

## Green Bills

### An analysis of the projected policy levy in energy bills

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#### Executive Summary

In Policy Exchange’s recent report, *Greener, Cheaper*, we set out the considerable scope for improving the cost-effectiveness of the current policies for addressing climate change.

Most of the costs of carbon emissions reduction and renewable energy policies are added to customers’ energy bills, rather than collected through conventional taxation. Analysis undertaken by Policy Exchange estimates that, by 2020, this policy levy on energy bills will total over £16 billion pa. This is equivalent to about 4 pence on the basic rate of income tax today.

Climate change poses major risks; mitigating its effects must be a priority; and the resources costs of doing so will be significant. It is therefore important that the resources devoted to climate policy are used effectively – so that the maximum climate impact can be achieved with resources available. Transparency about the level of resources being devoted to climate policy is a key part of securing greater policy cost-effectiveness.

<b>Total size of the energy and climate change policy levy on energy bills</b>			
<b>Real 2009 (£ billions)</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Total levy on domestic energy consumption	2	4.3	6.4
Total levy on non-domestic energy consumption	3.7	5.9	9.9
<b>Total levy on energy consumption</b>	<b>5.7</b>	<b>10.2</b>	<b>16.3</b>

## Analysis

Data published alongside the first Annual Energy Statement by the Secretary of State for Energy and Climate Change, in July, gave estimated impacts of energy and climate change policies on gas and electricity prices, in 2010, 2015 and 2020.

The relevant energy and climate change policies included the Renewables Obligation, Feed-in Tariffs for microgeneration, the Climate Change Levy, the roll-out of smart meters, the EU Emissions Trading Scheme, the Renewable Heat Incentive, the future Supplier Obligation and the Carbon Capture and Storage levy. These policies are all intended to support, either carbon emissions reduction or the promotion of renewable energy. (The Renewable Heat Incentive, which is estimated have the biggest impact on future gas prices, was consulted on by the previous government but is yet to be finalised.)

In general, each policy adds to energy prices by requiring energy companies to do or to pay for something, e.g. to source a proportion of renewable generation, to buy carbon permits, to pay the Climate Change Levy or to pay households with solar panels a subsidy for exporting electricity to the grid. Collectively they may be considered a 'levy' on energy bills to fund government policies, which might otherwise be paid for directly by conventional taxation.

Tables 1 and 2 give the Department for Energy and Climate Change's (DECC's) assessment of the increase in prices expected as a result of these policies, expressed as £ per Megawatt hour (MWh) of gas and of electricity consumed, in 2010, 2015 and 2020. The increase in prices is slightly different for domestic and for non-domestic energy consumption, because a different policy mix applies. (DECC gives figures for an average domestic, and an average medium-sized non-domestic, energy user, and we make an assumption that these figures may be applied to aggregate domestic and non-domestic consumption.)

The impact on gas and electricity prices increases substantially between 2010 and 2020 as the policies build up, for example, as increasing numbers of off-shore wind turbines receive subsidies.

Table 1. Estimated impact of energy and climate change policies on average domestic gas and electricity prices (including VAT)

Price impacts (real 2009 £/MWh)	2010	2015	2020
Increase in gas prices due to policies	1	4	8
Increase in electricity prices due to policies	15	29	40

Table 2. Estimated impact of energy and climate change policies on average non-domestic retail gas and electricity prices

Price impacts (real 2009 £/MWh)	2010	2015	2020
Increase in gas prices due to policies	2	3	7
Increase in electricity price due to policies	15	23	37

Source: *Estimated impacts of energy and climate change policies on energy prices and bills*; DECC, July 2010.

Our objective was to convert these energy price increases into a total amount of funding raised through energy bills for carbon emissions reduction and renewable energy policies. In other words, we aimed to estimate the total policy levy on bills.

To do this, we needed to project total gas and electricity consumption in 2010, 2015 and 2020, for domestic and non-domestic customers.

Forecasting future gas and electricity consumption is difficult. Demand will depend on a range of factors, including economic growth, fuel costs, and the take-up and impact of energy efficiency measures. Forecasting the impact of energy efficiency measures includes uncertainty about the 'rebound effect', i.e. the effect whereby customers respond to energy efficiency improvements in part by increasing their consumption (e.g. having a warmer home).

DECC's *Updated energy and emissions projections* publication sets out final energy consumption projections up to 2025, including the estimated impacts of energy and climate change policies in the Government's Low Carbon Transition Plan. Table 3 sets out the relevant projections, under DECC's central fuel price assumptions. (Non-domestic consumption includes industrial, commercial, transport, agricultural and public administration energy consumption.) DECC's projections were given in million tonnes of oil equivalent (Mtoe). We converted these to TWh using DECC's conversion rate<sup>1</sup>. (A Terawatt hour (TWh) is one million Megawatt hours (MWh) – the equivalent of running a one bar electric fire for one billion hours.)

<sup>1</sup> 1 Mtoe = 11.63 TWh; *Digest of United Kingdom energy statistics (2010 edition)*; DECC.

Table 3. Projections for total UK final consumption of gas and electricity

Terawatt hour (TWh)	2009 <sup>2</sup>	2010	2015	2020
Domestic electricity consumption	114	109	105	105
Non-domestic electricity consumption	215	214	226	231
Domestic gas consumption	344	351	302	276
Non-domestic gas consumption	244	248	238	197

Source: *Updated energy and emissions projections*; DECC, June 2010.<sup>3</sup>

Using the data from Tables 1-3, we calculate the total size of the levy on energy consumption. The results are set out in Table 4, as well as the Chart.

<sup>2</sup> These figures are broadly in line DECC's *Digest of United Kingdom energy statistics (2010 edition)* which reports that total electricity final consumption in UK in 2009 was 322TWh, and total final gas consumption, for energy use, was 532TWh. The match is not exact due to differences in the way some energy is counted.

<sup>3</sup> Figures include firm policies from the Low Carbon Transition Plan but not additional policy proposals.

Table 4. Total size of the energy and climate change policy levy on energy consumption<sup>4</sup>

Real 2009 (£ billions)	2010	2015	2020
Total levy on domestic gas consumption	0.35	1.21	2.21
Total levy on domestic electricity consumption	1.64	3.05	4.20
<b>Total levy on domestic energy consumption</b>	<b>2</b>	<b>4.3</b>	<b>6.4</b>
Total levy on non-domestic gas consumption	0.5	0.71	1.38
Total levy on non-domestic electricity consumption	3.21	5.2	8.55
<b>Total levy on non-domestic energy consumption</b>	<b>3.7</b>	<b>5.9</b>	<b>9.9</b>
<b>Total levy on energy consumption</b>	<b>5.7</b>	<b>10.2</b>	<b>16.3</b>

## Discussion and conclusions

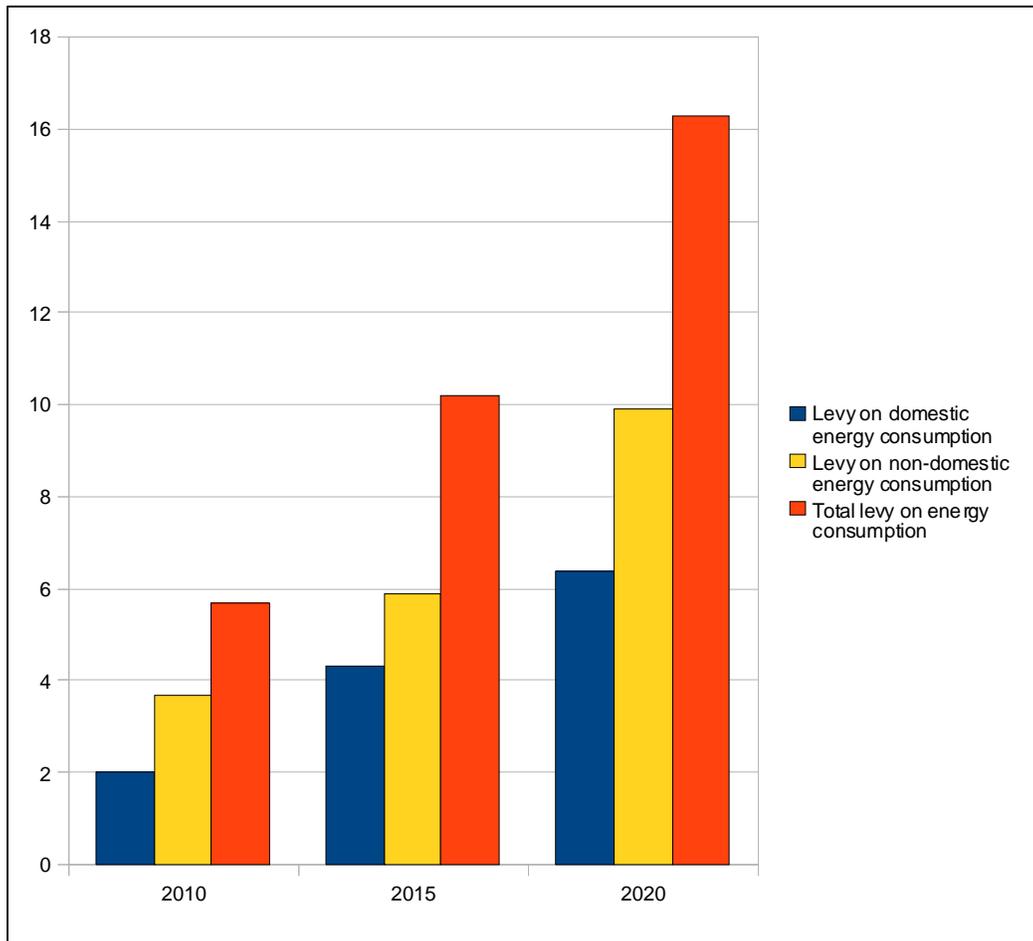
Using figures published by DECC in July, Policy Exchange has estimated the total cost of the increase in energy prices resulting from carbon emissions reduction and renewable energy policies.

This cost may be considered a policy levy on energy bills. While the money does not generally go to the Treasury (with the exception of the Climate Change Levy and receipts from the auctioning of carbon credits), it is formally accounted for by the Treasury as taxation and public spending.

The levy already costs around £5.7 billion per annum in 2010, and is set to rise under existing and proposed policies, to over £16 billion per annum in 2020. By that time, it will constitute around 2% of entire UK taxation – about the equivalent of 4 pence on the basic rate of tax today. The spending it represents is roughly equivalent to total public spending in England on both the police and fire services.

<sup>4</sup> DECC concludes in *Estimated impacts of energy and climate change policies on energy prices and bills* (July 2010), that energy and climate policies will add only 1% to *average* domestic energy bills in 2020. Policy Exchange's analysis is consistent with DECC's figures. DECC nets the increase in prices for all customers against the reductions in energy usage as a result of those policies which support energy efficiency measures in some households. The aggregate impact of increased energy efficiency is taken into account in DECC's projections for future energy consumption used in Policy Exchange's analysis.

Figure 1. Projected total UK policy levy on energy consumption (£ billion)



Energy bills are, effectively, becoming a large source of tax revenues.

Climate change is a major challenge and needs to be tackled as a priority. This is expensive so funds need to be raised. And carbon needs to be priced effectively.

But, like all other areas of tax-funded spending, there needs to be transparency in how and where funding is being raised. Such transparency is a key basis for promoting more cost-effective climate change policy, so that maximum climate change impact can be achieved with the resources the UK can afford.

Understanding the increasing scale of taxation through energy bills also highlights the issue of using energy customers as a tax base. For example, raising taxation through energy bills, rather than, say, using income tax, is relatively regressive, because the poorest households tend to spend a larger proportion of their income on energy.

## Recommendations

- 1. The Government should take steps to improve and maximise the cost-effectiveness of the £16 billion per annum set to be spent on climate change and renewable energy policies by 2020.**  
The Policy Exchange report *Greener, Cheaper* (July 2010), recommended some steps in this direction.
- 2. Energy bills should have a breakdown of the bill's components including, in particular, the costs of Government policies.** The Policy Exchange research note, *Knowledge is power: securing transparency in Britain's liberalised energy market* (May 2009), included discussion of this proposal.
- 3. The Government should set out its principles for apportioning the funding of energy and climate policies between energy bills and general taxation.** The raising of funding through energy bills has a different and relatively more regressive impact, but may help to price carbon, depending on policy design.
- 4. The Treasury should explicitly report the effective levy on energy bills, outturn and projected, alongside reporting revenues from other taxes.**

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For more information on our work, please contact Dr Simon Less, Head of the Environment and Energy Unit at [simon.less@policyexchange.org.uk](mailto:simon.less@policyexchange.org.uk).

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