



# RSA

Action and Research Centre

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## Money Talks

Divest Invest and  
the battle for  
climate realism

*Dr Jonathan Rowson*

December 2015

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# About the RSA

The RSA (Royal Society for the encouragement of Arts, Manufactures and Commerce) believes that everyone should have the freedom and power to turn their ideas into reality – we call this the Power to Create. Through our ideas, research and 27,000-strong Fellowship, we seek to realise a society where creative power is distributed, where concentrations of power are confronted, and where creative values are nurtured.



## About the author

**Dr Jonathan Rowson** is Director of the Social Brain Centre at the RSA and the author of a range of influential reports on behaviour change, climate change and spirituality. His work features regularly in the national press and he regularly advises businesses, government departments and NGOs. He has degrees spanning a range of human sciences from Oxford, Harvard and Bristol Universities, and approaches research and innovation challenges from an ‘inside-out’ perspective, attempting to integrate the personal and the political. In a former life he was a chess Grandmaster and British Champion (2004–6) and views the game as a continuing source of insight and inspiration. You can contact him with queries relating to this publication at [jonathan.rowson@rsa.org.uk](mailto:jonathan.rowson@rsa.org.uk) or via Twitter [@jonathan\\_rowson](https://twitter.com/jonathan_rowson)

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The ongoing support and a range of contributions from Climate Outreach, formerly COIN, significantly improved the main outputs of this project and I would like to thank Jamie Clarke, Adam Corner and Chris Shaw for their help in general, and with their contribution to this report in Appendix 1. One of many collateral benefits of this collaboration was that I became a Trustee at Climate Outreach, and look forward to supporting their skilled and important work on public engagement with climate change. I am particularly grateful to Adam Corner for introducing me to Palgrave Macmillan, which led to a contract to develop the ideas from this project into a short book: *The Seven Dimensions of Climate Change: rethinking the world's toughest problem* (forthcoming 2016/17).

Abi Stephenson, our Events Producer, deserves a special mention for a highly impressive range of public events featuring a high calibre of speakers. We were keen to experiment with communicating climate change differently, and think we succeeded. Several extracts from these events are included in the argument that follows, including expert analysis, poems, personal testimony, and jokes, with further details in Appendix 2.

For a series of intriguing graphic drawings of the seven dimensions of climate change I am grateful to thomasmatthews.com, not least for their patience with my tendency to load too many ideas into one image.

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For being perhaps the world's first 'climate constellator' I would like to thank Robert Rowland Smith, for his highly skilled facilitation of an inquiry into the somatic, intuitive and relational features of the climate challenge that we rarely have the courage to confront.

For their participation in our public or private events I am grateful to the following people who have not already been mentioned: Marcus Brigstocke, Holly Burn, Steve Punt, Pappy's, Jessica Fostekew, Pippa Evans, The Showstoppers, Rob Auton, Lord Nicholas Stern, Chris Rapley CBE, Baroness Jenny Jones, Solitaire Townsend, Jeremy Leggett, Rosemary Randall, Brodie Clarke, Molly McNamara, Kobir Ahamed, Joe Lo, Miriam Wilson, Caitlyn Falasco, Shanine Salmon, Erin Green, Louis Mertens, Gitika Bhardwaj, Alice Oswald, Ruth Padel, George The Poet, Simon Barraclough, John Agard, Pippa Evans, Iris Andrews, Simon

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**Dr Jonathan Rowson**

December 2015

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## **Prelude<sup>1</sup>**

**Constellator:** Say: I am evil.

**Fossil Fuel:** I am evil.

**Constellator:** How did that feel?

**Fossil Fuel:** Bollocks.

**Constellator:** OK, say: I am the past.

**Fossil Fuel:** I am the past.

**Constellator:** How did that feel?

**Fossil Fuel:** Better, about right.

1. In June 2015, the RSA hosted 'a climate constellation' workshop under the Chatham House Rule, with a range of experts in the climate change field including NGO strategists, Climate communication experts, climate change funding bodies, climate journalists and academics. The constellation approach is conventionally applied to family therapy, but is often used in organisational change processes. This was therefore an innovative attempt to allow people who have been working on climate change for several years through the same modalities of speech, text and evidence, to examine the issue from a more intuitive, somatic and emergent perspective. The feedback was extremely positive (see Appendix 2). The moment quoted stemmed from an inquiry where the question of divesting from fossil fuels was 'constellated' with about eight people representing different aspects of the issue; they established spatial relationships and the experienced constellator helped to tease out what these different aspects of the problem were feeling in those relationships, in the given instance through questions.

# Executive summary<sup>2</sup>

“Start by doing what’s necessary, then do what’s possible; suddenly you find you are doing the impossible.”

**St Francis of Assisi**

## Background

This report is the third in a series of reports on Climate Change from the RSA’s Social Brain Centre, following *A New Agenda on Climate Change: facing up to stealth denial and winding down on fossil fuels* in December 2013 and *The Seven Dimensions of Climate Change: introducing a new way to think, talk and act* in January 2015.

Both prior reports were an attempt to simultaneously broaden the scope and sharpen the focus of the climate policy debate; clarifying priorities by integrating perspectives. There were two main normative outcomes of the process of research and public and policy engagement. First, that we should focus on overcoming ‘stealth denial’ – the widespread tendency to intellectually accept climate risk but not to really feel it, acknowledge any responsibility for it, or act as if it mattered. Second, we should focus the policy response not on aggregate national emissions because that obscures what science seems to indicate should be the real focus – keeping the majority of global fossil fuel reserves in the ground. The main analytical outcome was the seven dimensions of climate change framework (science, law, technology, money, democracy, culture and behaviour) which emerges from looking at the problem holistically, and is an attempt to render the climate policy challenge, in Einstein’s terms, “as simple as possible, but not simpler”.

This report, *Money Talks*, builds on these normative and analytical foundations and integrative spirit, including insights from a range of public events and workshops hosted by the RSA. However, the argument is now more sharply focused on a particular question that the prior analysis suggests is at the heart of our response to climate change; namely whether it makes sense for individuals, institutions and governments to divest (disinvest) money from fossil fuels and reinvest it in alternative energy provision, particularly renewables and storage.

*In the context of significant progress that still amounts to inadequate achievement, the importance of the distinction between reducing emissions, and reducing emissions enough, quickly enough, can hardly be overstated*

2. This report is the final output of the Seven Dimension of Climate Change project which began in January 2015 and was funded by the Climate Change Collaboration. The project included some contributions from Climate Outreach (formerly ‘COIN’) and featured five public events, two workshops by invitation and a prior report co-authored with Dr. Adam Corner called *The Seven Dimensions of Climate Change, introducing a new way to think, talk and act* which is available online at [www.thersa.org/discover/publications-and-articles/reports/the-seven-dimensions-of-climate-change-introducing-a-new-way-to-think-talk-and-act/](http://www.thersa.org/discover/publications-and-articles/reports/the-seven-dimensions-of-climate-change-introducing-a-new-way-to-think-talk-and-act/). This current report applies the framework to the climate divestment debate, while the conceptual approach to climate change in general will be further developed in a book for Palgrave Macmillan due to be published at the end of 2016. For a fuller account of the project, see Appendix 2.





**The Seven Dimensions of Climate Change: Democracy.** Political power lies with fossil fuels and we need to move towards renewables. Collective action problems are pervasive, with the fate of the earth in the balance.

The emphasis on divestment in this report speaks to the ‘first do what is necessary’ emphasis in St Francis’ famous saying above and reinvestment in alternative energy, particularly renewables and storage, speaks to the ‘then do what is possible’ injunction. These developments are necessary but not sufficient responses to the climate challenge. ‘Achieving the impossible’ in this context will require much more than these financial actions alone, potentially including a transformation in human nature, values and purpose as we face up to the reality that we are now in the Anthropocene.<sup>3</sup> This particular report should not therefore be read as a comprehensive account of how humanity as a whole should respond to the climate challenge, but rather as a contextualisation of one major aspect of the challenge that is particularly time sensitive.

### After Paris

Whatever the precise outcome of COP21, a combination of political and cultural leadership, technological innovation and greater conviction and clarity about what is at stake means there are grounds for optimism about climate progress. Most of the world’s leaders have woken up to the need to decarbonise economies at scale and with speed.

But the grounds for pessimism are just as strong. The global appetite for energy is likely to endure and continue to grow and on current trends it seems unlikely that renewable energy will supplant rather than merely supplement fossil fuels in time to meet climate mitigation targets, not

3. Professor Clive Hamilton (2012) *Climate Engineering in the Anthropocene*. RSA Events, 31 May. [VideoFile] Available at: <https://www.thersa.org/events/2012/05/climate-engineering-in-the-anthropocene/>

least because of governments around the world continuing to subsidise fossil fuels, perhaps by as much as 5 trillion US dollars in 2015 according to the IMF. Debates about the precise definition of ‘subsidy’ continue, but the bottom line is that whatever their stated objectives, governments are complicit in perpetuating the climate problem. As leading climate economist Professor Nick Stern puts it: “Make no mistake: freely allowing an activity that imposes severe costs on others is correctly classified as a subsidy.”<sup>4</sup> Moreover, based on intended nationally determined contributions (INDCs) it looks almost certain that the Paris agreement will not place itself on a path that is likely to have a chance of maintaining average temperatures under the globally agreed limit of 2 degrees above pre-industrial levels.

To put that prospective failure in perspective, 2 degrees was always a compromise target, rather than meaningfully safe, and now most predictions suggest that even if existing commitments are strictly adhered to, we are heading towards a 3 degree world, with deleterious effects.<sup>5</sup>

### **The fundamental distinction**

In the context of significant progress that still amounts to inadequate achievement, the importance of the distinction between reducing emissions, and reducing emissions enough, quickly enough, can hardly be overstated.<sup>6</sup>

The essence of the climate challenge appears to have subtly shifted in the last few years from stealth denial – knowing but not acting – to forms of action that are laced with cognitive dissonance – acting on some aspects of knowledge, but in ways that are slow or obtuse. Most forms of power in the world have realised that anthropogenic climate change is real and risky enough for them to respond in words and deeds, but relatively few have grasped the urgency and scale of the challenge and the most obvious implication for how we need to act. ‘The unassailable logic’ considered in this report is the claim that if you want to have a chance of limiting planetary warming to levels deemed acceptable, the beginning of the end of the fossil fuel industry has to commence as quickly as possible.

The systemic impact of this understanding crystalising is already becoming clear. For instance, in a ground-breaking legal opinion published on 25 November 2015, Christopher McCall QC, a pre-eminent legal expert on the hotly debated topic of ‘fiduciary duty’, has raised the prospect that a wide range of different charities – particularly those with a general interest in the environment, in health, or in poverty – may be legally required to re-evaluate their approach to carbon intensive investments.<sup>7</sup>

*The essence of the climate challenge appears to have subtly shifted in the last few years from stealth denial to forms of action that are laced with cognitive dissonance*

4. Stern, N. (2015) Action on false subsidies must be accelerated. [Blog] *Financial Times*, 13 November. Available at: <http://blogs.ft.com/the-exchange/2015/11/13/action-on-fossil-fuel-subsidies-must-be-accelerated/>

5. JRC News (2015) Current Climate Commitments would increase global temperature around 3° C. *European Commission*, 15 October [Online] Available at: <https://ec.europa.eu/jrc/en/news/current-climate-commitments-would-increase-global-temperature-around-3-degrees>

6. For this particularly elegant framing of the challenge, I am indebted to David Roberts, see Roberts, D. (2014) Hey Paul Krugman: here’s the real argument about climate change and economic growth. *grist*, 8 October [Online] Available at: <http://grist.org/climate-energy/hey-paul-krugman-heres-the-real-argument-about-climate-change-and-economic-growth/>

7. For further information on this legal opinion, please see: <http://www.bwbllp.com/knowledge/2015/11/25/bwb-instructs-christopher-mccall-qc-on-ethically-questionable-investments>

## Overview

There are four main turns in the report's argument:

1. *The unassailable logic*: why minimising climate risk is about doing whatever it takes to keep fossil fuels in the ground.
2. *The unbelievable challenge*: why we are deeply dependent on fossil fuels and the requisite speed and scale of decarbonisation is hard to imagine and politically difficult.
3. *The signal that sets the agenda*: why the 'Divest Invest' campaign and movement is needed to strengthen resolve and quicken the pace of the transition.
4. *The map that yields momentum*: why the seven dimensions of climate change perspective (science, law, technology, money, democracy, culture, behaviour) helps to keep us focused and give us hope, by showing how the positive impact of acting in one dimension can have an important knock on effect on the others.

## The unassailable logic and the unbelievable challenge

“Two degrees was not a casual reaction to civil society impossibilism. It was a political judgement, informed by science, about the threshold beyond which climate insecurity is likely to become unmanageable.”

**John Ashton**<sup>8</sup>

Atmospheric warming happens gradually and one of the most counter-intuitive features of climate change is that emissions don't disappear; they remain in the atmosphere for centuries, so the cumulative and total global carbon budget is what matters. Measurements and deadlines relating to this budget can only be estimates, but scientists and political leaders across the world have agreed on an acceptable level of warming, and a commensurate carbon budget that is likely to keep us within that limit.

For staying within the 2 degree target to be 'likely' (66 percent) and with emissions other than carbon dioxide and land use considerations factored in, the Intergovernmental Panel on Climate Change (IPCC) estimate the total global carbon dioxide budget since emissions began until the point when they end, ideally this century (total cumulative emissions) is about 800bn tonnes. Measurements published in 2014 suggest we have already used up approximately 530bn tonnes, more than two-thirds of our total carbon budget.<sup>9</sup>

8. Ashton, J. (2015) Open letter to Shell's Ben van Beurden from John Ashton. *The Guardian*, 30 March [Online] Available at: [www.theguardian.com/environment/2015/mar/30/open-letter-shell-ben-van-beurden-john-ashton-climate-change](http://www.theguardian.com/environment/2015/mar/30/open-letter-shell-ben-van-beurden-john-ashton-climate-change)

9. Piddock, R. (2013) Carbon briefing: Making sense of the IPCC's new carbon budget. *Carbon Brief*, 10 October [Online] Available at: [www.carbonbrief.org/carbon-briefing-making-sense-of-the-ipccs-new-carbon-budget](http://www.carbonbrief.org/carbon-briefing-making-sense-of-the-ipccs-new-carbon-budget)

*Dealing with climate change is by no means just about ending fossil fuel extraction and combustion, but this point is fundamental and overrides all others*

The preeminent human activity that causes carbon dioxide emissions is the burning of fossil fuels, which represents up to about 87 percent of total human carbon dioxide emissions.<sup>10</sup> Dealing with climate change is by no means *just* about ending fossil fuel extraction and combustion, but this point is fundamental and overrides all others. Whether we fly less or drive less or eat less, the type and amount of energy used around the world is by far the most important factor, and that is driven by the economic and social logic of extraction (what Naomi Klein calls ‘extractivism’<sup>11</sup>).

To stay within the remaining carbon budget, we cannot use all our remaining fossil fuel reserves. In fact, research at UCL, published in *Nature*, estimates that of known reserves we have to leave 82 percent of coal, 49 percent of gas and 33 percent of oil in the ground.<sup>12</sup> Given the current value of these reserves which is factored into the putative health of the economy, and given the fact that about 81 percent of the world’s primary energy comes from fossil fuels, and given the growing demand for energy in the developing world, where coal, for instance, is relatively abundant, the transition away from fossil fuels represents a necessary but almost unbelievable challenge.

In this context, this paper advocates divesting in fossil fuels and reinvesting in renewable energy wherever possible as a way to reinforce the necessary direction of travel and ensure the momentum of recent progress on climate change continues and accelerates. The seven dimensions of climate change is used as a conceptual framework to make this case because examining the challenge through science, law, technology, money, democracy, culture and behaviour helps to illustrate why the purpose and impact of reallocating capital (moving money) is not merely or even principally financial.

At a cultural level divestment stigmatises the continued investment in fossil fuels, attempting to remove their social licence to operate. At a technological and financial level it signals to financiers that we are at the beginning of the end of the fossil fuel era, encouraging them to redirect their money towards new forms of research and infrastructure before it becomes obvious to everybody that this is what needs to be done. At a democratic level, divestment challenges the political power of the fossil fuel industry, particularly as it manifests in subsidies; and helps to solve a collective action problem by providing a form of collective action that is tangible, intuitive, tractable and above all meaningful. At a behavioural level, divestment wakes people up to their unwitting financial complicity in the problem, and gives them a clear goal and sense of being part of a mission much bigger than themselves. And all of these factors influence the regulatory ambience or ‘surround sound’ in which laws are made, potentially shaping the hard negotiations at the Paris COP21 and other legal decisions, including changing perceptions towards fiduciary duty.

10. Le Quéré, C. et al (2012) The global carbon budget 1959–2011. *Earth System Science Data Discussions*, 5 (2) pp.1107–1157. For discussion see: What are the main sources of carbon dioxide emissions. *What’s your Impact?* [Online] Available at: <http://whatsyourimpact.org/greenhouse-gases/carbon-dioxide-sources>. See also Gonzales, M. and Lucky, M. (2013) Fossil Fuels Dominate Primary Energy Consumption. *Worldwatch Institute*, 24 October [Online] Available at: <http://www.worldwatch.org/fossil-fuels-dominate-primary-energy-consumption-1>

11. Klein, N. (2014) *This Changes Everything*. Simon & Schuster.

12. McGlade, C. and Ekins, P. (2015) The geographical distribution of fossil fuels unused when limiting global warming to 2°C. *Nature*, 517, pp.187–190 [Online] Available at: [www.nature.com/nature/journal/v517/n7533/full/nature14016.html](http://www.nature.com/nature/journal/v517/n7533/full/nature14016.html)

This report therefore advances a strong case for ‘divest-invest’ and argues that it is an entirely necessary (but not sufficient) response to climate risk. The report also attempts to show why divest-invest is often mischaracterised as a protest tactic, when in fact it is deeply strategic, fundamentally about accelerating existing momentum in a complex system.

### **Reflexive realism**

There are two underlying points of emphasis that drive this argument. First, timing is everything, not just because we have used up most of our carbon budget but because energy infrastructure gets locked-in for decades and we don’t have decades to lose; keeping the pace and momentum of the existing decarbonisation process is imperative.

Second, ‘realistic’ climate mitigation is now reflexive, in the sense that the signals we send in response to our understanding of the climate challenge create reality rather than merely reflect it. This report seeks to show why these two points of emphasis – timing and reflexivity – have not been fully grasped by policymakers, investors or the general public, and why they need to be.

The report concludes by arguing that divest-invest is indeed a form of ‘gesture politics’, but this is an accidental compliment; in the context of a system that is highly sensitive to signals, it is precisely the kind of gesture politics we need.

While this report was in preparation the RSA took the decision to move its investment management contract to CCLA. While their general fund is not completely fossil free, CCLA has a policy against investment in any company that is primarily focused on coal and tar sands production and is gradually withdrawing from fossil fuels on risk/return grounds.



# Introduction: The battle for climate realism

“We have a paradox unique to our era. On a scientific basis there is more reason to be nervous than ever before. But at the same time there has never before been so much reason for hope.”

**Professor Johan Rockström, Executive Director of  
The Stockholm Resilience Centre<sup>13</sup>**



Comedian Marcus Brigstocke spoke at *Seven Serious Jokes about Climate Change* on 20 January 2015: “So the delegates decided, right there and then, that the best way to solve it was to meet up again.”

We are the first generation to feel the effects of climate change and may be the last to be able to significantly mitigate them.

Due to human activities since the industrial revolution began, and our inability to adequately respond to scientific assessments over the last few decades, in 2015 the world has already warmed by an aggregate of 1 degree Celsius since pre-industrial levels.<sup>14</sup> While direct cause and effect relationships are hard to establish, existing warming has significantly increased the probability of extreme weather events like floods in the UK in 2013/2014,<sup>15</sup> a range of droughts across the world, and forest fires in Australia.<sup>16</sup> Existing warming has also been associated with a range of health problems,<sup>17</sup> and may also have been a compounding factor in past and present conflicts, including Darfur and Syria.<sup>18</sup> For the sake of balance it should also be noted that existing warming has also increased vegetation and food supply, but even climate ‘lukewarmists’ accept that warming much beyond 1 degree is more likely to cause harm than good.<sup>19</sup>

A further 0.6 degrees Celsius of warming is thought to be ‘locked in’ and is likely to occur over the new few decades even if (which is impossible) we stopped all emissions immediately.<sup>20</sup> That means that on most assessments, the more ambitious global target of 1.5 degrees

13. Bawden, T. (2015) The most pessimistic climate change scientist has had a sudden change of heart. *Independent*, 12 October [Online] Available at: [www.independent.co.uk/environment/climate-change-measures-to-combat-global-warming-are-paying-off-scientist-says-a6689211.html](http://www.independent.co.uk/environment/climate-change-measures-to-combat-global-warming-are-paying-off-scientist-says-a6689211.html)

14. Met Office (9 November 2015) Global temperatures set to reach 1°C marker for first time [Online] Available at: [www.metoffice.gov.uk/news/release/archive/2015/one-degree](http://www.metoffice.gov.uk/news/release/archive/2015/one-degree)

15. Pidcock, R. (2015) Met office: Climate change made UK’s wet winter of 2013/14 seven times more likely. *Carbon Brief*, 5 November [Online] Available at: [www.carbonbrief.org/met-office-climate-change-made-uks-extreme-wet-winter-in-2013-4-seven-times-more-likely-2](http://www.carbonbrief.org/met-office-climate-change-made-uks-extreme-wet-winter-in-2013-4-seven-times-more-likely-2)

16. Reisinger, A. and Kitching, R. et al (2014) *Final Draft IPCC WGII AR5 Chapter 25 Australasia*. [Online] Available at: [http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap25\\_FGDall.pdf](http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap25_FGDall.pdf)

17. National Climate Assessment (2014) *Human Health*. 2014 National Climate Assessment, US Global Change Research Program [Online] Available at: <http://nca2014.globalchange.gov/highlights/report-findings/human-health>

18. Kelley, C., Mohtadi, S., Cane, M., Seager, R. and Kushnir, Y. (2015) Climate Change in the Fertile Crescent and implications of the recent Syrian drought. *PNAS (Proceedings of the National Academy of Sciences of the United States of America)* 112 (11) pp.3241–3246 [Online] Available at: [www.pnas.org/content/112/11/3241](http://www.pnas.org/content/112/11/3241)

19. *Changing Climate* Episode 1 The Science, 2015 (Radio programme) BBC Radio 4, 16 November 20.00. [Online] Available at: [www.bbc.co.uk/programmes/b06p7d29#play](http://www.bbc.co.uk/programmes/b06p7d29#play)

20. Bernick, S. (2015) Energy round-up: the big issue for Paris. *The NEF blog*, 13 November [Online] Available at: [www.neweconomics.org/blog/entry/energy-round-up-the-big-issue-for-paris](http://www.neweconomics.org/blog/entry/energy-round-up-the-big-issue-for-paris)

above pre-industrial levels is no longer obtainable. This is not an abstract consideration. It is thought temperature rises above 1.5 degrees pose an existential threat to about 44 of the world's low lying small island states. For this reason "1.5 to stay alive" has been the rallying cry of the Association of Small Island States (AOSIS).<sup>21</sup>

In the RSA's 'New Voices on Climate Change' public event, Kobir Ahamed, a sixth-form student at Holyhead School in Birmingham, UK, makes the point about the extra vulnerability of low-lying countries even more vivid:



Sixth Form student Kobir Ahamed spoke at *New Voices on Climate Change*, 17 March 2015.

"No money I can make or my family can send can stop Bangladesh from being under the sea...that's my heritage, my ethnic origins completely wiped off the face of the planet."

"I have family in Bangladesh, most of whom are subsistence farmers. When their crops fail, we send them money to keep them going until a new harvest. However no money I can make or my family can send can stop Bangladesh from being under the sea in 20 years-time. Bangladesh is a delta...It's one the largest population densities in the world and 80 percent of it is low lying and most of it is predicted to be under the sea. Now that's my heritage, my ethnic origins completely wiped off the face of the planet."

**Kobir Ahamed, Holyhead Sixth Form<sup>22</sup>**

When people say 'be realistic' about climate change, it helps to keep such real possibilities in mind. Bangladesh is one of many countries that realistically face extinction level events in this century (though probably not as soon as 20 years as suggested by Kobir Ahamed) and they do so not just because of what we're doing today and will do tomorrow, but what we have already done. Grasping that climate change is about the past, the present and the future is fundamental to managing the risks it has created and will continue to create. It is an evolving issue, and we should not expect any single mechanism or event to resolve it.

## Paris

"The delegates came and the delegates sat and they talked and they talked until their bums all went flat...So the delegates decided right there and then that the best way to solve it was to meet up again. And to decide on a future that's greener and greater. Not with action now. But with something else, later."

**Abbreviated version of Marcus Brigstocke on the 2009 Copenhagen meeting in the style of a Dr Seuss poem, performed at the RSA<sup>23</sup>**

This document will be published during the totemic 'conference of the parties' in Paris ('COP21') from 30 November to 11 December 2015 which many speak of as 'the last chance' to decisively steer the global economy towards the path of decarbonisation.

21. Alliance of Small Island States (2015) Small Islands propose "below 1.5°C" global goal for Paris Agreement. AOSIS, 8 June [Online] Available at: <http://aosis.org/small-islands-propose-below-1-5-CB%9Ac-global-goal-for-paris-agreement/>

22. RSA Spotlight – New Voices on Climate Change. *YouTube*, published on 17 April 2015 [Online] [www.youtube.com/watch?v=Ap2NoNK\\_eOk](http://www.youtube.com/watch?v=Ap2NoNK_eOk)

23. RSA Spotlight – Marcus Brigstocke on Climate Change, published on 30 January 2015. *YouTube* [Online] Available at: [www.youtube.com/watch?v=KDUcQY3jO4M](http://www.youtube.com/watch?v=KDUcQY3jO4M) The full Dr Seuss poem can be heard from 6:00 onwards.

*Getting to grips with climate change is urgent in the way accepting you have a chronic condition exacerbated by lifestyle is urgent, not in the way dealing with a sudden heart attack is urgent; it's about waking up and staying awake to an ongoing challenge, not panicking to fix something immediately*

Such language can be motivating, but on balance it is probably unhelpful, not least because as indicated by Marcus Brigstocke, these global summits have a tendency to disappoint. The deeper issue is that getting to grips with climate change is urgent in the way accepting you have a chronic condition exacerbated by lifestyle is urgent, not in the way dealing with a sudden heart attack is urgent; it's about waking up and staying awake to an ongoing challenge, not panicking to fix something immediately. The complications of diabetes, for instance, can lead to blindness, foot amputations and premature death, but you can significantly reduce their likelihood and impact by keeping blood glucose readings under control; and so much the better if you start as early as possible, before the latent damage is done. With climate change the stakes are not one healthy life, but a viable habitat for billions, and yet the same principle applies: a small shift in seemingly inconsequential numbers over years and decades can make a huge difference to existential outcomes.<sup>24</sup>

The good news is that the build up to Paris suggests the conference will be much better managed and feature significantly more collective determination than the prior conference of the parties in Copenhagen in 2009, including leadership and cooperation among major powers like China and the US. The bad news is that the outcomes will appear modest and inadequate relative to the prevailing scientific risk assessments. There is also a significant risk that the hope and energy invested in the conference will dissipate afterwards, with political capital and media attention diverted elsewhere, leading to dissipation and disillusion.

Speaking about hopes for Paris at the RSA, Nick Stern said “Even with all the leaning over backwards and soft shoe shuffles, they won't be able to pretend it's a 2 degree agreement.”<sup>25</sup> However, it is significant progress that the shared commitment is likely to be within 3 degrees; which means the world is committing to narrowing the range of risk, with scope for further tightening that will hopefully begin to seem even more credible once the decarbonisation process deepens and spreads.

In this context it is helpful to put Paris in a broader perspective, by focusing on an issue (divesting in fossil fuels) through an analytical lens (the seven dimensions of climate change) that helps to make sense of the outcome of Paris, and focus attention on what to do if the probable ‘big improvement but could do better’ result happens, as is widely expected.

## **21st century risk: is the world's response going to be prudent, reckless or insane?**

“If you double the odds of rolling a six, which might represent a very rainy day, you quadruple the odds of a double-six, which might represent a major flood.”

**Professor Myles Allen**<sup>26</sup>

24. The author writes with a personal knowledge of living with this kind of risk, having had type-one diabetes for 32 years. The equivalent of small variations in temperature is small variations of HbA1c in long-term blood readings. Diabetes News (2013) Lower HbA1c linked with dramatically reduced risk of diabetes complications. *Diabetes.co.uk*, 24 June [Online] Available at: [www.diabetes.co.uk/news/2013/Jun/lower-hba1c-linked-with-dramatically-reduced-risk-of-diabetes-complications-97539739.html](http://www.diabetes.co.uk/news/2013/Jun/lower-hba1c-linked-with-dramatically-reduced-risk-of-diabetes-complications-97539739.html)

25. RSA Replay – Climate Change Question Time. *YouTube*, streamed live on 11 February 2015 [Online] Available at: [www.youtube.com/watch?v=IZICsq-G4SQ](http://www.youtube.com/watch?v=IZICsq-G4SQ) c1:10.00

26. Berners-Lee, M. and Clark D., 2013. *The Burning Question*. Profile books, p19.

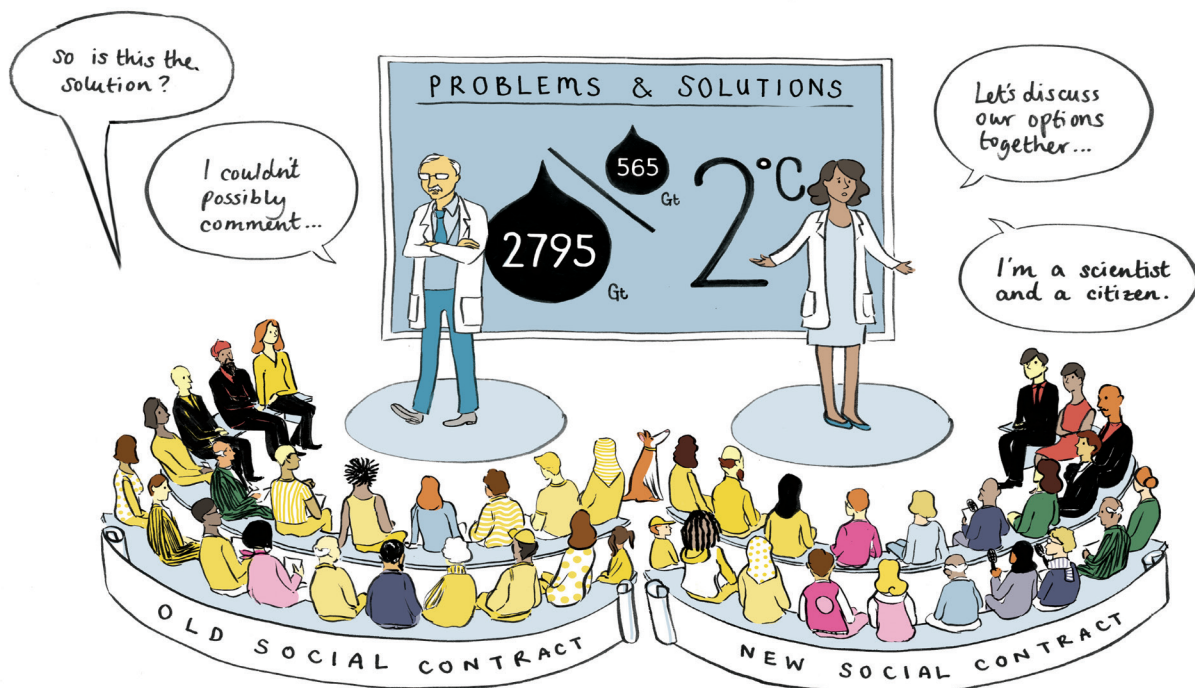
Our felt sense of climate change is strongly related to our judgments and feelings about belonging and identification and responsibility, but perhaps primarily it is about risk. The case for divesting from fossil fuels is a judgment about the social, ecological, security and health risks to the quality and viability of our habitat and the attendant financial risk to what we know to be the main (but not sole) root cause of that risk.

This report focuses on risk assessment because too much climate campaigning is couched in language that preaches to the converted. Precious years, even decades, of effective climate mitigation may have been needlessly lost due to too strong an emphasis on ‘the science’ being ‘settled’ and the case for ‘action’ being ‘clear’. This point is elegantly captured in *Culture and Climate Change: Narratives*:

“The rapid journey that people were offered – from apocalyptic scenarios to low energy lightbulbs – asked too much, too quickly and many welcomed the chance, when it came along, to reject it.”<sup>27</sup>

Climate science is not about ‘absolute truth’ but about credible and authoritative risk assessment, and climate policy is not about ‘solving a problem’ but about the ongoing management of risk in the context of related and sometimes competing objectives. Risk is a function of hazard (how likely something is to go wrong) and harm (how bad the effects will be if it does) and to grasp where we are with hazard and harm we need a

**The Seven Dimensions of Climate Change: Science.** There is an ongoing challenge to improve science communication and public engagement with science.



27. Smith, J., Tyszczuk, R. and Butler, R. eds. (2014) *Culture and Climate Change: Narratives*. Cambridge: Shed. [Online] Available at: [www.open.ac.uk/researchcentres/osrc/files/osrc/NARRATIVES.pdf](http://www.open.ac.uk/researchcentres/osrc/files/osrc/NARRATIVES.pdf)



deeper appreciation for that fact that climate change is about the past, the present and the future.<sup>28</sup>

This framing appears to be relatively inclusive, and is attractive to those on the political right who may otherwise be somewhat sceptical about climate mitigation policies:

“Framing the challenge of climate change as a problem of insurance against disaster is intellectually fruitful. It also provides the right answer to sceptics. The question is not what we know for sure. The question is rather how certain we are (or can be) that nothing bad will happen. Given the science, which is well established, it is impossible to argue that we know the risks are small. This being so, taking action is logical. It is the right way to respond to the nature and scale of possible bad outcomes.”

**Martin Wolf, *Financial Times***<sup>29</sup>

It bears repeating that small numbers reflecting global averages do not spread evenly and gently; they make a big difference in particular places at particular times. We are already in a 1 degree world, heading, more or less inevitably, for a 1.6 degree world, with a small window of opportunity to choose to remain as close as possible to 2 degrees, or risk heading towards 3 degrees or beyond, while the possibility of a 6 degree world before the end of the century or soon after is still a real and present danger.

These average temperature figures are painfully abstract, but they represent real effects in this century, in our lifetimes and certainly in the lifetime of our children, and in theirs. Nobody can be sure exactly what they mean in terms of ecological impact and human experience, but we know that risks increase as temperatures rise, and not in a gradual linear way, but sometimes abruptly.

One degree, where we are now, causes some harm and instability (but may also bring some benefits). On most assessments, the global target of 2 degrees is moderately hazardous and moderately harmful, and on the balance of risk only partially manageable (veteran climatologist James Hansen calls it “a prescription for disaster”). There is a good chance we might reach 2 degrees by midcentury.<sup>30</sup> The IPCC says 3 degrees, which we might also struggle to avoid, means “the intensification of extreme events” and “leaving the world as we know it”.<sup>31</sup> The president of the World Bank Jim Yong Kim called 4 degrees “devastating” and the higher the temperatures are, the harder it becomes to avoid going still further out of control.<sup>32</sup>

In the context of unavoidable and escalating risk, we have to do what we can to minimise hazard, holding fast to what seems prudent (as close to 2

*These average temperature figures are painfully abstract, but they represent real effects in this century, in our lifetimes and certainly in the lifetime of our children, and in theirs*

28. It is useful to focus the discussion around risk because while true believers and ‘deniers’ rarely find common ground, there is a relatively peaceful and productive scientific debate between ‘lukewarmists’ and ‘alarmists’ who disagree mostly about how quickly the warming will happen, how bad it will be when it does and what follows for how aggressive the policy response should be. The lukewarmists are very much in the minority, but a good overview of this debate can be heard here: [www.bbc.co.uk/programmes/bo6p7d29#play](http://www.bbc.co.uk/programmes/bo6p7d29#play)

29. Wolf, M. (2015) Why climate uncertainty justifies action. *Financial Times*, 9 June [Online] Available at: [www.ft.com/cms/s/0/e144719e-0dcb-11e5-aa7b-00144feabdco.html#axzz3qdHgLTsk](http://www.ft.com/cms/s/0/e144719e-0dcb-11e5-aa7b-00144feabdco.html#axzz3qdHgLTsk)

30. Mann, M. (2014) Earth Will Cross The Climate Danger Threshold by 2036. *Scientific American*, 310 (4) 18 March [Online] [www.scientificamerican.com/article/earth-will-cross-the-climate-danger-threshold-by-2036/](http://www.scientificamerican.com/article/earth-will-cross-the-climate-danger-threshold-by-2036/)

31. Pidcock, R. (2014) What happens if we overshoot the two degree target for limiting global warming? *Carbon Brief*, 10 December [Online] Available at: [www.carbonbrief.org/what-happens-if-we-overshoot-the-two-degree-target-for-limiting-global-warming](http://www.carbonbrief.org/what-happens-if-we-overshoot-the-two-degree-target-for-limiting-global-warming)

32. Berners-Lee, M. and Clark D. (2013) op cit, Chapter two.



degrees as possible) and avoiding what seems reckless (significantly above 2 degrees) or insane (3 degrees and above) in terms of prospective harm. But harm is already inevitable, which is why climate adaptation is underway. Speaking at the RSA, Nick Stern helped clarify this point as follows:

“Sometimes we think of mitigation as avoiding the unmanageable and adaptation as managing the unavoidable and if you express it that way you obviously have to do both and the less you do of the former the more you have to do on the latter, but we’d be completely bonkers not to adapt to a changing world. Why would anybody not do that? What you’re trying to do is adapt as best you can and stop it changing too much.”<sup>33</sup>

## Optimism

In the context of the risks that are both latent and manifest in the present, the overall picture is progress and optimism about the direction of travel, but pessimism about the requisite scale and speed. The case for optimism is growing, because major leaders in the worlds of science, politics, health, culture, economics and finance are speaking and acting in ways that show the climate penny has dropped, and there is existing and exciting momentum that can be built upon.

In September 2014, The Rockefeller Brothers Fund, committed to divesting in fossil fuels.<sup>34</sup> In a meeting in London their director Stephen Heintz said the move would be in line with oil tycoon John D Rockefeller’s wishes: “We are quite convinced that if he were alive today, as an astute businessman looking out to the future, he would be moving out of fossil fuels and investing in clean, renewable energy.”<sup>35</sup>

On the 21 of the same month about 600,000 people around the globe marched for action on climate change, widely reported as ‘the day the world woke up to climate change’.<sup>36</sup>

In November 2014, the presidents of the US and China, the world’s two largest emitters, agreed to significantly increase their ambition on emissions reduction.<sup>37</sup> While implementing concomitant policies may not be politically feasible in the US due to resistance in Congress, what made Obama’s commitment interesting was that it was backed by a pledge from 81 major corporations like Google, Apple and Coca-Cola that form a large part of the US economy.<sup>38</sup>

In March 2015, Mark Carney, the governor of the Bank of England, warned that rising temperatures was one of the top risks facing the

33. RSA Replay, streamed live on 11 February 2015, op cit.

34. Divestment Statement, September 2014. *Rockefeller Brothers Fund* [Online] Available at: [www.rbf.org/about/divestment](http://www.rbf.org/about/divestment)

35. Roundtable by invitation, Sainsbury Family Charitable Trusts, London, 3 September 2015.

36. Rowson, J. (2014) Legions march for climate change, but generic calls for action are ‘futile’. *RSA Blogs*, 22 September [Online] Available at: [www.thersa.org/discover/publications-and-articles/rsa-blogs/2014/09/legions-march-for-climate-change-but-generic-calls-for-action-are-utterly-futile/](http://www.thersa.org/discover/publications-and-articles/rsa-blogs/2014/09/legions-march-for-climate-change-but-generic-calls-for-action-are-utterly-futile/)

37. Biello, D. (2014) Everything You Need to Know about the US-China Climate Change agreement. *Scientific American*, November 12 [Online] Available at: [www.scientificamerican.com/article/everything-you-need-to-know-about-the-u-s-china-climate-change-agreement/](http://www.scientificamerican.com/article/everything-you-need-to-know-about-the-u-s-china-climate-change-agreement/)

38. McArdle, M. (2015) 81 Major Corporations – Including Google, Facebook, Coca-Cola, General Motors – Sign WH Pledge to Back Global Climate Change Deal. *CNS News*, 20 October [Online] Available at: [www.cnsnews.com/news/article/mairead-mcardle/81-companies-including-google-coca-cola-apple-join-obamas-fight-against](http://www.cnsnews.com/news/article/mairead-mcardle/81-companies-including-google-coca-cola-apple-join-obamas-fight-against)

*Climate science is not about ‘absolute truth’ but about credible and authoritative risk assessment, and climate policy is not about ‘solving a problem’ but about the ongoing management of risk in the context of related and sometimes competing objectives*

financial services industry.<sup>39</sup> In the same month *The Guardian* launched their ‘keep it in the ground’ campaign, arguing that the case for divesting in fossil fuels was becoming overwhelming.<sup>40</sup>

In May 2015, a report by the IMF suggested fossil fuels were being subsidised to the equivalent of 10m dollars a minute.<sup>41</sup>

In June 2015, the pope issued his encyclical on creation<sup>42</sup> arguing the moral case for protecting our common home. This statement was the first of many, including collective statements by all the world’s preeminent faiths, Christianity, Islam, Buddhism and Hinduism.<sup>43</sup>

In September 2015, research by Arabella Advisors revealed that \$2.6 trillion in assets had already been committed as divestments in fossil fuel stocks, suggesting that the divestment movement is one of the most successful social or environmental movements ever.<sup>44</sup>

In October 2015, BlackRock, the world’s largest money manager, announced that it is launching a fossil free investment product in early 2016. This represents an important breakthrough because many who seek fossil free portfolios currently struggle to find one they can trust.<sup>45</sup>

A report by Carbon Tracker in the same month also revealed that the estimates made by the International Energy Agency in 2000 for the amount of solar that would be deployed in 2015 was underestimated by more than 18 times.<sup>46</sup>

And in November 2015, the fossil fuel company Exxon was being investigated by the Attorney General in the US on the grounds that it may have lied to the public and to investors about the risks of climate change.<sup>47</sup>

39. King, E. (2015) Climate one of “top risks” facing insurance industry – Mark Carney. *Climate Home*, 11 March [Online] Available at: [www.climatechangenews.com/2015/03/11/climate-one-of-top-risks-facing-insurance-industry-mark-carney/](http://www.climatechangenews.com/2015/03/11/climate-one-of-top-risks-facing-insurance-industry-mark-carney/)

40. Rusbridger, A. (2015) The argument for divesting from fossil fuel is becoming overwhelming. *The Guardian*, 16 March [Online] Available at: [www.theguardian.com/environment/2015/mar/16/argument-divesting-fossil-fuels-overwhelming-climate-change](http://www.theguardian.com/environment/2015/mar/16/argument-divesting-fossil-fuels-overwhelming-climate-change)

41. For the original IMF report see Coady, D., Parry, I., Sears, L. and Shang, B. (2015) *How Large are Global Energy Subsidies?* International Monetary Fund [Online] Available at: [www.imf.org/external/pubs/cat/longres.aspx?sk=42940.0](http://www.imf.org/external/pubs/cat/longres.aspx?sk=42940.0) and for *The Guardian* story see Carrington, D. (2015) Fossil Fuels subsidised by \$10m a minute says IMF, *The Guardian*, 18 May [Online] Available at: [www.theguardian.com/environment/2015/may/18/fossil-fuel-companies-getting-10m-a-minute-in-subsidies-says-imf](http://www.theguardian.com/environment/2015/may/18/fossil-fuel-companies-getting-10m-a-minute-in-subsidies-says-imf). While definitions of ‘subsidy’ are based on estimates of the social and environmental costs of coal, oil and gas and are therefore contestable, this research helped clarify that fossil fuels are not merely provided by corporations, but have become an endogenous part of political economy, without their externalities being properly factored in.

42. Rowson, J. (2015) Is Climate Change a Moral Issue? Is the Pope Catholic? *RSA Blogs*, 15 June [Online] Available at: [www.thersa.org/discover/publications-and-articles/rsa-blogs/2015/06/is-climate-change-a-moral-issue-is-the-pope-catholic/](http://www.thersa.org/discover/publications-and-articles/rsa-blogs/2015/06/is-climate-change-a-moral-issue-is-the-pope-catholic/) and see Laudato si’ Wikipedia [Online] Available at: [https://en.wikipedia.org/wiki/Laudato\\_si%27](https://en.wikipedia.org/wiki/Laudato_si%27)

43. Greenfield, N. (2015) The Pope is not alone! *onEarth* (June) [Online] Available at: <http://www.onearth.org/earthwire/world-religious-leaders-climate-change>

44. Arabella Advisors (2015) *Measuring the Growth of the Global Fossil Fuel Divestment and Clean Energy Investment Movement* [Online] Available at: [www.arabellaadvisors.com/wp-content/uploads/2015/09/Measuring-the-Growth-of-the-Divestment-Movement.pdf](http://www.arabellaadvisors.com/wp-content/uploads/2015/09/Measuring-the-Growth-of-the-Divestment-Movement.pdf)

45. Shankleman, J. (2015) BlackRock reveals how it could make it easier for investors to ditch fossil fuels. *businessGreen* [Online] Available at: [www.businessgreen.com/bg/analysis/2432202/blackrock-reveals-how-it-could-make-it-easier-for-investors-to-ditch-fossil-fuels](http://www.businessgreen.com/bg/analysis/2432202/blackrock-reveals-how-it-could-make-it-easier-for-investors-to-ditch-fossil-fuels)

46. Sussams, L., Leaton, J. and Drew, T. (2015) Lost in Transition: how the energy sector is missing potential demand destruction. *Carbon Tracker Initiative* [Online] Available at: [www.carbontracker.org/wp-content/uploads/2015/10/Lost-in-transition-Exec-Summary\\_221015.pdf](http://www.carbontracker.org/wp-content/uploads/2015/10/Lost-in-transition-Exec-Summary_221015.pdf)

47. Gillis, J. and Krauss, C. (2015) Exxon Mobile Investigated for Possible Climate Change Lies by New York Attorney General. *The New York Times*, 5 November [Online] Available at: [www.nytimes.com/2015/11/06/science/exxon-mobil-under-investigation-in-new-york-over-climate-statements.html?\\_r=0](http://www.nytimes.com/2015/11/06/science/exxon-mobil-under-investigation-in-new-york-over-climate-statements.html?_r=0)



***The Seven Dimensions of Climate Change: Culture.*** We are continually distracted from the climate challenge, with the three monkeys on the iPad representing 'hear no evil, see no evil, speak no evil', in the context of the kind of flood that will become more common.

Conversely, in the same month it was reported that the IMF will be factoring in climate risk to its macroeconomic models from 2016.<sup>48</sup>

The combined effect of these developments, commitments and announcements is hope. The main causes (extraction and burning of fossil fuels) and impacts (on health, security, financial stability) of the problem are becoming clearer, the costs of the transition to renewable energy are rapidly falling, and the moral, financial and political case for a full and proportionate response is now clear. In a recent article UN climate executive Christiania Figueres even went as far as to say: "Political will has arrived".

48. Quoted in Darby, M. (2015) IMF to factor climate risk into world economic forecasts. *Climate Home* [Online] Available at: [www.climatechangenews.com/2015/10/27/imf-to-factor-climate-risk-into-world-economic-forecasts/](http://www.climatechangenews.com/2015/10/27/imf-to-factor-climate-risk-into-world-economic-forecasts/)

## Pessimism

Political will took its time. And damage has already been done. The case for optimism is genuine and building, but the case for climate pessimism looks every bit as compelling.

First, the world is not likely to achieve its main targets, and may not even get close, despite the fact that those targets are generally considered pragmatic rather than ambitious or even safe.

The 2 degree target is a policy heuristic that reflects the maximum amount of probable harm that is deemed tolerable, and the most exacting target it thinks it can achieve.

To put this failure into perspective, in a recent article in *Nature Geoscience* Kevin Anderson argues that scientists are being disingenuous in their presentation of their results, effectively massaging them to make them more palatable for policymakers:

“In plain language, the complete set of IPCC scenarios for a 50 percent or better chance of meeting the 2°C target work on the basis of either an ability to change the past, or the successful and large-scale uptake of negative-emission technologies. A significant proportion of the scenarios depend on both.”<sup>49</sup>

It would appear that 2 degrees is not enough, it's not happening and it may not even be possible. Given what we know about 2 degrees probably representing the upper ranges of acceptable risk, it appears likely we are heading for a scenario with significantly increased hazard and harm.

*It would appear that 2 degrees is not enough, it's not happening and it may not even be possible*

Second, energy demand is rising rapidly in the developing world, and it will continue to rise.<sup>50</sup> As indicated below (‘an unbelievable challenge’) developing countries create huge demand for energy as they grow, and much of this is likely to come from fossil fuels. Moreover, global meat and dairy consumption will also increase, a behavioural factor with emissions implications that alone may put 2 degrees out of reach.<sup>51</sup>

Third, the hydrocarbon hegemony is weakening, but it is weakening slowly from a position of enormous strength. Governments are showing no sign of withdrawing their financial and political support. On the contrary, in some countries, including the UK, fossil fuel subsidies seem to be increasing.<sup>52</sup>

Fourth, climate change is still relatively unimportant to most people and most politicians compared to other issues like the economy or immigration. The emphasis we place on dealing with it always risks being trumped by other issues deemed to be *relatively* urgent, which makes global resolve to

49. Anderson, K. (2015) Duality in Climate Science. *Nature Geoscience*, October [Online] Available at: [www.nature.com/articles/ngeo2559.epdf?shared\\_access\\_token=mRqyI89WkCEG6TMBCH81ldRgNojAjWel9jnR3ZoTvoOYjatF2vIGeZ2oeXRMS2BXJZJ7CkwPcQgosPmGNyjNWWcQrFibIoLQ7gMVT--d4rhcYOQh7p7zm1Fa4QyrHBJPukCQ-dypMV9RaYq\\_8jYpzFxIucvkaJXIaMaMAJOV998%3D](http://www.nature.com/articles/ngeo2559.epdf?shared_access_token=mRqyI89WkCEG6TMBCH81ldRgNojAjWel9jnR3ZoTvoOYjatF2vIGeZ2oeXRMS2BXJZJ7CkwPcQgosPmGNyjNWWcQrFibIoLQ7gMVT--d4rhcYOQh7p7zm1Fa4QyrHBJPukCQ-dypMV9RaYq_8jYpzFxIucvkaJXIaMaMAJOV998%3D)

50. International Energy Agency (2015) *World Energy Outlook 2015: Executive Summary*. IEA Publications [Online] Available at: [www.iea.org/Textbase/npsum/WEO2015SUM.pdf](http://www.iea.org/Textbase/npsum/WEO2015SUM.pdf)

51. McSweeney, R. (2014) Meat and dairy consumption could mean a two-degree target is “off the table”. *Carbon Brief*, 2 December [Online] Available at: [www.carbonbrief.org/meat-and-dairy-consumption-could-mean-a-two-degree-target-is-off-the-table](http://www.carbonbrief.org/meat-and-dairy-consumption-could-mean-a-two-degree-target-is-off-the-table)

52. UK singled out among G20 for bolstering fossil fuel subsidies *BusinessGreen*, 12 November 2015 [Online] Available at: [www.businessgreen.com/bg/analysis/2434471/uk-singled-out-among-g20-for-bolstering-fossil-fuel-subsidies](http://www.businessgreen.com/bg/analysis/2434471/uk-singled-out-among-g20-for-bolstering-fossil-fuel-subsidies)



stick to climate commitments questionable. Moreover, we still struggle to talk about the issue openly, which makes everything harder.<sup>53</sup> For a deeper exploration of this point, see the contribution by Climate Outreach in the appendices of this report, where they argue:

“If divestment is to really go mainstream and start to uproot the foundations of the fossil-fuel system – it is going to need wider support. The feeling of momentum that is currently providing buoyancy for the climate change movement must be shared by a larger group of the population. And for that to happen, there needs to be a much wider acceptance of the importance of climate change in the first place...”<sup>54</sup>

In outline, the situation is that the technocratic case for action to reduce emissions has been largely won, but the moral and political case for transformation based on *decarbonisation* remains underdeveloped.<sup>55</sup>

## Reflexive realism

“Not only strike while the iron is hot, but make it hot by striking.”

**Oliver Cromwell**

Considering the growing number of reasons to be optimistic and the remaining reasons to be pessimistic, it is worth asking what it means to be realistic. There is no single answer because realism on climate change is plural and perspectival – there are many competing interests and vantage points – but above all it has to be reflexive. Reflexivity is not a term of everyday language but it can be described as acting with awareness of the conditions of action and thereby changing those conditions.

Reflexivity is relevant to any situation with thinking participants. In George Soros’s account of reflexivity, the basic cognitive function of thinking is to understand the world in which we live, but there is also a participating (or manipulative) function that seeks to change the situation to our advantage. When the direction of causation is from world to mind, reality is supposed to determine the participants’ views; but when the direction of causation is from the mind to the world, the intentions of the participants have an effect on the world.<sup>56</sup>

53. Marshall, G. *Don’t Even Think About it: Why our brains are wired to ignore climate change*. Bloomsbury USA.

54. Corner, A. and Roberts, O. (2014) *Young Voices: How do 18–25 year olds engage with climate change?* Climate Outreach & Information Network.

55. It is noteworthy that Christiana Figueres does not use the term ‘decarbonisation’ when speaking with political leaders in Saudi Arabia. Apparently that term – which highlights that carbon is the heart of the problem – implicates them too directly in climate change due to their oil production, which is why they prefer the relatively neutral term, ‘emissions’, see Kolbert, E. (2015) *The Weight of the World*. *The New Yorker*, 24 August [Online] Available at: [www.newyorker.com/magazine/2015/08/24/the-weight-of-the-world](http://www.newyorker.com/magazine/2015/08/24/the-weight-of-the-world)

56. Billionaire philanthropist and founder of The European Central University, George Soros, has stated that reflexivity is absolutely central to his own financial success and his decisions on how to invest his money for social good: “It is a very curious situation. I am taken seriously; indeed a bit too seriously. But the theory that I take seriously and, in fact, rely on in my decision-making process is completely ignored.” For original sources of Soros on Reflexivity and a broader discussion of the concept, see Rowson, J. (2011) *Transforming Behaviour Change*. RSA. Section 2.1. [Online] Available at: [www.thersa.org/globalassets/pdfs/blogs/rsa-transforming-behaviour-change.pdf](http://www.thersa.org/globalassets/pdfs/blogs/rsa-transforming-behaviour-change.pdf)



*What is often overlooked is that energy is changing from being a hidden resource to be extracted to a technology to be developed, and this matters because technological change is often very rapid*

This is the sweet spot of climate realism. ‘World to mind’ is what you get when you read projections by the international energy agency about continued demand for coal or oil, or read the IPCC forecasts; it evokes optimism and pessimism, but it is a passive assessment. ‘Mind to world’, however, is where the higher quality of realism lies, because there is scope to act in ways that change the conditions of action, whether that’s the price of solar or the presumed climate indifference of your political representative.

Soros puts it like this: “These functions often interfere with each other because the independent variable of one function (mind, in world) is the dependent variable of the other (world, in mind) so neither function has a genuinely independent variable, making predictions about human behaviour and the social world radically indeterminate.”<sup>57</sup>

Soros uses this model to explain how pricing distorts market fundamentals because of their role in signalling future value, but the same might be true for humanity’s relationship to energy; if the world acts as if the future will be based on renewables and storage, the chance of it beginning to happen is that much greater. For example, it is estimated that every time the volume of solar power doubles, the cost reduces by about 20 percent, a phenomenon known as ‘Swanson’s law’.<sup>58</sup>

For related reasons, energy and fossil fuel demand projections may not be very reliable. The estimates by the International Energy Association have been challenged by Carbon Tracker for assuming the recent past is a good guide to the near future, and overlooking the scope for more sudden, transformational change.<sup>59</sup> This alternative vision underlies concerns that the global economy contains ‘a carbon bubble’ that could burst, with potential consequences significantly worse than ‘the housing bubble’ that caused a global recession in 2008.<sup>60</sup>

What is often overlooked is that energy is changing from being a hidden resource to be extracted to a technology to be developed, and this matters because technological change is often very rapid. As research from Bernstein financial analysts puts it: “Solar is a technology. Costs fall over time and will continue falling. Fossil fuels are, by definition, extractive. Costs tend to rise over time.”<sup>61</sup> The world’s leading technological innovators seem to see the transformation that is occurring and the resulting investment opportunities; Google has committed \$1.8bn to renewable energy projects and Apple has invested \$3bn in solar facilities.<sup>62</sup> Those investments don’t just reflect a reality of renewable energy, they also create it.

The possibility of a more abrupt energy transformation is therefore fundamentally a matter of social reflexivity; about people acting in ways

57. Soros, G. ‘Lecture 1: General Theory of Reflexivity.’ The CEU Lectures: George Soros on The Economy, Reflexivity and Open Society. Budapest: Central European University. Delivered October 26, 2009, [Online], Available at: [http://www.soros.org/resources/multimedia/sorosceu\\_20091112](http://www.soros.org/resources/multimedia/sorosceu_20091112)

58. See Crooks, E., Hornby, L. (2015) Sunshine Revolution: The Age of Solar Power *Financial Times*. [Online] Available at [www.ft.com/cms/s/0/488483ca-8334-11e5-8e80-1574112844fd.html#slideo](http://www.ft.com/cms/s/0/488483ca-8334-11e5-8e80-1574112844fd.html#slideo)

59. Sussams, L., Leaton, J. and Drew, T. (2015) Lost in Transition: how the energy sector is missing potential demand destruction. *Carbon Tracker Initiative* [Online] Available at: [www.carbontracker.org/wp-content/uploads/2015/10/Lost-in-transition-Exec-Summary\\_221015.pdf](http://www.carbontracker.org/wp-content/uploads/2015/10/Lost-in-transition-Exec-Summary_221015.pdf)

60. Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble? (2011) *Carbon Tracker Initiative* [Online] available at: <http://www.carbontracker.org/report/carbon-bubble/>

61. Bernstein (2015) *Asia strategy: Shouldn’t we all be dead by now?* Quoted in *ibid*, p.20.

62. Sussams, L., Leaton, J. and Drew, T. (2015) *op cit*.

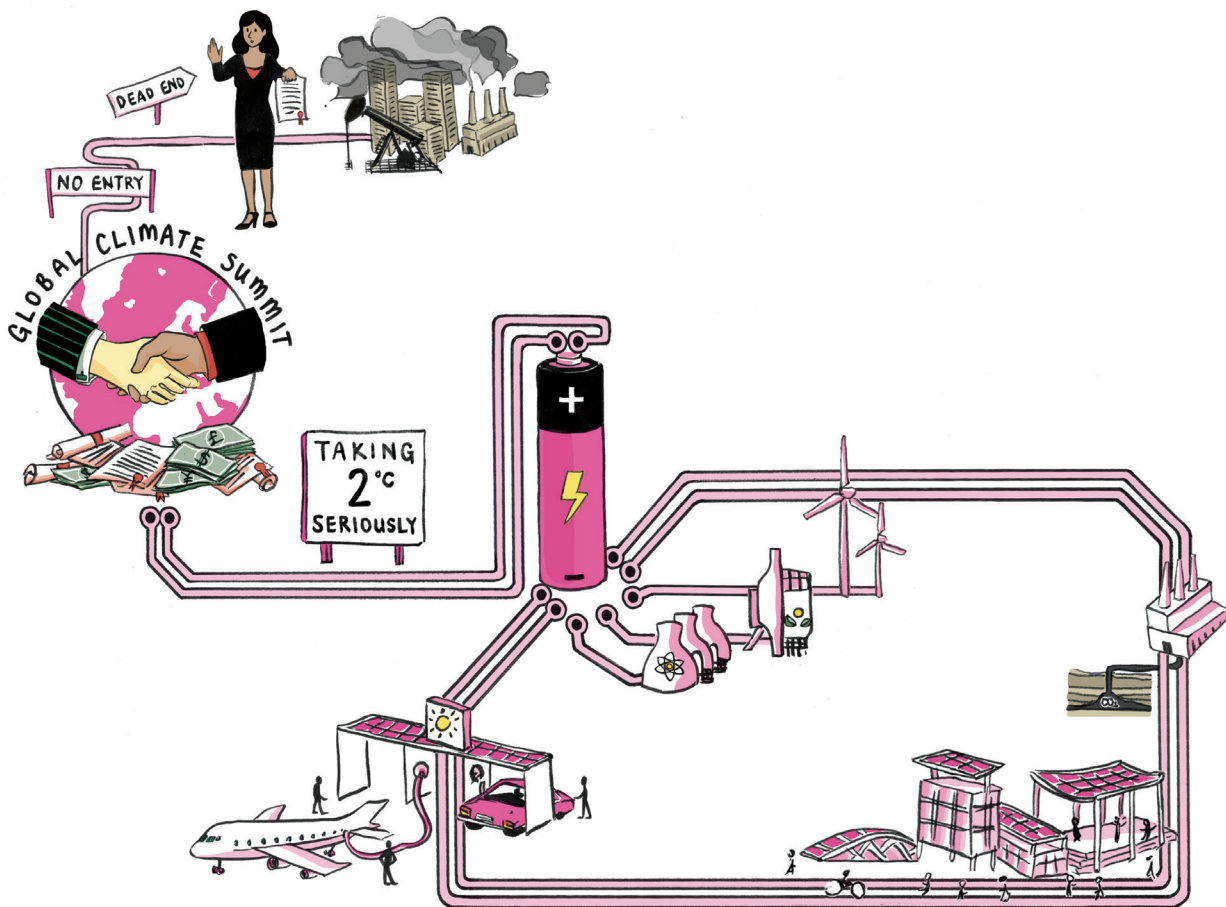
that reflect their understanding of how others may act. If investors believe we can develop batteries that can co-evolve with renewable technologies to make them jointly as reliable at scale as fossil fuels, for example, money will flow that way and the outcome becomes more likely more quickly. If fossil fuel companies come to think their business model will be obsolete in a decade rather than in five decades, they will direct their existing operations towards relatively clean energy much more quickly.

The main signal necessary to speed up this transformational shift is capital and yet financiers have been relatively slow to grasp this development, as Christiana Figueres indicates:

“In my conversation with the finance sector and very often with business I keep on being asked: ‘Well, when are we going to get the signal?’ And I have to say that the signal to noise ratio on what we are doing on climate change has shifted dramatically... certainly in the last 24 months and even in the last 12 months... In fact we don’t have a signal, we have a horn. We have a horn from a really large ship that has already changed the course of its direction. And if we can’t see that, we’re either deaf to the horn or blind to the ship – you choose.”

Christiana Figueres<sup>63</sup>

**The Seven Dimensions of Climate Change: Technology. Taking the 2 degree target seriously means massive technological change and development, including a range of renewables and improved storage and transportation.**



63. Quoted in Darby, M. (2015) op cit.

To push this analogy, if the ship is heading in the direction of decarbonisation and the horn is announcing that fact, ‘realism’ now amounts to getting on the ship and making the horn even louder so that others will feel obliged to get on too. How do we do that?

### **How do we make what *is possible become probable?***

Some have attempted to show what is ‘realistic’ by painting a clearer ‘world to mind’ picture to show what is possible. A good recent example is the New Climate Economy reports *Better Growth Better Climate* and *Seizing the global opportunity*.<sup>64</sup> Both reports are the product of a distinguished global commission and give clear policy recommendations. These reports are relatively optimistic in spirit, and help to clarify the policy frameworks and available technologies necessary to keep the world on a 2 degree path. However, they make only passing references to some of the political difficulties in implementing the changes. *The Energy Policy Simulator*<sup>65</sup> and *Pathways to Deep Decarbonisation* have similar strengths and limitations, with the latter report admitting: “At this stage, we have not looked systematically at the issue of economic and social costs and benefits, nor considered the question of who should pay for them.”<sup>66</sup>

The question arises: are these technical accounts of pathways to a 2 degree world realistic? The answer is partly, because they help shape reality by being informative and motivating. However, there is enormous complexity inherent in decisions about where responsibility for action (and inaction) lies, how that action relates to other policy goals like reducing poverty and inequality, and the realpolitik of ensuring enforcement. In this sense they bypass the political and moral and psychological heart of the climate challenge, highlighted by climatologist Richard Tol:

“That’s exactly one of the problems with climate policy... The only solution to the climate problem is if we decarbonise the economy, right? We need to go to zero emissions. We probably will need a century to do so, that’s the order of magnitude. And that means that climate policy will have to survive 20 electoral cycles.”<sup>67</sup>

64. Both reports are available at The New Climate Economy Working Papers: <http://newclimateeconomy.report/>

65. A new interactive ‘policy tool’ models the impact of combined climate interventions on temperature; it has been peer reviewed by scientists from the Massachusetts Institute of Technology, Stanford, and Berkeley, US national laboratories, and two Chinese research groups. It shows not only the results of individual policies, but also how various policies interact and clarifies just how much policy coordination is required to get to 2 degrees. But, again, by its nature cannot really engage in political or moral considerations. For details see: Roberts, D. (2015) Think you’ve got good energy policy ideas? This tool lets you see if they’d work. *Vox*, 31 October [Online] Available at: <http://www.vox.com/2015/10/31/9649518/energy-policy-simulator>

66. Guérin, E., Mas, C. and Waisman, H. managing eds, Bulger, C., Sulakshana, E. and Zhang, K. eds (2014) *Pathways to deep decarbonization*. Sustainable Development Solutions Network (SDSN) and Institute for Sustainable Development and International Relations (IDDRI). [Online] Available at: [http://unsdsn.org/wp-content/uploads/2014/09/DDPP\\_Digit.pdf](http://unsdsn.org/wp-content/uploads/2014/09/DDPP_Digit.pdf)

67. Carbon Brief Staff (2015) In Conversation: Roger Harrabin and Richard Tol. *Carbon Brief*, 16 November [Online] Available at: [www.carbonbrief.org/in-conversation-roger-harrabin-and-richard-tol](http://www.carbonbrief.org/in-conversation-roger-harrabin-and-richard-tol)

With 20 electoral cycles in mind, it is clear that the battle for climate reality has to be continually fought and won. The challenge is therefore to make what is technically possible look politically probable. Former UK climate diplomat John Ashton captures this point in his extraordinary open letter to the CEO of Royal Dutch Shell Ben Van Beurden:

“You and those who agree with you have a monopoly on realism and practicality. You are ‘balanced’ and ‘informed’. Your enemies are ‘naive’ and ‘short sighted’. And you accuse them of wanting ‘a sudden death of fossil fuels’. No phrase in your speech is more revealing. Nobody is asking for this and if they were they would be wasting their time. But the Freudian intensity of your complaint flashes from the text like a bolt of lightning.”<sup>68</sup>

*It is crucial to the fossil fuel business model that a world without fossil fuels any time this century is ‘unrealistic’, but that conviction obscures the fact that their business model includes fighting that battle for perceptions of reality*

It is crucial to the fossil fuel business model that a world without fossil fuels any time this century is ‘unrealistic’, but that conviction obscures the fact that their business model includes fighting that battle for perceptions of reality, not least through advertising and cultural sponsorship. Many who feel sober gratitude for the quality of life made possible by fossil fuels, rightly feel some betrayal at this self-serving, profit-driven manipulation of reality.

Again John Ashton to Ben Van Beurden:

“... You seem to want us to believe that the issue is not how to deal with climate change but how to do so without touching your business model. You are not detached, and in reality your authority is compromised by your obvious desire to cling to what you know, whatever the cost to society... Climate change is a mirror in which we will all come to see the best and the worst of ourselves. In that mirror you seem to see the energy system you have done so much to build and to find it so intoxicating that you cannot contemplate the need now to build a different one.”

Ashton’s point is that when leaders of fossil companies make predictions, they shape rather than reflect reality. They could, if they so chose, predict a wholesale transition to renewable energy which would shape it in a different and probably much better way.

Renewable energy entrepreneur Jeremy Leggett echoed Ashton’s point about attachment to the familiar while speaking at the RSA:

“In the technical community...most of the major decisions on the technologies and companies that are actually literally fuelling the problem are made by a relatively small number of human beings. They’re mostly men of a certain age, close to retirement, who find great difficulty in changing their belief systems. There are very few women involved in this decision making. And two-thirds of the emissions causing the problem come from just 90 companies – recent study – 90 companies!<sup>69</sup> Now it’s really simple we either

68. Ashton, J. (2015) op cit.

69. Here Jeremy Leggett is referring to this research: Heede, J. (2014) Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010. *Climate Change*, 122 (1) pp.229–241 [Online] Available at: <http://link.springer.com/article/10.1007/s10584-013-0986-y> with interactive graphics featured at: Goldenberg, S. (2013) Just 90 companies caused two-thirds of man-made global warming emissions. *The Guardian*, 20 November, [www.theguardian.com/environment/2013/nov/20/90-companies-man-made-global-warming-emissions-climate-change](http://www.theguardian.com/environment/2013/nov/20/90-companies-man-made-global-warming-emissions-climate-change)

have to persuade those companies to fundamentally change their business models, as E.ON has done or is in the process of trying to do, or we have to put them out of business. It's not that big a challenge at that level."<sup>70</sup>



George The Poet, spoke at *The Point is to Feel it; a night of creative responses to climate change* on 26 May 2015. "A paradigm shift is a change in common sense, but how do you go about rearranging common sense?"

Environmental leader Tom Burke further highlights the fragility of the constructed reality: "Three beliefs define the oil companies current comfort zone. The world needs their product. Governments are on their side. Energy technology change takes decades."<sup>71</sup>

None of these three points are given now. Reflexive realism is about acting in ways that further erode the reality of that comfort zone, for instance by using forms of energy that mean you rely less on oil, applying political pressure to make governments think twice, and speeding up the right kind of technological change by what you and your organisations invest in (including pensions).<sup>72</sup>

Grasping the significance of reflexive realism is crucial because de-carbonisation means creating a new reality and the necessary attitude is revolutionary in spirit. Speaking at the RSA, Nick Stern made this point in daunting technocratic terms: "We have to reduce emissions per unit of output in the next 35 years by a factor of seven or eight." At a later RSA public event, George The Poet framed the issue more directly: "A paradigm shift is a change in common sense, but how do you go about rearranging common sense?"<sup>73</sup>

70. RSA Replay – streamed live on 11 February 2015 op cit.

71. Burke, T. (2015) Something is happening here. *Tom Burke*, 17 August [Blog] Available at: <http://tomburke.co.uk/2015/08/17/something-is-happening-here/>

72. To further clarify the centrality of reflexive realism, it links directly to the core of the climate challenge, which is that it is a collective action problem from top (international agreements and global corporations) to bottom (individual consumption patterns and political engagement) and will require a range of collective action solutions. As indicated in Rowson, J. (2013) *A New Agenda on Climate Change*, RSA, there are three ways to respond to climate change as a collective action problem on a grand scale:

1. Individual resistance to action because of assumptions about others' actions – no-one else is acting or willing to act, so what's the point?
2. Personal commitment to action regardless of others' actions – 'I will act, whether you do or not'.
3. Reciprocal commitment to action conditional on others' actions – 'I will act, if you will act too'.

As indicated there, having courage to act is less about advocating personal heroic commitment that we hope to magically spread en masse, and more about those who are already deeply committed building opportunities and platforms for reciprocal commitment to arise and spread. The question is how to do that in a way that really makes a difference, and challenging the legitimacy of fossil fuels feels like an increasingly effective strategy to build reciprocal commitment.

73. RSA Replay – The Point is to Feel it: A Night of Creative Responses to Climate Change. *YouTube*, streamed live on 26 May 2015 [Online] Available at: [www.youtube.com/watch?v=IQO2dRbbVwc](http://www.youtube.com/watch?v=IQO2dRbbVwc). The full George the poet poem can be found from 1:00:54.



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# 1. An unassailable logic: what the consensus, the limit and the budget means for the burning

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“The bottom line of the science is that there is a limited amount of fossil fuel left that we can burn and the issue for society informed by that science is how to decarbonise the world economy and not burn beyond that limit. And we can argue exactly what that limit is but the principle is there.”

**Professor Chris Rapley<sup>74</sup>**

Clarifying the need to wind down on fossil fuels begins by recognising that the earth’s atmosphere is historically blind and politically ambivalent. While the Paris talks will be shaped by geopolitical constraints and economic objectives, the planet doesn’t ‘care’ where and when and how emissions arise, because it responds on the basis of cumulative total emissions across the globe. The logic of the scientific and political consensus on climate change falls out of that understanding.

We have a commitment to a temperature limit that is considered the upper range of acceptable risk (2 degrees Celsius above pre-industrial levels). We have a total global carbon budget that is commensurate with a likely (66 percent) chance to remain within that limit (around 800bn tonnes, of which we have already used about 530bn). We also know that most (about 85 percent) of the carbon we emit originally stems from the combustion of fossil fuels. Energy policy needs to grapple with related questions about fairness, fuel prices and energy security, but when it comes to climate change as such – a shared moral imperative – the only rational approach is to focus on keeping fossil fuel reserves in the ground.<sup>75</sup>

This argument has been around for decades but it remains slightly outside of the mainstream political debate because of our deep dependence on fossil fuels and our struggle to imagine viable alternatives. The case for why we need to face up to it squarely was brilliantly articulated

<sup>74</sup>. RSA Replay – streamed live on 11 February 2015 op cit.

<sup>75</sup>. Further details and references are include in the fuller development of the case below. The major uncertainties within climatology and climate policymaking include the impact of emissions on temperature (climate sensitivity) and the impact of temperature on ecological outcomes (temperature sensitivity). The reality of both relationships is well established, but the extent of both is variable and hard to measure. These uncertainties explain why the potential impact of emissions targets and temperature targets are framed in probabilistic terms.

by Bill McKibben in a *Rolling Stone* article called ‘Global Warming’s Terrifying New Math’<sup>76</sup> and developed in our 2013 report, *A New Agenda on Climate Change*. A key aspect of that report is that most relevant actors (people, businesses, governments) including those fully persuaded of the need to act on climate change, are in ‘stealth denial’ in the sense that they accept the problem intellectually but don’t live or advocate action in ways commensurate with their understanding. The UK government claiming to be steadfast in its climate commitments while being the only G7 country to increase its subsidies of fossil fuels is a good case in point.<sup>77</sup>

A related problem, also outlined in *A New Agenda* is that reducing energy demand only really matters to the extent that it reduces fossil fuel supply, and empirically that relationship just does not hold. The existence of rebound effects and the logic of global capitalism dictates that as long as there is a market for fossil fuel energy somewhere in the world, and no legal constraint on extraction, they will continue to be burned, and related global emissions will not fall. For the same reason, the development of renewable energy only helps directly to the extent that it supplants fossil fuels.<sup>78</sup>

Over the last two years this case has become more prominent and compelling, not least as the focus of *The Guardian*’s editorial decision to make ‘#keepitintheground’ the central plot in ‘the biggest story in the world’.<sup>79</sup> This argument is also at the heart of perhaps the most successful environmental campaign of all time. At the last count the divestment movement has led to about \$ 2.6 trillion being withdrawn from fossil fuels, and is supported by the UN.

So let’s look at it more closely, because there is an unassailable logic at the heart of the climate policy debate, it needs to be more widely known. While there are estimates, assumptions and qualifications at every stage of the argument, the case for divesting from fossil fuels and reinvesting in alternative energy flows from premises to conclusion as a form of deductive reasoning in roughly 10 parts:

1. There is a scientific consensus on anthropogenic global warming that shows a clear relationship between rising carbon dioxide emissions and atmospheric warming.<sup>80</sup>
2. There is an agreed constraint on temperature warming (2 degrees Celsius above pre-industrial levels) that is widely considered to be the upper limit of acceptable risk for maintaining the quality and viability of our habitat.<sup>81</sup>

76. McKibben, B. (2012) Global Warming’s Terrifying New Maths. *Rolling Stone*, 19 July [Online] Available at: [www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719](http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719)

77. Carrington, D. (2015) UK becomes only G7 country to increase fossil fuel subsidies. *The Guardian*, 12 November [Online] Available at: [www.theguardian.com/environment/2015/nov/12/uk-breaks-pledge-to-become-only-g7-country-increase-fossil-fuel-subsidies](http://www.theguardian.com/environment/2015/nov/12/uk-breaks-pledge-to-become-only-g7-country-increase-fossil-fuel-subsidies)

78. Rowson, J. (2013) *A New Agenda on Climate Change*. RSA [Online] Available at: [www.thersa.org/discover/publications-and-articles/reports/a-new-agenda-on-climate-change/](http://www.thersa.org/discover/publications-and-articles/reports/a-new-agenda-on-climate-change/)

79. Rusbridger, A. et al (2015) The biggest story in the world. *The Guardian*, 6 March – 19 June [Online] Available at: [www.theguardian.com/environment/series/the-biggest-story-in-the-world](http://www.theguardian.com/environment/series/the-biggest-story-in-the-world)

80. IPCC *Fifth Assessment Report (AR5)* [Online] Available at: [report www.ipcc.ch/report/ar5/index.shtml](http://report.ipcc.ch/report/ar5/index.shtml)

81. A good background to the two degree target is here: [www.carbonbrief.org/two-degrees-the-history-of-climate-changes-speed-limit](http://www.carbonbrief.org/two-degrees-the-history-of-climate-changes-speed-limit)

3. To stay within that limit, there is a commensurate total global carbon budget (approximately 800bn tonnes) we can't exceed, and in 2015, we have already used about two-thirds of it.<sup>82</sup>
4. The IPCC estimate that to have a chance of staying within that limit, global carbon dioxide emissions have to peak by roughly 2032 and fall rapidly towards zero before the end of the century.<sup>83</sup>
5. Most carbon dioxide emissions stem from fossil fuel combustion; estimates range from about 78–87 percent of the total.<sup>84</sup>
6. To stay within the remaining budget (approximately 380 tonnes) there have to be stringent constraints on fossil fuel extraction, or sufficiently developed carbon capture and storage (CCS) technology to mitigate the effects of future fossil fuel burning.<sup>85</sup>
7. However, existing research and development indicates that CCS has stunted potential primarily because it lacks efficacy in reducing net emissions (the process uses significant energy, it does not capture all carbon dioxide emissions, and there is a small residual risk of leakage). Compared to other low-carbon power sources it is costly and slow to deploy at any scale. While CCS is factored in to many climate projections, it is reasonable to discount any significant contribution will be made by CCS within the time constraints implicit in the carbon budget especially given that global CCS growth targets have consistently been grossly over optimistic and missed.<sup>86</sup>

82. There is some variation in the precise global carbon budget depending on the appetite for risk entailed by the chosen parameters (eg whether 1.5 or 2 degrees is the temperature limit and whether the odds of not exceeding it are selected as 50 percent, 66 percent or 75 percent). There is also variation even when these parameters are fixed because of lack of agreement of what should be included in the models, as is explained lucidly here: [http://e360.yale.edu/feature/what\\_is\\_the\\_carbon\\_limit\\_that\\_depends\\_who\\_you\\_ask/2825/](http://e360.yale.edu/feature/what_is_the_carbon_limit_that_depends_who_you_ask/2825/)

Here we have chosen the 800 tonne limit based on a 66 percent chance of remaining within 2 degrees, based on the analysis of the IPCC account at Carbon Brief here: [www.carbonbrief.org/carbon-briefing-making-sense-of-the-ipccs-new-carbon-budget](http://www.carbonbrief.org/carbon-briefing-making-sense-of-the-ipccs-new-carbon-budget) For a more detailed discussion of the nature and importance of the global carbon budget see Chapter three 'The Trillion Tonne limit' in Berners-Lee, M. and Duncan Clark, D. (2013) op cit.

83. There is a good discussion of the IPCC estimates here: Wilson, L. 22 years till we blow the 2°C Carbon Budget. *Shrink that Footprint*. [Online] Available at: <http://shrinkthatfootprint.com/global-carbon-budget>

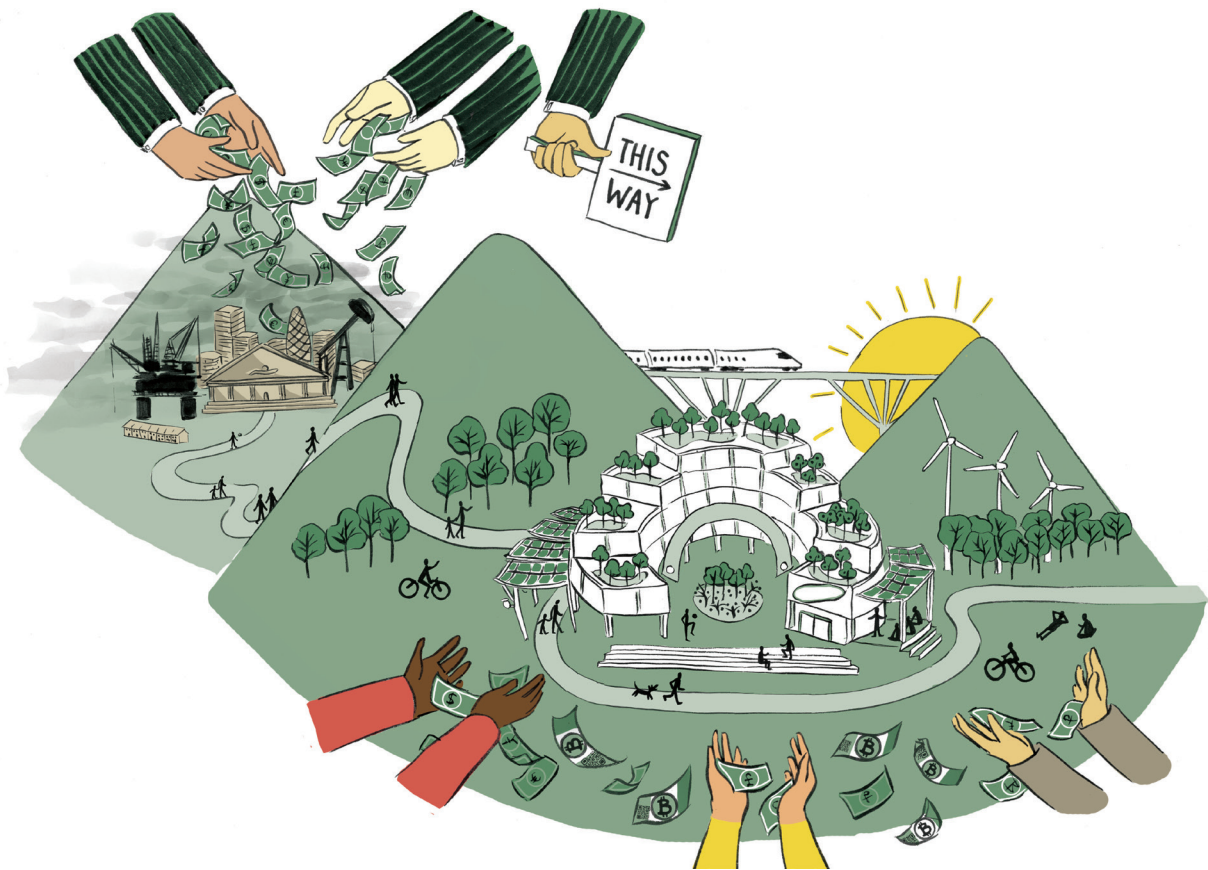
84. Le Quéré, C. et al (2012) The global carbon budget 1959–2011. *Earth System Science Data Discussions*, 5 (2) pp.1107–1157. For discussion see: What are the main sources of carbon dioxide emissions. *What's your Impact?* [Online] available at: <http://whatsyourimpact.org/greenhouse-gases/carbon-dioxide-sources>. See also Gonzales, M. and Lucky, M. (2013) Fossil Fuels Dominate Primary Energy Consumption. *Worldwatch Institute*, 24 October [Online] Available at: <http://www.worldwatch.org/fossil-fuels-dominate-primary-energy-consumption-1>

85. "There should be thousands of CCS projects in the world by now – there are thirteen... and they don't work economically", Jeremy Leggett at RSA Replay – Climate Change Question Time streamed live on 11 February 2015 op cit.

86. Cheng, I. (2015) What's gone wrong for carbon capture and storage? Energy Desk, *Greenpeace*, 24 August [Online] Available at: <http://energydesk.greenpeace.org/2015/08/24/comment-whats-gone-wrong-for-carbon-capture-and-storage/>

8. It follows that most existing fossil fuel reserves are overvalued because they cannot be used without contradicting the scientific and political consensus. The best current estimate suggests that from known reserves, to achieve the 2 degree target, we will have to leave 88 percent of available coal, 42 percent of available gas and 33 percent of available oil in the ground.<sup>87</sup>
9. Given global energy demand is likely to rise rather than fall, it also follows that ‘to keep the lights on’ (shorthand for maintaining a functioning economy and society) and energy affordable we will need a swift energy transition to decarbonise the world’s economy, which means rapidly developing alternative forms of energy infrastructure with speed and at scale to gradually replace rather than merely supplement fossil fuels.
10. Fossil fuels will remain a necessary part of the world’s energy for some time to come, but we are compelled to make that time period as short as possible. For moral and financial reasons, we therefore need to stop investing in fossil fuels and invest instead in alternative energy.

**The Seven Dimensions of Climate Change: Money.** We need to transform the energy basis of the economy, which means investors need to see that the future is in renewable energy rather than fossil fuels.



87. McGlade, C. and Ekins, P. (2015). Analysis and graphics at Carrington, D. (2015) Leave fossil fuels buried to prevent climate change, study urges. *The Guardian*, 7 January [Online] Available at: [www.theguardian.com/environment/2015/jan/07/much-worlds-fossil-fuel-reserve-must-stay-buried-prevent-climate-change-study-says](http://www.theguardian.com/environment/2015/jan/07/much-worlds-fossil-fuel-reserve-must-stay-buried-prevent-climate-change-study-says)

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## 2. The unbelievable challenge: decarbonisation needs to be fast, fair and everywhere

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“Riffle through dying corals in your bed, all the things you don’t want to know that you know – serpents in your tide, witchcraft under the floor, the lustre of hidden fox-foam sluicing in from the underworld. I am the tragic mask. I am how you defend yourself from what it is catastrophe to have to know.”

**Ruth Padel**<sup>88</sup>



Poet Ruth Padel spoke at *The Point is to Feel it; a night of creative responses to climate change* on 26 May 2015. “I am the tragic mask. I am how you defend yourself from what it is catastrophe to have to know.”

*Image credit: Adrian Pope*

The poet Ruth Padel’s reference to ‘the tragic mask’ elegantly captures why we struggle to accept the unassailable logic outlined in part one, because the scale of the decarbonisation challenge combined with our deep dependence on fossil fuels is ‘a catastrophe to have to know’. Speaking at an earlier event at the RSA, psychotherapist Ro Randall, co-founder of Carbon Conversations, further emphasised this point: “One of the most interesting things about all of our responses to climate change is that we need to defend ourselves against experiencing deeply what it means.”<sup>89</sup> The pervasiveness of ‘stealth denial’ on climate change is examined in depth in *A New Agenda*. It is pertinent here because the ‘unassailable logic’ does not seem to be cutting through fast enough. Moreover, we can observe how we defend ourselves against what the carbon budget means across the seven dimensions of climate change:

- Scientists continue to debate the exact size of the carbon budget and, unlike the 2 degree temperature limit, struggle to agree on a figure that policymakers can rally around and act upon (Science).
- The legal structure of global agreements converges around national emission target commitments, rather than total global budgets, obscuring the main drivers of the problem in energy supply and demand (Law).

88. RSA Replay, streamed live on 26 May 2015 op cit. The full Ruth Padel poem can be heard from 26:13.

89. RSA Replay – Climate Change Question Time, streamed live on 11 February 2015 op cit.



- Doubts about how quickly and reliably we can expect to transition away from fossil fuels to renewable energy are emphasised (Technology).
- The vulnerability of economies to stranded assets is barely considered in mainstream finance, and yet there is growing awareness that there might be a ‘carbon bubble’ at the heart of the economy (Money).
- The political power of the fossil fuel industry ensures subsidies for continued extraction (Democracy).
- Climate change is still viewed principally as an environmental problem with economic implications rather than an energy problem with ethical implications (Culture).
- ‘Stealth denial’ is pervasive; we act as if there is no problem (Behaviour).

*Around 81 percent of the world’s primary energy supply is currently based on fossil fuels so clearly the idea that we can ‘just stop’ is ludicrous. Instead, the climate challenge amounts to how quickly we can accelerate in a direction that is already broadly agreed, while keeping the lights on (energy security) and living costs relatively low*

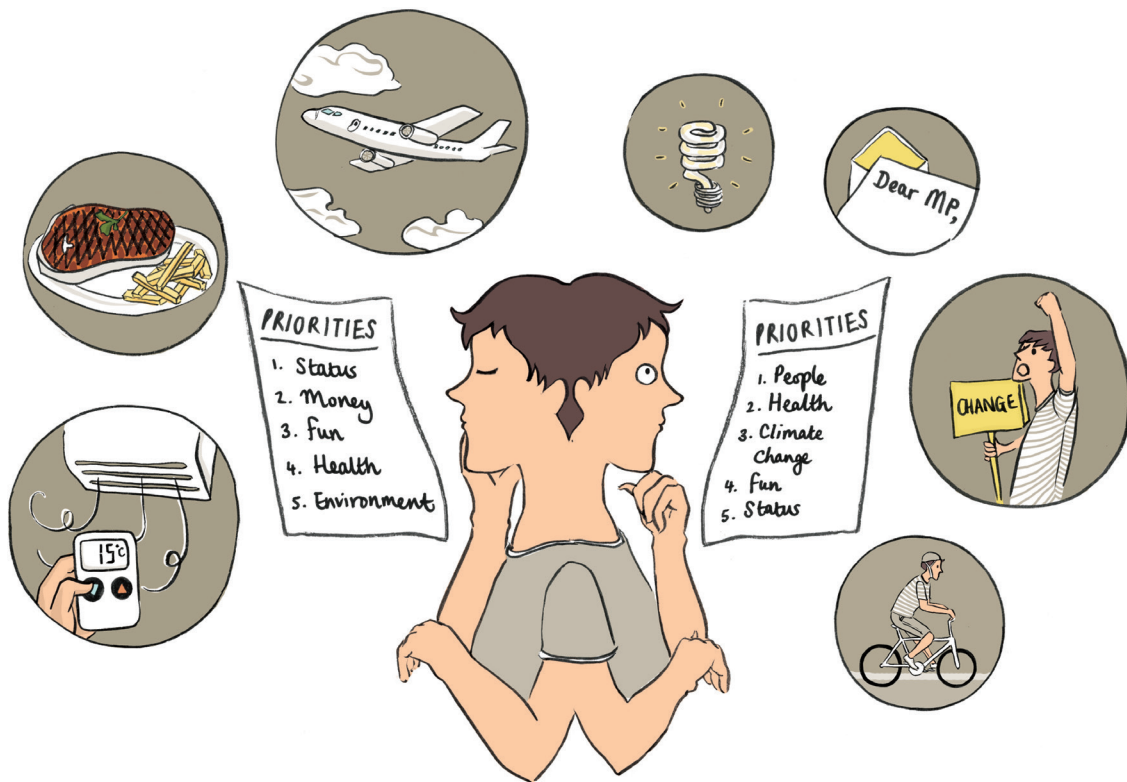
These forms of disconnect are understandable, because it is hard to really acknowledge what we have to do without having some idea of how we can possibly do it. Around 81 percent of the world’s primary energy supply is currently based on fossil fuels so clearly the idea that we can ‘just stop’ is ludicrous. Instead, the climate challenge amounts to how quickly we can accelerate in a direction that is already broadly agreed, while keeping the lights on (energy security) and living costs relatively low – the so called ‘energy trilemma’.<sup>90</sup>

We know that an adequate response to climate change will probably require a swift and large scale transition away from fossil fuel to renewable energy with commensurate energy storage and transportation. There will also have to be widespread improvements in land use, energy efficiency and reductions in demand for energy. However, the relatively simple vision of this change obscures the political challenge of making it happen across the world at different speeds in a way that is deemed fair and acceptable by different parts of the global population.

A related issue is that there are various forms of dissonance at play, not least failing to frame the problem as one of reducing or eliminating fossil fuel subsidies and failing to confront the political difficulties of doing that. The objective to rapidly move away from fossil fuels also raises questions of global justice because while energy demand is falling in Europe and the US, worldwide it is set to grow by one-third to 2040, driven primarily by developing economies in India, China, Africa, the Middle East and Southeast Asia. By 2040, non-fossil fuel energy is currently projected to be only 25 percent of the global energy mix.<sup>91</sup> A related problem is that at present there is also no compelling political mechanism

90. International Energy Agency (2015) op cit. For a discussion of the energy trilemma see: <https://www.thersa.org/discover/publications-and-articles/rsa-blogs/2013/03/can-we-resolve-our-energy-trilemma/>

91. In this context, putting oil, gas and coal together as if they were equally bad is rhetorically expedient but intellectually lazy. Coal is by far the most abundant fossil fuel and also by far the most carboniferous, while gas is significantly less abundant and much less harmful. At a global level, while ‘keep it in the ground’ remains a valid injunction, it may not be feasible to keep the coal in the ground without increasing the supply of gas in the short term.



***The Seven Dimensions of Climate Change: Behaviour.*** It can be confusing for an individual to know how to act on climate change in a way that makes a meaningful difference.

for adequate capital transfer from the developed world to the developing world to help them skip fossil fuels and go straight to renewable energy.<sup>92</sup>

The goal of keeping fossil fuels in the ground also begins to feel unreal when you make energy projections in terms of physics and joules. The following statement is particularly challenging:

“If you look at the advanced economies... then you can see the kinds of amounts of energy that are required to support a particular form of life. So, here in Europe, for example, which is relatively energy efficient, you need about 150 gigajoules (GJ) per year per person, to support this quality of life... If you actually look at the energy or the work that can be done by a physical labourer, that amounts to about a GJ per year, so what we’re actually talking about is everybody in Europe on average has 150 personal labourers, at low cost, but personal labourers working for them. If you go into a different kind of economy such as a North American economy, you’re talking about 300GJ per person. We estimate that over time, with attention to efficient end use and efficient infrastructures, like compact cities, perhaps around about 100GJ per year is sufficient to give people a decent quality of life. Now, if you take 100GJ per year and look towards the end of the century at 10 billion people in the world, then you multiply those numbers and you get, round about, a thousand exajoules (EJ) per year. So, again, with high efficiency, 1,000EJ per year, and that’s about double what you have today. So, if you’re going to have a world in which

92. This issue was highlighted by Snow on Blood: The UN Climate Talks in Paris – what really matters and what next? 10:10, 10 November 2015 [Online] Available at: [www.youtube.com/watch?v=VpJz1IDbnpM](http://www.youtube.com/watch?v=VpJz1IDbnpM)

you have this spreading of comfort and prosperity to more people, then you're talking about a doubling of the energy system required to provide the houses, the materials, the water systems, the sewage systems, the transport systems that are required for that.”

**Jeremy Bentham**<sup>93</sup>

It does not follow from this account, however, that we will indefinitely rely on fossil fuel. For instance, a famous paper by Jacobson and Delucchi argued it was technically, geographically and economically possible to meet 100 percent of the world's energy needs with renewable energy<sup>94</sup> and the IPCC analysis suggests there is significantly more renewable energy potential in the world than there is energy demand, even factoring in potential population growth. Britain's Carbon Tracker has also produced a blueprint<sup>95</sup> of the transition towards renewables, and the rapidly falling price of solar makes the installation of massive solar farms cost-effective. As indicated, there are also reports by commissions and a peer reviewed policy evaluation tool that make it clear: from an engineering perspective, we don't need fossil fuels.

However, from a social, economic and political perspective, the situation is not so clear. The challenge is that beyond imperfect market mechanisms, there is nothing to ensure that renewables growth will lead to a lack of interest in fossil fuel and that carbon emissions will therefore fall. On the one hand Solar is a technology which means costs fall over time and will continue falling while fossil fuels are, by definition, extractive, which means costs tend to rise over time.<sup>96</sup> Even so, our appetite for energy is insatiable and new sources have never yet replaced old ones, even if they may have dented their growth.<sup>97</sup> From considering all these factors, it becomes clear that what is needed is not just rapidly phasing out of fossil fuels, but an equally rapid creation of an alternative energy system. If the unassailable logic suggests fossil fuels have to stay in the ground, the unbelievable challenge suggests taking the opportunity present in advances in renewable technology. A campaign has built up around this understanding, and it's called divest-invest.

93. Evans, S. (2015) The Carbon Brief Interview: Jeremy Bentham. *Carbon Brief*, 14 October [Online] Available at: [www.carbonbrief.org/the-carbon-brief-interview-jeremy-bentham](http://www.carbonbrief.org/the-carbon-brief-interview-jeremy-bentham)

94. Jacobson, M. and Delucchi, M. (2010) Providing all global energy with wind, water and solar power, Part 1: Technologies, energy resources, quantities and areas of infrastructure, and materials. *Energy Policy*, 39 pp.1154–1169. [Online] Available at: <https://web.stanford.edu/group/efmh/jacobson/Articles/I/JDEnPolicyPt1.pdf>

95. Fulton, M., Spedding, P., Schuwerk, R. and Sussams, L. (2015) *The Fossil Fuel Transition Blueprint*. Carbon Tracker Initiative and Energy Transition Advisors. [Online] Available at: [www.carbontracker.org/wp-content/uploads/2015/04/Blueprint-Carbon-Tracker-230415.pdf](http://www.carbontracker.org/wp-content/uploads/2015/04/Blueprint-Carbon-Tracker-230415.pdf)

96. Bernstein (2015) *Asia strategy: Shouldn't we all be dead by now?* Quoted in *ibid*, p.20.

97. Thanks to Mike Berners-Lee for this point.

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# 3. The signal that sets the agenda: moving money from fossil fuels to alternative energy

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“Divest-invest has huge symbolic power in a hugely complex arena. It is an easily understood message. It tells the fossil fuel companies that it is not ok to have business plans that lead us towards a 3 or 4 degree world. And it tells our political leaders that we must have regulations and price incentives that keep fossil fuels in the ground.”

**Sarah Butler-Sloss**<sup>98</sup>

Divestment is an uneasy word. It doesn't rest easy on the eye or the ear. It smuggles in the misleading image of diving and seems to promote opposition to investment, which instinctively feels like a mistake. The term functions as a composite term for the double barreled dis-investment, which sounds even worse. And we hear the word exclusively in the context of issues that we would prefer not to know about, like slavery in the UK, genocide in Darfur, apartheid in South Africa, and now, of course, the incredible reality of climate change.

But just as 'no' can be a beautiful word, divestment is often a very positive thing. Sometimes your efforts to do something helpful are hindered or repelled until you've stopped doing something harmful. And silently, invisibly, systemically, the misuse of money causes a great deal of harm.

## The paradox of salience

Divestment strategies are premised on a curious paradox relating to money's salience; a feature of life that is at once vivid and obscure. Money is salient to everybody in their daily lives and decisions and therefore a powerful motivator of individual *agency*, but its role in mediating the social and political *structures* that shape our lives is relatively obscure. Notes and coins in our pockets and bags have meaning in a way billions

<sup>98</sup>. Europeans for Divest Invest (2015) Managing Value at Risk for Portfolios from Climate Change. What are the Financial Implications of COP21? *Divest-Invest* [Online] Available at: <http://divestinvest.org/europe/home/events/managing-value-at-risk-for-portfolios-from-climate-change-what-are-the-financial-implications-of-cop21/>

of dollars belonging to thousands of people, invested in remote infrastructures and technologies never will.

Finance has been described as the art of passing money from hand to hand until it finally disappears. Funny, perhaps, but it's no joke. Money becomes increasingly protean as it grows, which protects us from our complicity in problems we would rather not know about. At their heart, divestment movements are therefore movements for raising political consciousness, and they seek not just to influence diverse forms of power but to generate them. Divestment seeks to channel values through the vehicle of value, directing attention to the meaning and purpose of something we all have in common: money.

In their lucid and intricate overview of the global climate challenge *The Burning Question*, Duncan Clark and Mike Berners-Lee offer up a striking fact: "Almost anyone with a financial stake in global society is a part-owner of a fossil fuel reserve." Some have a bigger financial stake in global society than others, but we all have some stake; most professionals in the developed world have money that is working in our name to keep the fossil fuel show on the road. The case for divestment falls out of a recognition of this financial fact, combined with the prevailing scientific assessment of climate risk.

The divestment campaign is perhaps the most successful environmental campaign of all time and that's partly because it's not really an environmental movement, but rather a curious climate hybrid, with fund managers speaking the arcana of finance and student and faith leaders speaking the language of morality. Research published in September 2015 suggests \$2.6 trillion in assets have already been committed as divestments in fossil fuel stocks, with prominent support from the UN, The Rockefeller Brothers Fund and major universities including Stanford and California in the US.

The point of campaigning for charities, churches, universities, foundations, private and public sector organisations and individuals to significantly reduce or withdraw existing investments (including pensions) in coal, oil or gas companies is not to put fossil fuel companies out of business in the short term, but to draw attention to the lack of viability of their business model and undermine their social licence to operate and political power in the short term, so that they disappear or transform their energy portfolios in the medium term rather than the long-term. Divest-invest is fundamentally about speeding things up.

As a strategy, divest-invest is grounded in a deep appreciation for the role of timing and reflexivity in our collective climate response; the need to rapidly get to the root cause of the problem and thereby shape reality by changing perceptions of what is 'realistic'.

So far, so compelling. However, many other organisations have considered the case for divestment carefully and still decided *against* divesting, including the Wellcome Trust in the UK and Microsoft, with Bill Gates for instance saying that divestment was "a false solution", and Harvard University's President Faust said divesting from fossil fuels was "neither warranted nor wise" and made his reasoning public. Clearly the leaders of such institutions are neither ignorant nor irrational, so while it is possible that there might yet be some motivated reasoning in such cases, people of good will who want to deal with climate change have to face up to the case *against* divestment at its strongest.

*As a strategy, divest-invest is grounded in a deep appreciation for the role of timing and reflexivity in our collective climate response; the need to rapidly get to the root cause of the problem and thereby shape reality by changing perceptions of what is 'realistic'*



## **Futile, hypocritical, harmful and obtuse?**

*The Guardian's* Damian Carrington recently provided a valuable public service by highlighting 10 myths about fossil fuel divestment and then explaining why they were unpersuasive. The most compelling objections appear to cluster further into four main arguments against divestment that are all compelling at first blush: It's futile, hypocritical, harmful and obtuse.<sup>99</sup>

- 1. It's futile?** Fossil fuel companies have deep pockets and if one set of people or institutions sell their stock, others will buy them. Worse, those that buy will probably be less concerned with climate impacts. So nothing changes, and you lose your chance for more constructive engagement, for instance by trying to prevent particular infrastructure projects like Galilee basin coal, the Arctic, the keystone pipeline and tar sands more generally, some of which may be mission critical for climate mitigation.
- 2. It's hypocritical?** We are using the privilege of a fossil fuel lifestyle to argue for their eradication. Most who campaign for divestment live and work and consume and create with homes, offices, vehicles and tools derived from coal, gas and oil. Most of us are not willing to give up the lifestyles that fossil fuels provide us with, and visions of alternative energy provision that would maintain our current lifestyles are often far from persuasive.
- 3. It's harmful?** Investors make subtle judgments about what is of value and where money should go, and there is much more to such judgments than questionable inferences based on climate modelling. If money is lost in the process of divestment people who rely on that money will suffer.
- 4. It's obtuse?** The International Energy Association (IEA) estimate that about three-quarters of all fossil fuel stock is held by state owned companies. Even if you can answer the first three objections and succeed against the odds, you will leave the bulk of the problem untouched.

These four main arguments against divestment typically come from the right of the political spectrum, but not always. Many have a broader dislike for what can initially appear to be a simplistic, combative, confrontational approach. Professor Mike Hulme's recent critique of divestment is particularly noteworthy because his grasp of the human and societal response to climate change is generally world class. He argues: "Divestment is the latest stage in the symbolic politics of climate change, which too often has been wooed by apocalyptic imaginary and false deadlines and lost sight of the politics of pragmatism by which change in the world occurs."<sup>100</sup>

99. Carrington, D. (2015) 10 myths about fossil fuel divestment put to the sword. *The Guardian*, 9 March [Online] Available at: <http://www.theguardian.com/environment/2015/mar/09/10-myths-about-fossil-fuel-divestment-put-to-the-sword>. There are two further auxiliary points – that divestment is a kind of childish grandstanding, and that divestment is mostly about preserving the financial power of the powerful, rather than any broader pattern of transformation. Both points are covered in what follows, albeit indirectly.

100. Hulme, M. (2015) Why fossil fuel divestment is a misguided tactic. *The Guardian*, 17 April [Online] Available at: <http://www.theguardian.com/environment/2015/apr/17/why-fossil-fuel-divestment-is-a-misguided-tactic>

*What divest-invest seeks to take from fossil fuel companies is not fundamentally money, but legitimacy, and therefore time*

Beyond the four major arguments above, Hulme's broader critique of divestment as 'symbolic' is right in a variety of ways: He is *challengingly right* in noting that climate change is something that influences things we care about, rather than being the thing that matters in itself. Climate zealotry is problematic when it stops you thinking more broadly about human welfare. He is *obviously right* that divestment campaigns alone will not adequately deal with the issue/problem/phenomena. He is *helpfully right* that there is more to dealing with climate change than keeping fossil fuels in the ground – many other things can and must be done, and it's noteworthy that by his estimates around 50 percent of the climate problem is not caused by burning fossil fuel as such. He's *astutely right* to imply that speaking of 'fossil fuels' is often intellectually lazy and unhelpful because coal, oil and gas are very different in their effects. And he's even *provocatively right* that divestment is a kind of gesture politics; it is often a feel good campaign for those who don't know what else to do about the issue. He's *painfully right* that divestment doesn't feel compelling for much of the developing world where access to energy trumps climate concern in most cases. And he's *definitely right* that the challenge is to explain where the money coming out of fossil fuels is going to go, and why.

However none of these points really undermine the validity and importance of divestment campaigns when they are viewed in the context of the unassailable logic and the seven dimensions of climate change. In this particular case, Professor Hulme may have uncharacteristically over-simplified how and where divestment features as a response to climate change. The value of the divestment movement does not just lie in what they are explicitly trying to do, but how the existence of this passionate and growing movement impacts on the myriad actors in the global system. The four main arguments against divestment look much weaker in this broader context.

What divest-invest seeks to take from fossil fuel companies is not fundamentally money, but legitimacy, and therefore time. Money sends the signal we need to hasten the decline of one thing (fossil fuels) and the development of another (alternative energy) because that signal drives political and technological developments, including the reduction and removal of fossil fuel subsidies that slow down the transition. To make sense of this kind of argument for the systemic effects of divestment, we need a better map.

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## 4. The map that builds the momentum: the seven dimensions of climate change

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“We can’t impose our will on a system. We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone.”

**Donella H. Meadows**

*Since climate change mostly lies outside of direct experience, your implicit map of the challenge has a strong bearing on what you think should be done about it*

The heart of divestment is the attempt to shift cultural attitudes to climate change so that facing up to it looks less like a confounding technocratic puzzle and more like a moral imperative. Of course it is both of these things, but to grasp that it helps to see the climate problem from a broader range of perspectives.

Since climate change mostly lies outside of direct experience, your implicit map of the challenge has a strong bearing on what you think should be done about it. If you see climate change as one of many environmental problems, with emissions a regrettable externality that needs to be properly costed and reduced through improved technologies and behaviours, the idea that we should divest from fossil fuels is not self-evident, and policies relating to carbon pricing and taxing appear more plausible.

*Climate Question Time, RSA  
11 February 2015, Speakers Left  
to right: Ro Randall (behaviour)  
Nick Stern (money) Jenny Jones  
(democracy) Chris Rapley  
(science) Jonathan Rowson  
(chair), Solitaire Townsend  
(culture), Jake White (law),  
Jeremy Leggett (technology).*



However, when climate change is viewed as an issue that interpenetrates science, technology, law, money, democracy, culture and behaviour, and when the heart of the challenge becomes to reduce stealth denial in the global population and keep fossil fuels in the ground, divest-invest makes a great deal of sense, and feels like something worth getting behind as a necessary (but not sufficient) response to the challenge.

### **The seven dimensions of climate change**

One way to manage the feeling that climate change is about ‘everything’ is to think of it as a seven dimensional issue traversing science, law, technology, money, democracy, culture and behaviour. This framing is inspired by Einstein’s concern for ideas to be “as simple as possible, but not simpler” and the cognitive psychologist George Miller’s notion that ‘the magic number seven’ is about as much as most of us can contain in our working memories.<sup>101</sup>

There are always a range of voices, interests and agendas in play in discussions around climate change, but most of the phenomena can be captured through the following relationships: **Science** provides the data that sets the agenda, **Law** tries to respond with constraints at scale, **Technology** tells us what’s possible, **Money** asks what is profitable, **Democracy** mobilises opinion and argues about what is legitimate, **Culture** tries to keep us interested and reflects on what is acceptable, and **Behaviour** wants to know what to do.

This framework helps to differentiate climate change from broader environmental concerns, but also to clarify what it really means – for people, business and governments – to ‘act’ on climate change with conviction. Divestment is an excellent case in point. Superficially it’s just about money, but it’s a response to science, seeks to influence law, is grounded in judgments about technology, is a way of keeping climate change democratically and culturally salient and above all it helps by giving people something promising to do.

Here is where we begin to see the limitations of the main critiques of divestment, because divestment is typically challenged just in terms of the first three dimensions: science, law and money, but each of these critiques fall short when you factor in the broader knock-on effects. It’s an inadequate response to the science; maybe, but at a cultural and behavioural level it’s a tangible and emotionally commensurate response that was otherwise lacking, and which may have collateral benefits. It’s obtuse in terms of changing the law directly, but by undermining the social licence to operate, scope to interpret fiduciary duty differently emerges, with financial risk and social risk increasingly intertwined.<sup>102</sup> And it may look negative and even irresponsible unless you make a positive case for where exactly the money will be re-directed towards, but that case will emerge from democratic deliberation about technology, which will only arise when cultural and behavioural inertia starts to shift.

101. Rowson, J. and Corner, A. (2014) *The Seven Dimensions of Climate Change: introducing a new way to think, talk and act*. RSA [Online] Available at: [www.thersa.org/discover/publications-and-articles/reports/the-seven-dimensions-of-climate-change-introducing-a-new-way-to-think-talkand-act/](http://www.thersa.org/discover/publications-and-articles/reports/the-seven-dimensions-of-climate-change-introducing-a-new-way-to-think-talkand-act/)

102. See forthcoming (at the time of writing) publication of a legal opinion prepared by Christopher McCall QC published by Climate Change Collaboration on 25 November 2015.

**Divestment is not futile, because it serves to remove the Social licence to operate.** (Money meets culture meets behaviour.)

The University of Oxford's Stranded Assets report in 2013 highlights three strategic goals behind divestment in fossil fuels: 1) Reduce demand for shares in fossil fuels; 2) Reduce availability of debt for fossil fuel investment; 3) Redirect investment into renewable technologies and outputs. If you read those words carefully: 'demand', 'availability' and 'investment' – they are about desire, provision and planning, not profit as such – you are not so much taking money away, as trying to undermine the social licence to operate.

“The outcome of the *stigmatisation* process, which the fossil fuel divestment campaign has now triggered, poses the most far-reaching threat to fossil fuel companies and the vast energy value chain. Any direct impacts pale in comparison.”<sup>103</sup>

When a major public institution divests it sends a signal: not only is anthropogenic climate change real, but just as important, the extraction of fossil fuels is the main part of the problem. This is why it's not futile. It's not about money as such, it's about changing social proof – the cultural and behavioural norms that create the context for everyone's decisions about what to do with money, and the attendant predictive value of money in signaling market trends. In this respect, as the divestment movement grows, it indirectly signals that the drop in share value of fossil fuel stocks is not just cyclical, but structural.<sup>104</sup>

Moreover, divestment is not futile because it has enormous collateral benefits in terms of rebalancing power in the world:

“The fossil fuel industry is one of the wealthiest industries to ever exist, and is a most formidable foe. The divestment movement, however, knows a secret...social movements understand that elite power ultimately rests on popular consent. Even the most powerful institutions in the world are ultimately reliant on the collective consent of those subject to the powerful. When consent is withdrawn, the mighty can fall. The revolutionary and constitutive power of people acting in concert is kept hidden ('hence, secret') by a variety of forces including the mass media's focus on political and economic elites as the true masters of the universe. In other words, while the political, economic, cultural commonsense of our time reinforces the idea of a disempowered, hapless citizen subject to structured laws, and policies of captured corporate-oil states... everyday people ultimately hold the reins.”<sup>105</sup>

103. Ansar, A., Caldecott, B. and Tilbury, J. (2013) *Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets?* Stranded Assets Programme, Smith School of Enterprise and the Environment, University of Oxford.

104. I am grateful to Mark Campanale at Carbon Tracker for emphasising the importance of this distinction.

105. Rowe, J., Dempsey, J. and Gibbs, P. 'The Power of Fossil Fuel Divestment (and its Secret)'. School of Environmental Studies, University of Victoria. Accepted for publication in William Carroll and Kanchan Sarker, eds. *Organizing Dissent: Contemporary Social Movements in Theory and Practice* (2016).



*If you think about the power in the world today, pension funds and mutual funds have more power than just about any entities and yet no one... can name more than one or two of those*

Jeremy Heimans

**The Seven Dimensions of Climate Change: Law.** The possibility of a legal constraint on the extraction of fossil fuels may indicate there is 'a carbon bubble' in the economy, because we are currently valuing the global economy on the assumption that existing fossil fuel reserves can be extracted.

**Divestment is not obtuse, because we need new power to break the inertia of old power.** (Money meets culture meets democracy.)

The expression: 'follow the money' is usually said with a grimace and knowing eyebrow, but it's an injunction laced with mostly bitter experience. For the most part, the money that shapes the world is not ostentatious. Money is mostly stored in digital form and moves rapidly between stocks, bonds and funds all managed by technical gatekeepers at an inhuman scale. There is no malign puppet master deliberately leading us astray, but nonetheless the obscure arcana of finance precludes democratic experience of its enormous influence.

Even if you are intuitively swayed by arguments, the ideas and connections might seem rather remote and abstract. Is it ever possible to *feel* how the movement and concentration of money shapes the decisions that influence our lives? When it comes to climate change, we have to try. While the problem and the solution are by no means *just* a matter of money, grasping money's fundamental role is a prerequisite for what Buddhists call 'right view'. Without some feeling for how global finance shapes climate change you will remain deluded, misdiagnose the problem, and 'right action' is unlikely to follow.

Divestment has shown itself to be a powerful tool for social justice in general but for climate change it has added potency because it connects things that are not otherwise connected in the public mind: finance, energy and climate. As founder of Avaaz, Jeremy Heimans put it while speaking at the RSA: "If you think about the power in the world today, pension funds and mutual funds have more power than just about any entities and yet no one... can name more than one or two of those."



Tony Manwaring, chief executive of Tomorrow's Company echoes this sentiment: "(Pensions) are the point at which we connect to the financial system – which is complicated and alien and appears not to meet our needs. Yet they are an odd black hole of economic democracy."

Pensions? Hang on, I thought we were talking about climate change? That's the kind of response the divestment movement seeks, because we are. Climate divestment is precisely about shedding light on the 'odd black hole of economic democracy'.

So the claim that divestment is obtuse because most fossil fuel stocks are held by governments rather than private companies doesn't add up. Through the process of targeting private companies the political consciousness generated in the public at large makes it much harder for governments to justify the continued use of state-owned fossil fuel reserves. It should also help give them a political mandate for reducing their subsidies of the fossil fuel industry, which stand at around \$80bn US dollars a year from the G20 countries, more than twice what the industry itself spends on investment.<sup>106</sup>

"We all might rely on fossil fuels for the reproduction of our daily lives, but the vast majority of us do not lobby our governments to slow climate action (Dempsey and Rowe 2015). Enabling the distinction between an 'us' who can withdraw our consent from 'them' has been a key innovation of the movement."<sup>107</sup>

**Divestment is not harmful, because on climate change harm is a function of timing, and it serves to collectively bring the future into the present.**  
(Culture meets democracy meets technology.)

A recurring question in economics is 'how long is the long-term?', and the function of climate divestment is to make the significance of the long-term felt in the present. Who else will do this? How else will we come to know that timing matters? Neither governments nor most businesses seem to have the will because they are mostly trapped by perceptions of current need.

Let's be clear about this. We *need* fossil fuels in the short term, but we *need* not to need them in the medium and long-term – even more. And the shorter the short-term, the better. With climate change, hazard is a function of timing, and divestment is a way of speeding up the reduction of prospective harm. There is also a behavioural dimension here that relates to timing, highlighted by Nick Stern:

"We have to realise that we're in a hurry because if we lock in our city structures and our energy systems over the next 20 years it will be virtually impossible to back out and get any chance of 2 degrees. In that context the power of the individual example is enormously important. Who's done that? Does it work? Do you know anybody who does that and it works?"<sup>108</sup>

106. Bast, E., Makhijani, S., Pickard, S. and Whitley, S. (2014) G20 governments propping up fossil fuel exploration. ODI, November [Online] Available at: [www.odi.org/g20-fossil-fuel-subsidies](http://www.odi.org/g20-fossil-fuel-subsidies)

107. Dempsey, J. and Rowe, J. (2015) Is Petro-Divestment Too Divisive? *The Tyee*, 2 February [Online] Available at: [www.thetyee.ca/Opinion/2015/02/02/Divisive-Petro-Divestment/](http://www.thetyee.ca/Opinion/2015/02/02/Divisive-Petro-Divestment/)

108. Ibid.

‘We’ is not singular here, and it is much easier to divest in fossil fuels when you’re already developed, but we can legitimately hope that the developing world will build industrial strategies primarily on renewable energy, ie ‘leapfrog’ over the carbon intensive phase of industrialisation. The extent to which they do so will depend on their own judgments on climate hazard, and whether the developed world incentivises – ie *pays* – them to take long-term considerations into the present. This remains a potential barrier to a binding agreement in Paris.

The claim that divestment may be harmful is therefore misconceived. It is possible that too abrupt a shift in the provision of energy could cause problems, but it is almost certain that too slow a shift will cause even greater problems. When it comes to prospectuses of harm, on climate change the burden of proof should always be on those seeking to slow down the requisite transition.

**Divestment is not hypocritical, because we do not ‘choose’ how we spend in the same way we choose where to invest. (Behaviour meets democracy meets technology meets money.)**

We are caught up in a market society driven by consumption and cannot reasonably be expected to suddenly behave in ways that are radically at odds with our families, neighbours, colleagues and peers. For reasons outlined in *A New Agenda on Climate Change*, personal reductions in carbon footprints may set a good example and ease our conscience, but it’s very likely that the energy not used by you will be picked up with interest elsewhere in the global system. The place of behaviour change in climate change is therefore not principally in changing lightbulbs and reducing domestic energy consumption, but rather in acting in ways that more accurately reflect the global and systemic nature of the challenge and our place in it.

The charge of hypocrisy is therefore misplaced. The divestment advocate does not say: “the energy that fuels this way of life is bad and must change immediately”. Instead they say: “this way of life is unsustainable, and I want to minimise my complicity in perpetuating it in the medium term”. There is no direct contradiction.

## Conclusion: Back to the future

“Please keep this simple equation in mind: Quality of investment today, equals quality of the global energy system tomorrow, equals quality of life forever.”

**Christiana Figueres**<sup>109</sup>

As argued above, divestment is poorly understood when viewed as a ‘solution’ to the challenge of climate change. The point is not so much to solve the problem as remove the main obstacle to solutions emerging that are commensurate with the challenge.

To make this point a little more vivid, as many who have been present in the delivery suite of a hospital will know, there is a moment in the final stages of labour when it appears like everything possible is being done to deliver the baby, to the extent that it seems unfair and infeasible that the baby has not arrived yet. The injunctions to “Breathe!” and “Push!” and “Almost there!” seem incongruous to the mother in waiting, who is often tanked up on gas and feels like she is doing absolutely everything she can already. This moment, when the request to do more seems both indecent, unreasonable, and absolutely necessary, is the moment we will have reached with climate change after Paris COP21.

Those who are steadfastly ignoring the unassailable logic, or merely paying it lip service are those who are most likely to call divestment ‘gesture politics’. For those who, instead, grasp both the depth and urgency of the issue and the temptation to look away, what better than a good *gesture* to get peoples’ attention? Gandhi’s fasting in British India was a gesture against colonialism. Rosa Parks refusing to vacate her seat was a gesture against racism in the US. When you look at divestment through the lens of climate change’s seven dimensions, it looks like exactly the right kind of gesture and a hugely productive one.

At a cultural level divestment stigmatises the continued investment in fossil fuels, attempting to remove their social licence to operate. At a technological and financial level it signals to financiers that we are at the beginning of the end of the fossil fuel era, encouraging them to redirect their money towards new forms of research and infrastructure before it becomes obvious to everybody that this is what needs to be done. At a democratic level, divestment challenges the political power of the fossil fuel industry, particularly as it manifests in subsidies; and helps to solve a collective action problem by providing a form of collective action that is tangible, intuitive, tractable and above all meaningful. At a behavioural level, divestment wakes people up to their unwitting financial complicity in the problem, and gives them a clear goal and sense of being part of a mission much bigger than themselves.

And all of these factors influence the regulatory ambience or ‘surround sound’ in which laws are made, potentially shaping the hard negotiations

109. Europeans for Divest Invest (2015) op cit.



Poet Grace Nichols spoke at *The Point is to Feel it; a night of creative responses to climate change* on 26 May 2015. “I stand and gaze into the trade winds – discovering that the sun is the only eldorado.”

at the Paris COP21 and other legal decisions, including changing perceptions towards fiduciary duty.

The story of civilization is an energy story and 18th century coal is what made 21st century wind and solar power possible.<sup>110</sup> To say that the climate problem is principally a fossil fuel problem does not have to be about creating enemies to rally against, and it may be counter-productive to demonise the product as such. Getting the attitude right matters because you need to persuade people who feel no instinctive enmity towards fossil fuel companies that their time has come and gone. That process is already underway. As Stephen Heintz, President of the Rockefeller’s Brothers Fund says of perhaps the biggest fossil fuel tycoon of all time, John D Rockefeller:

“We are quite convinced that if he were alive today, as an astute businessman looking out to the future, he would be moving out of fossil fuels and investing in clean, renewable energy.”<sup>111</sup>

To paraphrase George The Poet, fossil fuels used to be common sense, but they are not any more. As Lord Adair Turner recently put it:

“I don’t think one should be in any way ashamed if one is part of an institution that previously made money out of fossil fuels....Isn’t it a bit ironic that the Norwegian Sovereign Wealth Fund is leading disinvestment having made all its wealth out of oil? ... The answer is no, it isn’t, because the whole of humanity is going to use the benefits of fossil fuels to move beyond fossil fuels.”<sup>112</sup>

Finally, while financiers are motivated by reducing financial risk, divest-invest does not feel like a process designed to ‘keep the rich rich’. On the contrary, what gives the divestment movement and divest-invest campaign such vitality is that they are politically charged, questioning not only the fruits of the status quo but also the roots:

“The existential threat that climate change poses has provided the fossil fuel divestment movement with an unsettling boldness. The confidence with which activists have swaggered into the elite arena of investment is worrying for stakeholders with a material and cultural attachment to the status quo of liberal capitalism. Divestment refuses the neutrality of institutional investment, seeking to insert moral and ecological considerations into the calculus. It is a slippery slope from criticising the morality of fossil fuel investments, to challenging the fetishes of impartiality and maximum return that protect investments in general from moral scrutiny and democratic intervention. Divestment prefigures a deeper withdrawal of consent from capitalist relations.”<sup>113</sup>

110. Perhaps the two best sources on the constitutive role of energy in human culture are Niele, F. (2005) *Energy: Engine of Evolution*. Elsevier Science Ltd and White, L. (1943) *Energy and the Evolution of Culture*. *American Anthropologist*, 45 (3) Part 1 [Online] Available at: <http://deepblue.lib.umich.edu/bitstream/handle/2027.42/99636/aa.1943.45.3.02a00010.pdf?sequence=1>

111. Goldenberg, S. (2014) Heirs to Rockefeller oil fortune divest from fossil fuels over climate change. *The Guardian*, 22 September [Online] Available at: [www.theguardian.com/environment/2014/sep/22/rockefeller-heirs-divest-fossil-fuels-climate-change](http://www.theguardian.com/environment/2014/sep/22/rockefeller-heirs-divest-fossil-fuels-climate-change)

112. Europeans for Divest Invest (2015) op cit, cit:00.

113. Rowe, J., Dempsey, J. and Gibbs, P. in William Carroll and Kanchan Sarker eds. (2016) op cit.



The case set out here is that divestment is a necessary tool to bring us back from the brink on climate change, and that reinvestment in the right technologies can make an alternative future possible. But that need not be where the story ends. By uniting the adaptive human aspects of climate change – behaviour, culture and democracy – with the relatively technical features of technology, law and science, the nature of money as such begins to look different; not just a store of value or a means of exchange, but more like a collective act of the imagination.<sup>114</sup>

When civil society mobilises, as it has, to delegitimise some parts of the economy and prioritise others through the reallocation of capital, it suggests that financial power is contingent on societal consent. The divest-invest movement shows that money talks, indeed, but it also shows that it is not only those with money who determine what it should say.

114. Analysis. *What is Money?* 2012 (Radio Programme) BBC Radio 4, 26 March, presented by Frances Stonor Saunders [Online] Available at: <http://www.bbc.co.uk/programmes/b01d1lzn>

# Appendices

1. A perspective on the public understanding of divestment.
2. The Seven Dimensions of Climate Change project outputs.
3. Practical advice and information on Divest Invest.

## Appendix 1: Divestment and the Public: invited contribution by Climate Outreach



### Divestment and the public

It is easy to see why the fossil fuel ‘divestment’<sup>115</sup> campaign has grown so quickly. Hastening the demise of the fossil fuel industry by removing its financial life-support machine has an undeniable and attractive logic for campaigners. This year saw the first ‘Global Divestment Day’<sup>116</sup> celebrating the movement’s successful move into the mainstream. However – as divestment advocates are the first to acknowledge – the mainstream is a relative term. As well as taking only a relatively small bite out of the global economic cake, there is an important question about how ‘mainstream’ divestment really is (or will be) beyond the circle of campaigners promoting the idea.

On the one hand, divestment is very much a way to speak to wider society in a currency – literally – that it understands. Economic investments are conceptually familiar to decision makers in the private sector (and the general public) in a way that carbon budgets are not. However, at a global scale, billions of people are barely familiar with the term ‘climate change’<sup>117</sup> – let alone the relatively technical and obscure concept of ‘divestment’. Within western societies the issue has greater salience, but it is not top of most people’s minds. Research suggest that many of the technical terms used by scientists, policy-makers and campaigners are not well understood by members of the public, and so another term that is barely understood is unlikely to build broad based public support.<sup>118</sup> And while western audiences are familiar with the language of economics, the divestment campaign (with Bill McKibben at the helm) has as its ultimate goal a climate outcome measured in terms of parts per million. The available evidence suggests these abstract ways of talking about climate change (eg the notion of ‘dangerous’ climate change) are simply not well-understood or engaged with outside of technocratic circles, and do not resonate strongly with the public.<sup>119</sup>

115. *Fossil fuel divestment 2015*. *The Guardian*, 2 September [Online]. Available at: [www.theguardian.com/environment/fossil-fuel-divestment](http://www.theguardian.com/environment/fossil-fuel-divestment).

116. *Global Divestment Day 2015*. Available from: <http://gofossilfree.org/wrap-up/>. [1st September, 2015].

117. Billions of people have never heard of climate change (2015). Available from: <http://motherboard.vice.com/read/billions-of-people-have-never-heard-of-climate-change>. [2nd September, 2015].

118. Corner, A. and Roberts, O. (2014) op cit.

119. How much climate change is dangerous? (2013). Available from: [www.carbonbrief.org/blog/2013/08/two-degrees-don%E2%80%99t-you-mean-eight-polling-shows-people-think-dangerous-climate-change-means-eight-degrees-of-warming/](http://www.carbonbrief.org/blog/2013/08/two-degrees-don%E2%80%99t-you-mean-eight-polling-shows-people-think-dangerous-climate-change-means-eight-degrees-of-warming/). [1st September 2015].

*Central to the rhetorical power of the divestment argument is an easily identifiable ‘bad guy’ (played here by the fossil fuel industry) from whom the rest of us ‘good folk’ can dissociate. But while it may be true that most of us don’t personally quarry the earth for burnable carbon, almost everyone pays a quarterly energy bill straight into the coffers of the fossil fuel industry*

There is currently no research that has specifically investigated public attitudes towards (or understanding of) divestment, however, and so no real way of knowing the extent to which public opinion is on board with the goals of this campaign.

The long-term power of divestment lies, therefore, in its potential to transform the social consensus on the merits of a fossil-fuelled economy, and to create the political space for laws and legislation that will mean fossil fuels have to stay in the ground. This is not an easy notion to square with our current economic system of growth-based capitalism. Campaigners point to the destabilising dynamics of public opinion that swirled around the divestment campaign in South Africa. Companies who associated with the racist regime could replace their investors, but they couldn’t replace their reputation. Perhaps the same fate will befall institutions and individuals that are complicit in the fossil fuel industry. But – as is so often the case – climate change frustratingly doesn’t fit the mould.

Central to the rhetorical power of the divestment argument is an easily identifiable ‘bad guy’ (played here by the fossil fuel industry) from whom the rest of us ‘good folk’ can dissociate. But while it may be true that most of us don’t personally quarry the earth for burnable carbon, almost everyone pays a quarterly energy bill straight into the coffers of the fossil fuel industry. To be clear, this doesn’t make everyone hypocrites: we are trapped in this arrangement, in many cases against our will. But it does make us complicit, whether we like it or not. This is problematic for a simplistic portrayal of climate change as a battle between good and evil (because the enemy is literally within).

Painting fossil fuel support as immoral or even ‘evil’ is a strategy that could backfire when the values and perspectives of those outside of the divestment movement come into play. It is hard to tarnish a company’s reputation when we find ourselves embroiled in it. In COIN’s own research – with groups of young people,<sup>120</sup> and in work that informed<sup>121</sup> the Climate Coalition’s ‘For The Love Of’<sup>122</sup> strategy – we have found that people tend to react against an easy distinction between ‘us’ (fossil-fuel opponents) and ‘them’ (the power companies). On the one hand, fossil-fuels are not well-liked by the UK public, and consistently attract lower ratings of favourability than renewables.<sup>123</sup> But because most people have no choice but to use and spend money on fossil fuels, there is a risk that the general public will feel more affiliation with ‘them’ than ‘us’. Maybe, as Bill McKibben has argued,<sup>124</sup> you cannot have a movement without an enemy. But this can be a dangerous game to play. Climate change is a politically polarised issue and campaigns that play on this political divide

120. Corner, A. and Roberts, O. (2014) op cit.

121. *How narrative workshops informed a national climate change campaign* 2014. Available from [www.climateoutreach.org.uk/portfolio-item/how-narrative-workshops-informed-a-national-climate-change-campaign/](http://www.climateoutreach.org.uk/portfolio-item/how-narrative-workshops-informed-a-national-climate-change-campaign/) [2nd September, 2015].

122. *The People’s Climate March 29 November 2015*. Available from: <http://fortheloveof.org.uk/> [2nd September, 2015].

123. Demski, C., Spence, A. and Pidgeon, N. F. (2013). *Transforming the UK energy system: public values, attitudes and acceptability – summary findings from a survey conducted August 2012*. London: UKERC.

124. Ramsay, A. and McKibben, B. (2013). *Bill McKibben interview – time for the climate movement to get on the front foot*. Available from [www.opendemocracy.net/ourkingdom/adam-ramsay-bill-mckibben/bill-mckibben-interview-time-for-climate-movement-to-get-on-fro](http://www.opendemocracy.net/ourkingdom/adam-ramsay-bill-mckibben/bill-mckibben-interview-time-for-climate-movement-to-get-on-fro) [2nd September, 2015].

*If divestment is to really go mainstream and start to uproot the foundations of the fossil-fuel system – it is going to need wider support. The feeling of momentum that is currently providing buoyancy for the climate change movement must be shared by a larger group of the population. And for that to happen, there needs to be a much wider acceptance of the importance of climate change in the first place*

could leave campaigners stuck in a green ghetto without the broad array of social allies needed to make the divestment campaign a success.

Climate change campaigns can only get so far with enemy narratives. Once unleashed, they take on a life of their own and come back to bite us, and we will find ourselves written in to replace our chosen enemies. Our best bet is to refuse to play this partisan game at all. We are all responsible. We are all involved and we all have a stake in the outcome. We are all struggling to resolve our concern and our responsibility for our contributions. Narratives need to be about co-operation on common ground – and solutions need to be presented that can speak to the common concerns and aspirations of all people. It is important to work with people to develop new stories and identify the appropriate messengers to enable wider groups to get involved in the climate change debate.<sup>125</sup>

It is also worth asking what it would mean for the divestment campaign to ‘work’. Unhooking ourselves from fossil fuels means attaching ourselves to a new life-support system – and that is going to require a painful, messy and complicated process of building broad and deep acceptance of, and opportunities for participating in, the changes required. This is where the comparisons between the anti-apartheid and fossil fuel divestment campaigns break down. Whether or not the anti-apartheid divestment campaigns channelled deep seated global disgust at the racism of the South African political system, the fact is the ending of apartheid came at no personal cost or inconvenience to the public in the west. The same cannot be said of western lifestyles should the fossil fuel divestment campaign succeed.

The divestment campaign is not a *substitute* for these messy social and political processes – it is part of it, and bound by the same ‘seven-dimensional’ rules. So when we ask what it would mean for the divestment campaign to ‘work’, we are really asking what it would mean for decarbonisation to ‘work’ – and this is a question that resists a simplistic answer.

None of this means that the divestment movement does not have huge potential. And, for climate change campaigners, divestment was the shot in the arm they urgently needed. After years of searching in vain for something exciting to say about international climate change negotiations, divestment campaigns – where each individual institution is targeted by separate groups of activists – offer repeated and credible ‘wins’. The feeling of momentum this produces (and the re-affirmation that committed activism can actually achieve tangible results) should not be underestimated.

But if divestment is to really go mainstream and start to uproot the foundations of the fossil-fuel system – it is going to need wider support. The feeling of momentum that is currently providing buoyancy for the climate change movement must be shared by a larger group of the population. And for that to happen, there needs to be a much wider acceptance of the importance of climate change in the first place. All around us are signals that point in precisely the wrong direction: the prominence of fossil fuel advertising in our media and public spaces suggests that we are a long way from ‘cultural divestment’.

125. Jones, M.D. and Song, G. (2013). Making Sense of Climate Change: How Story Frames Shape Cognition. *Political Psychology* 4, 447–476.

The real power of the anti-apartheid divestment campaign was in the broad-based social acceptance that racism was wrong. The divestment campaign gave a powerful voice to this movement, but it did not precede it. COIN's focus on involving a greater diversity of voices – from faith groups, to political conservatives, to communities affected by flooding – in the conversation about how to respond to climate change is one small step towards building a social consensus. Building this consensus means providing a space where people can discuss and listen to each others fears and hopes for the future, rather than being told what to think by campaigners. Getting people talking, on their own terms with people from their own communities is not on its own sufficient, but it is an important part of the process by which awareness of climate change and the risks it poses can be broadened and deepened.<sup>126</sup>

When a majority of people identify with 'us' rather than 'them' in divestment campaigns, the real power of the divestment movement will be unlocked.

This contribution was prepared by Dr Adam Corner, Research Director, Climate Outreach; Honorary Research Fellow in the School of Psychology, Cardiff University and Dr Chris Shaw, Senior Researcher, Climate Outreach.

## **Appendix 2: The Seven Dimensions of Climate Change: project activities**

### **The Seven Dimensions of Climate Change Project**

The initial idea that climate change could be distilled into a challenge of seven dimensions was first published in *The Guardian* on 14 February 2014.<sup>127</sup> The project developed by trying to clarify and establish the value of the idea in practice and was supported by the Climate Change Collaboration and latterly by the Network for Social Change. Climate Outreach (formerly COIN) were involved in an advisory capacity at most stages of the project and contributed directly to the first report and workshop. The main project outputs included:

### **Public Events**

RSA Events Producer Abi Stephenson had primary responsibility for conceiving and organising five public events, which she did with input from project leader Dr Jonathan Rowson and from Climate Outreach.

- 1. Seven Serious Jokes about Climate Change, 20 January 2015.**  
Curated in conjunction with Pippa Evans, and featuring performances from comedians thematically organised through

<sup>126</sup>. Groves, C. and Corner, A. J. (2014). Breaking the climate change communication deadlock. *Nature Climate Change*, 4, 743–745.

<sup>127</sup>. Rowson, J. (2014) The seven dimensions for action on climate change. *The Guardian*, Climate Change Behavioural Insights, 7 February [Online] Available at: [www.theguardian.com/sustainable-business/behavioural-insights/2014/feb/14/seven-dimensions-action-climate-change](http://www.theguardian.com/sustainable-business/behavioural-insights/2014/feb/14/seven-dimensions-action-climate-change)



- the seven dimensions.<sup>128</sup> The event was previewed by Dr Adam Corner in *The Guardian* and reviewed by James Murray in *Business Green*.<sup>129</sup> The panel included: Marcus Brigstocke, Comedian, Writer and Broadcaster; Holly Burn, Stand Up and Character Comedian; Steve Punt, Writer, Comedian and Actor; Pappy's, Live Sketch Team; Jessica Fostekeew, Stand Up, Writer; Pippa Evans, Comedian; The Showstoppers, Musical Comedy; and Rob Auton, Writer, Performer.
2. Climate Question Time 11 February 2015 featured a panel of seven speakers, one for each dimension; Lord Nicholas Stern: Economist and chair of the Grantham Research Institute on Climate Change (Money); Chris Rapley CBE: Professor of climate science at UCL (Science); Baroness Jenny Jones: Green Party member of the London Assembly (Democracy); Solitaire Townsend: Co-founder, Futerra (Culture); Jeremy Leggett: Green-energy entrepreneur and founder of Solarcentury (Technology); Rosemary Randall: Co-founder of the Carbon Conversations project (Behaviour); Jake White: Environmental lawyer, Friends of the Earth (Law). Chaired by Dr Jonathan Rowson.<sup>130</sup>
  3. New Voices on Climate Change on 17 March 2015 featured the best submitted responses from a range of school children, mostly from RSA Academies, and an interactive session with young climate activists.<sup>131</sup> Speakers included Brodie Clarke, Year eight student, Ipsley CE RSA Academy; Molly McNamara, Year nine student, Whitley Academy; Kobir Ahamed, A-level student, Holyhead School; Joe Lo, Journalist; Miriam Wilson, Climate Campaigner; Caitlyn Falasco, Intern at Design for Homes; Shanine Salmon, Music Education Worker; Erin Green, Year nine student at Trinity Catholic School; Louis Mertens, Year 12 student at RSA Academy Arrow Vale; Gitika Bhardwaj, Royal Institute of International Affairs; and Dr Jonathan Rowson, Director, Social Brain Centre.
  4. The Point is to Feel it, a night of creative responses to Climate change on 26 May 2015 featured a range of original poems in response to climate change, chaired by 'climatologist and poet' Rachel McCarthy and leading to a short collection of poetry, *Nine Original Poems about Climate Change* published by

128. RSA Replay – Seven Serious Jokes about Climate Change. *YouTube*, streamed live on 20 January [Online] Available at: [www.youtube.com/watch?v=IHZ3oLdNKzw](http://www.youtube.com/watch?v=IHZ3oLdNKzw)

129. Corner, A. (2015) Why it's good to laugh at climate change. *The Guardian* [Online] Available at: [www.theguardian.com/environment/2015/jan/20/why-its-good-to-laugh-at-climate-change](http://www.theguardian.com/environment/2015/jan/20/why-its-good-to-laugh-at-climate-change) and Murray, J., (2015) Climate Change Comedy: A laughing matter? [Online] Available at: [www.businessgreen.com/bg/james-blog/2391379/climate-change-comedy-a-laughing-matter](http://www.businessgreen.com/bg/james-blog/2391379/climate-change-comedy-a-laughing-matter)

130. RSA Replay, streamed live on 11 February 2015 op cit.

131. RSA Replay – New Voices on Climate Change. *YouTube*, streamed live on 17 March 2015 [Online] Available at: [www.youtube.com/watch?v=glroAVWYuuY](http://www.youtube.com/watch?v=glroAVWYuuY)

the RSA.<sup>132</sup> Speakers included: Alice Oswald, Award-winning poet; Ruth Padel, Award-winning British poet and author; George The Poet, BRITs Critics' Choice Award nominee; Simon Barraclough, Poet and the 2014 writer-in-residence at the Mullard Space Science Laboratory; John Agard, Poet, playwright, and recipient of the Queen's Gold Medal for Poetry in 2012; Grace Nichols, Poet, playwright and winner of the Commonwealth Poetry Prize; Tom Chivers, Poet and director of *Penned in the Margins*; Selina Nwulu, Educationalist, writer and poet; Sarah Warne, Film and arts composer and multi-instrumentalist; Rachel McCarthy, Senior climate scientist at the Met Office and Poet Laureate's Choice 2015.

5. Is there still hope on climate? Featuring Sir David Attenborough and Tim Flannery. 3 December 2015.

**Graphics:** The visual images of the seven dimensions of climate change were created by thomasmatthews.com in collaboration with Dr Jonathan Rowson and with some input from Climate Outreach. They were used in both main reports, in public talks about the project and were shown on the screen of the RSA Great Room before the beginning of the public events.

**First Report:** *The Seven Dimensions of Climate Change: Introducing a new way to think, talk and act* was jointly written by Dr Jonathan Rowson and Dr Adam Corner and published on 20 January 2015 as a discussion document and reference point for the project as a whole.

#### **Climate Constellations: 16 June 2015**

The RSA hosted 'a climate constellation' workshop under the Chatham House Rule, with a range of experts in the climate change field including NGO strategists, climate communication experts, climate change funding bodies, climate journalists and academics. The constellation approach is conventionally applied to family therapy, but is often used in organisational change processes. This was an innovative attempt to allow people who have been working on climate change for several years through the same modalities of speech, text and evidence, to examine the issue from a more intuitive, somatic and emergent perspective. The feedback was extremely positive, with selected extracts below:

"The climate change problem demands new types of thinking, and this turned out to be a powerful experiment in just that; exploring deep important intuitions in ways that are very hard to access through traditional analysis and discussion. Some brilliant insights came out of the day."

<sup>132</sup>. RSA Replay streamed live on 26 May 2015 op cit. *Nine Original Poems about Climate Change* can be found here: [www.thersa.org/action-and-research/arc-news/9-original-poems-on-climate-change/](http://www.thersa.org/action-and-research/arc-news/9-original-poems-on-climate-change/) A review of this event, including extracts can be found at [www.thersa.org/discover/publications-and-articles/rsa-blogs/2015/05/rsa-poetry-night2/](http://www.thersa.org/discover/publications-and-articles/rsa-blogs/2015/05/rsa-poetry-night2/)

“Taking part in the constellations was like nothing I have ever experienced before. It allowed us to see/feel blockages and opportunities that we might not otherwise have seen... It opened up new ways of thinking that were not rooted in the intellectual, as so much of our work tends to be. In the case of climate change this was particularly interesting as it is not just an intellectual issue, it is at once physical, intellectual and emotional — not to mention the other dimensions that you have been exploring!”

“The most interesting aspect of the exercise for me was not so much in the outcomes as the process itself. Allowing oneself to put aside rational thought and rely on intuition and instinct helped me feel more creative, more free and more courageous when facing this problem. Moving through the constellations, I felt deeply that the emotional impact of people and entities is far more powerful than the words they say or even the ideas they promote. Having this as a guiding principle for communicating the problem of climate change could fundamentally change the way in which I approach my work.”

**Workshop:** Divestment and the Seven Dimensions of Climate Change 7 July 2015. This workshop sought to uncover the key questions arising for those working on divestment or divest-invest and to examine the value of viewing the issue from a seven-dimensional perspective. Although the invited parties broadly agreed in terms of objectives, there were considerable differences of opinion over core definitions of terms like ‘divestment’ and ‘engagement’, and also a fairly clear dividing line between those working on divestment from an activist standpoint, and those in the financial industry trying to manage risk.

**Second Report:** Published 3 December 2015, see below.

**Forthcoming book:** The originator of the seven dimensions idea and author of this report has agreed a contract to deepen and clarify the conception in a forthcoming book called *The Seven Dimensions of Climate Change, rethinking the world’s toughest problem*, to be published by Palgrave Macmillan in late 2016.

### **Appendix 3: Information on Divest Invest**

There are a range of online resources that speak to the practicalities of pursuing divestment in fossil fuels and redirecting investments to alternative energy. For instance, Europeans for Divest Invest offers a range of resources and practical advice including a simple definition of their proposed process:

“Divest Invest is a process to divest portfolios of fossil fuel shares within five years and to invest at least a portion of wealth in climate solutions, such as renewable energy, clean tech and energy efficiency. Divest Invest both points to the problems and finds the solutions – raising the alarm on the risks of fossil fuel investments and the recklessness of the fossil fuel industry while speeding up investment in low-carbon technologies around the world.”

Divest Invest Europe also invites visitors to the website to ‘take the pledge’ which asks those with influence in companies to make no new investments in the top 200 oil, gas, and coal companies, to sell existing assets tied to these oil, gas, and coal investments within 3–5 years and to invest in climate solutions, such as zero carbon energy, energy efficiency, sustainable agriculture, water efficiency and more. After taking this pledge you are invited to:

- **ASSESS:** Conduct an assessment of your exposure to climate change risk, defining the degree to which you are invested in fossil fuels versus climate solutions and investments that support your mission.
- **CONSULT:** Launch a dialogue among Board and staff on investment strategies that align investments with mission and support a sustainable and just economy.
- **COMMIT:** Commit to a timetable and process, commensurate with the pace of climate change, for eliminating all fossil fuels from your investment portfolios while investing in a new, clean energy economy through renewables, clean tech and other innovations.

For more details go to: <http://divestinvest.org/europe/home/resources/>  
Further resources include:

- A Beginner’s guide to fossil fuel divestment: [www.theguardian.com/environment/2015/jun/23/a-beginners-guide-to-fossil-fuel-divestment](http://www.theguardian.com/environment/2015/jun/23/a-beginners-guide-to-fossil-fuel-divestment)
- Go Fossil Free: <http://gofossilfree.org/uk/resources/>
- Move your Money: <http://moveyourmoney.org.uk/campaigns/divest/>

The RSA (Royal Society for the encouragement of Arts, Manufactures and Commerce) believes that everyone should have the freedom and power to turn their ideas into reality – we call this the Power to Create. Through our ideas, research and 27,000-strong Fellowship, we seek to realise a society where creative power is distributed, where concentrations of power are confronted, and where creative values are nurtured.



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