

# LOCAL GOVERNMENT PENSIONS, FOSSIL FUELS & THE TRANSITION TO A NEW ECONOMY

The background features a dark grey area at the top with a white dot pattern. Below this is a black horizontal band. The bottom half of the image is composed of three wavy, overlapping shapes in green, light grey, and pink.

## Contents

<b>1. UK local government &amp; Fossil Fuels</b>	p. 04
<b>2. Divest to Reinvest</b>	p. 11
<b>3. Methodology</b>	p. 14
<b>4. Summary Pension Data for local authorities</b>	p. 21
<b>5. Endnotes</b>	p. 29

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The full data and this briefing are available online at <http://gofossilfree.org/uk/pensions>



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Local governments in the UK have pension funds worth over £230 billion. £14 billion of this – over 6% – is invested into fossil fuel corporations. This report analyses the breakdown of investments of all UK local authorities through their 101 pensions funds, responsible for 4.6 million employees. It looks at the impacts of these investments, and the potential alternatives. We know that 80% of the world's oil, coal and gas reserves need to stay in the ground, to prevent catastrophic climate change. Local authorities were at the forefront of divesting from apartheid in the 1980s. City, borough and county councils have the opportunity to lead again, by divesting from fossil fuels.

This is a moral argument. Pensions are for our and our families' future. But that future is threatened by fossil fuel extraction. It is also a financial argument. When governments finally take climate change seriously and legislate to leave fossil fuels in the ground, shares in oil, gas and coal will become worthless. Funds which don't invest in fossil fuels often perform as well or better than fossil-fuel heavy funds, so divestment does not mean that existing pension funds lose out. And it is a public benefit argument. £14 billion could build over 200,000 homes or generate more electricity than Scotland uses. By investing this capital into renewable energy, public transport and social housing, local government could create jobs and boost local economies, while protecting pensions.

# 1. UK local government & Fossil Fuels

On average, UK local authorities have invested £218 in fossil fuels for every single resident.<sup>1</sup> Some councils have significantly higher per resident exposure. For example, Greater Manchester Pension Fund holds £483 of fossil fuel shares per resident<sup>2</sup> and the Borough of Camden £470 per resident.<sup>3</sup>

In absolute terms, the five largest fossil fuel holdings are held by:

1.	Greater Manchester Pension Fund	£1,304 million
2.	Strathclyde Pension Fund <sup>4</sup>	£752 million
3.	West Yorkshire Pension Fund	£671 million
4.	Merseyside Pension Fund	£355 million
5.	West Midlands Pension Fund	£355 million

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As local authority pension funds vary a lot in size, depending on the population and area covered, we have mostly ranked the funds by the percentage of total holdings invested into fossil fuels. The average pension fund exposure to fossil fuels is 6.22%.

The ten authorities with the highest percentage fossil fuel investments are:

1.	London Borough of Merton Pension Fund	10.99%
2.	Worcestershire Pension Fund <sup>5</sup>	10.74%
3.	Northamptonshire Local Government Pension Scheme	10.35%
4.	Greater Manchester Pension Fund	9.82%
5.	London Borough of Camden Pension Fund	9.5%
6.	London Borough of Tower Hamlets	8.76%
7.	Teeside Pension Fund	8.74%
8.	East Riding Yorkshire Pension Fund	8.73%
9.	Dyfed Pension Fund Investments	8.34%
10.	Somerset County Council Pension Fund	8.25%

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The local government pension funds with the least exposure to oil, gas and coal are Lancashire County Pension Fund<sup>6</sup> with 1.9%, Clwyd Pension Fund with 2.32% and the Orkney Islands Pension Fund with 3.45%. However, even the Orkney Islands, which also have the smallest absolute fossil fuel holdings of £8.1 million, have invested £404 per resident.<sup>7</sup>

## Where the money goes

UK local authorities hold £5,464 million direct investments in fossil fuel companies, and a further £8,562 million indirect investments.

Of the direct investments, three quarters are held in just 10 companies:

1.	Shell	£1,156 million	UK/Netherlands	Oil & gas
2.	BP	£881 million	UK	Oil & gas
3.	Rio Tinto	£586 million	Australia/UK	Coal
4.	BG Group	£362 million	UK	Gas & oil
5.	BHP Billiton	£337 million	Australia/UK	Coal, oil and gas
6.	Anglo American	£158 million	UK	Coal
7.	EOG Resources	£143 million	USA	Formerly Enron. Oil & gas
8.	Total	£141 million	France	Oil & gas
9.	Chevron	£122 million	USA	Oil & gas
10.	Glencore Xstrata	£117 million	UK/Switzerland	Coal, oil, gas, mining

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As this only includes direct investments, actual local authority ownership is significantly higher. Companies like BP and Shell make up a large proportion of the FTSE 100, and are over-represented in many of the pooled funds that make up the indirect investments. This means that actual ownership will be several times that listed here, and even more concentrated into a handful of companies.

These investments are propping up a broken energy model that threatens our future. They directly enable companies to drill in the Arctic, expand tar sands and open new coal mines. In Nigeria, Azerbaijan and Egypt, these companies are fuelling repression and violence.<sup>8</sup> Even those companies that represent themselves as British generate limited public benefit for the councils that invest into them – less than 18% of BP's employees are in the UK.<sup>9</sup>

## Case Studies

### Greater Manchester Pension Fund

Total pension holdings: £13,284 million  
Total fossil fuel holdings: £1,304 million  
Of which direct shareholdings: £1,057 million  
Of which holdings via pooled funds: £247 million  
Proportion of total holdings in fossil fuels: 9.82%  
Fossil fuel investments per resident: £483

Greater Manchester holds the highest fossil fuel shares. This is not only due to its large population – it also has amongst the highest per resident fossil fuel investments, and the 4th highest percentage of fossil fuels to total investments. The Pension Fund has been making efforts to invest into the new economy, with a commitment to put £10 million into community power.<sup>10</sup> This is laudable; however, at less than 1/25 of its shareholding just in BP, this pales into insignificance compared to Manchester’s fossil fuel investments.

Largest holdings:

BP	£269 million
Shell	£261 million
Rio Tinto	£168 million
Anglo American	£66 million
Glencore Xstrata	£57 million

### East Riding Pension Fund

Covers: East Riding of Yorkshire, Kingston upon Hull, North East Lincolnshire, North Lincolnshire  
Total pension holdings: £3.3 billion  
Total fossil fuel holdings: £289 million  
Of which direct shareholdings: £237 million  
Of which holdings via pooled funds: £52 million  
Proportion of total holdings in fossil fuels: 8.73%  
Fossil fuel investments per resident: £314<sup>11</sup>

Climate change is not a future threat but an existing reality in Hull and East Riding. While investing hundreds of millions into fossil fuels, East Riding and Hull have already suffered significant destruction from climate change. Floods in summer 2007 saw 17,000 homes affected by flooding in Hull. 10,000 homes were evacuated and one person died.<sup>12</sup> Hull City Council estimated the repair costs at £200 million - equivalent to 2/3 of East Riding’s fossil fuel investments.<sup>13</sup>

## Largest holdings:

BP	£55 million
Shell	£44 million
BG	£30.8 million
Rio Tinto	£30 million
BHP Billiton	£18.4 million

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## Borough of Camden Pension Fund

Total pension holdings: £1,163 million  
Total fossil fuel holdings: £110 million  
Of which direct shareholdings: £42 million  
Of which holdings via pooled funds: £69 million  
Proportion of total holdings in fossil fuels: 9.50%  
Fossil fuel investments per resident: £470<sup>14</sup>

The Borough of Camden has the largest absolute fossil fuel investments in London, and the second highest percentage. As well as £10 million in Shell shares, Camden invests heavily into controversial Brazilian mining multinational Vale and into EOG REsources - formerly Enron and now a heavy shale driller.

Camden residents suffer from fossil fuels on a daily basis. All of Camden's main roads break the European legal limits for nitrogen dioxide, in large part the result of diesel fumes.<sup>15</sup> More than 100 people in Camden die from pollution each year.<sup>16</sup>

Shell	£10.2 million
Vale	£6.7 million
BHP Billiton	£6.4 million
EOG Resources	£5.9 million
ENI	£5.6 million

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## Regional Breakdowns

### London

The 33 London local authorities' pension funds are investing £1,882 million in fossil fuel companies, averaging just over 6% of their total pension investments. The councils with the lowest percentage are Newham and Enfield, with 4%. London's largest local authority pension fund is the London Pension Fund Authority, which manages £4.9 billion in assets with over £233 million in fossil fuels.

The 10 councils with the highest percentage investments in fossil fuels are:

1.	Merton	11.0%
2.	Camden	9.5%
3.	Tower Hamlets	8.8%
4.	Westminster	7.8%
5.	Kensington and Chelsea	7.4%
6.	Haringey	7.3%
7.	Havering	7.3%
8.	Ealing	7.0%
9.	Hounslow	6.8%
10.	Harrow	6.8%

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### Scotland

Scotland's local governments invest £1,665 million of their pension funds in fossil fuel companies – 5.2% of total funds. Strathclyde is by far the largest fund, and has the biggest fossil fuel investments, at £751 million. Even Orkney, with the lowest percentage and the smallest investments, has above average per resident investments of £404.

1.	Shetland	8.1%
2.	Dumfries and Galloway	7.9%
3.	Tayside	7.2%
4.	Falkirk	5.9%
5.	Fife	5.2%
6.	Strathclyde	5.0%
7.	Scottish Borders	5.0%
8.	Highland	4.8%
9.	Lothian	4.7%
10.	North East Scotland	4.3%
11.	Orkney	3.5%

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## Wales

Welsh councils invest £739 million of their pension funds in fossil fuel companies. That's 6.6% of their total investments, and higher than in Scotland, England or Northern Ireland. Dyfed has the highest percentage investment, and Clwyd the lowest.

More than 50 Welsh communities look likely to be abandoned to rising sea levels as part of a process of 'managed retreat'.<sup>17</sup>

1.	Dyfed	8.3%
2.	Torfaen	7.8%
3.	Swansea	7.4%
4.	Cardiff	7.3%
5.	Gwynedd	6.3%
6.	Rhondda	5.7%
7.	Powys	5.1%
8.	Clywd	2.3%

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### **Why Divest: moral, financial and public benefit arguments?**

Local authorities in the UK led the way on divesting from apartheid in the 1980s. They can do so again to challenge catastrophic climate change.

**a. Moral** – Without bold action to keep 80% of fossil fuels in the ground, a changing climate will have devastating consequences for people, societies and ecosystems around the world. By investing £14 billion in fossil fuel extraction, our local governments are providing resources that accelerate climate change. As public bodies, local governments have a responsibility to work for the public good; they shouldn't be financially and politically supporting the most destructive industry on the planet. Fossil fuel investments undermine existing local authority climate change mitigation and adaptation strategies and commitments. Local councils were the forefront of challenging apartheid, and can take a lead again

**b. Financial** – Making 4.6 million public sector pensions dependent on longterm profits from an industry threatening a safe planetary future is not a sensible investment strategy. When local governments allow pensions to be exposed to fossil fuels, they're relying on stranded assets for the safe retirement of their workers.<sup>18</sup> When a 30-year-old speech therapist at Hackney Council retires at age 60, it will be 2045, and the fossil fuel industry's days are already numbered.

As continued investments in fossil fuels pose material financial risks to portfolios, funds have fiduciary duties to consider the benefits of

decarbonising as part of their investment strategies. Furthermore, Trustees may consider non-financial factors if members share the concern and there is no risk of significant financial detriment to the fund – which is increasingly the case for divestment.

**c. Public Benefit** – When a local government invests pensions into paper certificates for shares listed in London and international stock exchanges, this represents a transfer of public capital from across England, Scotland and Wales. In the cases examined by this briefing, this money is centralised in a small number of multinational corporations. They in turn re-invest most of that wealth abroad. Other than the return on capital, there are no social or economic benefits for local government – or for residents whose council tax goes into the pension fund. Investing into fossil fuel multinationals does not support local jobs, economies or infrastructure.

## 2. Divest to Reinvest

By divesting fossil fuel holdings, local government across the country will free up capital that can be invested more usefully, boost local economies, and provide public benefit while potentially generating a higher return than fossil fuels will over the next generation.

Pensions can be harnessed to drive the energy transition, create local jobs and support local innovation. Pensions can be more effectively put to work by creating and retaining value in local economies, while establishing new community ownership models. The longterm nature of pension investments allows for the support of infrastructure essential in reducing inequality and meeting climate commitments, including social housing, public transport and renewable energy. Over time, these are likely to provide a better and more stable return (and thus a safer pension) than fossil fuel companies like BP and Shell that have large unburnable reserves.

The ‘fiduciary duty’ (financial responsibilities towards stakeholders) for local government pension funds is split between the fund beneficiaries (who would usually be the only ‘fiduciaries’), employers (mostly the local governments themselves) and local residents, whose taxes top up the pension pot. The duty owed to local residents means a wide body of people arguably should have some say in local government pensions.

The Centre for Research on Socio-Cultural Change at the Manchester Business School called on local authorities to mobilise their pension funds and “retain it in the local community for a social purpose, like building social housing”. They pointed out that after fees, many funds were not getting more than 5% return on their investment.<sup>19</sup>

By divesting the £14 billion currently invested in fossil fuels, local councils can take an important step forwards in challenging climate change. Reinvesting this money into renewables, housing and public transport is a feasible and sensible strategy for providing a longterm return and building safe pensions for public sector workers.

- £14 billion could be used to build 218,750 energy efficient social rent homes, alleviating the housing crisis and providing a guaranteed and solid income stream.<sup>20</sup>
- £14 billion could be used to place solar panels on all 10,000 schools with suitable roofs, on a further 20,000 municipal buildings, and on 2 million homes.<sup>21</sup> This would create 8.9 GW of solar generating capacity, and triple existing solar power capacity.<sup>22</sup> This could generate more electricity than Scotland consumes.<sup>23</sup>
- £14 billion could be used to build 60,000 wind turbines of 100kW, around the UK. This would add 6 GW of electricity generating capacity, increasing existing wind power by 50%.<sup>24</sup> This could generate as much electricity as Wales uses.<sup>25</sup>

As well as providing safer longterm returns for pensions, all of these would create local jobs, improve the lives of local residents and boost local economies more than investing into multinational fossil fuel companies.

In some cases, this is already becoming a reality.

### **Reinvesting into renewable energy and public transport**

Some councils have started to take a lead on this. Lancashire County Council invested £12 million in Westmill Solar Coop, the UK's largest community owned solar farm. The solar farm has 1,648 members, who all bought shares in the project. Lancashire and the individual members will receive interest for 23 years, with a projected 11% annual return.<sup>26</sup> Other small-scale renewable schemes are ready for councils to support – Abundance Generation have a pipeline of community renewables offering 6-9% annual returns.

Larger pension funds like Strathclyde and Greater Manchester have also joined in, both committing £10 million to community power projects backed by the UK's Green Investment Bank.<sup>27</sup> Albion Community Power (ACP) will manage the capital with first investments earmarked for a hydro-electric power station in Western Scotland. Strathclyde is investing over three years, and expects a return of 11-13%.<sup>28</sup>

Local authorities could also invest in larger renewables energy projects, including offshore wind. The City of Copenhagen co-owns the Middelgrunden Offshore wind farm, together with a residents co-operative. The wind farm is 3.5 kilometres off the coast of Copenhagen, and provides 4% of the Danish capital's electricity.<sup>29</sup>

Various UK local authorities are examining how to set up municipal energy companies, including Bristol, Islington and Nottingham. These could be financed in part by pension funds from other local authorities – creating public-public partnerships and spreading the risk of local investments between different councils.

With high up-front capital costs but longterm revenue streams, expanding urban public transport presents another sensible pension investment. Enhancing bus, train and tram networks would create jobs, strengthen local economies and improve quality of life, while providing a longterm return on investment. For example, making London's public transport system as efficient as Copenhagen's would boost GDP by \$11.9 billion.<sup>30</sup>

Currently, the constraint on cities to invest in their transport networks mostly lies with a lack of financial resources.<sup>31</sup> The first line of Nottingham's Express

Transit was opened in 2004 and cost £200 million. Infrastructure expansion like this could be financed in part through pensions – while simultaneously boosting municipal ownership.

### **Reinvesting into Housing**

Many councils already have property in their portfolios. But some, like Greater Manchester, are leading the way in investing into social housing. Islington Pension Fund in London is planning to put £150 million – 15% of its pension pot – into social housing – arguing that this offers more stable and guaranteed income and return than the private sector.<sup>32</sup> Enfield, further north in London, has explored similar options after CRESC noted that its pension fund had earned net returns of 5% or less from fund investments in the City of London and pointed out that social housing – in chronically short supply in North London boroughs – would offer better returns.<sup>33</sup>

Calls to invest local government pension funds in new housing have come from both unions and Treasury reports. UNISON Scotland and the Scottish Federation of Housing Associations proposed using local government pension funds to build new social and affordable housing in Scotland.<sup>34</sup> A Treasury-commissioned study published in February 2015 argued that local authorities should invest £5 billion from their pension funds to create a “substantial increase in new homes nationally”.<sup>35</sup> Further, every £1 spent on construction generates a further £2.09 on economic activity, higher than the return to most other sectors including advanced manufacturing and finance.<sup>36</sup> By divesting the £14 billion in fossil fuels, UK councils could easily make this a reality – boosting economic activity and going some way to addressing the housing shortage.

### **3. Methodology**

- 1. Obtaining The Data**
- 2. Completing and Cleaning the data**
- 3. Direct Fossil Fuel holdings**
- 4. Indirect Fossil Fuel holdings**
- 5. Data Verification and Quality Control**
- 6. Inputting data into the Data tool**
- 7. Top Fossil Fuel companies overall**
- 8. Accuracy of Data**

As employers of large numbers of people, local governments are required to put aside and manage money for workers' pensions. Where these are underfunded, they need to be topped up with public revenues.

This data covers all local authorities across the entire UK, with investments managed through 101 local authority pension funds.

Some councils have their own individual pensions funds – like the Borough of Hackney. In other cases, one pension fund covers multiple local authorities. So for example Oxford Council Council manages the pension fund for smaller bodies like Oxford City Council and West Oxfordshire District Council, while Falkirk Council Pension Fund is responsible for the pensions of employees of Falkirk, Stirling and Clackmannanshire.

Our data covers some funds that are not local authorities, including the Environmental Agency Pension Fund and the South Yorkshire Integrated Transport Pension Fund.

We filtered the data set for investments into the Carbon Underground 200 – the 100 largest public oil & gas companies and 100 largest public coal companies. We did not include investments into fossil fuel service companies like Halliburton, or smaller FTSE-listed extraction companies, such as Cairn Energy, Premier Oil or Enquest.

## **1. Obtaining the data**

In order to obtain information about the holdings of the pension funds managed under the Local Government Pension Scheme (LGPS) Freedom of Information requests (FOI) were sent to all the administering local authorities (LA) who maintain pension funds. The question asked is detailed below:

### **FOI Request for aggregated pension fund data**

*Please provide the sum total of pension fund investment, and details of what the (combined) Council Pension Fund currently invests in, including the full name and amounts of each fund, bond, institution or investment being held, broken down by asset class/ category, and presented in Microsoft excel format for the 2014/15 financial year (or most current available data set).*

## **2. Completing and Cleaning the data**

Different authorities gave data of varying quality. While some disclosed all equity holdings, including their proportional indirect investments through Unit/pooled funds, others only gave summary data detailing the various external fund managers and their mandate.

Data was provided by the local authorities in a range of different formats including PDF and word documents. Relevant data fields from these documents including equity and pooled fund holdings, and total holdings had to be cleaned (extra text and empty cells removed, etc.) extracted, and converted into a standardised excel format prior to the script extracting direct and indirect fossil fuel investments.

Where the FOI responses were incomplete, contained obvious errors or were denied by the local authority, data was obtained from publicly available FOI data or annual reports – refer to ‘partially complete data’ and ‘no response’ in the table below.

In general, the holdings in fossil fuel companies belong to one in two categories. They are either fossil fuel investments held directly by the local authority as equity (share) holdings, or they are held in more opaque unit/pooled equity funds where little data was available or where for example only the top 10 investments by value are disclosed. These were analyzed using different methods (see Section 3 & 4).

The information provided by the local authorities (LA) as an answer to the FOI fell into four categories:

<b>Category of Answer</b>	<b>Data given</b>	<b>Measures taken to complete data</b>
<b>Full Response</b>	Detailed information was given including all the equity investments and unit/ pooled funds	Data from FOI was sufficient for full analysis. In a few cases currency conversion of the value of equities with the rate of the date of valuation were performed.
<b>Partially complete data</b>	For example, the LA released information of their self managed equity holdings, but limited information about equity holdings in unit/ pooled funds & other investments	Information from other publicly available sources including previous FOI requests was identified. Alternatively audited Annual Reports for 2013/14 detailing total holdings and investment in pooled funds and fund managers with specific mandates were used. Top 10 equity holdings per unit/ pooled fund were scrutinised.
<b>Investment mandates of fund managers</b>	The portfolio of the pension fund is broken down in fund managers and their investment mandate without details of individual equity holdings	If information about equity holdings, dated not earlier than April 2013 was publicly available (e.g. published on the website of the pension fund, or through earlier FOI requests), it was added. Otherwise, this information was deemed sufficient to project indirect fossil fuel investments.
<b>No response or FOI request was denied</b>	There was no reply to the FOI request in time for inclusion in this data analysis	If information about equity holdings dating no earlier than 2013 was publicly available (e.g. published on the website of the pension fund, or through earlier FOI requests), it was used. Otherwise a breakdown of the portfolio was extracted from the audited Annual Report 2013/14.



### **3. Direct Fossil Fuel investments**

The Fossil Fuel companies invested in by the various council funds were determined by comparing the list of investments to the Carbon Underground top 200 fossil fuel companies list from the 2015 report.<sup>37</sup> This excludes many smaller cap fossil fuel companies listed in the FTSE Index and internationally, and as such means our estimate of direct fossil fuel investments is likely to be an underestimate.

However, some councils have provided more detailed information than others, which means for those latter councils not all investments in these companies could be captured. This can be the case when only the holdings of some fund managers are given and not of others.

Another example would be the use of abbreviated names for equity holdings, e.g. some councils provided information with abbreviated names – increasing the chance of fossil fuel investment data being omitted by the script (“Royal Dutch” instead of “Royal Dutch Shell”).

After the formula picked out relevant stocks a visual scan was performed on each pension fund to verify whether they are actually fossil fuel companies (e.g. Mitsubishi UFJ, a financial group, was wrongly identified by the formula as Mitsubishi corporation, which is on the Carbon Underground 200 list, and this was corrected).

Sometimes a local authority would give some information about equity holdings in corporations, however it would not be clear whether this was a direct holding, or an indirect holding via pooled funds. In these instances, to avoid double counting a holding in both direct investments and in our methodology for calculating indirect investments, we set the direct holding for that company at zero.

### **4. Indirect Fossil Fuel Investments**

#### 4.1. Fossil Fuel content of equity pooled funds

Not all fossil fuel investments are direct shareholdings in companies. These are harder to identify.

Local governments invest large sums into unit trusts – pooled funds that manage a portfolio of stock exchange securities. These unit trusts are often focused on the FTSE 100, or similar indexes in other countries. Many council pension funds invest a large proportion – sometimes 40-60% of their total – into just one, two or three such unit trusts.

So for example:

- £301 million (19.5%) of Bedfordshire Pension Fund is in Legal & General N - UK EQUITY INDEX
  - £132 million (39.75%) of Shetland Islands Pension Fund is in AQUILA LIFE UK EQUITY INDEX FUND SER 1
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Sometimes the council did not disclose how equities were purchased – whether through a pooled fund or direct – but listed the fund manager and the type of investment. If it is clearly stated that this proportion of the portfolio is only invested in equities, or with a fund manager with a specific equity mandate, it was also counted as a pooled fund.

For example:

- London Borough of Waltham Forest has £284 million (43.1%) in UK equities managed by AXA Framlington, and £157 million (23.75%) in pooled equities by JO Hambro.
  - London Borough of Hammersmith & Fulham has invested £226 million (26.2%) through Majedie Asset Management UK Equities.
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#### a. Identifying the fossil fuel proportion for pooled funds

We know that a significant proportion of pooled investments are in fossil fuels. The FTSE 100 makes up a large portion of council investments into pooled unit trusts. According to the Smith School, oil & gas companies make up 20% of the FTSE 100<sup>2</sup>, with coal mining taking the figure higher.

But identifying precise figures was not possible in the scope of this project. Unit trusts do not publish a full breakdown of their equity portfolios.

In order to estimate their percentage holdings in fossil fuel companies, we took a random sample of 10 pension funds. For each pension fund, we identified the three largest equity pooled funds.

We then used a Bloomberg Terminal to identify either the fossil fuel companies amongst the Top 10 holdings, of each of the 3 x 10 pooled funds, or the stated percentage in “Oil & Gas”. This gave a minimum figure, as it excludes diversified mining companies, like BHP Billiton and Rio Tinto, which are listed as “Mining” instead of “Oil & Gas”.

Data on many funds was not available, but we obtained minimum figures for fossil fuel exposure for 39% of the total investment volume of this sample.

A weighted average of the fossil fuel exposure gave us a figure of 10% as a conservative estimate of fossil fuel content for indirect equity investments by UK local government.

#### b. Applying the fossil fuel proportion to indirect funds

For each local authority, we identified the 15 largest individual investments.

We manually went through these, identifying unit trusts invested into equities, using either the Bloomberg Terminal, Trustnet or information provided by the council. Equity pooled funds were defined as pooled funds that are almost exclusively invested in equities. We also included investments managed by fund managers that were specifically focused on equities. For example, those listed above for Bedfordshire, Shetland Islands, Waltham Forest and Hammersmith & Fulham pension funds.

We derived our indirect investment figure by applying the 10% fossil fuel proportion to these equity investments. We did not apply it to funds invested into property, private equity, currencies, to investments outside the largest 15, or to funds we didn't recognise as definitely being in equities.

This gave us a figure for indirect fossil fuel investments that is considered to be a conservative estimate.

### **5. Quality Control and Verification Process**

The total holdings calculated from the data provided was checked against the last audited pension fund annual accounts. Since most of the data was valued as of March 31st 2015, compared to the last annual report of one year earlier, differences had to be in a reasonable margin. If some of the data was not clearly labelled a comparison of the volumes in each asset class between the data provided and the annual report was carried out.

### **6. Inputting data in the datatool**

Using a Google Script the data from all the various spreadsheets is compiled in a Master spreadsheet and consecutively exported and imported as a .csv file. This allows for automatic updates preventing errors through manually transferring the data.

Notes about running campaigns and information particular to specific pension funds or counties are added manually.

## **7. Top Fossil Fuel companies overall**

The direct investments in each fossil fuel company are summed up across all pension funds using Google scripts. Again, this data has to be viewed as a minimum and is subject to various ways of calculating it. Some councils have included data of their proportional investment through unit trusts and a significant proportion have given no detailed information about any holdings of their fund managers. Their exposure through pooled equity vehicles (indirect investments) is not accounted for in this analysis.

## **8. Accuracy of Data**

In reaching the national LGPS figure of £14bn invested in fossil fuels, we have included figures for direct equity investments in the top 200 Coal, Oil, and Gas Companies as listed in the Carbon Underground 200, and estimated the exposure to oil and gas investments in unit/ pooled equity funds.

Corporate bond holdings in fossil fuel companies were excluded from this analysis, and we have not attempted to quantify indirect exposure to fossil fuel companies via equity holdings in major UK and global banks.

Given our methodology excludes small cap equity holdings in fossil fuels outside of the Carbon Underground 200, and uses a cautious fossil fuel estimate for unit/ pooled fund holdings, we believe that we are underestimating the actual totals of fossil fuel holdings of LGPS funds.

## Summary Pension Data

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
Greater Manchester	Greater Manchester Pension Fund	13,284,054,000	1,304,123,000	9.82%
Argyll and Bute	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
East Ayrshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
East Dunbartonshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
East Renfrewshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
Glasgow	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
Inverclyde	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
North Ayrshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
North Lanarkshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
Renfrewshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
South Ayrshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
South Lanarkshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
West Dunbartonshire	Strathclyde Pension Fund	14,906,954,000	751,960,000	5.04%
West Yorkshire	West Yorkshire Pension Fund	10,370,000,000	670,800,000	6.47%
West Midlands	West Midlands Pension Fund	10,144,000,000	354,946,441	3.50%
Merseyside	Merseyside Pension Fund	5,964,099,000	355,195,000	5.96%
Kent	Kent County Council Pension Fund	4,079,298,000	324,271,000	7.95%
Medway	Kent County Council Pension Fund	4,079,298,000	324,271,000	7.95%
South Yorkshire	South Yorkshire Pension Fund	5,550,000,000	317,728,000	5.72%
Derby	Derbyshire County Council Pension Fund	3,830,271,000	292,803,000	7.64%
Derbyshire	Derbyshire County Council Pension Fund	3,830,271,000	292,803,000	7.64%

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
East Riding of Yorkshire	East Riding Pension Fund	3,310,213,000	288,905,000	8.73%
Kingston upon Hull	East Riding Pension Fund	3,310,213,000	288,905,000	8.73%
North East Lincolnshire	East Riding Pension Fund	3,310,213,000	288,905,000	8.73%
North Lincolnshire	East Riding Pension Fund	3,310,213,000	288,905,000	8.73%
Hartlepool	Teesside Pension Fund	3,240,857,000	283,167,000	8.74%
Middlesbrough	Teesside Pension Fund	3,240,857,000	283,167,000	8.74%
Redcar and Cleveland	Teesside Pension Fund	3,240,857,000	283,167,000	8.74%
Stockton-on-Tees	Teesside Pension Fund	3,240,857,000	283,167,000	8.74%
Hampshire	Hampshire Pension Fund	5,108,786,000	269,433,000	5.27%
Portsmouth	Hampshire Pension Fund	5,108,786,000	269,433,000	5.27%
Southampton	Hampshire Pension Fund	5,108,786,000	269,433,000	5.27%
Tyne and Wear	Tyne and Wear Pension Fund	5,432,300,000	264,961,000	4.88%
Nottingham	Nottinghamshire County Council Pension Fund	3,708,200,000	261,253,000	7.05%
Nottinghamshire	Nottinghamshire County Council Pension Fund	3,708,200,000	261,253,000	7.05%
Staffordshire	Staffordshire Pension Fund	3,215,718,000	249,697,000	7.76%
Stoke-on-Trent	Staffordshire Pension Fund	3,215,718,000	249,697,000	7.76%
Midlothian	Lothian Pension Fund	5,038,420,000	237,036,000	4.70%
West Lothian	Lothian Pension Fund	5,038,420,000	237,036,000	4.70%
East Lothian	Lothian Pension Fund	5,038,420,000	237,036,000	4.70%
Edinburgh	Lothian Pension Fund	5,038,420,000	237,036,000	4.70%
Devon	Peninsula Pension Fund	3,357,571,000	215,549,000	6.42%
Plymouth	Peninsula Pension Fund	3,357,571,000	215,549,000	6.42%
Torbay	Peninsula Pension Fund	3,357,571,000	215,549,000	6.42%
Banbridge	NILGOSC	5,060,000,000	206,662,000	4.08%
Belfast	NILGOSC	5,060,000,000	206,662,000	4.08%
Carrickfergus	NILGOSC	5,060,000,000	206,662,000	4.08%
Castlereagh	NILGOSC	5,060,000,000	206,662,000	4.08%
Coleraine	NILGOSC	5,060,000,000	206,662,000	4.08%
Cookstown	NILGOSC	5,060,000,000	206,662,000	4.08%

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
Craigavon	NILGOSC	5,060,000,000	206,662,000	4.08%
Derry	NILGOSC	5,060,000,000	206,662,000	4.08%
Down	NILGOSC	5,060,000,000	206,662,000	4.08%
Dungannon	NILGOSC	5,060,000,000	206,662,000	4.08%
Fermanagh	NILGOSC	5,060,000,000	206,662,000	4.08%
Larne	NILGOSC	5,060,000,000	206,662,000	4.08%
Limavady	NILGOSC	5,060,000,000	206,662,000	4.08%
Lisburn	NILGOSC	5,060,000,000	206,662,000	4.08%
Magherafelt	NILGOSC	5,060,000,000	206,662,000	4.08%
Moyle	NILGOSC	5,060,000,000	206,662,000	4.08%
Newry and Mourne	NILGOSC	5,060,000,000	206,662,000	4.08%
Newtownabbey	NILGOSC	5,060,000,000	206,662,000	4.08%
North Down	NILGOSC	5,060,000,000	206,662,000	4.08%
Omagh	NILGOSC	5,060,000,000	206,662,000	4.08%
Strabane	NILGOSC	5,060,000,000	206,662,000	4.08%
Antrim	NILGOSC	5,060,000,000	206,662,000	4.08%
Ards	NILGOSC	5,060,000,000	206,662,000	4.08%
Armagh	NILGOSC	5,060,000,000	206,662,000	4.08%
Ballymena	NILGOSC	5,060,000,000	206,662,000	4.08%
Ballymoney	NILGOSC	5,060,000,000	206,662,000	4.08%
Essex	Essex Pension Fund	4,964,655,000	204,359,000	4.12%
Southend-on-Sea	Essex Pension Fund	4,964,655,000	204,359,000	4.12%
Thurrock	Essex Pension Fund	4,964,655,000	204,359,000	4.12%
Herefordshire	Worcestershire Pension Fund	1,837,753,000	197,423,000	10.74%
Worcestershire	Worcestershire Pension Fund	1,837,753,000	197,423,000	10.74%
Surrey	Surrey County Council Pension Fund	2,807,500,000	176,765,000	6.30%
Angus	Tayside Pension Fund	2,463,100,000	176,010,000	7.15%
Perthshire and Kinross	Tayside Pension Fund	2,463,100,000	176,010,000	7.15%
Dundee	Tayside Pension Fund	2,463,100,000	176,010,000	7.15%
Brighton and Hove	East Sussex Pension Fund	2,602,879,000	171,846,000	6.60%
East Sussex	East Sussex Pension Fund	2,602,879,000	171,846,000	6.60%
Northamptonshire	Northamptonshire Local Government Pension Scheme	1,659,847,000	171,800,000	10.35%
Bath and North East Somerset	Avon Pension Fund	3,302,280,000	171,777,000	5.20%
Bristol	Avon Pension Fund	3,302,280,000	171,777,000	5.20%
North Somerset	Avon Pension Fund	3,302,280,000	171,777,000	5.20%
South Gloucestershire	Avon Pension Fund	3,302,280,000	171,777,000	5.20%

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
Leicester	Leicestershire County Council Pension Fund	2,514,711,000	164,292,000	6.53%
Leicestershire	Leicestershire County Council Pension Fund	2,514,711,000	164,292,000	6.53%
Rutland	Leicestershire County Council Pension Fund	2,514,711,000	164,292,000	6.53%
Blaenau Gwent	Torfaen Pension Fund	2,062,483,000	161,193,000	7.82%
Caerphilly	Torfaen Pension Fund	2,062,483,000	161,193,000	7.82%
Monmouthshire	Torfaen Pension Fund	2,062,483,000	161,193,000	7.82%
Newport	Torfaen Pension Fund	2,062,483,000	161,193,000	7.82%
Torfaen	Torfaen Pension Fund	2,062,483,000	161,193,000	7.82%
Halton	Cheshire Pension Fund	3,550,000,000	157,500,000	4.44%
Cheshire	Cheshire Pension Fund	3,550,000,000	157,500,000	4.44%
Warrington	Cheshire Pension Fund	3,550,000,000	157,500,000	4.44%
Bournemouth	Dorset County Council Pension Fund	2,091,827,000	153,544,000	7.34%
Dorset	Dorset County Council Pension Fund	2,091,827,000	153,544,000	7.34%
Poole	Dorset County Council Pension Fund	2,091,827,000	153,544,000	7.34%
North Yorkshire	North Yorkshire County Council Pension Fund	2,078,026,000	149,227,000	7.18%
York	North Yorkshire County Council Pension Fund	2,078,026,000	149,227,000	7.18%
Carmarthenshire	Dyfed Pension Fund	1,694,781,000	141,345,000	8.34%
Ceredigion	Dyfed Pension Fund	1,694,781,000	141,345,000	8.34%
Pembrokeshire	Dyfed Pension Fund	1,694,781,000	141,345,000	8.34%
Norfolk	Norfolk Pension Fund	2,644,730,000	140,844,000	5.33%
Hertfordshire	Hertfordshire Pension Fund	3,469,985,000	129,078,000	3.72%
Darlington	Durham County Council	2,130,855,000	128,293,000	6.02%
Durham	Durham County Council	2,130,855,000	128,293,000	6.02%
Buckinghamshire	Buckinghamshire County Council Pension Fund	1,896,306,000	128,107,000	6.76%
Milton Keynes	Buckinghamshire County Council Pension Fund	1,896,306,000	128,107,000	6.76%
Moray	North East Scotland Pension Fund	2,913,400,000	124,854,000	4.29%
Aberdeen	North East Scotland Pension Fund	2,913,400,000	124,854,000	4.29%
Aberdeenshire	North East Scotland Pension Fund	2,913,400,000	124,854,000	4.29%



Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
West Sussex	West Sussex Pension Fund	2,290,454,000	121,547,000	5.31%
Somerset	Somerset County Council Pension Fund	1,472,295,000	121,505,000	8.25%
Cambridgeshire	Cambridgeshire Pension Fund	2,238,809,000	119,964,000	5.36%
Peterborough	Cambridgeshire Pension Fund	2,238,809,000	119,964,000	5.36%
Oxfordshire	Oxfordshire County Council Pension Fund	1,665,432,000	119,695,000	7.19%
Suffolk	Suffolk County Council Pension Fund	1,866,346,000	117,708,000	6.31%
Lincolnshire	Lincolnshire Pension Fund	1,623,527,000	113,380,000	6.98%
Camden	London Borough of Camden Pension Fund	1,162,683,000	110,492,000	9.50%
Gloucestershire	Gloucestershire Pension Fund	1,506,000,000	110,050,000	7.31%
Cumbria	Cumbria County Council Pension Fund	1,829,134,000	108,400,000	5.93%
Clackmannanshire	Falkirk Council Pension Fund	1,782,195,000	105,761,000	5.93%
Falkirk	Falkirk Council Pension Fund	1,782,195,000	105,761,000	5.93%
Stirling	Falkirk Council Pension Fund	1,782,195,000	105,761,000	5.93%
Cardiff	Cardiff and Vale of Glamorgan Pension Fund	1,451,692,000	105,306,000	7.25%
Vale of Glamorgan	Cardiff and Vale of Glamorgan Pension Fund	1,451,692,000	105,306,000	7.25%
Blackburn with Darwen	Lancashire County Pension Fund	5,372,370,000	101,940,000	1.90%
Lancashire	Lancashire County Pension Fund	5,372,370,000	101,940,000	1.90%
Neath Port Talbot	City & County of Swansea Pension Fund	1,348,965,000	99,503,000	7.38%
Swansea	City & County of Swansea Pension Fund	1,348,965,000	99,503,000	7.38%
Bridgend	Rhondda Cynon Taf Pension Fund	1,727,894,000	98,322,000	5.69%
Merthyr Tydfil	Rhondda Cynon Taf Pension Fund	1,727,894,000	98,322,000	5.69%
Rhondda, Cynon, Taff	Rhondda Cynon Taf Pension Fund	1,727,894,000	98,322,000	5.69%
Fife	Fife Council Pension Fund	1,831,973,000	95,394,000	5.21%
Swindon	Wiltshire Pension Fund	1,516,333,000	92,707,000	6.11%

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
Wiltshire	Wiltshire Pension Fund	1,516,333,000	92,707,000	6.11%
Tower Hamlets	London Borough of Tower Hamlets Pension Fund	1,047,073,000	91,764,000	8.76%
Warwickshire	Warwickshire County Council Pension Fund	1,520,471,000	88,368,000	5.81%
Westminster	Westminster City Council Pension Fund	1,094,331,000	85,075,000	7.77%
Anglesey	Gwynedd Council Pension Fund	1,309,546,000	82,297,000	6.28%
Conwy	Gwynedd Council Pension Fund	1,309,546,000	82,297,000	6.28%
Gwynedd	Gwynedd Council Pension Fund	1,309,546,000	82,297,000	6.28%
Greenwich	Royal Borough of Greenwich Council Pension Fund	1,265,738,000	81,180,000	6.41%
Shropshire	Shropshire Pension Fund	1,339,203,000	73,863,000	5.52%
Telford and Wrekin	Shropshire Pension Fund	1,339,203,000	73,863,000	5.52%
Bedfordshire	Bedfordshire Pension Fund	1,538,134,000	71,014,000	4.62%
Luton	Bedfordshire Pension Fund	1,538,134,000	71,014,000	4.62%
Wandsworth	Wandsworth Pension Fund	1,054,186,000	69,623,000	6.60%
Berkshire	Royal County of Berkshire Pension Fund	1,620,500,000	66,570,000	4.11%
Haringey	London Borough of Haringey Pension Fund	909,765,000	66,464,000	7.31%
Cornwall	Cornwall Pension Fund	1,408,716,000	64,909,000	4.61%
Northumberland	Northumberland County Council Pension Fund	944,221,000	63,889,000	6.77%
Hackney	London Borough of Hackney Pension Fund	1,029,000,000	63,111,000	6.13%
Eilean Siar	Highland Council Pension Fund	1,268,000,000	60,897,000	4.80%
Highland	Highland Council Pension Fund	1,268,000,000	60,897,000	4.80%
Kensington and Chelsea	Royal Borough of Kensington and Chelsea Pension Fund	817,492,000	60,850,000	7.44%
Ealing	London Borough of Ealing Pension Fund	867,000,000	60,800,000	7.01%

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
Southwark	London Borough of Southwark Pension Fund	1,234,847,000	60,601,000	4.91%
Islington	London Borough of Islington Pension Fund	971,000,000	59,474,000	6.13%
Lambeth	London Borough of Lambeth Pension Fund	1,036,207,000	59,145,000	5.71%
Lewisham	London Borough of Lewisham Pension Fund	927,937,000	58,419,000	6.30%
Merton	London Borough of Merton Pension Fund	478,854,000	52,649,000	10.99%
Dumfries and Galloway	Dumfries and Galloway Pension Fund	634,800,000	49,817,000	7.85%
Hounslow	London Borough of Hounslow Pension Fund	721,000,000	49,310,000	6.84%
London	City of London Pension Fund	746,300,000	46,780,000	6.27%
Hammersmith and Fulham	London Borough of Hammersmith and Fulham Pension Fund	864,781,000	44,933,000	5.20%
Waltham Forest	London Borough of Waltham Forest Pension Fund	659,647,000	44,096,000	6.68%
Kingston upon Thames	Royal Borough of Kingston upon Thames Pension Fund	640,890,000	42,464,000	6.63%
Hillingdon	London Borough of Hillingdon Pension Fund	724,461,000	42,391,000	5.85%
Harrow	London Borough of Harrow Pension Fund	615,661,000	41,744,000	6.78%
Richmond upon Thames	London Borough of Richmond Upon Thames Pension Fund	611,432,000	41,144,000	6.73%
Croydon	London Borough of Croydon Pension Fund	766,512,000	40,150,000	5.24%
Brent	London Borough of Brent Pension Fund	639,487,000	39,011,000	6.10%
Bexley	London Borough of Bexley Pension Fund	660,079,000	38,670,000	5.86%
Barking and Dagenham	London Borough of Barking and Dagenham Pension Fund	726,370,000	35,428,000	4.88%
Newham	London Borough of Newham Council Pension Fund	921,574,000	34,193,000	3.71%

Local Authority Area	Pension Fund	Total Fund Amount	Fossil Fuel Investment	% Fossil Fuels
Havering	London Borough of Havering Pension Fund	468,397,000	34,159,000	7.29%
Bromley	London Borough of Bromley Pension Fund	656,073,000	33,671,000	5.13%
Enfield	London Borough of Enfield Pension Fund	746,121,000	33,221,000	4.45%
Redbridge	London Borough of Redbridge Pension Fund	578,399,000	32,852,000	5.68%
Sutton	London Borough of Sutton Pension Fund	491,054,000	28,633,000	5.83%
Scottish Borders	Scottish Borders	559,876,000	28,218,000	5.04%
Denbighshire	Clywd Pension Fund	1,213,567,000	28,134,000	2.32%
Flintshire	Clywd Pension Fund	1,213,567,000	28,134,000	2.32%
Wrexham	Clywd Pension Fund	1,213,567,000	28,134,000	2.32%
Shetland Islands	Shetland Islands Council Pension Fund	331,954,000	26,778,000	8.07%
Isle of Wight	Isle of Wight Council Pension Fund	441,447,000	25,559,000	5.79%
Powys	Powys County Council Pension Fund	463,873,000	23,233,000	5.01%
Orkney Islands	Orkney Islands Council Pension Fund	234,272,000	8,078,000	3.45%

## Endnotes

1. UK population 64.1 million
2. Population of Greater Manchester – 2.7 million
3. Population of Camden – 235,000
4. Covers Argyll & Bute, East Ayrshire, East Dunbartonshire, East Renfrewshire, Glasgow, Inverclyde, North Ayrshire, North Lanarkshire, Renfrewshire, South Ayrshire, South Lanarkshire, West Dunbartonshire
5. Covers Herefordshire and Worcestershire
6. Covers Lancashire, and Blackburn with Darwen
7. Population of Orkney – 20,000
8. <http://platformlondon.org/wp-content/uploads/2015/06/All-That-Glitters-Pdf.pdf>  
<http://platformlondon.org/2014/07/21/bp-using-egypt-crackdown-to-steamroll-unpopular-project/>
9. <http://www.independent.co.uk/news/business/news/bp-job-losses-oil-giant-to-brief-15000-uk-employees-on-staff-cuts-and-restructuring-plans-9979158.html>
10. <http://www.pensionfundsonline.co.uk/content/pension-funds-insider/investment/manchester-pension-fund-invests-10m-in-renewable-energy/1899>
11. Population: East Riding (334,000), Kingston upon Hull (256,400), North east Lincolnshire (159,700), North Lincolnshire (169,20) = 919,300
12. <http://www.theguardian.com/uk/2007/jun/26/topstories3.weather>  
<http://news.bbc.co.uk/1/hi/uk/6277996.stm>
13. <http://news.bbc.co.uk/1/hi/uk/6272012.stm>
14. Population: East Riding (334,000), Kingston upon Hull (256,400), North east Lincolnshire (159,700), North Lincolnshire (169,20) = 919,300
15. <http://www.itv.com/news/london/2013-09-03/londons-worst-performing-boroughs-for-air-pollution-revealed/>
16. <http://www.camdenfoe.org.uk/london/how-toxic-is-the-air-in-camden/>
17. <http://www.walesonline.co.uk/news/wales-news/more-50-welsh-communities-face-6693013>
18. <http://www.carbontracker.org/report/wasted-capital-and-stranded-assets/>
19. [http://www.cresc.ac.uk/sites/default/files/EnfieldExperiment\\_0.pdf](http://www.cresc.ac.uk/sites/default/files/EnfieldExperiment_0.pdf)
20. Based on a £64,000, in line with previous government programmes for social rent housebuilding. This £64,000 figure represents an average grant per build that is in line with the 2008–2011 National Affordable Housing Programme, and which has been updated in line with regional house price inflation.  
[http://www.ippr.org/files/publications/pdf/the-chancellors-choices\\_Aug2015.pdf?noredirect=1](http://www.ippr.org/files/publications/pdf/the-chancellors-choices_Aug2015.pdf?noredirect=1)  
<http://www.nao.org.uk/wp-content/uploads/2012/07/1213465es.pdf>
21. Schools: £300m could put 30 kW solar panels on 10,000 schools. There are 30,000 schools, but not all have suitable roofs. At £1000 per kW, 10,000 x 30kW x £1000 = £300 million  
Public buildings: Same costings as for schools.  
Homes: £6,000 for a 4 kW installation. 2 million homes x £6,000 = £12.4 billion  
<http://www.theecoexperts.co.uk/4-kw-solar-pv-systems>  
Energy generating capacity: 10,000 x 30 kW + 20,000 x 30 kW + 2,000,000 x 4 kW = 8.9 GW
22. <http://www.carbonbrief.org/blog/2015/04/five-ways-the-uks-electricity-grid-is-changing/>
23. Based on 2013 Annual electricity consumption figures – p8 – Scottish electricity consumption is almost 9% of Great Britain total (excl Northern Ireland)  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/388960/Subnational\\_electricity\\_and\\_gas\\_consumption\\_summary\\_report\\_2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/388960/Subnational_electricity_and_gas_consumption_summary_report_2013.pdf)  
8.9 GW represents 10.5% of UK electricity generation capacity (85 GW)  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/447632/DUKES\\_2015\\_Chapter\\_5.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/447632/DUKES_2015_Chapter_5.pdf)
24. <http://www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/>

25. Based on 2013 Annual electricity consumption figures – p8 – Welsh electricity consumption is 5.4% of Great Britain total (excl Northern Ireland)  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/388960/Subnational\\_electricity\\_and\\_gas\\_consumption\\_summary\\_report\\_2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/388960/Subnational_electricity_and_gas_consumption_summary_report_2013.pdf)  
6 GW represents over 7% of UK electricity generation capacity (85 GW)  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/447632/DUKES\\_2015\\_Chapter\\_5.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/447632/DUKES_2015_Chapter_5.pdf)
- 26 <http://blueandgreentomorrow.com/2013/02/08/westmill-solar-lancashire-pension-fund/>
- 27 <https://cleantechnica.com/2015/08/10/uk-pension-fund-invests-10-million-community-scale-renewables/>
- 28 <http://www.ipe.com/news/esg/strathclyde-joined-by-uk-green-bank-in-community-power-investment/10006714.article>
- 29 <http://web.archive.org/web/20070706184255/http://www.cece.dk/EE0911AA-D9A1-49E8-9CA2-332E37BBA568>
- 30 <http://www.siemens.com/press/pool/de/feature/2014/infrastructure-cities/2014-06-mobility-opportunity/Study-mobility-opportunity-preview.pdf>
- 31 [http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2014/infrastructure-cities/ic201406009.htm&content\[\]=IC&content\[\]=Corp&content\[\]=MO](http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2014/infrastructure-cities/ic201406009.htm&content[]=IC&content[]=Corp&content[]=MO)
- 32 <http://www.socialhousing.co.uk/islington-council-pension-fund-looks-to-social-rent-housing-as-safer-investment/7007509.article>
- 33 [http://www.cresc.ac.uk/sites/default/files/EnfieldExperiment\\_0.pdf](http://www.cresc.ac.uk/sites/default/files/EnfieldExperiment_0.pdf)
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