

Political power and the development of the GB renewable heat incentive

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1. Abstract

A transformation of the UK's heat system is required to ensure that the goals of sustainable and secure energy are met. This transformation could require a complete shift away from fossil fuels to primarily renewable sources of heat. Like in any transformation, social and political power is likely to be an important factor. This paper documents research which has focussed on the socio-political power of actors to affect policy and regulation in the area of UK sustainable heat policy. It draws on theory from the sociological literature around socio-political power and literature around lobbying to examine the GB renewable heat incentive policy. It shows that while there have been numerous attempts to influence GB heat policy, these attempts are limited in their success and unpicking the role actors versus evidence is extremely difficult. The research also shows the methodological complexity of examining political influencing.

2. Context

Compared to the electricity sector, the UK heat sector has historically received only limited attention from both policy makers and academic researchers. More recently, the focus on heat by policy makers has increased for a number of reasons.

Firstly, the current provision of UK heat is completely incompatible with the UK's climate change commitments under the Climate Change Act (UK Government, 2008) which requires at least an 80% reduction of greenhouse gas emissions compared to 1990 levels. The vast majority of heat use in the UK is based on fossil fuels, 71% of heat comes from gas and 7% from oil (DECC, 2013b) and heat use produces a third of the UK's total greenhouse gas emissions (DECC, 2012a). DECC, The Committee on Climate Change and others have suggested that an elimination of both greenhouse gas emissions and the associated use of fossil fuels from space heating is required by 2050 (DECC, 2012b, Carbon Connect, 2014, Committee on Climate Change, 2015).

Secondly, policy developments at an EU level to support renewable energy introduced country specific renewable energy targets for 2020 with the UK having a target of 15% of all energy produced from renewable sources (European Union, 2009). The UK Government expects around 12% of heat to come from renewables to support this target (Connor *et al.*, 2015).

Thirdly, the UK's high reliance on gas for heating has security and economic issues. The UK became a net importer of gas in 2000 and the trend towards import dependency has increased to a level of dependency where around 50% of all gas is imported (DECC, 2015b). Only heroic predictions for the growth of new sources of gas would see this trend reverse (National Grid, 2016). As a result of this change, and a fall in the price of gas, UK tax take from natural gas production has reduced significantly (HM Revenue and Customs, 2014) reducing the UK's GDP and tax revenue from gas.

Because of the combination of these issues, a complete transformation of the UK's heating system is required. As such, the UK Government has introduced a policy to attempt to increase the

penetration of renewable heat in the UK, The Renewable Heat Incentive (RHI) and has produced a long term vision for heat often referred to as 'The Heat Strategy'.

This research is primarily interested in how a transformation to a sustainable heating system can be supported through Governance of the heat system. It has investigated if and how the impact of political power such as lobbying and influencing has affected the development of the RHI and considers the implications of this political power for future policy making.

As such, this research has relevance for those interested in the development of UK heat governance as well as wider debates around socio-technical transitions and socio-political power.

3. Theoretical Framework

This research has considered the development of UK heat policy through the lens of socio-political power, in quite simple terms, investigating how the development of heat policy and regulation has been affected by actors. The lack of research on UK heat policy means that almost any research on UK heating is original and of value however the role of socio-political power was chosen because there is a recognition in the academic literature around transformations of socio-technical systems that the consideration of power and politics has often been absent (e.g. Shove & Walker, 2010, Markard et al., 2016).

Normative understandings of the idea of 'power' are widespread and frequently used, particularly in governance and political discourses. For example actors are frequently described as being powerful or having power. Various authors, academics and philosophers have considered the idea of power both directly and indirectly. Machiavelli's 'The Prince' which considers the power of elite politicians is often seen as one of the earliest texts on specifically on power (Machiavelli, 1999 (translated)). During the 20th century, various theorists including Dahl (Dahl, 1961) Foucault (Foucault, 1998) and Lukes (Lukes, 2005) considered what power is and how it works often taking very different positions and considering different phenomena.

Despite a vast body of research, the concept of power is one of the most contested ideas in the social sciences having both no firm definition, various ways of aiming to understand it and no agreed way of measuring or analysing it (Arts, 2000). Lukes (2005) explains that 'there is no agreement about how to define it, how to conceive it, how to study it and, if it can be measured, how to measure it [power]' (p61).

Haugaard and Ryan (2012) suggest that much of the debate around social and political power can be considered as four dimensions of power which effectively consolidates the work of Lukes and Foucault. In this understanding:

- The first dimension is the ability of an actor to get another actor to do something that would otherwise not been done
- The second dimension is the ability of an actor or actors to mobilise bias in debates by controlling or setting the agenda
- The third dimension is the where an actor has the ability to control the thoughts or preferences of another actor in order to get that actor to do things that they would otherwise not have done
- The fourth dimension considers the normalising of thoughts and practices among individuals and the role of individuals and society in reproducing these rules

This research has applied the four dimensions of power framework to consider UK heat policy, investigating how actors have been able/attempted to affect the RHI policy. In this case, power is behaviour which attempts to influence policy change. It should however be noted that this is one of potentially many aspects of power within the heat socio-technical system.

4. Methodology¹

Because of the complexity associated with socio-political power, in order to make the research as high impact and applicable to real life policy making as possible, an approach which used non-academic language and a practical approach to measure and consider power was used. In this approach, the key attentions within the research were the drivers of policy and political change around heat policy, concepts including, lobbying, framing and influence, all of which are intertwined with the four dimensions of power framework.

The 'EAR' approach for analysing lobbying was chosen and this approach uses three angles, the view or the lobbyist (ego or E), the view of the person being lobbied (alter or A) (gained from interviews) and the view of the researcher (R) (Arts and Verschuren, 1999). It then uses these three views to triangulate the information, assessing where there are similarities and differences and where there are similarities and all views are the same, this indicates that there has been attempted policy influencing and may provide evidence of a policy influencing success or failure.

The data collection therefore included a large number of interviews with those involved in the UK's heat policy network on both the civil service and Government side as well as those involved in lobbying and influencing from business, trade associations and pressure groups. Interviews were then transcribed and coded into themes using NVivo software. Following the coding, particular policy changes highlighted in the interview data were considered alongside grey literature such as policy documents and parliamentary data attempt to understand where there had been successes and failures at influencing policy.

5. Results: Power and the Renewable Heat Incentive

This section considers the results of the triangulation analysis of the RHI. These results are fully referenced to either grey literature or interviews with a list of interviewees provided at the end of the document. Some interviews/comments are anonymous and referenced as such.

The results detail where there have been attempts to influence the RHI and where triangulation suggests that actors have had power and successfully influence or where actors have failed to have power and not influenced policy. This section also considers how these attempts to influence could be considered alongside the four dimensions of power framework.

5.1 A brief history of The Renewable Heat Incentive

Before the introduction of the RHI, the only real change to heat generation policy in the UK, since the expansion of the gas networks in the 1960s and 1970s (Arapostathis *et al.*, 2013) was the mandating of condensing boilers in 2003 (Department for Trade and Industry, 2003). The 'Clear Skies' and 'Low-carbon buildings programme' had delivered some renewable heat capacity such as biomass and solar thermal through grant payments (Connor *et al.*, 2015) however, these schemes were in their nature short term.

¹ This paper considers a select aspect of interview data on RHI policy influencing. The wider data set, collected through my PhD research, considers three case studies one of which is the RHI and also considers the structure of the policy network and the various approaches used by actors to attempt to influence.

In 2008, the at the time Department for Business, Enterprise and Regulatory Reform (BERR) expressed support for increasing the penetration of renewable heat technologies in the UK and announced some potential options for renewable heat support at scale (BERR, 2008a). Later that year, BERR consulted on the two potential options of support, an obligation for renewable heat or an incentive mechanism (BERR, 2008b). As discussed in section 5.1.1 below, legislation was introduced to support the RHI at the end of 2008.

Following more detailed development of the scheme, the RHI eventually opened for non-domestic applications in November 2011 and rewards those producing renewable heat with a fixed payment per unit of energy for 20 years with the particular tariff based on the type of technology and the size of the installation (DECC, 2011). The domestic scheme opened in Spring 2014 and rewards homeowners who generate renewable heat with a tariff for each unit of heat generated for seven years (DECC, 2013a). Technologies supported by the scheme include biomass boilers, heat pumps, solar thermal and biogas and the scheme is administered by Ofgem.

The following sections consider the major policy changes, highlighted from interviews and grey literature associated with the RHI in the period from its inception and introduction in 2008 to 2015. It is presented chronologically.

5.1.1. Policy change 1: The power of the Renewable Energy Association to speed up the introduction of the RHI

As early discussions around renewable heat had been taking place within BERR, the 2008 Energy Act, focussed on renewable electricity generation (specifically the Renewables Obligation) was passing through the UK parliament. The Renewables Obligation was supporting the development of primarily large scale electricity generation (1) and there was support among parliamentarians and wider civil society for the development of a feed-in-tariff mechanism to support smaller scale renewable electricity generation, something which was not in the bill at this point. This support was officially set down in an Early Day Motion in parliament tabled 5th February 2008, shortly after the Energy Bill entered parliament which had the support of 281 MPs (Parliament, 2008b).

In April 2008, Alan Simpson MP who laid the early day motion, along with a number of other MPs laid a potential amendment to the 2008 Energy Act; this amendment would have caused the Government to introduce a feed in tariff system which would have supported small scale electricity and heat (1, and Parliament, 2008a). Whilst the amendment was voted down (210 votes for and 250 against) (Parliament, 2008d), this vote represented a major rebellion as 33 labour MPs voted in favour of the amendment (26, Guardian, 2008).

The Government was concerned that the level of political support for the feed in tariff policy would eventually lead to a defeat in the commons and so decided that rather than fight, they would take the opportunity and develop a Government amendment which would create the feed in tariff and also lay the primary legislation for a renewable heat incentive (1). In the words of one interviewee, parliament '*forced the Government's hand*' in creating the legislation for the RHI (2). The amendments for both the feed in tariff and the renewable heat incentive were introduced to the bill on 5th November 2008 at 3rd reading in the House of Lords, the last stage amendments can be introduced and shortly after became law, allowing BERR to develop a scheme to support renewable heat.

As discussed above, the political power to instigate the Government led RHI amendment came from parliament. However, the Renewable Energy Association (REA), a trade body representing renewable energy, explained that they believed they, along with Friends of the Earth, a non-

governmental organisation had been *'instrumental'* in getting the amendment (3) and this was also repeated by other previous employees (4, 5) including their ex-chief executive, Gaynor Hartnell who explained:

'the whole of that feed in tariff and the RHI existence was the big win. That was the first big goal.' (4)

Another interviewee explained that a *'feed in tariff campaign'* had been led by non-governmental association Friends of the Earth and included the Renewable Energy Association who were particularly keen that the amendment included heat and this campaign had the support of Alan Simpson MP (26).

Use of the triangulation method corroborates the role of the REA in influencing the inclusion of heat in the final amendment. Two civil servants working on the RHI as the legislation developed explained that the REA played the leading role in terms of political campaigning for the RHI (1, 6). One civil servant explained *'the REA drove the amendment and everyone coalesced behind the REA'* (1). Another civil servant explained: *'they were a big force certainly, even just to get the legislation in so she [Gaynor Hartnell] was a big force and I think probably on feed in tariffs as well so I thinkthe REA were the biggest sort of influence'* (6).

Applying the four dimensions of power framework to this example implies the existence of the first dimension, getting the Government to do something that they would have otherwise not done i.e. the amendment for the RHI and the feed in tariff. This change also suggests the use of the second dimension of power, with the REA having the power to put heat on the agenda in the amendment. The third face of power, the shaping of preferences can also be observed, with the role of a *'feed in tariff campaign'* to get MP's to support change to the Energy Act to support renewable heat and vote for an amendment.

While most of the interviewees from industry who had been involved with the campaign to introduce the RHI suggested that industry had played an important role, one interviewee suggested that even though the campaign did support the RHI's development, the RHI probably would have happened anyway, it simply happened sooner, in advance of the 2010 general election (5). This view is supported by the words of a DECC civil servant, *'we thought this is a fantastic opportunity to get some primary legislation in around a renewable heat incentive'* (1) and this follows from the fact that the Government was already discussing introducing support for renewable heat. This implies that while the REA's push for the amendment was successful, it may have simply sped up the process.

5.1.2. Policy change 2: Funding the RHI through general taxation

It had been expected that the RHI would be funded through a levy on fossil fuels (HM Government, 2009). The 2010 RHI consultation document explained that DECC was considering changing how the scheme was going to be funded following informal consultation with industry (DECC, 2010). It explained that the Government had met with a number of organisations who, under a fossil fuel levy, would be liable to meet the costs of the RHI and recognised the problems with funding the scheme through fossil fuel suppliers; these problems included equitability, transparency and efficiency (DECC, 2010). There were questions over which fossil fuels you would levy the charge on, with concerns raised around barbecue gas canisters and bags coal (1) and also a recognition the just levying the tax on natural gas would penalise the lowest carbon form of heat at the time. However, the actual reason for the change is not clear within the data and through triangulation.

One off-grid fossil fuel company representative explained *'We lobbied very hard that the RHI should come from general taxation, not from a levy on fuel bills and it came from general taxation, how*

much we had to do with that I don't know, but that was certainly our line' (8).

The fact that the RHI was not eventually funded by a levy on fossil fuels represents a policy success for the companies who sell fossil fuels. However, the use of triangulation does not suggest the fossil fuel companies necessarily caused the success.

Whilst heavy lobbying from the fossil fuel sector was felt by DECC, it was also recognised that the development of the policy to fund it through energy suppliers would have been incredibly complex and long-winded and funding it through taxation would be a simpler option hence it was funded this way (1).

However, another civil servant in DECC working on the RHI at the time, explained that whilst the big 6 companies were generally supportive of the RHI, *'off the record they would say we might stomach it [funding through a levy on bills] for a while but eventually we will not, we will challenge you because it just doesn't make sense that we get a levy on us' (6).*

As such, determining the source of power for policy change in this example is difficult. Interview data between alter and ego cannot be corroborated and the limited grey literature on the issue doesn't give any further detail (DECC, 2010). In a situation such as this, the reliance on civil servant (alter) interview data has severe limitations because, civil servants do not want to appear as if industry (particularly the fossil fuel industry) have successfully changed their policy position.

As it is therefore not clear if or what power relations caused this change, considering the four dimensions of power in this instance is difficult. However, it is clear that the fossil fuel companies attempted to utilise the first face of power in order to change the Government's position on the funding and the third face of power may also have been used as a tactic by the lobbyists in order to change the Government's preferences and convince them that funding the scheme through taxation would be so complicated.

5.1.3. Policy change 3: The maintenance of the RHI in the coalition Government

Following the election of the Conservative/Liberal Democrat coalition Government in May 2010, neither the initial coalition agreement (HM Government, 2010) nor the first budget of the new Government in June 2010 contained any mention of the RHI (HM Treasury, 2010a) and as such there was nothing to suggest to the heating industry that the scheme would ever actually open to participants. It was not until the spending review in October and once departmental budgets had been set that the Government would announce that funding would be made available for the RHI (HM Treasury, 2010b).

While no announcements were made by DECC before the Treasury announcement, the policy did have strong political support within DECC and according to one civil servant, *'I think the words Chris Huhne [Secretary of State for DECC at the time] used were: 'it's there in invisible ink' (6).*

It was also the case that the DECC ministers at the time, had been in opposition as the 2008 Energy Act passed through parliament and had been involved with the development of the bill and so already had an interest in the topic (7). For example, Charles Hendry a DECC minister was a sponsor and Chris Huhne, DECC Secretary of State was a signatory of the the feed in tariff/RHI early day motion (Parliament, 2008b). Also, Greg Barker and Charles Hendry, DECC ministers at the time of the introduction of the RHI voted to support the amendment when it was tabled in April 2008 (Parliament, 2008c). The DECC ministers were also considered supportive of green policies in general and DECC was seen as the most 'left and green' department (6).

Whilst parliamentary records and interview comments suggest that the DECC ministers were supportive of the RHI within Government, and the RHI scheme was indeed opened, definitively attributing this policy change to them is not possible. In this case, in the triangulation model, the DECC ministers, despite being inside Government are the 'egos', attempting to lobby their own Government for funding from the Treasury who are the 'alters'. Grey literature including the spending review document which announces the RHI funding simply explains that the RHI is being introduced in order to help the UK meet its EU renewable energy targets (HM Treasury, 2010b) Further interviews with civil servants in the Treasury (beyond the potential of this research), could be used to attempt to examine the reasons for the funding of the RHI in more detail. The lack of detail also means that assessing this change from the dimension of power approach is not possible.

5.1.4. Policy change 4: The mandarin and the near death of the RHI

Despite political and industry support, the existence of the required laws and finances being available, one major obstacle to the RHI remained, the most senior civil servant at the Department of Energy and Climate Change. The permanent secretary in DECC is both department lead and accounting officer, accountable to Parliament for spending (HM Treasury, 2015).

At the time of the introduction of the RHI, Moira Wallace was permanent secretary and accounting officer and two DECC sources explained that she was opposed to the RHI (anonymous). Other interviewees explained that in fact the most negative comments regarding the RHI came from within DECC because there was a concern that the rapid increase in spending caused by the feed in tariffs for electricity would be replicated with the RHI (1, 9, 6).

The RHI was recognised as being both a large amount of spend in general and an expensive way of reducing carbon emissions. One civil servant informed me: *'it was designed purely to meet that 2020 target. If you were looking at something purely on low-carbon terms you probably wouldn't have done it like that, in fact we wouldn't have done it like that and it was hugely expensive, we knew that'* (anonymous).

At one point, the issue was almost elevated to a level where the permanent secretary was going to ask for a 'ministerial direction'² for the policy to progress (9). However, the ministerial direction was never issued (9) and in February 2011, Chris Huhne pushed the RHI through with the compromise that only the non-domestic would progress because the larger scale renewable heat systems were known to be cost effective whereas domestic scale systems were not cost effective (anonymous).

Similarly to the previous example, this policy change concerns power struggles within Government. In this case from a triangulation perspective, the 'ego', the permanent secretary is attempting (apparently successfully) to stop or slow the RHI policy and the 'alters' are the department's own ministers. Whilst full triangulation of the sources in this example is not possible, it appears, based on interviews with a number of civil servants that the permanent secretary did exercise power to reduce the initial scale of the RHI.

From the dimension of power perspective, in this example, the permanent secretary had the first face of power over the ministers to force the change as a result of the institutional situation of her role as accounting officer with ultimate responsibility for all DECC departmental spending.

² A ministerial direction is requested by a permanent secretary if a minister or secretary of state wants to go against the advice of their accounting officer and that minister then becomes accountable to parliament for that issue (HM Treasury, 2015). According to analysis by the institute for Government, only 2 ministerial directions were requested during the coalition Government (2010-2015) making them an unusual occurrence (Institute for Government, 2015).

5.1.5. Policy change 5: The over-rewarding of biomass

In 2013, DECC released details of the domestic RHI which was expected to be launched in Spring 2014; the scheme would support biomass systems, air, ground and water-source heat pumps and solar thermal at the tariff levels shown in Figure 1 with tariffs running for 7 years for each installation (DECC, 2013a).

As shown in Figure 1, the new domestic tariff levels represented a significant change to those proposed in the original consultation document and resulted from intelligence around the Renewable Heat Premium Payment grant scheme as well as new research. The air-source heat pump tariff was reduced to below the proposed range, the biomass tariff increased above its proposed range and the solar thermal tariff increased above its range (DECC, 2013a).

	Biomass	ASHP	GSHP	Solar Thermal
Tariff (p/kWh) (Equivalent payable on total heat output)	12.2	7.3 (4.7)	18.8 (13.2)	At least 19.2
Tariff Range proposed at Consultation ⁷ (payable on total heat output)	(5.2 – 8.7)	(6.9 – 11.5)	(12.5 – 17.3)	(17.3)

Figure 1. Final tariffs for domestic RHI (DECC, 2013d) N.B. for comparisons between the final and proposed tariffs for ASHP's and GSHPs, use the numbers in brackets

According to one interviewee from a ground source heat pump manufacturer: *'the micro-power council (a trade association) were very very supportive of air-source [heat pumps] and were very cross with me when we argued to DECC that this is a technology that could take off and you've got to be careful about the tariff. And we knew we were on very fertile ground here, DECC were so worried about budget that anyone saying the air-source industry could explode, it could be cheap Chinese kit DECC were going oh we can't have this, this is dreadful scenario and they slashed the tariff'* (10)

This example of influencing is clearly an application of the third dimension of power whereby the lobbyist is attempting to alter the preferences of the civil servants in order to try and convince them to reduce the tariff for air source heat pumps. The eventual reduction in the air source heat-pump tariff was seen as a success by some (10, 3), particularly those involved with Ground Source Heat pumps who believed they caused the change (10). *'It was a policy success, but hurting them and not helping yourselves [groundsource] was a fairly disappointing outcome'* (10). The domestic GSHP tariff was after all near the bottom of the proposed band and it was also the case that the biomass tariff was significantly higher than had been expected by industry.

The changes to the tariffs were attributed by DECC to new evidence and research gathered through the Renewable Heat Premium Payment grant scheme and by consultants 'sweet' (sweett, 2013) according to the DECC impact assessment for the RHI (DECC, 2013d). There was no evidence gained from interviews suggesting that the biomass tariff had been increased as a result of industry lobbying. The impact assessment stated: *'There are some significant changes which have been made to the tariffs most notably for net capital cost (Biomass is more expensive than previous evidence suggested, ASHPs are slightly cheaper) and load factors...'* (DECC, 2013d, p14). It should be noted that the report from 'sweet' was based on responses to questionnaires completed by industry participants such as installers (sweett, 2013) who had interests in having high tariffs. This reliance on industry data is an example of the power that vested interests can have in providing information, which is potentially produced in alignment with the interests of the relevant company in order to potentially promote large subsidies or supportive regulation. This reliance on industry data or

knowledge has been previously described elsewhere as ‘regulatory capture’ (Dal Bo, 2006).

Nonetheless, despite the tariff changes, using triangulation it is not possible to attribute changes to specific actors in this case because there is no evidence from alters i.e. civil servants, that anyone successfully influenced the tariffs. One DECC source suggests that in the case of biomass *‘they have been treated very generously by DECC with absurdly large subsidies for biomass boilers which have been flooding in to dubious locations all around the country for many years now so I didn’t see much lobbying from them because yeah they were just getting fat on the subsidies and didn’t need to lobby me’* (11).

As such, from this research, despite clear attempts to influence tariffs, there is no clear evidence that any actors have successfully done this. It is possible that the biomass industry could have been successful in providing evidence to sweet consultants and affecting the tariff this way. The use of evidence to influence policy could be considered as an application of the third face of power, preference shaping however in this example as there is no evidence actors causing policy change, the actual impact of a role of a particular face of power cannot be determined.

5.1.6. Policy change 6: Further support for biomass

In 2013, a change was introduced which approximately doubled the available budgets for small and medium scale biomass in the non-domestic scheme (DECC, 2013c). This policy change involved *‘quite a big feed-back loop with industry’* (12) according to one civil servant at DECC.

Interviewees from the REA explained that the budget changes were primarily a result of the REA and their lobbying efforts, (5, 3). One went on to explain that in the case of the budget management triggers, it’s possible to shift them because there are only a small number of officials involved in managing the budget even though ministerial sign off is required (5). However, this was not confirmed by a DECC economist working on the RHI at the time who explained:

‘it was a bit of a no brainer because at the time that we were making those changes frankly it would’ve been inconceivable to not increase the amount of money that was being given to biomass because otherwise we would have been a I said earlier, deciding that we weren’t going to be spending the money at all’ (12).

As such while this change represents success for the biomass industry in terms of having more RHI budget available, the role of the REA or other actors in this change is not confirmed by the relevant policy makers and may simply have happened without their input. It could however also be the case that the civil servant, did not want to admit that the biomass industry had successfully lobbied for this policy change as may also have been the case with policy change 2 discussed in section 5.1.2.

5.1.7. Policy change 7: Extra support for biomethane

In 2014, biomethane, biogas which is upgraded and injected into the gas grid was the subject of both a tariff review in order to address subsidies which were perceived to be too high (DECC, 2014b) and also faced the introduction of rules for sustainability of the biomass resource (DECC, 2013c).

A new tariff, above the level initially proposed in the review was introduced in February 2015 (DECC, 2015a) and since this date, the forecast expenditure on biomethane has been above (in some cases double) expected levels (DECC, 2016) suggesting that the new tariff has had little effect on reducing the growth of biomethane.

The tightness of the new rules around sustainability was also reduced, reducing the required level of carbon saving by around 10% and increasing the length of time to meet these rules (5).

There was a wide belief from interviewees that these changes represented a success for the biomethane industry (3, 5, 13).

According to one civil servant working on the operation of the RHI at the time:

'Biomethane is probably a good example where you've got some wealthy landowners who are well connected with people in the House of Lords and into the politicians and they can smooth the waters or at least make the right phone calls or send the right notes and say, my constituent is concerned about this issues, can you sort it out. There was quite a lot of that in that area...it was around all of the changes that we were thinking about for biomethane, there was a lot of that background activity going on.

You would get messages coming down from ministerial offices and thinking where did that come from? And those people obviously knew how to go about doing that, sending the right messages.

I think in some cases it was the land owners involved, the people who owned the project...I think it did actually help on the tariff setting, we did let them off fairly lightly in the end on the tariffs. It could've been a lot worse. And the sustainability stuff we did delay it for a long time, we did rethink on some of the numbers quite a bit as a reaction to some of that lobbying.' (14)

In the case of biomethane, the responses to the Government consultations are not held online and there is little publicly available information regarding this particular policy change. However, the National Farmers Union, a trade association which represents the farming industry and agricultural landowners details its engagement with this policy issue on its website. It explains that the guarantee of a set biomethane tariff until December 2014, before the updated tariffs were introduced, something which had been previously questioned, was a 'policy-influencing 'win'' (NFU, 2014).

A letter from Greg Barker, Minister in DECC at the time sent to the Renewable Energy Association and the Anaerobic Digestion and Biogas Association explains that this particular guarantee of tariffs was due to *'the volume of consultation responses received and our (DECC'S) wish to provide industry with more certainty'* (DECC, 2014a) implying that industry did indeed play a role in influencing DECC's decision. This appears as an example of the first face of power, with industry causing Government to do something it would otherwise have not done.

While the use of triangulation in this case suggests that industry was successful in influencing biomethane support policy in a number of ways, the lack of finely grained data makes understanding exactly why these specific changes happened and who caused them complex. Further specific data collection could help in this case.

6. Conclusions and Discussion

The development of heat policy in the UK is power-laden. Attempts and the ability to influence come not just from commercial and NGO lobbyists but from parliamentarians, Government ministers, civil servants, consultants and researchers.

This research indicates that some actors have been successful in influencing the RHI policy, in speeding up the introduction of the policy into law (change 1), in slowing down the implementation of the domestic scheme (change 4) and in protecting the biomethane sector (change 7). However, there are also numerous policy changes where the evidence indicates that the power of actors has not been a driving factor.

In considering policy changes alongside the four dimensions of power framework, it appears that the first, second and third dimensions of power are used (not necessarily at once) by actors in order to attempt to influence policy. As such, this power framework may be a useful tool to consider as an aspect of socio-technical transitions, where, as discussed earlier, conceptualisations of power have been limited. However, the applicability of the fourth dimension of power has not been apparent from this research, highlighting the known difficulties of applying Michel Foucault's conception of power to the real world (Mills, 2003).

In the development of policies to promote more sustainable forms of heat in the UK, while there have been policy successes and policy failures for various actors, attributing who, if anyone is the cause of the policy change is complicated. The use of the triangulation approach requires relying on the view of those being lobbied i.e the civil servants and politicians in order to corroborate the views of lobbyists. However it may be the case that none of the interviewees, including civil servants are telling the (full) truth and while other 'grey' data sources such as policy documents may contain some information, in some cases attributing the reasons for policy change is not possible. Further research, such as using Freedom of Information requests or secondary interviews could strengthen this methodology.

Political power, including lobbying is just one aspect of socio-political power which also includes the role of institutions, consumer power and ideas, all of which are extremely important to sustainability transformations such as the required transformation for the UK heat system. This research suggests that power, through lobbying of energy policy, is affecting a transformation to sustainable heat. As such, policy makers must fully take into account the interests and behaviours of those looking to influence policy in order to ensure that their own decisions are as objective and evidence based as possible.

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List of Interviewees

1. DECC Civil Servant
2. Representative of Ground Source Heat Pumps Association
3. Employee at Renewable Energy Association
4. Previous chief executive of Renewable Energy Association
5. Head of Policy at Renewable Energy Association
6. DECC civil servant
7. Chief executive of Sustainable Energy Association
8. Anonymous interviewee
9. Anonymous interviewee
10. Chief executive at Kensa Heat Pumps
11. Previous chief scientist, DECC
12. DECC civil servant
13. Head of Policy, Anaerobic Digestion and Bioresources Association
14. DECC civil servant
15. Employee at Association for Decentralised Energy
16. Employee at Association for Decentralised Energy
17. Employee at Energy Networks Association

18. Employee at Delta EE Consulting
19. Employee at Heat Pump Association
20. DECC civil servant
21. Employee at EDF
22. Employee at Worcester Bosch
23. Employee at Forever Fuels
24. DECC civil servant
25. Ex Friends of the Earth Employee