

Position Paper - Electricity generation

1. Biblical background

Hope in God's Future was adopted by the 2009 Conference and is the main body of Methodist teaching and policy with respect to climate change. It outlines the theological approach taken towards climate change and makes recommendations both for action by the Church and its members and also for continuing the prophetic witness of the Church on the subject.

1.1. Theological approach to climate change

Hope in God's Future was produced by a joint working group in partnership with the United Reformed Church and the Baptist Union, and provides a thorough theological context to the issues and challenges present in climate change and the appropriate Christian response to these challenges.

The report reviews the theological underpinnings of a Christian approach to the issue of climate change. It stresses the importance of maintaining our hope in God's promises rather than despairing at the current situation. At the same time it recognises that our hope in God's promises does not mean we can ignore our current environment in the knowledge that redemption will come or that we can avoid the responsibility that God's gift of freedom has given to us in the hope that He will resolve all our problems.

The New Testament commandment to love our neighbours as ourselves is noted, along with the particular concern shown by Christ and His disciples for the poor and vulnerable. The report also notes the witness of the prophets against the oppression of the poor and needy, the Covenant made after the flood and God's care for all creation rather than just humanity:

- the Covenant made after the flood "was with all creatures in every generation" and that as such we should not view the interests of those in future generations of being as any less important than our own.
- God's care is for all creation rather than just humanity; the injunction to 'have dominion' over all other creatures, is an injunction to be wise stewards of creation, not an indulgence to exploit the rest of creation for our own ends.

The report finally considers the implications of God's coming judgement of those who fail to attend to the urgent needs of their neighbours.

"In encountering the biblical warnings about the consequences of failing to love and deal justly with those in need, it is hard to escape the conclusion that in continuing to emit carbon at rates that threaten our neighbours, present and future, human and other than human, we are bringing God's judgement upon us. Even there we should not despair: that God judges rather than abandons us is a sign of God's grace and continuing love for us."

2. Methodist tradition and teaching

2.1. Historic Methodist Church teaching

The CFB has often used John Wesley's sermon *The Use of Money* as a foundation stone with respect to ethical investment policy. The sermon does not address the issue of anthropogenic climate change (let alone electricity generation) directly, although some of the principles are relevant to these issues.

“We are... to gain all we can, without hurting our neighbour. But this we may not, cannot do, if we love our neighbour as ourselves. We cannot, if we love every one as ourselves, hurt any one in his substance... None can gain by swallowing up his neighbour’s substance, without gaining the damnation of hell!”

This focus on the need not to gain at the expense of our neighbours is reflected in modern church teaching on the environment and climate change, especially *Hope in God’s Future*.

2.2. Recommendations of Hope in God’s Future

The report calls on us to confess that we:

- “are heirs to the riches of an industrialized economy that has been instrumental in causing the climatic change already placing our neighbours in peril;
- are so addicted to the fruits of this economy that we find it hard even to want to live lives that do not threaten the future of life on planet earth; and
- know much of the good we should do to live within sustainable boundaries, but struggle to summon the moral will to change.”

and to repent of these sins.

The report further acknowledges that this repentance must be corporate and involve the Church at an institutional level as well as Christians at an individual level.

The report affirms the recommendation of the UK Government’s Committee on Climate Change that to avoid the worst impact of climate change, global emissions should be cut to 50% of their current level by 2050 and that for the UK this would imply an 80% cut in the UK’s greenhouse gas emissions from 1990 levels by 2050, and recognises that the Church should seek to cut its own emissions as well as continuing its political engagement on the issue.

The report further notes that

“Church policy in many areas, including the investment of church funds, will need to be reviewed in the light of this commitment”

2.3. Policy briefing regarding the 2012 Energy Bill

The Methodist Church, jointly with the Baptist Union, the Quakers and the United Reformed Church, has produced a policy briefing regarding the 2012 Energy Bill. This briefing laments the lack of a target to decarbonise the power sector, noting the advice of the Committee on Climate Change that meeting the target to reduce the UK’s greenhouse gas emissions by 80% by 2050:

“will only be achievable if electricity generation is almost completely decarbonised by 2030.”

The briefing calls for a decarbonisation target within the Bill, measures to limit the scope for long-term investment in fossil fuel power generation, and a target for renewables to provide 60% of electricity in the UK by 2030.

2.4. Other recent Methodist statements & activities

Following the Conference decision to adopt *Hope in God’s Future*, the Methodist Church has been making efforts to reduce its own carbon footprint: encouraging churches, circuits and districts to become Eco-Congregations, Eco-Circuits or Eco-Districts; providing help and advice to individual churches installing solar panels through the feed-in tariff; and launching a benchmarking scheme for measuring the energy efficiency of church buildings.

The President of the Conference has also signed Operation Noah’s Ash Wednesday Declaration. This is a call to the Church to respond and also provides a useful summary of Christian teaching regarding climate change.

3. Other church policies

Many churches have issued detailed position and policy statements with respect to the issue of climate change and an increasing number have grappled with some of the issues relating to the interaction between climate change and investment, though there has been little published regarding investment in electricity generation and climate change.

3.1. Nuclear energy

Two churches or church related charities have been identified as having specific exclusions relating to nuclear energy or uranium mining. The Joseph Rowntree Charitable Trust, a member of the Church Investors Group, avoids investments in companies which are materially involved in new generation nuclear power stations, while the Victoria and Tasmania synods of the Uniting Church in Australia have long excluded companies based on exposure to uranium mining.

3.2. Coal

No church or church related charities have been identified as having exclusions related to either coal mining or to generating electricity from coal. Recently the managers of the COIF Ethical Investment Fund have introduced an exclusion criterion relating to the extraction of coal. Interestingly, this relates only to the extraction of coal and not its burning.

4. Previous CFB precedents and policy

The CFB has long been concerned with the impact on the environment of the activities of the companies in which it invests. However, it has rarely been called upon to make ethical judgements with respect to the electricity generation industry.

4.1. Policy statement on climate change

The CFB policy on climate change (and associated position paper) considered the Church's teaching and scientific evidence on climate change in greater detail than this report, though noted many points pertinent to all companies as well as some points particularly pertinent to the electricity generation industry.

4.1.1. Disclosure and reduction of emissions

One aspect of the policy is for the CFB to encourage all companies to disclose and reduce their emissions, and the intensity of those emissions relative to their activities. This applies to all industries, though particularly to those with a high level of carbon intensity. There is a further specific statement calling on companies operating in industries with high levels of greenhouse gas emissions to invest to reduce those emissions.

4.1.2. Exclusions

The policy outlines two possible grounds on which investment in a company could be viewed as unacceptable:

“To consider disinvestment as the appropriate response when companies are either unwilling to enter into dialogue or if it proves to be ineffective.”

“To consider avoiding whole areas of economic activity as unacceptable if it appears that involvement with such activities and profiting from them is contrary to the teaching of the Methodist Church.”

4.1.3. Target to reduce greenhouse gas emissions by 80% by 2050

The Methodist Conference, following the *Hope in God's Future* report, affirmed the Church's support for the goal of reducing the UK's greenhouse gas emissions by 80% by 2050 to ensure that global warming is limited to 2°C. The Conference further instructed that the Church should look at means of reducing its own emissions by 80% by 2050. This would suggest that any actions that commit the UK to emitting large amounts of greenhouse gases in 2050 and thereby prevent the UK from meeting this goal could be considered contrary to the current stance of the Methodist Church.

4.2. Previous CFB decision and JACEI advice

JACEI has rarely been called upon to provide advice regarding electricity generation, though it has often provided advice to the CFB regarding extractive industries, though this has mostly been focused on human rights concerns, health and safety issues and impacts on the local environment.

In 1997, following the CFB's investment in British Energy, the JACEI report to conference noted that:

“The CFB Investment Committee has given careful consideration to the acceptability of British Energy as a potential holding before participating in the flotation. The Advisory Committee concurred with the view of the CFB that nuclear power has certain environmental advantages, subject of course to the most stringent safety requirements. The Committee noted that the long term disposal of nuclear waste remains an issue, but felt that all forms of energy production have environmental drawbacks. It was also noted that this was the only type of electricity generation which recycles the fuel and fully costs the environmental impact of its activities. The Committee has consulted Church and Society who have included this issue in their public consultations, and it continues to keep the subject of British Energy under review.”

The 1999 JACEI report to conference noted that:

“A letter was received from the Uniting Church in Australia questioning the CFB's holding of shares in WMC Corp in view of its involvement in uranium mining. The Committee felt that this was not a matter of particular ethical concern, noting the small size of the company's exposure to uranium, and the fact that it was used only for peaceful purposes. The Committee disagreed with environmental groups who consider uranium to be an evil in itself.”

These positions were reaffirmed in the 2002 policy statement on mining and other extractive Industries.

In November 2006, JACEI considered three mining companies: Anglo American, UK Coal and Xstrata. JACEI advised against investment in Xstrata as a result of the poor corporate governance of the company and that it did not fulfil the best in class criterion set out in the policy on extractive industries detailed above. Concerns were also expressed about the very high proportion of coal mining (42%) and the resulting implications for climate change. JACEI was unable to advise that UK Coal was an ethically acceptable investment without further work around fossil fuels and climate change.

4.3. Involvement with other bodies

The CFB has long recognised that its voice is much louder when used together with those of other investors. The CFB has been a signatory of the Carbon Disclosure Project (CDP) since its inception in 2003, and was actively involved in setting up the Institutional Investors Group on Climate Change (IIGCC) in 2001.

5. Current issues regarding electricity generation in the UK

The UK electricity generation market is currently in a state of change with the Electricity Market Reform establishing new mechanisms for encouraging renewable energy, reducing emissions and establishing capacity mechanisms to ensure sufficient generation at times when intermittent sources of generation are not generating. The 2012 Energy Bill gave an indication of government policy regarding the electricity market, though it also defers many decisions into the future.

The Bill establishes a regime for approving new nuclear power stations, though the crucial element of the price at which nuclear power will be bought is still under negotiation. The Bill allows for a decarbonisation target, though delays the setting of any target until 2016. It also establishes emission performance standards for new fossil fuel power stations; these are set at 450 g/KWh. This level would make it impossible for a new unabated coal-fired power station to be built in the UK.

Alongside the Energy Bill, the government also published a gas generation strategy to encourage investment in new gas-fired power stations.

5.1. Level and source of generation in recent years

The level of demand for electricity in the UK has been falling in recent years. This is partly as a result of the recession, though also as a result of higher electricity prices during this period and increased efficiency among users of electricity. The table below shows electricity demand in the UK since 2007 measured in gigawatt hours (GWh) and taken from the Department of Energy and Climate Change (DECC)'s Digest of UK Energy Statistics (often referred to as DUKES).

402,437	399,674	379,478	384,814	374,343	375,046

The proportion of electricity generated using each fuel source is indicated in the next table below. In recent years the proportion of electricity generated from renewable resources has increased following large investments in this area, as has that generated from coal (though this is a temporary phenomenon), while the proportion generated from gas has decreased.

Nuclear	16.4	18.9	19.5
Hydro	1.0	1.6	1.5
Wind	2.7	4.3	5.7
Other Renewables	3.2	3.6	4.2
Gas	46.4	40.2	27.7
Oil	1.3	1.0	1.0
Coal	28.4	29.8	39.7
Other	0.7	0.7	0.7

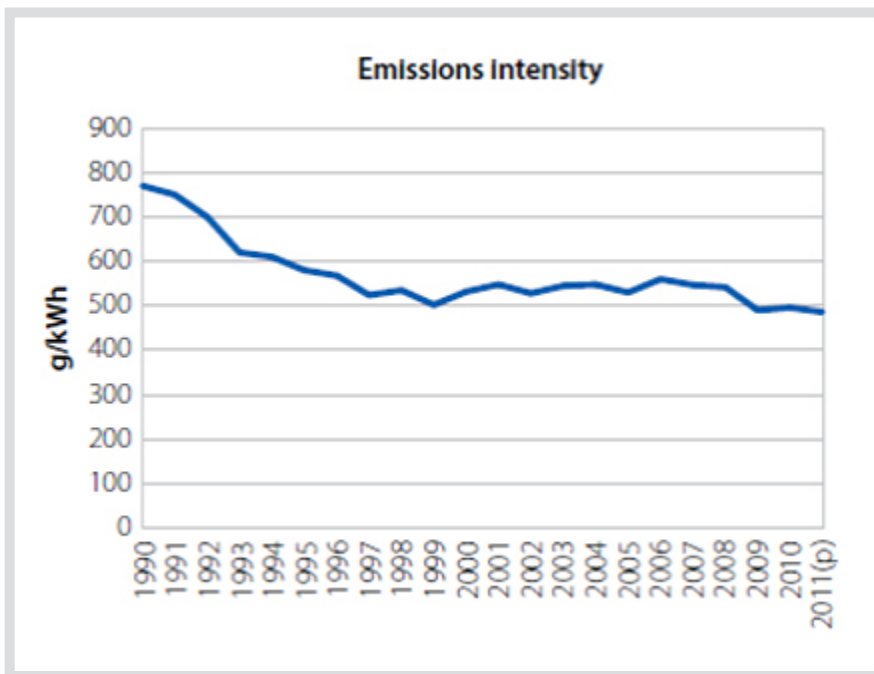
The proportion generated from coal has increased partly owing to the significantly higher profitability of coal-fired electricity generation (compared to gas-fired generation) at present and partly owing to the Large Combustion Plant Directive (LCPD) of the European Union. The higher profitability of coal-fired generation is due to the relatively low price of thermal coal and the relatively high price of natural gas in European markets. The LCPD requires coal-fired power stations to fit flue-gas desulphurisation equipment. Plants which do not must close by 2015 with only a limited number of running hours between 2008 and 2015.

Some existing coal-fired power stations are being adapted to burn biomass, with some co-firing a small (10-15%) proportion of biomass and others converting to being entirely fuelled by biomass. Drax (the UK's largest coal-fired power station) is converting half its generating units to being entirely fuelled by biomass.

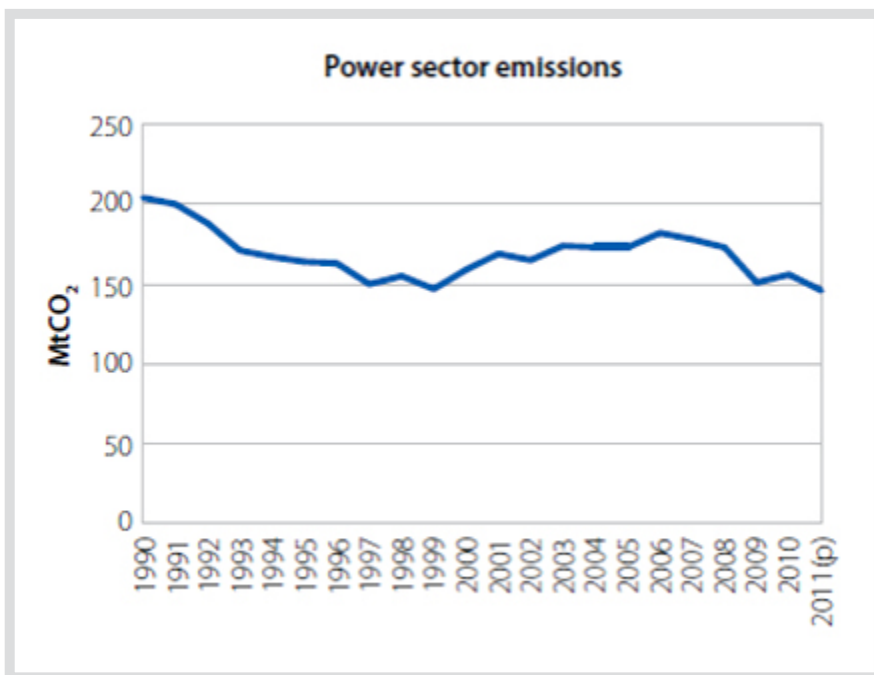
5.2. Roadmaps to emissions reductions

The electricity generation industry contributed 28% of the UK's greenhouse gas emissions in 2006 (DECC), and is one of the sectors key to meeting the 80% target in the carbon budgets of the Committee on Climate Change's carbon budgets and DECC's *Low Carbon Transition Plan*.

It is worth noting that the carbon intensity of electricity generation in the UK has already fallen significantly over the last couple of decades owing to the dash for gas of the 1990s. According to DUKES, the carbon intensity of gas-fired electricity at present in the UK is 392gCO₂e/KWh, while that of coal-fired electricity is 912gCO₂e/KWh. The chart immediately below (from the 2012 Progress Report to Parliament by the Committee on Climate Change) shows the declining emissions intensity of electricity generation in the UK. The progress made, and the current level (443gCO₂e/KWh) should be viewed in the context of the Committee on Climate Change's advice to the government that for the 80% target to be met, the carbon intensity of electricity generation will need to fall to 50gCO₂e/KWh by 2030, i.e. an 89% fall from current levels.



The fall in overall emissions from the electricity sector since 1990 has been smaller than the fall in carbon intensity shown above as for much of this time period (1990-2005) electricity consumption grew, though it has since fallen. The next chart shows the development of total emissions from electricity generation since 1990.



Many forms of low-carbon generation (e.g. wind, solar and to a lesser extent hydro) are intermittent, and require back-up sources of generation. The requirement for this back-up can involve significant further investment in generation plant and infrastructure which diminishes the amount of “headline” emissions reductions.

5.3. New investment in electricity generation

Power plants have long lives and investment choices in electricity generation impact the fuel source and emissions from the sector for decades after the point of investment. The coal-fired power stations being closed as a result of the LCPD typically date from the 1960s or early 1970s, while the Magnox design of nuclear power stations in the process of being phased out were built from the mid-1950s to the early 1970s. Many of the hydro-electric power stations attached to the National Grid date from the 1950s or even the 1930s, while the oldest commercial power station still generating dates from 1918 (though it has been refitted since then).

An unusually large proportion of the UK’s generation capacity is due to be phased out between now and 2020, meaning that much of the generation mix in the 2030s and 2040s will be decided in the next few years. Decisions regarding this generation mix have been delayed over the last decade and there are concerns that the result of these delays is that the new capacity will not be completed in sufficient time to replace the capacity being closed.

Future investment in new capacity will impact emissions into a time horizon in which emissions will need to be significantly below those currently prevailing to meet the 80% target and the associated carbon budgets. The policy briefing from the Methodist Church has called for the removal from the Energy Bill of the exemption that allows unabated coal plants to be built provided that they are committed to the future use of carbon capture and storage. The Church feels that this would allow an unsustainable expansion of unabated gas and coal. To set this into context, the most recent coal-fired power station to be completed in the UK was Drax in 1986.

The construction of new unabated gas-fired power plants has been a matter for some debate, with the Committee on Climate Change having published an open letter to the government, expressing great concern regarding reports that the government would allow extensive investment in new unabated gas-fired power stations as this would be incompatible with meeting carbon budgets and the 80% target. The Committee on Climate Change does not rule out a role for unabated gas-fired power stations post 2030, though it has concerns regarding a further large construction phase.

The construction of new nuclear power stations is also controversial. Many nuclear power stations in the UK are due to close in the next few years, hence the plans to build a new generation of nuclear power stations. The Methodist Church's website (<http://www.methodist.org.uk/mission/public-issues/environment-and-the-created-world/energy>) notes that nuclear energy is a low-carbon form of generation and has benefits in terms of decarbonising the economy, while having issues with accidents in the past and needing to deal with radioactive waste. Radioactive waste is dangerous, and will need to be stored safely over the next few thousand years. The most recent nuclear power station to be completed in the UK was Sizewell B, in Suffolk, which was completed in 1995.

5.3.1. IEA 2012 analysis

The 2012 World Energy Outlook published by the International Energy Agency (IEA) considered the likelihood of global warming being limited to the 2°C level (i.e. the level on which the UK's 80% reduction target is predicated). This noted that 80% of the maximum allowable emissions to remain within this level are already locked in to existing energy infrastructure and that only one-third of proven fossil fuel reserves can be used before 2050 if there is to be a 50% chance of achieving this goal.

The IEA report highlights the extent to which current investments in energy infrastructure will determine whether or not the aim of restricting global warming to a moderate level will succeed.

5.3.2. HSBC policy regarding coal-fired power plants

HSBC has introduced a policy regarding financing new coal-fired power plants (CFPPs). This notes that:

“Within the energy sector CFPPs are the most significant contributor to climate change. HSBC will increasingly support only new CFPPs which have lower carbon intensities. We will require more robust standards for developed countries.

We will not provide financial services which directly support new CFPPs, including expansions, with individual units of 500MW or more and a carbon intensity exceeding:

- 850g CO₂/kWh in developing countries;
- 550g CO₂/kWh in developed countries. With existing technologies, this may require acceptable CCS (carbon capture and storage) plans or material benefits from combined heat and power or biomass.”

6. CFB position

The basis of the CFB's position towards electricity generation is the climate change position paper and policy, which were themselves based on the Hope in God's Future report. These made clear the need for companies to disclose and reduce their emissions, and also made clear the Methodist Church's support for the UK government's target of an 80% cut in CO₂ emissions by 2050 (from 1990 levels).

6.1. Disclosure and reduction of emissions

The climate change policy makes clear the importance of disclosure of emissions as a first step towards reducing those emissions; disclosure in the electricity generation sector tends to be extremely good.

The climate change policy also makes clear the importance of reducing emissions, and the need for companies in energy-intensive industries to invest to reduce their levels of emissions. The emissions intensity and the overall emission levels of power generation in most developed markets have been falling in recent years, and most electricity companies have been actively investing to reduce their emissions intensity both through greater deployment of renewable generation and also through investments to increase the efficiency of existing thermal generating plant.

The phasing out of nuclear energy in some countries after the Fukushima disaster is likely to complicate this and may lead to some companies experiencing greater emissions intensity and greater emissions levels, particularly in those with significant exposure to electricity generation in either Germany or Japan.

The climate change policy would suggest that investing in companies involved in electricity generation that refuse to disclose emissions would be a serious issue.

The requirement to reduce emissions and emissions intensity is particularly relevant to the electricity generation industry. Companies whose emissions intensity is increasing over time (rather than just in a specific year) would represent a significant concern.

When assessing companies, the level of disclosure, the emissions intensity, and the trends in overall emissions and emissions intensity should all be considered together.

6.2. Implications of the 80% target

To achieve the target of an 80% cut in the UK's greenhouse gas emissions by 2050 requires a very significant reduction in the emissions intensity of the electricity generation industry. Given the need for similar reductions in other developed markets in order to achieve the limiting of global warming to 2°C by 2100, this would imply that a similar reduction in the energy intensity of electricity generation is also required in other developed markets.

The roadmap established by the Committee on Climate Change suggests dramatic reductions in the emissions intensity of electricity generation by 2030. Given the very long duration nature of electricity generation investment, the investments made in the near-future will continue to impact the emissions intensity of electricity generation in 2030 and indeed in 2050. To achieve the target of an 80% reduction by 2050 requires that current and future investments are compatible with this and do not preclude it.

The construction of new unabated coal-fired power stations would make achievement of the target almost impossible. Commercial carbon capture and storage plants are still in their infancy, with no working industrial-scale plants. This and the length of time which any new plants would run unabated, would suggest that investing in, or otherwise financing, the construction of new unabated coal-fired power stations would not be compatible with the Methodist Church's support for an 80% reduction in greenhouse gas emissions by 2050.

The advice of the Committee on Climate Change, and the support for this advice from the Methodist Church, regarding a renewed dash for gas would suggest that the wholesale building of new unabated gas-fired power stations would also complicate the achievement of the 80% target. The building of unabated new gas-fired power plants should be viewed negatively, though not as seriously as the building of unabated new coal-fired power plants.

When assessing companies, the investment plans of these companies should be taken into account as well as their current emissions intensity and generation mix. Where companies are investing in the construction of new unabated coal-fired power stations then this would have very serious implications for any investment by the CFB. The proportions of unabated gas plants, should be considered along with the proportions of nuclear and renewable plants when coming to a decision.

6.2.1. Differences between developed and emerging markets

Greenhouse gas emissions per capita in emerging markets are significantly lower than in developed markets. Developed countries have, during the course of their industrialisation, emitted significantly greater quantities of greenhouse gases than developing countries. As a result it is developed countries that need to make the most efforts with respect to emissions reductions, and this is reflected by the UK's target for emissions reductions being 80% while global emissions only need to be reduced by 50%.

The construction of new unabated coal-fired power stations in emerging markets would make the eventual need to reduce emissions and emissions intensity in these markets harder. The impact of this would not be as significant as the construction of new unabated coal-fired power stations in developed markets, where the need to reduce emissions is greater. This is not to say that the sections of the climate change policy dealing with the need to reduce emissions intensity do not apply to those companies with electricity generating assets and investments in developing countries.

6.3. Lobbying actions

The main tool which is likely to result in the reduction of emissions intensity is government regulation. The electricity generation industry has a significant input into government regulation and legislation and corporate lobbying that would allow investments that would not be compatible with the 80% target would be a significant concern. The lobbying actions of companies should also be evaluated when considering companies.

6.4. Other impacts

The decarbonisation of the power sector is likely to have many unintended consequences. The increase in electricity prices that this will probably entail would cause an increased incidence of fuel poverty and inequality, if not otherwise mitigated. It is worth noting that the move towards low-carbon generation has been only a minor factor in the electricity prices increases of recent years. Utility companies already have some programmes in place to deal with fuel poverty in the UK, and it is likely that these may need to be enhanced in the future. Such programmes may not be possible in developing markets.

Significant investment in biomass-fuelled generation may also have unintended consequences. Some biomass investments focus on waste products (e.g. straw, woodchips) whereas others focus on crops specifically grown for fuel. In certain circumstances, this may involve diverting land from growing crops for food and have implications for food prices and food security.

Companies' approach to avoiding unintended consequences should be included in the evaluation.

6.5. Implications for other sectors

This paper only deals with the implications of Hope in God's Future and the CFB's policy on climate change for the electricity generation industry. There are implications for other industries with similarly long asset lives (such as air travel) from this approach which will need to be considered separately.

The analysis with respect to the construction of new unabated coal-fired power stations would suggest that companies, where a significant portion of their investment plans relate to new thermal coal mines, may need to be re-assessed.

7. Further information

This report merely summarises some of the vast literature on the subject. The following websites contain much greater information on some of the sections contained in this report.

- Hope in God's Future www.methodist.org.uk/downloads/10-hope-in-gods-future-210509.pdf
- The Carbon Disclosure Project www.cdp.net
- The Climate Congress www.climatecongress.ku.dk
- The Committee on Climate Change www.theccc.org.uk
- The Intergovernmental Panel on Climate Change www.ipcc.ch
- The Institutional Investors Group on Climate Change www.iigcc.org
- The Stern Review www.sternreview.org.uk
- Operation Noah www.operationnoah.org

- Policy Briefing on the Energy Bill www.jointpublicissues.org.uk/policy%20briefing_AB
- Other CFB policies and previous JACEI reports to conference are available of the CFB website www.cfbmethodistchurch.org.uk

November 2013