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Project: Value Management

Title: Overcoming barriers to smarter heat solutions in UK homes - Annexe 2a:
Qualitative policy analysis

Abstract:

This document was prepared at the time to contribute to ETI internal thinking and planning only.

Context:

This project studied how value can be delivered across a smart energy value chain - in the context of the UK. It built a clear understanding of how smart energy systems can deliver combined consumer value alongside commercial value for market participants - producers, suppliers, distributors. The analysis will help to make the commercial deployment of smart energy systems more likely. This £600,000 project was delivered by Frontier Economics, a leading economic consultancy.

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Overcoming barriers to smarter heat solutions in UK homes

Annexe 2a: Qualitative policy analysis

PREPARED FOR THE ETI

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1 Overview

This section focusses on policy solutions. We first set out the methodology for our qualitative policy analysis, followed by a discussion of our findings, a shortlist of policies considered in the cost-benefit analysis, and tables summarising the qualitative assessment of each policy in turn.

1.1 Methodology for analysis

We analysed policies in two stages, starting with the long list of policies, shown in **Figure 1**. This includes a combination of policies that have been suggested or trialled, and policy measures that have yet to be put forward. We first qualitatively assessed whether policies may be effective. Then, for policies that we find may be effective and are not obviously ‘low-regrets’ policies (that is, if they are likely to be associated with low costs), we analysed them further quantitatively using a cost-benefit framework..

This annexe presents results of the first stage of the analysis, while annexe 2b sets out the cost-benefit analysis.

Figure 1. Long list of policies

Externalities, lock-in, upfront costs and interest	<ul style="list-style-type: none">• Stamp duty rebate• Council tax rebate• Grants to consumers• Grants to district heating developers• Variable council tax• Energy efficiency feed in tariff (FIT)• Economy-wide carbon price• Technology tax• Providing information on consumers in a community that have switched to low-carbon heating• Requirement that calculation of future heating bills is factored into mortgage decisions• Minimum EPC at sale• Mandating energy efficiency improvements
Misaligned incentives	<ul style="list-style-type: none">• Including information on energy bills in headline rental prices• Variable tax on landlords
Coordination, natural monopolies and lock-in	<ul style="list-style-type: none">• Regulatory framework that shares district heating risks• Consumer protection for district heat• Mandating district heating connection• Standardised district heat development contracts• Building skills and capabilities
Upfront costs and affordability	<ul style="list-style-type: none">• Lower interest on Green Deal loans• Reducing the term of Green Deal loans

Source: Frontier Economics

Our qualitative assessment of each policy considers:

- the expected impact of the policy;
- risk and uncertainty around the policy; and
- implementation of the policy.

Figure 2 sets out the criteria that we used to assess policies in more detail.

Figure 2. Qualitative assessment criteria for policy analysis

	No.	Criteria	Description
Impact	1	Effectiveness in addressing barriers	Which barriers does the policy address? Would businesses overcome the barriers the policy is addressing anyway? What's the effect on uptake? Are there interactions with other barriers?
	2	Cost	How costly is the intervention to government/ consumers/ businesses and others? What is the cost over time (e.g. will a policy drive down costs of an intervention in future?)?
	3	Distributional impacts	What are the distributional impacts of the policy? What are the impacts on consumer bills and how do these differ by consumer income?
	4	Impact on government, supplier, investor and consumer confidence	What impact is the policy expected to have on confidence in the developing UK energy market?
Risk & uncertainty	5	Risks/unintended consequences	What unintended consequences could the policy have? How could the positioning of the policy affect its impact?
	6	Evidence base	Is there evidence that the policy works? E.g. are there international or past precedents, and has the policy been trialled?
	7	Flexibility	Is the policy robust to different scenarios for decarbonisation? How flexible is it in the face of uncertainty over future conditions?
Implementation	8	Transition	What transition is required to implement this policy? E.g. how long would it take to implement, what are the transition costs, does it require replacement of other policies?
	9	Political acceptability and communication to consumers	Does the policy create new winners and losers? Are those losing out likely to oppose the policy? Are there risks around a negative public reaction? How easily could the policy be communicated to consumers?
	10	Compatibility	Is the policy compatible with other policies already in place? How does the policy interact with other policies (e.g. are potential policies complements or substitutes?)?

Source: Frontier Economics

2 Findings of the qualitative analysis

We now discuss the findings of our qualitative analysis. We discuss how policies can tackle market failures, market failures in the transition; and distributional and equity issues. Many policies address a number of these issues simultaneously. We therefore group our analysis in four sections:

- externalities, lock-in, upfront costs, and interest;
- misaligned incentives;
- coordination, natural monopolies, lock in; and
- upfront costs and affordability.

2.1 Externalities, lock-in, upfront costs, and interest

Correcting market failures around externalities and lock-in (where technologies are more expensive initially, but where costs could be expected to fall with economies of scale) will tackle some of the actual cost barriers associated with interventions. As described below, it is crucial that these policies are also designed to tackle barriers associated with upfront costs.

We now present three examples of financial incentives that performed well in the qualitative analysis. These tackle both actual cost and upfront cost barriers: stamp duty rebates, council tax rebates and grants to consumers. These will be most important for heat pumps and insulation (HEMS may not need policy support and grants to developers are most relevant for district heat).

In the design of these incentives, we have drawn in learning from the barriers analysis:

- **Tackling upfront costs is likely to be more effective than tackling ongoing costs.** The appeal of upfront incentives can be seen by high uptake under the Green Deal Home Improvement Fund (GDHIF). The entire funding for solid wall insulation was allocated within a day of the GDHIF reopening in December 2014¹. This is in contrast to the RHI, which has not seemed to engage people, even though it provides a return that compensates for the difference in upfront cost when investing in low-carbon compared to conventional heating.² This is because of the tendency of consumers to focus on near term costs and benefits as well as misaligned incentives between landlords and tenants. Upfront incentives have the added

¹ <http://gdorb.decc.gov.uk/installers/green-deal-home-improvement-fund>

² DECC (2013), *RHI – Domestic Impact Assessment*

benefit of removing or reducing the need for credit, benefiting consumers that may not be able to access credit.

- **Using existing structures to gain people's attention may be effective.** Our barrier analysis shows that levels of interest and awareness in heating are low. For example, DECC research found that most (68%) consumers who had not replaced a heating system to date, had never considered doing so.³ Rather than trying to make information interesting, or raising incentives high enough to catch people's attention, it makes sense to tag new heating information and incentives to policies and information sources that already have people's attention.
- **Target the important trigger points.** DECC research found that having a heating system that was broken or near the end of its life drove the decision of 61% of homeowners to invest in their heating system⁴. Home renovations are also an important trigger point, with 28% of those surveyed for the RHI evaluation citing this as a reason for purchasing renewable heating technology⁵.
- **More carrot than stick.** There is a choice between using subsidies and rebates to provide an incentive to take up interventions or taxes to put up the cost of the alternative options. Because delivering a financial incentive by increasing taxes will exacerbate fuel poverty, we have focussed on subsidies and rebates. This may also be a more appropriate transition strategy, to the extent the support is only temporary. However, we acknowledge that there is a cost to these measures. This would either need to be agreed by the Treasury and covered by the tax payer, or recovered through energy bills. If longer term support is required then a different policy mix may be required.
- **Grants to businesses or consumers.** Where incentives are not provided upfront, businesses should be allowed to collect them on behalf of consumers, in return for installing the measures, with payments conditional on the provision of continued performance guarantees to the customer. This has the added benefit of transferring performance risks to the installer, who may be best-placed to manage them. Providing a guarantee would give the installer strong incentives to install and size the heat pump correctly and to

³ DECC (2013) Homeowners' Willingness to Take up More Efficient Heating Systems.

⁴ DECC (2013) *Homeowners' Willingness to Take up More Efficient Heating Systems*

⁵ This work found that key triggers to installing a renewable heating technology included the need to replace a heating system (35%), upgrading/refurbishing a home (28 %) or building a new home (16%) The availability of a grant was only the trigger for 27%. DECC (2014) *Evaluation of the Domestic Renewable Heat Incentive: Interim Report from Waves 1–4 of the domestic RHI census of accredited applicants*

maintain it over time. In turn this would give consumers greater confidence in investing in the technology. However, this would only work where payback periods are sufficiently low for businesses to work within (e.g. less than 10 years).

Box 1: At what level should financial incentives be set?

There are a number of options for **setting the level of incentive** that can apply to all of these measures. **Figure 3** shows three options we considered for setting incentives.

Figure 3. Options for setting the incentive level

	Pros	Cons
In line with the reduced carbon cost associated with the measure	Economically optimal approach, with zero resource costs to UK Plc	Immature (and more costly) technologies like heat pumps would not be incentivised
To cover additional lifetime costs to consumers of interventions, with a reasonable return (e.g. 5%)	Fair to consumers and allows more immature technologies to be incentivised	There will be net resource cost to the UK
To cover additional upfront costs to consumers of interventions	Upfront costs are most visible to consumers	Consumers taking incentive will be net winners. Higher resource costs to UK Plc

Source: Frontier Economics

When assessing financial incentives, we have set the cost of incentivising each intervention at a level that internalises the *average* value of carbon savings associated with that intervention, where the carbon savings are valued using DECC’s carbon projections. Therefore the level of the financial incentive offered for each intervention is the same under each policy (Table 1).

Table 1. Value of the financial incentive

	Heat pumps	Solid wall insulation (internal and external)
Value of the rebate in 2025	£2.9k	£4.8k

Source: Frontier Economics

Stamp duty rebate

A stamp duty discount could be an effective way of driving take up of energy efficiency, covering the upfront costs of energy efficiency improvements at a key trigger point for renovations, and attracting consumers’ interest and attention by tagging the incentive to a well-known tax.

This policy would offer a one-off rebate on stamp duty to new homeowners, payable when low-carbon heating interventions are installed in the home. Buyers could claim this either at the point of sale or in the first twelve months after the sale.

The discount would be calculated using the Standard Assessment Procedure (SAP) or Energy Performance Certificate (EPC) framework (though we note that using EPC ratings rather than SAP scores to evaluate efficiency could introduce distortions at the boundaries between the bands).⁶ EPCs are already mandatory at the point of sale, so using this framework for rebates would not introduce an additional cost. As with all of the subsidy measures that we are considering, we assume that it would be based on the value of the carbon savings associated with each measure. In some cases, the rebate will be greater than the stamp duty the new homeowner would have paid. In these cases, new home owners would receive a net payment under this policy. With financial incentives already in place for energy efficiency and low-carbon heat, those already claiming subsidies (e.g. the GDHIF) would have to be ineligible to avoid subsidising consumers twice for the same intervention.

To avoid disproportionately benefiting homeowners with valuable properties, we have looked at an absolute discount. The rebate would not address finance barriers, as homeowners would have to finance the measures themselves before claiming a rebate (which may be possible through taking on a larger mortgage). This intervention may therefore favour less credit constrained consumers.

Government has considered this policy before: in 2013, DECC announced that they would introduce a stamp duty rebate of up to £4,000 for homebuyers installing energy efficiency measures, including those that don't have to pay Stamp Duty.⁷ The rebate was also set to be limited to three years. This plan appears to have changed, but it is not clear why.

Council tax rebate

A council tax rebate for households which install energy efficiency measures could also be effective. Again, this tackles upfront cost barriers, and attracts consumers' attention through the link to a well-known tax. Providing a council tax rebate (rather than ongoing payment) addresses consumers' tendency to discount future costs and benefits heavily compared to current costs and benefits.

⁶ UK Green Building Council, 2013, *Retrofit incentives*

⁷ DECC, 2013, Press release, Government action to help hardworking people with energy bills, available at: <https://www.gov.uk/government/news/govt-action-to-help-hardworking-people-with-energy-bills>.

The policy is effectively a type of cash-back scheme. Households would qualify based on providing receipts for the improvement measures. Accreditation for installers undertaking these interventions and auditing of selected properties could help ensure high standards are maintained. As with the stamp duty policy, where the rebate is greater than the council tax that would have been paid, homeowners will receive a net payment. The rebate could be made more effective by coupling it with a ‘nudge’ intervention such as providing information on consumers in a community that have switched to low-carbon heating.⁸

Compared to stamp duty, this policy has the benefit of being applicable to the whole population, not just those that are moving house. As for stamp duty, a council tax rebate would not address finance barriers. However, coupled with ECO, the distributional impacts may be limited. In contrast with a stamp duty rebate, the source of funding for a council tax rebate may be different from the level at which the rebate is offered, given that funding may be required from central government for councils to offer a rebate.

To the extent that council tax is perceived as a means of paying for local services, this may make it an unpopular vehicle for central government subsidy delivery. However, evidence from a scheme to increase insulation in Sheffield found that council branding helped gain trust.⁹ Trials of offering modest council tax discounts in England for consumers installing energy efficiency measures have had mixed success, with some achieving take up, while a scheme in Richmond was withdrawn due to a lack of take up.¹⁰

Grants to consumers

Grants to consumers would provide a similar incentive to council tax rebates and stamp duty. They differ only in that they are not tagged to an existing policy structure. However, experience from existing grants such as the Green Deal Home Improvement Fund, suggest that they may be effective even without this.¹¹

⁸ We note that behavioural nudges can be effective, but do not always translate from one context to another. In addition, behavioural interventions may not play out in practice as stated preference information would suggest. This suggests a need for trialling behavioural interventions if they are to be applied to the low-carbon heat context. [Source: <http://www.fca.org.uk/news/beesley-lecture>]

⁹ Consumer Focus, 2012, What’s in it for me, Using the benefits of energy efficiency to overcome the barriers, available at: <http://www.consumerfocus.org.uk/files/2012/06/Whats-in-it-for-me-IA.pdf>.

¹⁰ For example, a trial by Croydon council offered £100 council tax discounts for installation of cavity wall and loft insulation from 2006, with 1,200 measures installed over a two year period. London Assembly, 2008, Lagging behind: insulating in London homes, available at <https://www.london.gov.uk/sites/default/files/Lagging%20behind%20-%20final.pdf>

¹¹ <http://gdorb.decc.gov.uk/installers/green-deal-home-improvement-fund>

We considered provision of grants for heat pumps and insulation, available both for owner-occupiers and for rental properties. Like council tax rebates, this policy has the benefit of being applicable to the whole population. Unlike council tax and stamp duty rebates, grants are already being used to incentivise take up of energy efficiency and low-carbon heat, as part of the Green Deal.

Grants to district heating developers

We consider grants to district heating developers to incentivise development of heating networks. To date, most district heating networks have benefitted from some grant funding,¹² and arrangements are already in place providing some funding for heating network developers through the Heat Network Delivery Unit.

Providing grants to developers could be an effective way of addressing barriers arising from high sunk costs, by increasing the expected rate of return for developers. Upfront grant finance would also address finance barriers faced by developers. It would not address awareness and attention barriers, or risks such as uncertainty over long-term heat demand.

Other financial incentives

We also analysed a number of other financial incentives. The following four incentives did not perform well in our qualitative assessment. We summarise our assessment of them below.

- **Variable council tax.** We also considered variable council tax. Offering variable council tax rates would not overcome barriers associated with upfront costs, as consumers receive an ongoing rather than one off reduction. This would reduce the impact of the policy, due to credit constraints or the tendency of consumers to focus on near term costs and benefits. In addition, this would require all properties to have an EPC rating (currently an EPC is only required at the point of sale or rental). This would be costly, and may be unpopular amongst consumers and local authorities.
- **Energy efficiency feed in tariff (FIT).** This would reward households with payments for installing measures which reduce their energy consumption.¹³ FITs for energy efficiency face a similar problem to variable

¹² BRE, University of Edinburgh and the Centre for Sustainable Energy for the Department of Energy & Climate Change, 2013, Research into barriers to deployment of district heating networks

¹³ FIT payments can be based on actual or estimated energy savings. The advantage of using actual savings is that it avoids problems with the “rebound effect.” See: Bertoldi, Paolo, Boza-Kiss, Benigna, Rezessy, Silvia and Oikonomou, Vlasia, 2009, *Feed-in tariff for energy saving: thinking of the design*, available at http://www.eceec.org/library/conference_proceedings/eceec_Summer_Studies/2009/Panel_1/1.

council tax, in that a FIT is not likely to overcome the tendency of consumers to focus on near term costs and benefits or finance barriers, as the payment is ongoing rather than a one-off lump sum. In addition, a FIT is unlikely to overcome attention barriers, as it would not be piggy-backed onto a well-known tax (such as stamp duty or council tax).

- **Economy-wide carbon price.** A carbon price could be introduced that also covered domestic gas use. This would aim to incentivise investment in low-carbon heat by shifting the relative costs of heat pumps and gas boilers, as well as making insulation more cost-effective for consumers. It would also correct the distortion in the market that results from a carbon price being applied to domestic electricity use, but not to gas. If an economy-wide carbon price were introduced, it may be most effective in addressing consumer barriers where delivered as an upfront rather than an ongoing payment it is likely to be too low to incentivise interventions such as heat pumps. In addition, a carbon price would also increase gas bills, and have a negative impact on fuel poverty.¹⁴
- **Technology tax.** A tax could be introduced that was targeted at high carbon heating technologies. While a higher price for high carbon technologies will reduce the price differential between them and low carbon technologies, the overall increased price of heating technologies may cause people to delay replacing their current high carbon technologies. Therefore this policy could have the unintended consequence of actually decreasing the average carbon efficiency of the stock of heating technologies, at least in the near term, which matters given the importance of the transition.

Non-financial interventions

We also consider the following non-financial interventions.

- **Providing information on consumers in a community that have switched to low-carbon heating.** Consumers could be provided with information on uptake of low carbon heating or energy efficiency within their community (e.g. the percentage of their neighbours that have switched to a heat pump). This information could be presented in a number of ways, for example on consumers' electricity bills, alongside the results of an EPC, or annually with council tax bills (if a council tax rebate was also introduced).

235]. However, this also introduces complexity in establishing a baseline and measuring savings, though smart meters address these difficulties.

¹⁴ The impact of internalising the carbon price on bills could be large. For example, a carbon tax on gas would add £200 to a typical gas bill in 2020, based on DECC's projected non-traded sector carbon prices.

Providing this information could be a relatively low cost way of encouraging take up of energy efficiency and low carbon heat. Providing information on comparative energy use on energy bills has been trialled in the US and resulted in reduced energy use.¹⁵ However, these effects may be small, and given awareness and interest barriers this may not produce sufficiently large results to be a major part of the policy solution.

- **Requirement that calculation of future heating bills is factored into mortgage decisions.** The Mortgage Market Review introduced additional requirements on lenders to ensure that mortgages awarded are affordable for borrowers. This included requirements that lenders take into account committed expenditure (e.g. loan repayments or child maintenance), essential expenditure (e.g. Council tax, utility bills), and quality-of-living costs (e.g. holidays, eating out).¹⁶ A requirement that calculation of future heating bills is factored into mortgage decisions, to address low engagement with heating, could be introduced. The intervention is targeted at a time when attention barriers are likely to be lower, for example as households consider making home improvements at the time of moving. However, when taking on a mortgage, the change in heating costs is unlikely to be a major change for many buyers, in absolute terms. As a result, sharing this information is unlikely to drive additional take up of low-carbon heating or energy efficiency.
- **Minimum EPC for all properties.** This would require all properties to have a minimum EPC rating at the point of sale, as well as for rental properties, as is currently proposed. A major disadvantage of the policy is that it would not incentivise that the most efficient improvements were made. Although the minimum could be increased over time, it does not introduce a dynamic incentive to improve the energy efficiency of a property. A further major drawback is that this would require sellers to make investments in energy efficiency, while in practice sellers typically make cosmetic improvements, while buyers are more likely to renovate a property. Finally, the policy would apply only to homes being sold, rather than the entire housing stock.
- **Mandating energy efficiency improvements.** We also consider a role for mandating energy efficiency improvements identified as cost effective in an

¹⁵ Cabinet Office, DECC, and DCLG, 2011, Behaviour Change and Energy Use, available at: https://opower.com/uploads/library/file/18/behaviour_change_and_energy_use_-_reduced_size.pdf.

¹⁶ See 11.6.5 R, Financial Services Authority, 2013, Policy Statement, Mortgage Market Review, Feedback on CP11/31 and final rules, available at: <http://www.fca.org.uk/static/documents/policy-statements/fsa-ps12-16.pdf>.

EPC or Green Deal Assessment. This would overcome barriers relating to actual features of interventions and bypass awareness, attention and perception barriers. However, it is likely to be highly unpopular, given the upfront costs and hassle associated with some of the improvements. Our view is that there are better options than mandating to deliver this uptake at present (see Box 2). We note that local authorities can require that building standards are higher than the national minimum requirement. In 2006, Uttlesford District Council introduced requirements that households make energy efficiency improvements on the whole home when adding an extension, where these measures are cost effective.¹⁷ This is over and above national building regulations, which affect the new addition, and not the existing dwelling¹⁸.

¹⁷ Communities and Local Government Select Committee, 2008, Regulation and encouragement, available at <http://www.publications.parliament.uk/pa/cm200708/cmselect/cmcomloc/432/43205.htm>.

¹⁸ Department for Communities and Local Government, 2013, Changes to part L of the building regulations 2013: impact assessment, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226965/Part_L_2013_IA.pdf.

Box 2: Mandating as a last resort

It is clear that there is strong variation between consumers, in terms of their attributes, attitudes and activities and therefore what they need and want in terms of heating systems. Since it is difficult for policy makers to gather information on what it is that different consumers want and need, it is important to maintain consumer choice where possible. This will allow consumers to select for themselves the interventions that may deliver them the greatest benefits.

However, mandating can be a useful ‘last resort’ when:

- consumers are not very interested in having a wider choice; or
- consumers make choices that are not in their economic interest because options are complex and information is difficult to process; and
- the options being mandated entail net benefits for UK Plc.

To minimise the cost of mandated standards, they should be set in as broad a way as possible, e.g. setting minimum energy efficiency standards, rather than specifying the exact technologies required to deliver those standards.

2.2 Misaligned incentives

The private rental sector is growing: the most recent figures available show that 18% of UK dwellings were privately rented in 2012, with a further 18% rented from housing associations or LAs, and the remaining 64% owner occupied.¹⁹ This compares to 10% of dwellings being rented privately in 2002, 21% socially rented, and 70% owner occupied.²⁰ We have looked at policies specifically aimed at the private rental sector, given the issues of misaligned incentives between tenants and landlords.

Misaligned incentives are a problem in the rental sector. Because low-carbon interventions entail high upfront costs in return for ongoing benefits, the landlord does not have an incentive to invest in the interventions, as the tenant gains the benefits. Given the short tenure lengths in the private sector, tenants also do not have an incentive to invest in the measures, as they are unlikely to be in the property for long enough to allow their investment to pay back.

If tenants were to factor energy costs into their rental decisions, incentives would no longer be misaligned, since landlords would be able to factor the energy savings associated with the low-carbon interventions into their rent. However

¹⁹ DCLG, 2014, Table 101: Dwelling stock: by tenure, United Kingdom.

²⁰ Figures don't sum to 100% due to rounding.

this doesn't happen as only a small proportion of tenants take EPCs into account when choosing a property,²¹ and energy efficiency is not a priority for tenants (see Box 3 below).

Box 3: Decision making in the private rental sector

The evidence on decision making in the private rental sector suggests that energy efficiency is not a high priority when deciding on a property to rent. Recent research found that the most important factors when choosing a property to rent were:²²

- affordability (65% of respondents ranked this as most important);
- location (23% of respondents); and
- space (10% of respondents).

The proportion prioritising location was higher than average amongst higher income respondents, and the proportion prioritising affordability was slightly higher than average for lower income respondents.

Source: Knight Frank, 2014, UK tenant survey 2014, private rented sector research, available at: <http://content.knightfrank.com/research/707/documents/en/2014-2407.pdf>.

We consider two policies to address misaligned incentives:

- including information on energy bills in headline rental prices; and
- variable tax on landlords.

Including information on energy bills in headline rental prices

We consider a policy whereby advertised headline rental prices would be required to be inclusive of estimated energy bills for the property. Currently when renting a property, the EPC must be made available, and this includes information on energy costs for heating, lighting and hot water at standard occupancy. The calculation of energy costs could therefore be made based on the EPC.

To be effective, this would require that landlords could afford to make energy efficiency improvements in response to consumer demand. This may not be the case if, for example, landlords were credit constrained.

²¹ Consumer Focus, Liz Lainé, 2011, Room for improvement The impact of EPCs on consumer decision-making, available at: <http://www.consumerfocus.org.uk/files/2011/02/Room-for-improvement.pdf>.

²² Knight Frank, 2014, UK tenant survey 2014, private rented sector research, available at: <http://content.knightfrank.com/research/707/documents/en/2014-2407.pdf>.

Evidence from Germany contrasts with the UK, and suggests that misaligned incentives can also work in the other direction, with tenants unwilling to allow energy efficiency improvements to be made by landlords, due to hassle (see Box 4 below). This is likely to be the result of differing models of tenancy in Germany relative to the UK. In particular, tenancy agreements tend to be longer in Germany.

Box 4: Addressing misaligned incentives – policy in Germany

In Germany, misaligned incentives in the rental sector have different impacts compared to the UK. Policy changes in 2012 aimed to address misaligned incentives through changes to tenancy law. This introduced requirements that tenants accept disturbances associated with investment in energy efficiency, within certain bounds.²³

This addressed concerns that tenants did not have incentives to agree to energy efficiency investments being made. This was because longer tenancy arrangements in Germany meant that this work would be carried out while the tenants were there, rather than between periods of tenancy as would be more likely in the UK market. This hassle to tenants was sufficient to outweigh the lower bills resulting from energy efficiency investments during their period in the property. In addition, there were limits on the extent to which landlords could recover their investment through rent increases, with the potential result reduced investment by landlords.²⁴

Source: KPMG, Spotlight, Real Estate Focus, available at:
<https://www.kpmg.com/DE/de/Documents/real-estate-focus-0313-en.pdf>.

Variable landlord tax

We also considered a variable tax on landlords based on energy efficiency. Taxing landlords on the efficiency of their properties would introduce a financial incentive for landlords to improve the energy efficiency of their properties. This would address the problem of split incentives. We have rejected the policy on the basis of distributional consequences: it would not be fair to tax landlords while providing incentives to the owner-occupier sector as this would introduce penalties that would be passed onto those in the rental sector.

²³ See: <http://www.refire-online.com/features/investment/german-parliament-approves-new-landlord-tenant-laws/>.

²⁴ OECD, 2012, OECD Economic Surveys, Germany

2.3 Coordination, natural monopolies, lock in

In this section, we consider policy required to address barriers to district heat. Specifically, we assess policy that could overcome coordination barriers, regulatory risks resulting from natural monopolies, and lock in to more expensive incumbent technologies as a result of high upfront and sunk costs of alternatives. Note that we have already considered grants to district heating developers above.

We consider the following interventions:

- a regulatory framework that shares district heating risks;
- consumer protection for district heat;
- mandating district heating connection;
- standardised district heat development contracts; and
- building skills and capabilities.

Regulatory framework that shares district heating risks

We consider policy to address cost barriers to district heating, which could result in lock in to less economic incumbent technologies. We have considered creation of a regulatory framework where risks are shared between district heat investors and the government. We first consider the arrangements used when developing the natural gas network in Northern Ireland, and existing sharing of risks in district heating developments (Box 5).

Box 5: Roll out of gas network in Northern Ireland

Natural gas was first introduced as a heating fuel in Northern Ireland in 1996. Roll out proved slower than expected, with anecdotal evidence of consumers being reluctant to switch away from familiar heating sources (predominantly oil). Barriers have varied across housing types, with those in social housing often not having a choice over the switch, high take up in new builds due to less space required by gas heating, and lower take up amongst owner-occupiers, which may have been the result of substantial upfront costs and relatively uncertain, long-term, economic gains. Overall, roll out has been successful, with a substantial number of consumers switching to natural gas.

This was supported by a long-term strategy adopted by Phoenix gas (the regulated gas company, which was licensed to transmit, distribute and supply gas in 1996), UReg (the regulator), and DETI (the government). This strategy provided a long-term commitment to roll out, both by providing a licence to the regulated monopoly, as well as supporting investment by the regulated monopoly through regulation that ensured sufficient returns to justify high risks associated with establishing a natural gas network.²⁵ The provisions in this included:

- an allowed rate of return to reflect the risk faced by investors that was fixed for an agreed period;
- allowing costs to be recovered through a price control framework; and
- allowing return to be increased by exceeding forecast gas sales.²⁶

The experience in Northern Ireland is an example of a long-term policy commitment being used to support investment by a regulated monopoly in a new heating fuel. This works to reduce risks associated with developing a new network.

There are a couple of differences in the context for gas rollout in Northern Ireland compared to district heating in the UK.

- **Cost relative to the incumbent technology.** Natural gas has generally been cheaper than the incumbent oil technology during roll out in Northern

²⁵ Northern Ireland Authority for Energy Regulation, May 2005, Consultation Paper, The Proposed Acquisition of East Surrey Holdings plc by Kellen Acquisitions Limited – Implications for Phoenix Natural Gas Limited, available at: http://www.uregni.gov.uk/uploads/publications/GAS_Phoenix_Consultation_24may05.pdf.

²⁶ Northern Ireland Authority for Energy Regulation, May 2005, Consultation Paper, The Proposed Acquisition of East Surrey Holdings plc by Kellen Acquisitions Limited – Implications for Phoenix Natural Gas Limited.

Ireland. This reduced the payback period expected for consumers when they switched to gas. In contrast, the costs of district heating are still higher than conventional gas or electric heating in the UK.²⁷

- **Regulation.** Roll out in Northern Ireland occurred in the context of a regulated monopoly market, while district heating is currently unregulated.

In our design of district heat solutions, we have focussed on ensuring that the regulatory framework allocates investors those risks that they can best manage and protects consumers from natural monopoly.

This could be made up of the following.

- **Licencing developers.** District heating developments are local monopolies, with competition for the market (e.g. through tender processes to develop heating networks with local authorities). This process could be formalised, with developers licensed and awarded a local monopoly. A market led approach would be preferable where private developers have more information on prospects for district heating in a given area. This may be the case in the context of new buildings. A publicly led approach could be preferable where local authorities or central government have better information on heating network potential, and this could be the case as a result of heat mapping work undertaken. Licencing could be introduced alongside a target for take up of district heat by 2020 and/or 2030. A target is already in place in Scotland, and was put forward by the CCC in its most recent progress report.
- **Risk sharing between government and developers.** Many of the risks faced by district heating networks are driven by policy (for example the extent to which alternative heating technologies will be supported by policy in the future). This is an argument for the Government to bear some of the risk associated with developing district heating. Risk sharing could be combined with licencing, as a license could specify risk sharing between the government and developers, for example which types of risks government takes on, and conditions for government providing resources.

The types of risks that government may be best placed to manage include providing long-term heat demand guarantees or loan guarantees, or acting as a ‘quasi-regulator,’ and existing agreements already include these types of risk sharing between project sponsors and ESCOs for some heating networks.²⁸

²⁹ ³⁰ A further way for local and national Government to manage risk may be

²⁷ Pöyry and Faber Maunsell (2009), *The potential and costs of district heating networks, A report to the Department of Energy and Climate Change*

²⁸ Frontier Economics for ETI, 2013, Characterisation of the current energy value chain

²⁹ Roger Cotton, Brodies LLP, 2011, Governance and business models for district heating, available at: http://www.heatandthecity.org.uk/_data/assets/pdf_file/0009/71757/6_-_Roger_Cotton_-_GOVERNANCE_AND_BUSINESS_MODELS_FOR_DISTRICT_HEATING.pdf.

to identify the local characteristics that would make an area most suitable for district heat. In addition, government could contribute resources such as land or planning expertise, or grants (which we consider separately above). This would address finance barriers for developers that result from high sunk costs (either explicitly through loan guarantees, or through sharing of broader risks enabling finance to be raised).

While we have considered a role for national regulation in ensuring a transition, there may be a significant role for local authorities in sharing risks. For example, in some cases local authorities may be best placed to provide long-term demand guarantees, e.g. where a heating network includes a large load from public buildings.

There is also a question of whether distortions might arise that result in inefficient trade-offs between making investments in district heat networks and reinforcing the electricity networks to be able to meet higher heating demand. However, we note that the existing regulatory framework for electricity distribution supports consideration of alternatives to traditional network investment, which may include investment in district heating. See Box 6 below.

³⁰ ARUP (2011), *District heating manual for London*

Box 6: Regulatory incentives for DNOs

The existing regulatory framework for electricity Distribution Network Operators (DNOs) has been designed to provide them with an incentive to consider alternatives to traditional network investment. As part of the Strategy decision for the recent RIIO-ED1 electricity distribution price control, Ofgem stated:

‘We are promoting a step change in the way DNOs think about the future. DNOs will need to set out how they plan to accommodate uncertain levels of low carbon technologies onto their networks. The package of outputs and incentives will ensure they do this at efficient cost, using smart grids tools and techniques whilst providing good service to new and existing customers. They will also be incentivised to manage their carbon footprint and will have to report on how their actions have contributed to broader environmental objectives.’³¹

Smart grid solutions covers a range of non-traditional approaches including investing in new technologies (such as storage) or in contractual solutions (such as Demand Side Response). It could also include contracting with a District Heat provider as an alternative to network investment.

The mechanisms that Ofgem is using to achieve its aims include the following.

- DNOs are required to engage in extensive stakeholder engagement and, through this, develop well-justified business plans. This would include engagement with LAs and potential DH providers within its area to discuss opportunities for avoiding network investment by supporting DH schemes.
- The use of cost benchmarking to set allowances drives the DNOs to find and apply innovative least cost-solutions. To the extent that one of the DNOs did not contract with DH providers where cost effective, they could be expected to be penalised when their costs were benchmarked against those DNOs that did.
- Specific incentive mechanisms are also in place, such as the interruptions incentive (IIS), which gives a strong incentive on the companies to anticipate the increased loads from low carbon technologies, and ensure that they do not overload the network assets.

It remains to be seen whether these measures will be sufficient to level the

³¹ Page 5, Ofgem, 2013, Strategy decision for the RIIO-ED1 electricity distribution price control Overview, available at: <https://www.ofgem.gov.uk/ofgem-publications/47067/riioed1decoverview.pdf>.

playing field between traditional reinforcement and alternative smart solutions (particularly where they involve contractual relationships to avoid new load). However, this is something Ofgem has taken steps to address, and can be expected to continue to adjust its policy to meet this objective going forward.

Source: Ofgem, 2013, Strategy decision for the RIIO-ED1 electricity distribution price control Overview

Consumer protection for district heat

We have considered policy to address regulatory risks associated with district heat, which result from its natural monopoly characteristics.

Currently heating is not regulated, and heat network customers have no access to the Energy Ombudsman. An industry-led Independent Heat Customer Protection Scheme is being developed by the Combined Heat and Power Association.³² This covers households and small businesses, and seeks to replicate (where appropriate) consumer protection in electricity and gas market regulation. Proposals include assessment criteria for evaluating the level of customer protection in Heat Supply Agreements, and independent adjudication.

However, experience of district heat internationally, and anecdotal evidence of poor outcomes for some UK heating networks, suggests that regulation (rather than a voluntary, industry-led approach) is required alongside policy supporting further development of district heating networks. This is to ensure that consumers are protected both in terms of price and quality of service. This is in the face of risks for consumers, as heating networks are natural monopolies, and consumers have limited alternative heating options available after connecting to a heating network.

Introducing strengthened consumer protection in relation to pricing and quality of service (which could also include quality assurance of installations) could provide certainty for consumers and investors. Consumer protection could take the form of formal regulation, adopting an approach that is already widely used and familiar in other natural monopoly sectors.

On the consumer side, regulation could ensure better outcomes and address take up barriers that result from negative perceptions of district heating. On the investor side, regulation could reduce risks in the supply chain (e.g. over dispute resolution and liability) as well as addressing consumer scepticism barriers faced by developers.

Regulation could potentially be applied along with unbundling, for example regulating the generation, transmission and distribution of heat, while separating retail services and allowing consumers to choose between suppliers. In larger

³² See: <http://www.heatcustomerprotection.co.uk/>.

heating networks heat generation could also be unbundled from the network and be open to competition from other sources of heat supply.

However, for most heat networks retailers wouldn't have choice on where to purchase heat from and this would limit the dimensions of competition (e.g. to customer service and billing). This may be ineffective given the local nature of heat networks, and in fact in the water industry, a decision has been made to limit retail competition to non-domestic customers. We discuss retail competition in the context of water in Box 7.

Box 7: Unbundling in the water market

The finding of the Cave Review of Competition and Innovation in Water Markets (2009) was that introducing competition into the water market would improve the market for non-domestic consumers and allow for gains in efficiency³³. The Independent Review of Charging for Household Water and Sewerage Services (2009³⁴) did not conclude that domestic households should be able to switch water suppliers, finding that metering is the best way to achieve fair billing and efficient use of water.

In the non-domestic sector, it was proposed that competition would be introduced by unbundling the current vertically integrated structure to make the water market more “innovative and responsive to consumers”³⁵. The 2014 Water Act implemented the following main recommendations of the review^{36,37}:

- non-domestic consumers can choose their water provider (the previous threshold was removed);
- changing the licencing system so that it is more flexible (single permits rather than multiple permits);
- retail divisions of companies should become legally independent from the network (unless not in the consumers’ interests to do this); and
- mergers that are in the consumers’ interests should be allowed, except for retail mergers.

Mandating district heating connection

There are barriers to the transition to domestic district heating due to network issues (the requirement that a large number of consumers -or landlords- want to switch in a relatively high density location). We considered the role of local mandating of district heat connection in areas where it has been identified as most economic, and found that it was not a prerequisite for successful roll out of networks.

³³ Cave, Martin, 2009, Independent review of competition and innovation in water markets: final report

³⁴ Walker, Anna, 2009, The independent review of charging for household water and sewerage services, available at [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69459/walker-review-final-report.pdf]

³⁵ DEFRA, 2014, Reforming the water industry to increase competition and protect the environment

³⁶ HM Government, 2014, The Water Act 2014

³⁷ Cave, Martin, 2009, Independent review of competition and innovation in water markets: final report

Experience of district heating in Germany shows this as many heating networks have been developed without use of mandating. Similarly, the roll out of gas networks in Northern Ireland illustrates that maintaining consumer choice is possible, even where the new solution is dependent on gaining a critical mass of customers before it can be economically viable.

We therefore view mandating as a last resort policy measure. If applied, it could be used in the transition towards increased district heating take up, for example only in areas with the highest district heating potential. Alternatively, district heat could be made a default option in certain scenarios, which consumers can opt out of. This has been found to be an effective means of driving take up in some sectors, and the application of defaults in the pensions sector is described in Box 8).

Box 8: Use of defaults in the pensions sector

The tendency of consumers to focus on near term costs and benefits has resulted in chronic under saving for pensions³⁸. According to Department of Work and Pensions estimates in 2010, 7 million people were under saving for their retirement³⁹.

Defaults have been used in this sector to overcome the under saving problem: The Pensions Act legislated for automatic enrolment into private pensions, with the right to opt out. Enrolment started in October 2012 for employees of the largest companies, with employees of smaller companies joining until April 2017⁴⁰.

By December 2014, around 90% of the 5 million workers who had been automatically enrolled in pensions had remained enrolled and not exercised their right to opt out of their work-place pension⁴¹.

Standardised district heat development contracts

A lack of standardised contract mechanisms has been identified as an important barrier to development of district heat networks in the UK, resulting in higher transaction costs. This was found to be the case specifically in the context of risk (how it can be reduced and distributed), spanning installation, operation, and

³⁸ 'Present bias' means people under-save for retirement and regret it later. Financial Conduct Authority, 2013, Occasional Paper No. 1, Applying behavioural economics at the Financial Conduct Authority

³⁹ Department for Work and Pensions modelling using data from the English Longitudinal study of aging. Cited in DWP (2010), *Making Automatic enrolment work*

⁴⁰ PPI (2014), *The Pensions Primer: a guide to the UK pensions system*

⁴¹ <https://www.gov.uk/government/news/standing-ovation-as-auto-enrolment-hits-5-million-and-auto-transfer-launch-plans-are-unveiled>

network assets. This could result in lock in to incumbent technologies. Lack of standardised contracts have been found to be more of a barrier for property developer led heat network developments than local authority led networks.⁴²

This is likely to be a barrier for district heat in particular because of the long-term nature of contracting required, the large number of parties typically involved, and limited experience developing district heating.

Introducing standardised contracts for district heating networks could be an effective ‘low regrets’ policy.

Building skills and capabilities

The transition towards increased low carbon heating in the UK will require supply chain development and development of associated skills. Existing transitions (e.g. the mandating of condensing gas boilers in the UK) have been supported by programmes to develop the required skills, often alongside formal accreditation.

Formal accreditation and skills development could be particularly relevant for district heating, given evidence of relatively high costs of district heat in the UK relative to Europe resulting from a lack of experience, and anecdotal evidence of some poor quality installations.⁴³ More broadly, skills development programmes could address awareness barriers amongst installers and consumers (the latter to the extent that consumers receive information on their heating options from installers).

Lack of skills amongst district heat developers could also be addressed by further targeted support. This is already being provided to an extent by the Heat Network Delivery Unit (HNDU), with £7 million of innovation funding awarded in January 2015.⁴⁴ However its scope is limited, with funding available until spring 2015.

2.4 Upfront costs and affordability

Policy will also be required to meet distributional or equity aims, for example to ensure that affordability issues are not preventing people from being able to stay

⁴² DECC, 2013, Research into barriers to deployment of district heating networks Research study by BRE, University of Edinburgh and the Centre for Sustainable Energy for the Department of Energy & Climate Change.

⁴³ http://www.theccc.org.uk/wp-content/uploads/2014/07/CCC-Progress-Report-2014_web_2.pdf

⁴⁴ £1 million of funding has been awarded to 17 schemes for feasibility studies, with up to ten of these projects then able to apply for £6 million of funding for implementation. DECC, 2015, £7m boost to heat industry innovation, News story, available at: <https://www.gov.uk/government/news/7m-boost-to-heat-industry-innovation>.

warm in their homes. In this section we consider policy to address credit constraints. We do not consider distributional policy on a standalone basis.

Credit constraints mean that consumers may not be able to invest in interventions with high upfront costs. This may prevent investment in interventions with upfront costs that are paid off by long-term benefits.

Policy intervention may be required to address credit constraints faced by consumers. The Green Deal is already available to offer loans for investments in energy efficiency, with a wide availability of finance (covering 83% of the population).

However, take up has been very low, due to a combination of the design of the policy (e.g. meaning that loans are long-term to meet the golden rule, which is not in line with consumer preferences) and consumer cognitive failures (e.g. meaning that interest rates are perceived as high due to being compared with short-term variable interest rates).

As a result, Green Deal loans are not currently an effective way of addressing finance barriers. We therefore consider two modifications to the Green Deal:

- subsidising interest rates – this could be done on a time-limited basis, to encourage consumers to act now to benefit from the subsidy;⁴⁵ and
- reducing the term of Green Deal loans to better meet consumer preferences.

We expect that Green Deal modification may still not be sufficient to drive take up of energy efficiency. There is mixed evidence on take up of subsidised finance for energy efficiency and low-carbon heat investments, as set out in Supporting Report 1. Some consumers already have low cost finance available to them (e.g. through top-up mortgages) or are eligible for free measures through ECO. For those for whom a subsidised Green Deal loan would be the best available finance option, wider barriers such as lack of awareness, attention or trust may still prevent take up.

Lower interest on Green Deal loans

Low-interest loans could be introduced to drive low-carbon heat uptake by reducing credit constraints. An interest rate subsidy could be offered on a time-limited basis through the Green Deal, to ease credit constraints, and encourage consumers to act now to benefit from the subsidy (e.g. as applied to Cashback and the GDHIF, where a set amount of funding was available on a first come

⁴⁵ Frontier Economics for the Committee on Climate Change, 2014, Reducing the cost of capital for household low-carbon investment decisions

first served basis).⁴⁶ In addition, making the interest rate subsidy time limited would limit costs to Government (or additional costs recovered through energy bills), and could ensure the Green Deal Finance Company (GDFC) reaches a more efficient scale, which in turn could drive future falls in the interest rate it is able to offer consumers.

Take up of Green Deal loans (available at an unsubsidised interest rate) to date has been low. Green Deal interest rates are perceived as high due to being compared with products with shorter-term and/or variable rates.

Subsidising rates would enable Green Deal loans to more effectively tackle credit constraints. However, this may still be insufficient to drive take up. There is evidence that consumers do not like to borrow to cover heating system costs. DECC research found that nearly half of homeowners would opt to pay for a new heating system through their savings (47%) and most homeowners who felt they had insufficient savings would only take out finance if they were in an emergency situation as a last resort.⁴⁷

In addition, some consumers already have low cost finance available to them (e.g. through top-up mortgages) or are eligible for free measures through ECO. For those for whom a subsidised Green Deal loan would be the best available finance option, wider barriers such as lack of awareness, lack of trust, or consumers' tendency to focus on near term costs and benefits may still prevent take up.

Reducing the term of Green Deal loans

In addition to reducing Green Deal loan interest rates, the term of Green Deal loans could be reduced. Currently Green Deal loans are long-term (typically 10-25 years). This compares to unsecured personal loans available at up to seven year terms. Currently meeting the golden rule prevents shorter term loans from being offered.

Relaxing the golden rule to allow shorter term loans would enable Green Deal loans to better meet consumer preferences towards finance. There is a risk that a relaxed golden rule could cause consumers to take on loans that they cannot afford to repay, which would have to be taken into account (e.g. this may mean that five year loans were appropriate but one year loans were not for most borrowers).

As for the interest rate subsidy, this intervention would enable Green Deal loans to better address upfront cost and affordability barriers. However, given the mixed evidence on take up of energy efficiency finance internationally, it may still

⁴⁶ Frontier Economics for the Committee on Climate Change, 2014, Reducing the cost of capital for household low-carbon investment decisions

⁴⁷ DECC (2013) *Homeowners' Willingness to Take up More Efficient Heating Systems*

not be effective in driving uptake. Considering wider barriers while redesigning the Green Deal (e.g. subsidising and shortening loans in a way that is simple) may help to address this.

However, a direct subsidy on upfront costs is likely to be more effective than subsidising consumers through lowering Green Deal rates or shortening the terms of the loan.

3 Shortlist of policies

We shortlisted a number of policies based on our qualitative analysis. These are shown in **Figure 4** below. Our cost benefit analysis of these policies is set out in Annexe 2b. We do not analyse ‘low-regrets’ policies further. In addition, we exclude policies that were not expected to be effective ways of addressing barriers. We note that providing information on consumers in a community that have switched to low-carbon heating, while found to be effective in US trials, is unlikely to produce sufficiently large results to be a major part of the policy solution, particularly given the UK evidence on awareness and interest barriers. We therefore exclude it from our shortlist.

We also exclude Green Deal modification from the shortlist, given our assessment that delivering a subsidy through lower Green Deal interest rates is not justifiable economically, or in terms of behaviour.

Figure 4. Shortlisted policies

Externalities, lock-in, upfront costs and interest	<ul style="list-style-type: none">• Stamp duty rebate• Council tax rebate• Grants to consumers• Grants to district heating developers
Coordination, natural monopolies and lock-in	<ul style="list-style-type: none">• Regulatory framework that shares district heating risks• Consumer protection for district heat• Standardised district heat development contracts

Source: Frontier Economics

The remainder of this annexe sets out tables summarising our qualitative assessments of each policy considered. We have structured the annexe according to the barriers being addressed by the policy.

3.1 Externalities, lock-in, upfront costs and interest

3.1.1 Stamp duty rebate

Table 2. Assessment of stamp duty rebate

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers		Requires that modest financial incentive drives uptake, through targeting at time when focus is on home improvements
Effectiveness in addressing awareness, attention and perception barriers		Linking to a large and well known tax overcomes attention and awareness barriers
Effectiveness in addressing lack of finance		Where the discount is claimed after the interventions have been applied, buyers would need to finance the interventions themselves. This may be possible through a larger mortgage.
Cost		Transfer from taxpayers or energy consumers to the group taking up this incentive. Real resource costs from incentivising measures not yet cost effective (e.g. heat pumps).
Distributional impacts		May favour better off/ less credit constrained consumers.
Impact on government, supplier, investor and consumer confidence		May have limited impact in increasing confidence, as further policy change and take up uncertain
Risk/ unintended consequences		Reducing stamp duty could increase liquidity in the housing market. Risk that additionality is not delivered – i.e. people who take up incentive would have installed measures anyway
Evidence base		No past precedents and the policy has not been trialled.
Flexibility		Would be based on EPC or SAP framework, which may require updates over time. Rates could be adjusted bi-annually if priorities change
Transition		Relatively straightforward to introduce as EPCs are already mandatory at point of sale.
Political acceptability and communication		Likely to be acceptable to consumers.
Compatibility		To ensure consumers are not being subsidised twice, those collecting the RHI or FITs would have to be ineligible for this.

3.1.2 Council tax rebate

Table 3. Assessment of council tax rebate		
Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Requires that modest financial incentive drives uptake, through tying it into existing council tax
Effectiveness in addressing awareness, interest and perception barriers	Yellow	Linking to a large and well known tax overcomes attention and awareness barriers.
Effectiveness in addressing lack of finance	Red	Where the discount is claimed after the interventions have been applied, buyers would need to finance the interventions themselves.
Cost	Yellow	Could be designed to be revenue neutral for local authorities, but it would be difficult to guarantee neutrality. Real resource costs from incentivising measures not yet cost effective (e.g. heat pumps)
Distributional impacts	Yellow	Limited distributional impacts alongside existing ECO/Green Deal policy. Absolute discount rather than percentage discount
Impact on government, supplier, investor and consumer confidence	Green	May have limited impact in increasing confidence, as further policy change and success uncertain
Risk/ unintended consequences	Yellow	May not be revenue neutral depending on actual uptake Risk that additionality is not delivered – i.e. people who take up incentive would have installed measures anyway.
Evidence base	Yellow	No past precedents and the policy has not been trialled
Flexibility	Green	Would be based on EPC or SAP framework, which may require updates over time
Transition	Green	Households could qualify based on providing receipts for the improvement measures. Therefore EPC or SAP assessments would not have to be undertaken for all households.
Political acceptability and communication to consumers	Red	Revenue neutrality would require increase in council tax overall to fund rebates. Again, this is likely to be highly unpopular. Council tax perceived as a means of paying for local services, which may make council tax an unpopular vehicle for central government subsidy delivery

Compatibility		To ensure consumers are not being subsidised twice, those collecting the RHI or FITs would have to be ineligible for this. Green Deal loan consumers could remain eligible.
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3.1.3 Grants to consumers

Table 4. Assessment of grants to consumers		
Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers		Effectiveness depends on wider barriers and how grants are delivered to consumers
Effectiveness in addressing awareness, interest and perception barriers		If offered at the same time as the smart meter roll out, they could overcome awareness/interest barriers.
Effectiveness in addressing lack of finance		Reduces barriers related to the credit constraint if delivered before consumers have to purchase in the interventions
Cost		Transfer from taxpayers or energy consumers to the group taking up this incentive. . Real resource costs from grants provided for measures not yet cost effective (e.g. heat pumps)
Distributional impacts		Given the fact that grants are likely to be very popular, it may be necessary to 'ration' them, potentially based on the degree of fuel poverty
Impact on government, supplier, investor and consumer confidence		Likely to be positive, subject to way in which grants are delivered
Risk/ unintended consequences		Risk that additionality is not delivered – i.e. people who take up grants would have installed measures anyway.
Evidence base		Evidence on existing, limited use of grants for home improvements
Flexibility		Robust to different decarbonisation scenarios, not technology agnostic
Transition		Could be incorporated into the Green Deal, or delivered through local authorities
Political acceptability and communication to consumers		Acceptable to consumers, but political appetite could be limited due to cost

Compatibility		May require modification of Green Deal (e.g. removal of GDHIF)
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3.1.4 Grants to district heating developers

Table 5. Assessment of grants to district heating developers

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers		Effectiveness depends on wider barriers including risks faced by developers
Effectiveness in addressing awareness, interest and perception barriers		Likely to be effective in overcoming interest barriers, but would not address lack of skills/experience in developing district heating in the UK
Effectiveness in addressing lack of finance		Reduces barriers related to credit constraints
Cost		Transfer from taxpayers or energy consumers to developers. Real resource costs from grants provided for measures not yet cost effective (relevant to district heating given high relative costs of district heating in the UK)
Distributional impacts		May be necessary to 'ration' grants (as is already the case for the HDNU's funding which is awarded through competitions)
Impact on government, supplier, investor and consumer confidence		Likely to be positive
Risk/ unintended consequences		Risk that additionality is not delivered
Evidence base		Evidence on existing use of grants for developers in the UK and internationally
Flexibility		Robust to different decarbonisation scenarios, not technology agnostic
Transition		Likely to entail an expansion of existing grant funding in place
Political acceptability and communication to consumers		Acceptable to consumers, but political appetite could be limited due to cost
Compatibility		Some grant funding is already in place through the HNDU

3.1.5 Variable council tax

Table 6. Assessment of variable council tax

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Yellow	Requires that modest financial incentive drives uptake, through tying it into existing council tax
Effectiveness in addressing awareness, interest and perception barriers	Red	Adjusting an existing tax may help overcome awareness and interest barriers. However, because this is an ongoing reduction, myopic customers may undervalue it.
Effectiveness in addressing lack of finance	Red	Buyers would need to finance the interventions themselves
Cost	Yellow	To be viable for LAs to implement, it may need to be designed to be revenue neutral. However, it could be costly for LAs if take up is higher than projected. Real resource costs from incentivising measures not yet cost effective (e.g. heat pumps)
Distributional impacts	Yellow	Adverse distributional impacts if worse off households are more credit constrained and less able to fund improvements
Impact on government, supplier, investor and consumer confidence	Green	May have limited impact in increasing confidence, as further policy change and take up uncertain
Risk/ unintended consequences	Yellow	May not be revenue neutral depending on actual uptake
Evidence base	Yellow	The policy has not been trialled. Local authorities in Scotland are required to introduce council tax discounts for energy efficiency under the Climate Change Act Scotland (2009), with the minimum discount £50.
Flexibility	Green	Would be based on EPC or SAP framework, which may require updates over time
Transition	Red	Requires EPCs/ other assessments for all houses. This would be costly
Political acceptability and communication to consumers	Red	To make this policy revenue neutral, some households would have to accept increases in Council Tax. This is likely to be highly unpopular. Council Tax discounts in Scotland are revenue

		neutral for some authorities, for example by being offered through energy suppliers. ⁴⁸
Compatibility		To ensure consumers are not being subsidised twice, those collecting the RHI or FiTs would have to be ineligible for this. Green Deal loan consumers could remain eligible.

⁴⁸ For example, the £50 council tax discount offered in Aberdeenshire is administered by Scottish Gas, for anyone who has installed cavity wall or loft insulation through the initiative, whether they are a Scottish Gas customer or not. Aberdeenshire County Council, 2012, Energy efficiency council tax discount scheme, available at: https://aberdeenshire.gov.uk/housing/tenant/energyefficiency/council_tax_discount.asp.

3.1.6 Energy efficiency Feed-in-Tariff (FIT)

Table 7. Assessment of an energy efficiency FIT

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Yellow	Depends on size of incentive, and accurate measurement of energy savings
Effectiveness in addressing awareness, interest and perception barriers	Red	Government has already experimented with a FIT in low-carbon heating: the RHI. Take up of the RHI is low, despite a high return. This suggests an EE FiT is unlikely to overcome interest barriers unless incentives are very high. An upfront incentive may be more effective.
Effectiveness in addressing lack of finance	Red	Ongoing incentives do not address credit constraints
Cost	Yellow	Transfer from taxpayers or energy consumers to the group taking up this incentive. Real resource costs from incentivising measures not yet cost effective, though this less likely to apply to EE measures.
Distributional impacts	Yellow	Likely to be taken up by the able to pay, and regressive if funded by energy bills
Impact on government, supplier, investor and consumer confidence	Yellow	May have limited impact in increasing confidence, as further policy change and success uncertain
Risk/ unintended consequences	Green	
Evidence base	Red	Evidence from the RHI suggests that this would not be effective
Flexibility	Green	Could easily be adjusted as priorities change.
Transition	Green	Government already has experience in designing and implementing FiTs
Political acceptability and communication to consumers	Green	If funded out of general taxation (like the RHI), there are unlikely to be problems communicating this to consumers
Compatibility	Green	Would require removal of other energy efficiency subsidies

3.1.7 Economy-wide carbon price

Table 8. Assessment of an economy-wide carbon price

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Yellow	Applying an economy-wide carbon price would shift the relative costs of heat pumps and gas boilers, and would make insulation more cost-effective for consumers. The size of the incentive is not likely to be large enough to incentivise heat pumps.
Effectiveness in addressing awareness, interest and perception barriers	Red	Providing a small and ongoing incentive is not likely to be effective.
Effectiveness in addressing lack of finance	Red	Does not address finance barriers
Cost	Green	If set at the right level, an economy-wide carbon price should allow targets to be met in the most efficient way
Distributional impacts	Red	May be adverse for fuel poor or credit constrained households
Impact on government, supplier, investor and consumer confidence	Green	Likely to improve confidence in meeting decarbonisation targets
Risk/ unintended consequences	Yellow	Risk around alignment with international carbon pricing policies
Evidence base	Red	Evidence from the RHI suggests the incentive would not be large enough.
Flexibility	Green	Could be easily adjusted.
Transition	Green	Could easily be introduced.
Political acceptability and communication to consumers	Red	Applying a carbon price to gas would increase energy bills. This is not likely to be politically acceptable.
Compatibility	Green	Would fit well with other policies and correct an existing distortion in the market

3.1.8 Technology tax

Table 9. Assessment of a technology tax

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Yellow	May result in higher carbon heating, as consumers delay replacing their existing heating system
Effectiveness in addressing awareness, interest and perception barriers	Yellow	Likely to increase awareness through increases in prices at time of replacing heating system
Effectiveness in addressing lack of finance	Red	Does not address finance barriers
Cost	Yellow	Could raise revenue for Government. Could entail net costs to UK Plc, if it incentivises technologies which are not yet cost-effective, such as heat pumps.
Distributional impacts	Red	Would increase the cost of heating technologies. May have adverse consequences for low-income or credit constrained households
Impact on government, supplier, investor and consumer confidence	Yellow	May not increase confidence given potential to delay take up of more efficient heating
Risk/ unintended consequences	Red	A technology tax could disincentive replacement of old and inefficient technologies, and therefore could increase emissions in the transition
Evidence base	Red	No precedent
Flexibility	Green	Could easily be changed if priorities changed.
Transition	Green	Could be relatively straightforward to implement
Political acceptability and communication to consumers	Red	Likely to be highly unpopular due to increasing the cost of replacing incumbent heating systems
Compatibility	Yellow	Not consistent with current approach providing subsidies for low-carbon heat

3.1.9 Providing information on the percentage of people in a community that have switched to a low carbon heating system

Table 10. Assessment of providing information on uptake of low-carbon heating

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Red	Does not address actual features
Effectiveness in addressing awareness, interest and perception barriers	Yellow	May raise awareness of interventions and improve perceptions of low-carbon heat, but would merit further trialling
Effectiveness in addressing lack of finance	Red	Does not address finance barriers
Cost	Green	Low cost intervention
Distributional impacts	Green	Not expected to have distributional impacts. May be more effective amongst able to pay consumers given finance barriers
Impact on government, supplier, investor and consumer confidence	Yellow	Could have limited impact on confidence
Risk/ unintended consequences	Green	Low risk, particularly as it would be easy to roll out gradually
Evidence base	Yellow	Evidence available on the impact of providing comparative information on energy bills, but not low carbon heat or energy efficiency adoption
Flexibility	Green	Easy to adapt, and can be tailored
Transition	Green	Could be introduced quickly
Political acceptability and communication to consumers	Green	Likely to be accepted
Compatibility	Green	Compatible with existing policies

3.1.10 Requirement that calculation of future heating bills is factored into mortgage decisions

Table 11. Assessment of factoring future heating costs into mortgage assessments

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers		Does not address barriers related to actual features
Effectiveness in addressing awareness, interest and perception barriers		Could raise awareness of the potential for savings, but may be ineffective as change in heating costs is unlikely to be major for many buyers
Effectiveness in addressing lack of finance		Does not address finance barriers
Cost		Introduces additional costs of mortgage lending
Distributional impacts		Likely to be limited
Impact on government, supplier, investor and consumer confidence		Likely to be limited, given limited impact on uptake
Risk/ unintended consequences		Could reduce availability of mortgage finance for some, but this effect likely to be very marginal
Evidence base		Some evidence from introducing further affordability requirements under MMR
Flexibility		Robust to different decarbonisation scenarios
Transition		Could be easily introduced using MMR framework
Political acceptability and communication to consumers		Likely to be limited support for further changes to requirements at time of getting mortgage
Compatibility		Compatible with existing policies, may not align with financial services policy

3.1.11 Minimum Energy Performance Certificate (EPC) at sale

Table 12. Assessment of a minimum EPC at sale

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Mandates improvements before sale of property, overcoming barriers relating to actual features.
Effectiveness in addressing awareness, interest and perception barriers	Green	Mandating bypasses the need to overcome awareness, interest and perception barriers
Effectiveness in addressing lack of finance	Red	Does not address finance barriers
Cost	Yellow	Inefficient way of driving energy efficiency investment. Improvements would have to be made to all homes, not just to the homes where improvements would be most cost-effective.
Distributional impacts	Yellow	Could disadvantage less able to pay households unable to afford required interventions
Impact on government, supplier, investor and consumer confidence	Yellow	Likely to increase confidence to the extent that the EPC threshold is binding
Risk/ unintended consequences	Yellow	Risk around liquidity of property market
Evidence base	Yellow	Set to be introduced in private rental market
Flexibility	Red	Once introduced, it would be difficult to remove without unfairness. However, EPC framework and minimum rating could be updated to reflect improvements in stock over time
Transition	Green	Could be seen as extension of EPC policy for private rental market
Political acceptability and communication to consumers	Red	Likely to be unpopular, for example affecting confidence in ability to sell properties
Compatibility	Green	Compatible with existing policies

3.1.12 Mandating energy efficiency improvement

Table 13. Assessment of mandating energy efficiency improvement

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Effective mandates bypass this barrier to uptake.
Effectiveness in addressing awareness, interest and perception barriers	Green	As for EPCs, this mandating bypasses the need to overcome awareness, interest and perception barriers.
Effectiveness in addressing lack of finance	Red	This barrier is not addressed.
Cost	Red	Since only cost-effective measures would be mandated, the net cost to UK Plc would be low. However, costs to consumers would be high.
Distributional impacts	Yellow	As for EPCs, this requirement would disadvantage less able to pay households unable to afford the required interventions.
Impact on government, supplier, investor and consumer confidence	Yellow	Some concerns over reliability of EPCs in guiding energy efficiency investments and as an EPC may be used to determine the improvements this could lower confidence
Risk/ unintended consequences	Yellow	The policy could lead to people doing the bare minimum to comply rather than actively wanting to further improve energy efficiency
Evidence base	Yellow	Mandating on this scale for energy efficiency is unprecedented
Flexibility	Yellow	The EPC and GD frameworks may need updating
Transition	Yellow	Rolling out EPCs or Green Deal assessments to all properties is likely to be costly
Political acceptability and communication to consumers	Red	Similarly expected to be unpopular due to introducing upfront costs to consumers.
Compatibility	Green	It would eliminate the need for some other policies

3.3 Misaligned incentives

3.3.1 Including information on energy bills in headline rental prices

Table 14. Assessment of including energy bill information in headline rental prices

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers		Doesn't impact on actual features of energy efficiency or low-carbon heat
Effectiveness in addressing awareness, interest and perception barriers		Increases awareness of ongoing energy costs amongst tenants
Effectiveness in addressing lack of finance		Addresses misaligned incentives through boosting tenant demand for energy efficiency Does not address lack of finance, but Green Deal is available for the rented sector
Cost		Piggy backs onto existing EPCs, so cost of introduction could be small
Distributional impacts		Not expected to have adverse distributional impacts
Impact on government, supplier, investor and consumer confidence		May increase confidence in decarbonising private rental sector
Risk/ unintended consequences		Risk of unpopularity
Evidence base		No past precedents and the policy has not been trialled
Flexibility		Flexible to changes in the EPC framework
Transition		Requires that landlords/estate agents make simple calculations and apply them to pricing listings.
Political acceptability and communication to consumers		Could be perceived as additional red tape
Compatibility		Compatible with existing policy in place (e.g. Green Deal loans)

3.3.2 Variable landlord tax

Table 15. Assessment of variable landlord tax

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Reduces relative cost to landlords between doing nothing and investing in interventions.
Effectiveness in addressing awareness, interest and perception barriers	Yellow	May address awareness barriers amongst landlords
Effectiveness in addressing lack of finance	Yellow	Addresses split incentive barrier by ensuring landlords gain a return on energy efficient investments.
Cost	Yellow	Could raise revenue for Government. Would entail a net cost to UK Plc if measures such as heat pumps which are not cost-effective are incentivised.
Distributional impacts	Red	Tax is likely to be passed on to tenants. This could be unfair, given owner-occupiers receive subsidies for improvements at present.
Impact on government, supplier, investor and consumer confidence	Yellow	May have limited impact in increasing confidence
Risk/ unintended consequences	Yellow	May be a disincentive to investment in rental properties, e.g. due to complexity.
Evidence base	Red	No past precedents and the policy has not been trialled
Flexibility	Green	Based on EPC framework, and tax could be updated through budget process
Transition	Yellow	Would use EPCs, which are already a requirement for rental properties upon renting
Political acceptability and communication to consumers	Red	Likely to be unpopular
Compatibility	Red	Not compatible with existing policies which provide rewards for EE investment across tenancy types.

3.5 Coordination, natural monopolies, lock in

3.5.1 Regulatory framework that shares district heating risks

Table 16. Assessment of risk-sharing regulatory framework for district heating

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Addresses regulatory risks for developers
Effectiveness in addressing awareness, interest and perception barriers	Yellow	Formalised licencing and risk sharing framework may help address awareness barriers as well as addressing perceived lack of long-term central government support
Effectiveness in addressing lack of finance	Green	Could address this barrier, to the extent that finance (e.g. guarantees) is explicitly included in risk sharing, or sharing of broader risks enables finance to be raised
Cost	Yellow	If risks are allocated to those who can manage them the most effectively, costs should be minimised
Distributional impacts	Green	Likely to be limited
Impact on government, supplier, investor and consumer confidence	Green	Expected to have a positive impact on confidence by reducing risk for investors
Risk/ unintended consequences	Green	Risk of removing flexibility of heating networks to local contexts – could be mitigated in regulatory design
Evidence base	Green	Evidence available from licencing in electricity and gas markets, and approaches to risk sharing in developments to date
Flexibility	Red	Some limited flexibility could be built in (e.g. via price controls)
Transition	Yellow	Developing regulation may be costly
Political acceptability and communication to consumers	Green	Regulation to share risks likely to be welcomed
Compatibility	Green	Supersedes existing unregulated framework

3.5.2 Consumer protection for district heat

Table 17. Assessment of consumer protection regulation for district heat

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Addresses risks of high pricing and poor quality of service
Effectiveness in addressing awareness, interest and perception barriers	Yellow	Perceptions of district heating may be improved if consumers feel they receive the same protection as under incumbent technologies
Effectiveness in addressing lack of finance	Red	Does not address finance barriers
Cost	Green	Not expected to be costly for UK Plc
Distributional impacts	Green	Likely to be limited
Impact on government, supplier, investor and consumer confidence	Green	Expected to have a positive impact on investor and consumer confidence by reducing risks
Risk/ unintended consequences	Green	
Evidence base	Green	Evidence available from regulation of electricity and gas markets
Flexibility	Yellow	Some limited flexibility could be built in to regulation
Transition	Green	Transition costs for existing developments
Political acceptability and communication to consumers	Green	Regulation to protect consumers likely to be welcomed, provided it doesn't add substantially to costs
Compatibility	Green	Supersedes existing unregulated framework

3.5.3 Mandating district heating connection

Table 18. Assessment of mandating district heating

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Bypasses actual features barriers, but may be costly to consumers
Effectiveness in addressing awareness, interest and perception barriers	Green	Bypasses barriers
Effectiveness in addressing lack of finance	Red	Finance barriers not addressed by a mandate
Cost	Yellow	Likely to be inefficient, so a high cost way of achieving roll out
Distributional impacts	Yellow	To the extent that district heating transition is concentrated amongst lower income consumers (e.g. those in social housing) and mandating increases costs, the policy would have adverse distributional impacts
Impact on government, supplier, investor and consumer confidence	Green	Likely to have a positive impact on confidence for investors by reducing network barriers
Risk/ unintended consequences	Yellow	Could result in district heating being developed where other low-carbon heat interventions were more efficient
Evidence base	Green	Evidence available on mandating internationally
Flexibility	Red	Inflexible – once connected as a result of mandate, consumers are locked in
Transition	Yellow	Requires most economic district heating areas to be identified – this could draw on existing heat mapping work
Political acceptability and communication to consumers	Red	May be unpopular with consumers, particularly in the absence of regulation to protect consumers
Compatibility	Yellow	Not consistent with market led approach in other aspects of low-carbon heat

3.5.4 Standardised district heat development contracts

Table 19. Assessment of standardised district heat contracts

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Addresses barrier of difficulties agreeing contracts, particularly around sharing risk
Effectiveness in addressing awareness, interest and perception barriers	Red	Does not directly address lack of awareness or interest barriers
Effectiveness in addressing lack of finance	Red	Would not address finance barriers, though standardised contracts may reduce perceived risk
Cost	Green	Not expected to be costly. Could be Government or industry led, with implications for the distribution of costs
Distributional impacts	Green	Not expected to have distributional impacts
Impact on government, supplier, investor and consumer confidence	Green	Likely to improve investor confidence
Risk/unintended consequences	Yellow	Risk of adding to barriers if overly prescriptive or complex. Design of standardised contracts would have to account for this
Evidence base	Yellow	Could draw on more widespread experience of district heat development internationally
Flexibility	Yellow	Could be updated to reflect developments in regulation
Transition	Green	Limited transition costs expected
Political acceptability and communication to consumers	Green	Likely to be widely accepted
Compatibility	Green	Contracts could be developed to be compatible with other policies in place

3.5.5 Building skills and capabilities

Table 20. Assessment of building skills and capabilities

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Reduces issues associated with execution
Effectiveness in addressing awareness, interest and perception barriers	Green	Skills coordination would raise awareness of district heat amongst developers
Effectiveness in addressing lack of finance	Red	Does not address finance barriers
Cost	Green	Likely to be relatively low cost
Distributional impacts	Green	Not expected to have distributional impacts
Impact on government, supplier, investor and consumer confidence	Yellow	Skills and awareness barriers may be addressed anyway through growth in the size of the DH market (enabling supply chain and skills development)
Risk/ unintended consequences	Green	
Evidence base	Yellow	Existing roll outs (e.g. condensing boiler mandating) have been accompanied by skills programmes, but their impact alone is not clear
Flexibility	Green	Would need to be compatible with diversity of heating networks
Transition	Green	Expected to be straightforward
Political acceptability and communication to consumers	Green	Likely to be widely accepted
Compatibility	Green	Compatible with current policy

3.6 Upfront costs and affordability

3.6.1 Lower interest on Green Deal loans

Table 21. Assessment of subsidising Green Deal loan interest rates

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers	Green	Subsidising loans will reduce the actual cost of the low-carbon measures.
Effectiveness in addressing awareness, interest and perception barriers	Red	Subsidising loans does not address awareness, interest and perception barriers
Effectiveness in addressing lack of finance	Green	Addresses finance barriers
Cost	Yellow	If funded through taxation, cost to taxpayers estimated at NPV of £1.2bn to 2039 for interest free Green Deal loans, and £250m for low-interest loans (3% real). ⁴⁹
Distributional impacts	Green	Credit constraints likely to be greater amongst less well off, and this policy could help address this
Impact on government, supplier, investor and consumer confidence	Yellow	May not have a major impact due to failure of Green Deal to date
Risk/ unintended consequences	Yellow	Risk of State Aid concerns
Evidence base	Green	Experience from offering subsidised loans for energy efficiency is mixed, with low take up in Australia, and more widespread use in Germany.
Flexibility	Green	Robust to different decarbonisation scenarios, but not technology agnostic
Transition	Green	Modification to existing policy
Political acceptability and communication to consumers	Yellow	Labour has suggested providing interest free loans for energy efficiency. ⁵⁰ Perceptions of the Green Deal as a failure may result in a negative public reaction even with a subsidised Green Deal interest rate
Compatibility	Green	Would require modification of Green Deal

⁴⁹ Frontier Economics for the Committee on Climate Change, 2014, Reducing the cost of capital for household low-carbon investment decisions

⁵⁰ See: <http://press.labour.org.uk/post/98218687704/speech-by-caroline-flint-mp-to-labour-party>

3.6.2 Reducing the term of Green Deal loans

Table 22. Assessment of reducing the term of Green Deal loans

Aspect of policy	RAG	Summary
Effectiveness in addressing actual features barriers		Reducing loan terms does not address barriers relating to actual features of interventions
Effectiveness in addressing awareness, interest and perception barriers		Reducing the length of the Green Deal loans could increase consumers' willingness to take them up.
Effectiveness in addressing lack of finance		This would continue to address finance barriers.
Cost		Revenue neutral compared to the current Green Deal as consumers would still pay the loans back.
Distributional impacts		Concern relaxing the Golden Rule results in consumers taking on loans that they aren't able to pay back affordably.
Impact on government, supplier, investor and consumer confidence		May not have a major impact due to failure of Green Deal to date
Risk/ unintended consequences		Could result in increased lending that consumers aren't able to afford
Evidence base		Outside mortgage finance, consumer preferences appear to be for shorter term loans. Mixed evidence on take up of energy efficiency loans
Flexibility		Robust to different decarbonisation scenarios, but not technology agnostic
Transition		Modification to existing policy
Political acceptability and communication to consumers		Perceptions of the Green Deal as a failure may result in a negative public reaction even with shorter term loans
Compatibility		Would require modification of Green Deal

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