supply pipe work and Chris explained developments that have reduced the risks. There were also some questions on performance would it be hot enough. One questioner knew of an old scheme in Russia where the flats towards the end of the supply lines were too cold. G1 later moved onto the size of development that might make a District Heating scheme viable and community support.

G2 was more sceptical and had one participant who had quite a lot of knowledge about District Heating schemes over the years. G2 had a longer discussion on a number of issues. G2 questions started with one about lost heat in the delivery system. There were also discussions on heat sources and whether some of the 'waste heat' sources might reduce over time as energy production became more efficient. Set up costs and how these were affected by distance were discussed and support for set up from central and local government. Southampton was mentioned by Chris as an example and also preliminary work done in London.

> ***When I went to college District Heating was talked about in the 1940s, the brave new world of District Heating. (G2M)***

Acceptability of District Heating

The majority of participants were cautiously in favour of District Heating and would take it if it was available to them at the same or lower cost than their present systems. There was some scepticism as to whether it could be made available to existing houses. Two of the most enthusiastic participants in G1 liked the fact that it used heat that would otherwise be wasted. Another participant in G1 was keen for similar, environmental reasons. Some G1 participants liked the idea that it may make the UK more self-sufficient in energy terms. G2 had a majority of participants who would take part in a District Heating initiative. The group member with solar panels, whilst supportive, did not like the idea of wasting his investment in the panels. One participant was more sceptical and would wish to wait until a system had 'proved itself'. The same respondent also raised age as possibly deterring people from converting to a new system.

> ***In theory I think in certain areas it would work well like you suggested in a community. But I think in a place like Newcastle there's such varied housing things and stuff. (G1F)***

> ***Well I think if we're using heat that's a by-product I think that's an excellent idea because I think it's so ridiculous that so much is wasted in heat. Where we used to live there was Didcot Power Station and the amount of wasted heat there you could see it. (G1F)***

> ***Yes if it was available and if it was kind to the atmosphere and everything and low cost yeah. (G2F)***

Yes if it could work with the solar panels as well...well they're there and so I don't want those to become redundant! (G2M)

I think I would have to wait until it had proved itself to some degree before I would be willing to change. Because I don't think in the long term, and I think I'm talking for quite a lot of us here, we've got a finite number of years and therefore is it going to be worth changing or having a lot of upheaval? (G2F)

Energy source

Participants were asked how they would feel about different heat sources including nuclear. There was a mixed reaction to this. There was less objection to using heat generated from the process of generating electricity from existing nuclear power plants, however, one participant G1 felt that if this happened it would be used as the basis for supporting new plants. One of the G1 respondents was very clear that he would want the source of the heat to be sustainable and eco-friendly. There was no objection to other sources such as rubbish as long as there were no adverse environmental consequences. When the question was put to G2, the reaction to the point about nuclear energy source was that it was probably inevitable that energy generation form nuclear power would increases although there was a strongly expressed wish for more use of sustainable sources.

Contracts

Discussion of longer term contracts and lock-in provoked more questions about the District Heating schemes themselves. It increased wariness. There was comparison with other schemes where two years were offered at a low price, and then increases had occurred. There was much discussion in the groups about experience elsewhere, both in Europe and in the UK. Chris was asked whether there were any schemes that had been made mandatory in particular areas. There was some discussion in G1 re restoration on the sale of the property. One person in G1 turned the discussions to cost, but although the prospect of lower costs appealed, concerns and queries about the system persisted.

Would you say then it would be more likely to be applied in sort of council housing or conglomerate type of housing or a separate individual house? If you sort of left your house and signed over your lease or whatever the next person would be obliged to some extent to take it on without great cost to change. (G1)

These various communities in Europe how long have they been in operation? ....
And none of them have failed or gone bankrupt or anything like that? (G1)

And so when they install it for existing buildings is it compulsory or can you keep independent sources? (G2)

Yes especially in terms of as it were the length of the contract. Okay it's dead cheap for the first two years but what freedom have they got to change the price after the initial period. And so you would want some assurance about the long term pricing. (G2)

Supplier

Lock-in and contract length led quickly and naturally to discussion of suppliers. On the whole, people felt more comfortable with major suppliers whose names were known to them such as British Gas and NPower. There was also a degree of comfort from schemes where the local authority was involved such as Southampton and Woking. However, there was a concern that even where this was the case, privatisation and mergers and sales could change the situation. Smaller, private companies which were not known aroused more suspicion and a general view that profit would be the main motivation. Also giving quite a degree of

comfort was the notion of having local communities with a stake in the running of the scheme and a more open system of governance.

> ***I think again it would come down to cost and it would come down to whether you trusted them because as soon as you get a very private company in the most important thing that they are looking for is profit. And would you have any control over the charges that they were going to make. (G2)***
>
> ***F: If there was some system of local ownership, and I don't mean the local council I mean the people that are the users having a stake in it, would that make it any more appealing?***
>
> ***Definitely yeah (G2)***
>
> ***I think it would to me yes, yes, because they're always selling them off (G2)***
>
> ***F: And so if you felt you had some sort of stake in it?***
>
> ***If it was a sort of cooperative enterprise***

Installation

One view expressed in G1 was that if it was being installed, that the disruption would have to be borne with. Comparisons were made with other major infrastructure schemes that participants had experienced/remembered. For others, the degree of disruption was a further factor that made them incline to the view that it was a system more for new housing/developments than existing ones.

> ***I live in Whickham and at the moment the telecoms are you know putting new stuff in and certainly the water companies you know they've been on for years repairing old pipes. (G1)***
>
> ***We're used to it!(G1)***
>
> ***I don't think it's a really practical thing on getting old estates like my estate is pre-Victorian and so doing them would be cost prohibitive. I think it's only going to work on new build estates. (G1)***

Participants' Final Thoughts

Participants in both groups were asked for their final thoughts at the end of the sessions. Environmental concerns and the need for change was a feature of both discussions. G1 felt that there were still a number of things which could be done which would yield quick benefits. One participant cited cavity insulation. Otherwise, G1 did a round-up of views on District Heating. There was general agreement that they all knew much more about it, even the 3 who had known something at the beginning of the session. There were at least 3 expressions of interest in it – if it could do what current systems do. Again there was doubt as to whether it was a system which could serve their homes/communities. Discussion then moved to the inconvenience of more than one bill. G2's discussion started with comments about the amount of heat perceived as wasted – in shopping malls for example. One participant raised the question of whether older people should downsize rather than have homes that were only partly used even though some did not heat unused rooms. The theme of District Heating being very suitable for some settings – such as hospitals was raised. The participant with the greatest interest in environmental issues was pleased with the degree to which these had been discussed. Another delegate would have liked more notice of the topic.

Yeah I think it's a very good idea if as I said before we can replace like with like with no disruption other than you know what you would expect. And the price is the same as what we've got I think we would be interested in it. (G1F)

I hadn't heard of it and I think it's a good idea. But from a practical point of view from where I'm living I couldn't see it going into the neighbourhood other than new buildings or apartment blocks. It would be great for public buildings. (G1F)

I've been very encouraged by the degree of environmentally friendly concerns expressed around the table. We're the generation who are going to benefit least from any improvements or suffer least from any disasters that are about to happen I don't know. It's very encouraging to see such concern for environmentally means of generating heat and light and I would like to wish Chris and his colleagues well in their research because I'm sure we need all the technological help we can get. (G2M)

Conclusions

Both groups showed that issues of domestic heating, its adequacy, controllability and costs were of great concern and interest to all participants. There was evidence that they spent time trying to use energy effectively, have serviceable equipment, to seek out good deals from trusted suppliers. All had some interest in the environment and the future of energy and do not like to see waste. One participant in each group had a deeper interest and had in one case used an eco supplier and in the other had had solar panels installed. Even in self-selected group with an interest in energy, just under half had heard of District Heating and knowledge was limited. The views and experience of the two groups were relatively consistent. G2 was more sceptical, though much of the scepticism came from one participant.

The following views emerged from the two groups on District Heating:

- Participants were quite supportive in principle of District Heating if it could be delivered with the same efficiency, controllability and costs as the best systems currently available eg gas combi boilers
- Despite the interest, many thought it unlikely that a DH offer would/could be made to them in their particular housing circumstances
- Participants liked the idea of using heat that would otherwise be wasted and generally had some concern for the environment with a few real enthusiasts
- There was a preference for sustainable heat sources such as geo-thermal and some distaste for nuclear, especially if it was to be new nuclear plants
- Participants liked flexibility to change their equipment and their suppliers and most had done so within their current arrangements within a three year time frame
- There was some concern with possible longer-term contract lock-ins for District Heating and practical lock-ins through having the DH equipment installed
- There was an interest in who the supplier might be. On the whole, British sounding big names were the most trusted
- With District Heating some comfort was felt with the prospect of a community interest arrangement
- Stories of poor performance in District Heating schemes or any associated problems such as the Byker scheme ash and a Russian scheme with inadequate heating at the end of the line, were widely known and lasted a long time. Conversely there was relatively little knowledge of how District Heating schemes worked and of some successful and more current examples

Elaine Rodger
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Focus Groups – Heating Practices and Attitudes 28/4/10

With

Paul Upham
Chris Jones

From
Tyndall Centre for Climate Change Research, University of Manchester

And

Elaine Rodger – Facilitator

Programme

Introductions – 10 minutes (Elaine Rodger) to 10.10/13.10
Discussion on heating – 45 Minutes (Elaine Rodger) to 10.55/13.55
Presentation on District Heating – 30 Minutes (Chris Jones) to 11.25/14.25
Discussion on District Heating – 30 Minutes (Elaine Rodger) to 11.55/14.55
Wrap up – 5 minutes (Elaine) to 12.00/15.00

Hello and welcome to this focus group on heating. This group is being run as part of a research project that seeks to understand how we can make better use of heat in the UK. One approach is to recycle heat that would otherwise be wasted by industry or when electricity is generated. We can recycle this heat to heat buildings and to provide hot water. This approach is widely used in Northern Europe and in some parts of the UK, and is generally referred to as District Heating.

We will begin with a discussion of existing heating practices before hearing a presentation on district heating and asking for your views.

Heating habits

Most of the energy used in homes, shops, offices and other buildings is for space heating and to provide hot water (around 80% if anyone asks). We want to understand heat use better, so we have a number of questions about how you use heat.

Space heating practices

- How do you heat your home? (Identify the range in the group – may be gas, electric etc. or gas with a small electric heater in the bedroom etc; instant or hot water tank)
- What temperature do you heat your house to? (Do people know; how do they think about / assess this?)
- How many hours a day do you have your heating on? (Winter/ summer differences; once/twice a day?)
- What influences whether you put the heating on? (comfort, cost, other; is it set and then changed?)

Water heating practices

- Do people prefer showers or baths?
- How often do put the hot water on? (with heating; separately?)
- Do you have a dishwasher, or do you use hot water in a bowl for washing up?

Attitudes to heat supply

We now want to move on to ask some questions about heat supply.

- What is most important to you about heat supply?
- How would you rank the issues of cost, reliability, convenience, controllability and environmental impact of heat supply?
- What do you know about where your heat comes from currently? (What do people know about their heat supply system)?

Presentation on District Heating (see Appendix II)

Attitudes to District Heating

First of all are there any more questions about the presentation? Is anything unclear?

We now want to ask you for your views on district heating.

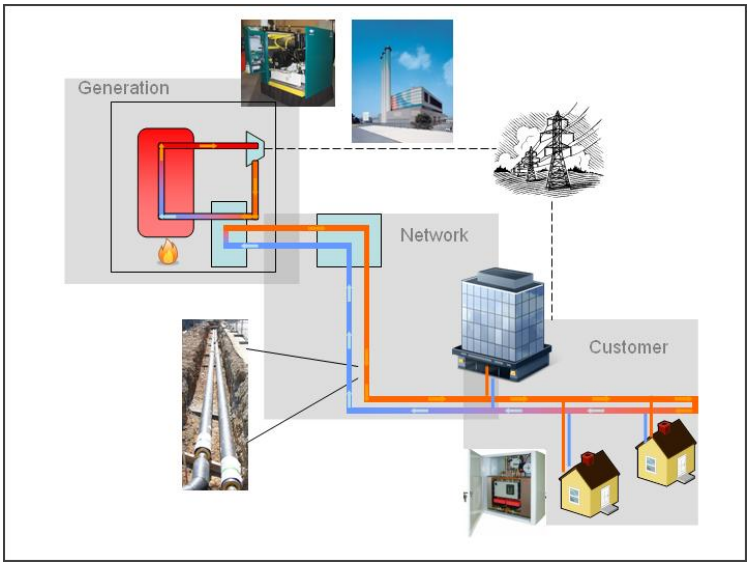
- Had you heard of district heating before today?
- How would you feel about getting your heat from a district heating scheme?
- Would the energy source of the heat matter to you?
- How would you feel about using heat from a more unconventional source such as a nuclear power station or a chemical plant?

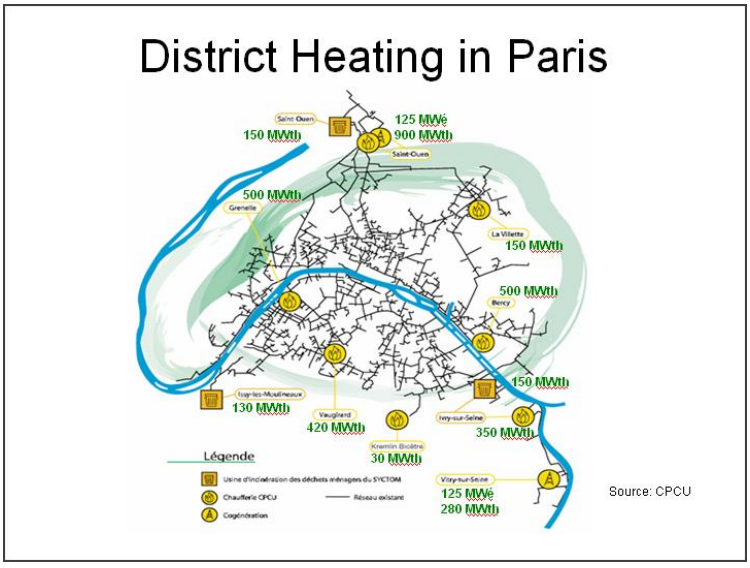
We should probably brief you more explicitly on how use of waste heat in district heating would differ from what you are used to. Chris will make this more obvious in his talk but it would be better if you knew a bit more in advance. The following is a combination of information and issues.

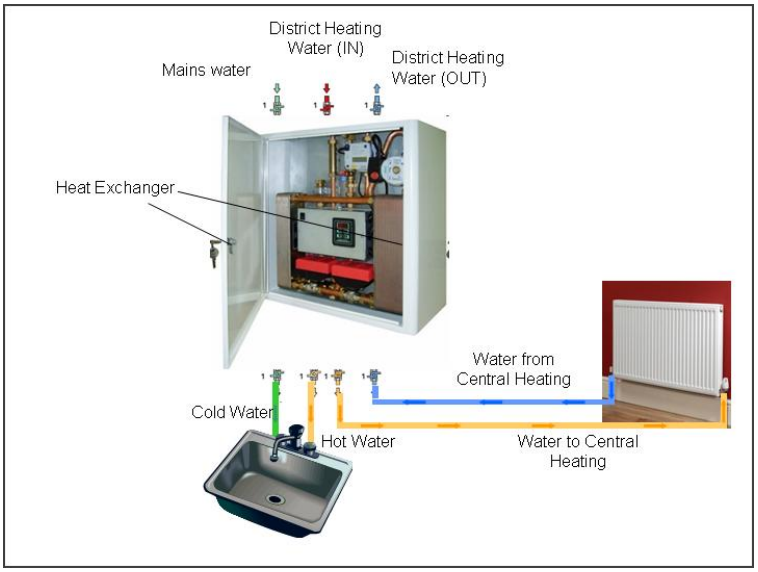
- Use of waste heat may or may not involve a different type of contract with the consumer – would be longer term tie-ins be a concern for people? How would potential price reductions trade-off with that – in increments – eg would a 10% or 30% saving be enough to overcome any perceptions of reliability risk?
- Reliability and trust: price and trust in the supplier's brand are normally influential in consumer decision-making. What is the role of the local heat supplier in this regard - would a more high profile supplier be more trusted?
- Flexibility: having a heat exchanger in your house appears less flexible than having a gas boiler for whom the supplier can be changed – how do people react to this? Might they be concerned about resale price in a private dwelling?
- Disturbance of installation – we probably didn't emphasise this sufficiently – what cost reduction, if any, would be required to induce people to put up with the inconvenience of installation in the home and in the street (pipes).

Presentation – Chris Jones

District Heating







Control issues – district heating

How do people view the following at different levels of price reduction (e.g. 10-50%)

- Contract lock-in
- Technology lock-in:
- heat exchanger only
- heat exchanger plus unused boiler or electrical heating
- Street disturbance (pipe-laying)
- Disturbance in the home (heat exchanger fitting)
- Energy source (factory, waste incineration, power station [inc nuclear])