12-7-2016

Fossil Fuel Divestment: Implications For The Future Of Sustainability Discourse And Action Within Higher Education

Noel Healy
Salem State University

Jessica Debski
Salem State University

Local Environment
The International Journal of Justice and Sustainability

ISSN: 1354-9839 (Print) 1469-6711 (Online) Journal homepage: http://www.tandfonline.com/loi/cloe20

Fossil fuel divestment: implications for the future of sustainability discourse and action within higher education

Noel Healy & Jessica Debski

LOCAL ENVIRONMENT, 2016
http://dx.doi.org/10.1080/13549839.2016.1256382

Fossil fuel divestment: implications for the future of sustainability discourse and action within higher education

Noel Healy and Jessica Debski

Department of Geography, Salem State University, Salem, MA, USA

ABSTRACT
This paper provides a critical overview and analysis of the student-led fossil fuel divestment (FFD) movement and its impact on sustainability discourse and actions within US higher education. Analysing higher education institutes' (HEIs) divestment press releases and news reports shows how institutional alignment with cultures of sustainability and social justice efforts played key roles in HEIs' decisions to divest from fossil fuels. Key stated reasons for rejection were: minimal or unknown impact of divestment, risk to the endowment, and fiduciary duty. Participant observation and interviews with protagonists reveal the intricate power structures and vested business interests that influence boardroom divestment decision-making. While some HEIs embrace transformative climate actions, we contend that higher education largely embraces a business-as-usual sustainability framework characterised by a reformist green-economy discourse and a reluctance to move beyond business-interest responses to climate politics. Nonetheless, the FFD movement is pushing HEIs to move from compliance-oriented sustainability behaviour towards a more proactive and highly politicised focus on HEIs' stance in the modern fossil fuel economy. We offer conceptual approaches and practical directions for reorienting sustainability within HEIs to prioritise the intergenerational equity of its students and recognise climate change as a social justice issue. Fully integrating sustainability into the core business of HEIs requires leadership to address fundamental moral questions of both equity and responsibility for endowment investments. We contend that HEIs must re-evaluate their role in averting catastrophic climate change, and extend their influence in catalysing public climate discourse and actions through a broader range of external channels, approaches, and actors.

ARTICLE HISTORY
Received 5 April 2016
Accepted 18 October 2016

KEYWORDS
Higher education; climate change; fossil fuel divestment; sustainability; justice and ethics

Introduction

Climate change is a defining issue of our time and an existential threat to our life and development, according to the United Nations (Ki-Moon 2014). If we are to avoid catastrophic climate change and bequeath a sustainable planet worth living on, immediate and transformative actions by governments, businesses, institutions, and individuals must occur (Anderson and Bows 2010, Cai *et al*. 2016, Clark *et al*. 2016). Higher education institutes (HEIs) have unique opportunities to address the climate challenge and catalyse societal transition towards sustainability (Cortese 2003, Trencher *et al*. 2014a). This paper raises questions and opportunities for how to think differently about sustainability in higher education and the role of HEIs in averting a climate crisis. Because sustainability challenges current paradigms, structures, and predominant practices in higher education, universities are

CONTACT Noel Healy nhealy@salemstate.edu

struggling to contribute meaningfully to it (Calder and Clugston 2003, Su and Chang 2010, Tilbury 2011, Jones 2012, Jones 2015a). The mission of universities to educate future leaders carries an onus to equip graduates to tackle the interconnected challenges of climate change, global inequality, and social justice (Rappaport *et al*. 2007, Lotz-Sisitka *et al*. 2015).

Universities have frequently been regarded as key institutions in processes of social change and development (Brennan *et al*. 2004). Nonetheless, much of the academic research on sustainability has centred on how HEIs can change internally (Barlett and Chase 2004, Rappaport *et al*. 2007, Svanström *et al*. 2008, Ferrer-Balas *et al*. 2009, Blewitt and Cullingford 2013) rather than how they can facilitate external change (Stephens *et al*. 2008, Stephens and Graham 2010, Sedlacek 2013, Trencher *et al*. 2014a). While students have been engaged in initiatives targeting personal and campus energy efficiency ("carbon footprints"), including: "Take Back the Tap" campaigns to eliminate plastic water bottles on campus, dorm energy challenges, and educational programmes (Mikhailovich and Fitzgerald 2014, Wachholz *et al*. 2014), collective political student action on climate change is more recent (Grady-Benson and Sarathy 2016).

Fossil fuel divestment (FFD) encourages collective action on a broader scale through a coordinated national movement targeting the fossil fuel industry. Students rallied around the FFD movement for several reasons, including: the international community's failure to implement the transformative action required for radical and immediate emission reduction (Chatterton *et al*. 2013); frustration with political gridlock on comprehensive US climate policy (McKibben 2012); the need for urgent systematic change (Anderson and Bows 2010); and growing awareness of the social consequences of fossil fuel extraction (Watts 2005). Moreover, the revelation that just 90 companies contributed to 63% of the greenhouse gases (GHGs) emitted globally between 1751 and 2010 (Starr 2016) added to the recognition of the fossil fuel industry as a socio-environmental enemy (Ringeling 2015).

FFD aims to remove the social licence by which fossil fuel companies operate through reputational damage and stigmatisation. In a rapidly changing energy market and with increasing climate change awareness at the institutional level, FFD has the capacity to "catalyze public discourse and facilitate a vast web of influence that could bring a shift in attitudes toward climate change and the fossil fuel industry" (Ayling and Gunningham 2015, p. 11). This paper illustrates how the movement is pushing HEIs to reconsider their focus on incremental internal sustainability actions. Instead, it seeks to extend their influence by refocusing public climate discourse on the systematic and urgent political, social, and economic changes required to rapidly decarbonise our global energy systems. Given the movement's relatively recent origin, FFD has scarcely been mentioned in higher education and environmental policy literature. Therefore, the purpose of this paper is threefold:

(1) To provide a critical overview and analysis of the FFD movement within US higher education;
(2) To analyse FFD's impact on sustainability discourse and actions within higher education, particularly the role of HEIs in averting catastrophic climate change;
(3) To offer conceptual approaches and practical directions for re-orienting sustainability towards an emergent paradigm of climate justice.

To address these aims, we critically explore the FFD movement to unpack some of the often unspoken political structures and power imbalances inherent in sustainability discourse and actions. Interviews with students and faculty in the FFD movement reveal how the push for divestment is rapidly changing sustainability efforts from compliance-oriented sustainability behaviour towards a more proactive and highly politicised focus on the stance of universities in the modern fossil fuel economy (Bratman *et al*. 2016). The movement is shifting the conventional framing of climate change from a technocratic "environmental issue" to one elevating the social justice, intergenerational justice, and health impacts of climate change. This reframing of the climate narrative draws attention to the shortcomings of HEI's business-as-usual sustainability framework, which has been characterised by a reformist green-economy discourse. The movement for divestment is attempting to reorient sustainability discourse and actions from a reform/transition sustainability approach towards one of radical transformations. It is pushing HEIs to move to a deeper engagement with global climate justice concerns and the underlying political economy that is influencing (and obstructing) the transition to a low-carbon world.

Sustainability within higher education

Since the Brundtland Commission's report, *Our Common Future* (United Nations 1987), the concept of sustainable development has grown in relevance and importance within higher education as evidenced by the publication and adoption of national and international declarations, charters, and partnerships on sustainability – notably, the Talloires Declaration of 1990, Agenda 21 of 1992, Kyoto Declaration of 1993, Copernicus University Charter of 1994, Global Higher Education for Sustainable Development Partnership of 2000, and Rio + 20 Higher Education Sustainable Education Initiative (for detailed summaries, see Wright 2002, 2004, Lozano *et al*. 2013). Recently, higher education's role in fostering sustainable development and reorienting existing institutions to incorporate sustainability-related principles, knowledge, skills, values, and perspectives has been emphasised further by the United Nations Decade of Education for Sustainable Development 2005–2014 (DESD) (UNESCO Education Sector 2005). Its goal is to integrate the values of sustainable development into all aspects of learning in order to bring about behavioural changes for a more sustainable and just society for all. It requires HEIs to integrate sustainability into all of their major activities – rethinking their missions and research priorities, as well as restructuring their courses, community outreach, and campus operations (Beynaghi *et al*. 2016, Yarime *et al*. 2012).

In theory, these declarations' potential applications on college campuses were radical. In practice, however, progress has been slow (Velazquez *et al*. 2005), partly because conventional university appraisal systems do not measure compliance with sustainability goals when evaluating university performance. From the point of view of education, sustainability is generally seen as a bolt-on requirement (Sterling and Thomas 2006), which can be incorporated, embedded, or implemented rather than being integral to major activities. Deconstructing the rhetoric of sustainability in higher education, authors such as Selby and Kagawa (2010) argue that higher education's close alignment with a globalisation agenda facilitates a neoliberal marketplace worldview that embraces an economic growth and managerial view of the environment. For Morrissey (2015), HEIs are now embedded within nationally and globally competitive networks guided by neoliberal concerns of rankings, benchmarking, and productivity. For Lynch (2006), HEIs have been transformed over the last decade into powerful consumer-oriented corporate networks. On a similar note, Huckle and Wals (2015) contend that the discourse guiding the DESD was essentially business as usual – claiming that it failed to acknowledge or challenge neoliberalism as a hegemonic force blocking transitions towards genuine sustainability.

Moreover, sustainability's lack of fixed meaning enables university management to continue business-as-usual operations and present sustainability in ways to suit their own agenda. This frequently equates to minimal compliance with declarations or sustainability goals through demonstration of a commitment to continuous environmental improvement, however small (Jones 2012). Many scholars have noted that sustainability in practice tends to operate in ways that are decisively non-threatening to the status quo (Cortese 2003, Brown 2016) – with HEIs proclaiming inclusive visions and aspirations while simultaneously enacting a top-down bureaucratic approach to sustainability actions (Jones 2015a). Emphasis on local micro-focus tends to decontextualise sustainability efforts from broader geopolitical issues such as global climate justice. Many campus initiatives focus on environmental considerations rather than social justice, health, and climate justice. Little attention is paid to power, politics, citizenship, and the deeper systemic roots of the global sustainability and climate crisis (Alperovitz *et al*. 2015, Huckle and Wals 2015). The FFD movement draws attention to this gap and encourages HEIs to reconsider how justice and human-related climate impacts are incorporated into campus sustainability efforts, particularly climate initiatives and programmes. According to Carlson (2015), the sustainability movement within higher education, which emerged almost a decade ago, is in need of a new trajectory and impetus.

From individualised sustainability efforts to collective, change-oriented sustainability

Universities have unique opportunities to address the climate challenge and catalyse societal transition towards sustainability. As spaces of knowledge production, perpetuation, and dissemination, they have unique potential to apply knowledge to social change (Stephens *et al*. 2008, Trencher *et al*. 2014b). Stephens *et al*. (2008) outline four ways HEIs can contribute to societal transition towards sustainability. First, universities can act a microcosm of society – modelling and promoting sustainable practices in campus operations and environments (Ferrer-Balas *et al*. 2009). Second, universities are seen primarily as spaces of concentrated learning. Through their teaching and curricula, they can promote action on advancing sustainability (Colucci-Gray *et al*. 2013). Third, higher education can conduct action-oriented research on real-world problems, targeting the urgent sustainability challenges facing society. This has placed emphasis on use-inspired and transdisciplinary collaborations with external actors from community, local government, industry, and civic organisations (Whitmer *et al*. 2010, Sedlacek 2013, Trencher *et al*. 2014b). Many of these partnerships are accentuations of established paradigms such as agricultural extension, action and participatory research, transdisciplinarity, and regional development (Trencher *et al*. 2014a). Historical functions and trends in higher education have tended to focus on the pursuit of income generation and economic development. Critics of this approach have called on HEIs to further align their activities with chronic sustainability problems of the twenty-first century (Peer and Stoeglehner 2013, Beynaghi *et al*. 2016).

This leads us to the fourth category: HEIs as change agents, facilitating change external to their own institution. This is akin to Bringle *et al*.'s (1999) concept of "universities as citizens" – whereby universities are contributing, active, responsive entities in society. This function, cited in a 2004 report for the Center for Higher Education Research, is described as follows:

> Universities have frequently been regarded as key institutions in processes of social change and development. The most explicit role they have been allocated is the production of highly skilled labour and research output to meet perceived economic needs. But to this role may be added, especially during periods of more radical change, roles in the building of new institutions of civil society, in encouraging and facilitating new cultural values, and in training and socialising members of new social elites. (Brennan *et al*. 2004, p. 7)

Trencher *et al*. (2014b) conceptualise this broader and more ambitious university function as a societal transformer and co-creator. They define this role as collaboration "with diverse social actors to create societal transformation with the goal of materializing sustainable development in a specific location, region or societal sub-sector" (2014b, p. 152). In sustainability co-creation, the university's role is characterised by explicit objectives to transform society through implementation of knowledge, social, or technical innovation, representing a shift from the historical tendencies to principally document problems of the world. Given the need for urgent action, divestment activists are calling on HEIs to leverage their position to draw attention to the systemic societal changes required to avert catastrophic climate change. HEIs can play a key role in modelling the transition to a clean energy economy.

Climate change campus initiatives have tended to focus on internalised efforts at becoming "sustainable universities" (Kemp and Loorbach 2003) through the "greening of the campus", green certifications, and providing educational programmes (Wachholz *et al*. 2014). Examples of climate and sustainability initiatives include Campus Climate Challenge (coordinated by the Energy Action Coalition), the American College and University Presidents' Climate Commitment (ACUPCC), coordinated by Second Nature, ecoAmerica, and the Association for the Advancement of Sustainability in Higher Education. Key efforts of these initiatives to reduce GHGs emissions include actions to adopt an energy-efficient appliance purchasing policy, efficient use of water, waste management, low-carbon buildings, and promotion of public transportation for campus members (Wachholz *et al.* 2014, ACUPCC 2015).

Many HEIs rate their sustainability performance on popular, externally accredited sustainability league-table criteria. But there is scarce evidence that these visible tick-the-box criteria are radically changing behaviour towards sustainability among university stakeholders (Jones 2015b). For instance, the ACUPCC aims to provide climate leadership-by-example for the rest of society. While nearly 700 HEIs have signed the ACUPCC, only three schools have fulfilled their pledge to reach climate neutrality; the average climate-neutrality target date among signatory schools is 2045 (Greenberg and Fang 2015).

Bratman *et al.* (2016) contend that sustainability efforts at most campuses have, so far, aligned with mainstream greening and depoliticised sustainability efforts which focus on environmental harm rather than its root causes. Students engaged in campus sustainability have traditionally focused on initiatives stressing individual responsibility. Nonetheless, Grady-Benson and Sarathy (2016) contend that the widespread mobilisation for FFD signals a sea change, from individualised sustainability efforts to youth-led collective political action and recognition of climate change as a social justice issue (Figures 1 and 2).

Origins and evolution of the FFD movement

FFD is a climate change initiative that seeks to withhold capital by selling stock market-listed shares, private equities, or debt from firms investing in fossil fuel. The movement uses a range of strategies to shame, pressure, facilitate, and encourage individual and large institutional investors to divest from fossil fuel stocks (Ayling and Gunningham 2015), often encouraging investment in alternative energies or at least climate-neutral alternatives. This strategy, which has precedent in divestment campaigns against tobacco, Sudan, and South Africa during apartheid, aims to remove the social licence by which fossil fuel companies operate, through reputational damage and stigmatisation.

The movement emerged organically out of various Blockadia-style attempts to block carbon extraction at its source, specifically, the movement against mountaintop-removal coalmining in Appalachia in 2011 (Klein 2015). Blockadia, Naomi Klein writes, is a “roving transnational conflict zone that is cropping up with increasing frequency and intensity wherever extractive projects are attempting to dig and drill, whether for open pit mines, gas fracking, or tar sands pipelines” (Klein 2015, pp. 294–295). FFD had its beginnings at Swarthmore College in 2010, when students started the Swarthmore Mountain Justice campaign. Organisers adopted the tactic of divestment in solidarity with Appalachian communities (Bratman *et al.* 2016). In 2011 and 2012, several other HEIs, including Brown University, began coal divestment campaigns. Student activists were later joined by a national

Figure 1. People’s Climate March, NYC, September 2014. © [Shadia Fayne Wood].

Figure 2. Middlebury College students linking their divestment campaign to a call for climate justice. © [Paul Gerard].

and then international campaign spearheaded by 350.org, which extended the divestment call beyond coal to the 200 leading publicly traded fossil fuel companies (i.e. CU200). Of the 81 HEIs divestment commitments worldwide, nearly half are US institutions (40), while the remainder are from the UK (26), Australia (6), Sweden (3), New Zealand (3), Canada (1), Denmark (1) and the Marshall Islands (1).

Divestment is part of a growing frontline social movement that uses increasingly confrontational direct-action tactics, such as marches, mass arrests, lockdowns, and blockages (e.g. Tar Sands Blockade) (Bradshaw 2015). The movement's rapid spread can be partially attributed to Bill McKibben's (2012) *Rolling Stone* article "Global Warming's Terrifying New Math", which popularised climate scientists' revelation that 80% of currently listed fossil fuel reserves must remain in the ground as stranded assets to prevent uncontrollable warming (Meinshausen *et al*. 2009). Public concern was galvanised by McKibben's argument that despite the existential threat to humanity, fossil fuel companies intend to burn all identified reserves, regardless of the effect on climate. Fossil fuel companies spent an estimated $650 billion seeking new reserves in 2013 (Leaton *et al*. 2013). McKibben argued that the systemic change required to avoid disastrous levels of climate change could only materialise through a newly invigorated social movement which challenged the political power of the fossil fuel industry (Bratman *et al*. 2016). The FFD movement brought higher education's contradictory position to the fore – it is paradoxical for universities to remain invested in fossil fuels and profit from an industry that threatens their students' future (Supran 2015a). Prompted by this "terrifying new math", the non-profit 350.org catalysed FFD campaigns and student participation in the battle against the Keystone XL pipeline.

FFD is considered the fastest-growing divestment movement in history (Ansar *et al*. 2013). It is now a transnational advocacy network, which has prompted over 612 institutional commitments to divest, including the Rockefeller Brothers Fund, Norwegian Sovereign Wealth Fund, University of Glasgow, Australian National University, the World Council of Churches, the British Medical Association, the city of Paris and over 50,000 individual commitments. Together, this represents over $3.4 trillion in assets (Fossil Free 2016).

Backed by global leaders such as Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC) Christiana Figueres, World Bank President Jim Yong Kim and South African Archbishop Desmond Tutu, the global advocacy network is showing no signs of stopping. It has also drawn increased attention to the risk of stranded assets – stocks that become obsolete due to fossil fuel deposits that cannot be extracted or sold. Influential figures and organisations such as the Secretary-General of the Organization for Economic Co-operation and Development; the Governor of the Bank of England, Mark Carney; HSBC; and Deutsche Bank have all flagged fossil fuels as potential stranded assets, or raised doubts over their reliability as a continuing source of profitable investment. The value of financial assets is thus at risk in the face of both unabated climate change and more ambitious climate policy (Dietz *et al*. 2016).

Methods

Our research is based on over two years of participant observation within the FFD movement and involvement in key gatherings, including: divestment events in the Greater Boston region, participation in university panel discussions and workshops (e.g. Confronting capitalism & climate crisis: economics for achieving justice, equity, and sustainability summer school, Smith College.), the UNFCCC Bonn climate change conference (June 2015), the UNFCCC COP21, and the People's Climate Summit in Paris. Both authors participated (as faculty and student leaders respectively) in the Salem State University divestment campaign, and thus are afforded unique access and insight into HEIs' divestment deliberations and the movement itself. Nevertheless, the positions presented in this paper are based on empirical data and are distinct from the authors' advocacy. Alongside participant observation, the lead author interviewed 31 key figures, including student and faculty in the FFD movement, and HEI decision-makers. With a multi-method approach combining semi-structured qualitative interviews, participant observation, and document analysis, the research captured the "official" position of divestment protagonists while also facilitating a critical exploration of the connections between intricate political power structures in university boardrooms and their respective boards of trustees and fund managers. Interviewees were asked how HEIs could effectively tackle the climate crisis, and what their views were on the future trajectory of sustainability within higher education. Most data were collected between October 2014 and July 2016.

Clarification of FFD aims and strategies

First, we need to situate FFD within a broad spectrum of climate actions. Most transnational climate change initiatives are based on market liberal and institutional worldviews (see Bulkeley *et al*. 2014). Governments and corporations publicly acknowledge the need to implement urgent mitigation actions, yet they reject policy actions that may challenge continued fossil fuel extraction and production. Instead, governments stress free-market fixes like carbon trading and unproven technological solutions like carbon capture and storage (CCS), with the latter embedded in the 2015 Paris Agreement (Anderson 2015, Barry 2016). Countries put forward non-committal, ambitious-sounding goals (e.g. the Paris Agreement: "Parties aim to reach global peaking of greenhouse gas emissions as soon as possible") while making investments and policy decisions that further entrench us in the carbon economy. These tendencies all reinforce cognitive frames that can inhibit our ability to see solutions to addressing climate change (Reyes 2015). In over 20 years of international climate negotiations (including Paris COP21), the issue of limiting fossil fuel extraction and production has been ignored (Marshall 2015, Monbiot 2015). The result is a technocratic misframing of the climate crisis as a problem of excessive GHGs emissions that can be solved through technological change and voluntary international agreements. In contrast, political economy approaches, which explicitly seek to limit fossil fuel extraction and production in the first place, remain marginalised. The phrase "fossil fuels" conspicuously does not appear once in the Paris Agreement. Divestment is thus reframing and transforming the terms and nature of the climate debate, inserting ethics, politics, and importantly, fossil fuels into the climate narrative. In contrast, FFD, and other Blockadia-style climate movements (e.g. Stop Keystone XL Pipeline) directly addresses fossil fuel production by putting pressure on decision-makers to "keep it in the ground" (the movement's slogan).

The movement aims to bring about a complete break with fossil fuels, resulting in a radical and rapid structural shift in the economy, consistent with the "energy revolution" advocated by the International Energy Agency (International Energy Agency 2009, p. 3). This energy revolution proposes reorienting an energy system currently dominated by fossil fuels. Ultimately, this necessitates leaving approximately 33% of oil reserves, 50% of gas reserves, and over 80% of current coal reserves in the ground by 2050 (McGlade and Ekins 2015). Rather than relying on far-off temperature targets, net zero emissions targets offer a more effective focal point to guide policy and socio-economic pathways within global carbon budgets (Geden 2016). For instance, the International Energy Agency (2012) says this means that if "action to reduce CO_2 emissions is not taken before 2017, all the allowable CO_2 emissions would be locked-in by energy infrastructure existing at that time" (p. 3), hence the need for divestment.

Despite the growth of institutional divestment, a fragmented understanding of the aims of the movement persists between HEIs and the general public (Cleveland and Reibstein 2015). Previously successful divestment campaigns, for example, South Africa, articulated a clear connection between the tactic (divestment) and end goal (the end of apartheid). The continued vitality of the current movement necessitates greater clarification of the role of FFD in helping to transform humanity's energy production and consumption systems. Through a synthesis of FFD reports, divestment literature, public statements, and interviews with protagonists, we provide necessary clarification of the connections between the movement's goals and tactics (see Table 1).

Divestment protagonists know that divestment is unlikely to have much, if any, immediate or direct effect on the valuation of fossil fuel companies; they say it represents just one tactic in a broader climate activist movement. No individual actor or tactic will be *the* agent of change – but collectively, through intersections among a multitude of actors and movements, the climate change narrative is being reframed (Reyes 2015). Consequently, FFD is fast becoming an important node in a constellation of transnational non-state governance initiatives adopting alternative approaches to climate solutions utilising strategies based on arguments of morality and ethics (Ayling and Gunningham 2015).

Divested schools in US higher education

Campus protests and student resolutions propelled some HEIs to divest quickly (e.g. Sterling College; Foothill-de Anza Community College district), while other campaigns met with stern administrative

Table 1. Aims and strategies of the FFD movement.

FFD strategies
Stigmatising the fossil fuel industry, thereby undermining its political power and lowering the barriers to the passage of meaningful climate legislation (e.g. carbon tax; ban on further drilling) (Brown *et al*. 2014)
Pressuring governments to enact legislation that will help create market conditions in which alternative energies can thrive (e.g. termination of fossil fuel subsidies) (Ansar *et al*. 2013)
Raising awareness of urgent need for vast scaling up of renewable energies and efficiency technologies (e.g. fuel cell development) (Patsky and Samuelrich 2014)
Shifting the public discourse on our collective energy future by promoting climate consciousness and actions at personal and institutional levels (Brown *et al*. 2014)
Raising awareness in the financial community about the systemic risk of fossil fuel stranded assets, i.e. stocks that become obsolete due to fossil fuel deposits that cannot be extracted or sold, thus raising doubts over their reliability as a continuing source of profitable investment (Brown *et al*. 2014)
Increase public awareness of the social consequences of climate change and the systematic human rights violations of the corporate fossil fuel-complex
Raising awareness of fossil fuel-interest-funded misinformation and denial of climate change
Linking climate change to other critical sustainability issues such as massive population displacement, water scarcity, global conflicts, and national security (student interview #14)
Raising awareness of the disproportionate impacts of climate change on developing nations, economically disadvantaged communities, and future generations, who bear the least historical responsibility for its cause (Brown *et al*. 2014)
Linking climate change to racial and economic justice on local and national levels (student interview #11)
Expanding climate activism outside the gates of university campuses and linking divestment campaigns to other local and regional "Blockadia"-type campaigns (student interview #14)
Pressuring HEIs to become model carbon-neutral environments (student interview #11)
Pressuring fossil fuel companies to undergo "transformative change", leading to a drastic reduction in carbon emissions (e.g. by switching to less carbon-intensive forms of energy supply) (Brown *et al*. 2014)
Increasing awareness of the need to minimise hardships for workers and their communities affected by and dependent on a fossil fuel economy, i.e. a "just transition" (faculty interview #6).

opposition (e.g. Harvard). Student activists and university administration alike have been thrust into a new policy domain. While the decision to divest has been subject to widespread debate, HEIs' responses and policy pathways have received little analysis in the literature. Addressing this gap, we grouped current institutional divestment approaches into categories that describe the process for schools that have committed to divestment as of October 2016. Divestment commitments began in institutions with small endowment and enrolment sizes. During the first two years of the movement, two schools divested: Hampshire College in 2011, and Unity College in 2012. Eight schools divested in 2013, and nine in 2014. In 2015, 14 HEIs committed to divest, including high-profile schools like Syracuse University, Georgetown University, and four state university systems (Maine, Washington, Hawaii, and California). Thus far, in 2016, seven HEIs have committed to divest – including three with billion-dollar endowments (Boston University, University of Maryland, and Yale University) and a major state university system (University of Massachusetts). Overall, 40 HEIs – 25 private and 15 public – have committed so far. Sixteen hold endowments over $100 million, eight of which are in the billions (University of Maryland, $1b; Syracuse University, $1.2b; Georgetown University, $1.5b; Boston University, $1.6b; University of Washington, $2.8b; University of California, $8.9b; Stanford University, $18.7b; Yale University, $25.6b).

Much debate (and confusion) exists about the extent to which an institution will divest. We identified three leading divestment strategies employed by HEIs: inclusive, selective (Carbon Underground 200) (Braman *et al*. 2014), and targeted (see Table 2). Sixteen HEIs are pursuing inclusive divestment, the most comprehensive approach, shedding holdings from any coal, oil, or gas company. Fifteen HEIs chose selective divestment, which uses the CU200 list as a guide. Eight HEIs chose targeted divestment, which is the selection of, and divestment from, one or more specific carbon-emitting sectors (e.g. coal and tar-sands). Schools that chose targeted divestment are still subject to sustained pressure from advocates to commit to more extensive divestment (e.g. Stanford University). Furthermore, divestment movements do not specifically require reinvestment in alternative energy. Many institutions (e.g. Prescott College) encourage a balanced approach to reinvestment, which involves reallocating divested capital into funds that perform similarly to fossil fuel stocks or into currently held non-fossil fuel companies.

We also expanded Grady-Benson and Sarathy's (2016) work in identifying the official stated factors of why HEIs adopted or rejected divestment. Through analysis of press releases and news reports, we found similar motivations for divestment echoed across current commitments (see Table 3). In total, 73% of HEI cited alignment with values as a primary motivation for FFD; others expressed similar views, such as a desire to support campus environmental efforts or maintain a positive reputation. Over half (53%) expressed a desire to take leadership on a critical matter facing the planet, with many referencing the moral imperative to act on climate change or their participation in the ACUPCC. Of currently divested schools, 63% are signatories of the ACUPCC, though divestment is not required for ACUPCC membership. A significant proportion (20%) of schools explicitly state that they "expect minimal harm to the endowment" following divestment and reallocation of funds; 30% note that this shift is expected to improve the long-term stability of investments. Almost a quarter (23%) were motivated by previously stated policies for responsible investment, for example, Hampshire College's Policy on Environmental, Social, and Governance Investing (ESG) (1977, revised 2012) and Stanford's Statement on Investment Responsibility (1971, revised 2013).

Table 2. Leading divestment strategies employed by HEIs.

Inclusive Divestment	Most comprehensive, and involves the divestment from ***all*** fossil fuel companies beyond those listed on the Carbon Underground 200 (CU200) (see Braman et al. 2014). Institutions may choose to divest from ***all*** direct holdings, or ***all*** direct and comingled funds.
Selective (CU200) Divestment	Used as the standard for "full divestment" by Go Fossil Free. This involves divestment from the CU200, which lists the top 100 coal and top 100 oil and gas companies, ranked by potential emissions content of their proven reserves.
Targeted Divestment	Narrowest scope, and involves divestment from one or a few specific industries (e.g., coal, tar sands).

During the divestment process, over half (68%) have adopted, or updated, institutional investment legislation to uphold FFD and ESG criteria.

Rejection of FFD

Of the 46 colleges that have explicitly rejected divestment, 25 hold billion-dollar endowments. Seventeen schools have endowments of \$1–5b, five have endowments of \$5–10b (Cornell University, \$6.26b; Washington University at St. Louis, \$6.76b; Duke University, \$7.04b; Columbia University, \$9.2b; Notre Dame University, \$10b), and four have endowments over \$10 billion (University of Michigan, \$10.26b; MIT, \$13.48b; Princeton University, \$18.8b; Harvard University, \$36.4b). As with FFD commitments, we analysed the press releases of HEIs who rejected divestment (see Table 4). Most schools (78%) cited costs and/or risks to the endowment as key motivators for rejection, 26 of which noted their "fiduciary responsibility" in official communications. Almost two-thirds (65%) stated that divestment would have a minimal or unknown impact on the fossil fuel industry, with many citing "more effective" ways to address climate change like shareholder advocacy (e.g. MIT) and increased investments in sustainability (e.g. Williams College). Arguments from high-profile schools have garnered much attention: 20% stated that divestment is contradictory when a school continues to consume fossil fuels (e.g. Columbia University), and 26% stated that endowments should not be used to make a political statement (e.g. Princeton University). The latter was made infamous by Harvard president Drew Faust, who stated:

> We should, moreover, be very wary of steps intended to instrumentalize our endowment in ways that would appear to position the University as a political actor rather than an academic institution. Conceiving of the endowment not as an economic resource, but as a tool to inject the University into the political process or as a lever to exert economic pressure for social purposes, can entail serious risks to the independence of the academic enterprise. The endowment is a resource, not an instrument to impel social or political change. (2013)

Strongly disputing and challenging Faust's position, Divest Harvard and Harvard Faculty For Divestment cited the university's previous support for divestment campaigns (e.g. tobacco). Not divesting, they declared, is itself a political act. They also argue that shareholder engagement will not propel a company to fundamentally change its core business plan (Harvard Faculty for Divestment 2014). The divestment movement has (re-)politicised HEI endowment portfolios, a component of university practice traditionally ignored in campus discussions of sustainability. HEIs are now being forced to take a position on the carbon economy. The divestment campaign is also pushing HEIs to recognise that their largely depoliticised approach to the sustainability dilemma lends implicit support to fossil fuel-complex human rights violations: "We invest in Shell, a company who have decimated the Niger Delta and the Ogoni people" (student interview #2). Increasing public awareness of the social consequences of extractivism aims to push HEI efforts away from compliance-oriented sustainability towards an emergent paradigm of climate justice.

The rhetoric and politics of sustainability in higher education

Many universities that rejected divestment responded with new, or renewed, internalised campus climate commitments (e.g. improved carbon-reduction commitments, climate research funds, sustainability-oriented degree offerings). While welcome as constructive steps, these were seen by many activists as "jumping on the bandwagon of sustainability studies and corporate green energy, rather than dealing with the political realities of climate change" (faculty interview #3). Interestingly, 67% of schools that rejected divestment are ACUPCC signatories.

Divestment activists argued that many universities were embracing eco-narratives as a rhetorical device (Jones 2012), rather than as a reflection of or an impetus to proactively address the root causes of climate change. HEIs' focus on supply-side climate policy research, for example, carbon trading and CCS, was also questioned by interviewees. Fossil fuel companies, they claimed, are shaping the political and societal response to the climate emergency through funding "solutions" which do not challenge continued "carbon as usual" (faculty interview #7). These efforts, in their eyes, fail to challenge the dominant political-economic system of continued fossil fuel extraction and production. Student campaigns thus conveyed a tension between reform and transformative action – both desiring to belong to their school, and rejecting it as a cog in defence of the status quo.

Similarly, while divestment groups welcomed the reactive establishment of portfolio advisory committees, many viewed this as "delay tactics, or attempts to quell momentum" (student interview #11). MIT, for instance, established the Climate Change Conversation Committee: a comprehensive consultation over nine months with the MIT community that culminated in backing an action (by 9 to 3) to divest from coal and tar sands. Divestment groups protested MIT's rejection of its own committee's recommendation and ignoring of the unanimous support for creating an Ethics Advisory Council to explicitly combat misinformation and avoid inadvertently supporting disinformation through investments (Stocker *et al*. 2015). Faculty in support of divestment expressed their "deep frustration with MIT's climate action plan", as stated in their open letter:

> Though we welcome the constructive steps embodied in the plan and applaud the acknowledgement of "the seriousness and urgency of the climate threat, and the need for MIT to play a public leadership role", we do not believe the Plan for Action on Climate Change meets these aspirations. If MIT sincerely aims to "Accelerate progress towards low- and zero-carbon energy technologies", "Educate a new generation of climate, energy and environmental innovators", and "Share what we know, and learn from others around the world", the first thing – and simplest thing – to do would be to put out a strong message. This is exactly divestment. Else, these headlines are nice predicates, crafted to sound exciting but ultimately ringing hollow. (MIT Faculty for Divestment 2015)

Universities' failure to take a position on the carbon economy aligns with a green-economy discourse rather than adopting a system-change-oriented notion of sustainability, which places climate justice front and center (Bratman *et al*. 2016). Similarly, Harvard's response was to become a signatory to the UN-supported Principles for Responsible Investment and the Carbon Disclosure Project's climate change programme, and commit to continued engagement in and funding of research into sustainability energy science and governance (Faust 2014). Activists, however, were more sceptical: "While it's great signing up for charters, it is just creating a narrative of action rather than reality" (student interview #3). Universities that rejected divestment frequently illustrated the language and narrative of engagement (e.g. establishing advisory committees, public hearings) while simultaneously implementing a top-down, techno-centred set of quick fixes (e.g. by improving internalised sustainability goals).

The movement has also attempted to engage with university fund managers, boards of trustees, and business-dominated communities to re-evaluate interpretations of socially responsible investing (SRI), ESG, and corporate social responsibility (CSR) spheres. In doing so, it has shed light on the technocratic, top-down bureaucratic approach to decision-making by boards of trustees: "Harvard Corporation operates completely behind closed doors, excluding youth voices and doesn't even listen to faculty or alumni" (student interview #1). The vision, action, and transparency that supposedly characterise education and campus operations are virtually absent from financial decision-making; as Karp *et al*. (2014) put it, sustainability has not reached the boardroom to nearly the same extent as it has the classroom, the dining room, and the boiler room. The movement is also calling on HEIs to exercise more ethical oversight of its investments, and to do so in a transparent and community-backed manner.

The fossil fuel industry has a long-standing campaign of spreading disinformation and doubt about the scientific consensus on climate change, and deliberately distorting public policy and energy regulations (Oreskes and Conway 2011). Close relationships between the fossil fuel industry, boards of trustees and fund managers in major universities raise questions about how patron–client relations and political expediency may influence decision-making: "It's naïve to think that influential

Table 3. FFD commitments.

HEI	Est. endowment	Scope	Stated motivations for FFD
Adler University, IL	Data unavailable	Inclusive	• Alignment with values • Previously stated SRI policy
Brevard College, NC	$25m	Inclusive	• Uphold mission statement • Leadership on critical matter facing planet
Boston University, MA	$1.644b	Targeted (Coal & Tar Sands)	• Part of comprehensive Climate Action Plan • Reducing energy consumption "key to mitigating climate change"
California Institute of the Arts, CA	$115m	Inclusive (Direct)	• Alignment with values • Eliminate exposure to most carbon-intensive companies • Leadership on critical matter facing planet
Chico State University, CA	$52m	Selective (CU 200)	• Alignment with values • Leadership on critical matter facing planet
College of the Atlantic, ME	$30m	Inclusive	• Alignment with values • Expect no harm to endowment • "Morally and politically just"
Foothill-De Anza CC Foundation, CA	$33m	Selective (CU 200)	• Alignment with values • Expect minimal harm to endowment • Long-term investment strategy
Georgetown University, DC	$1.5b	Targeted (Coal)	• Alignment with values and mission • Part of campus sustainability efforts • Long-term stability
Goddard College, VT	$1m	Inclusive	• "Logical extension" of campus environmental efforts • Leadership on critical matter facing planet
Green Mountain College, VT	$3.4m	Selective (CU 200)	• Alignment with values • Adoption of SRI policy
Hampshire College, MA	$31.8m	Inclusive (Direct)	• Alignment with values • Previously stated ESG policy/history of SRI • Long-term stability
Humboldt State University, CA	$26m	Inclusive	• Previously stated SRI policy • Commitment to sustainability • Leadership on critical matter facing planet
Naropa University, CO	$6.25m	Selective (CU 200)	• Alignment with values • Expect minimal harm to endowment • History of SRI • Shareholder advocacy would not result in "significant changes in behavior"
The New School, NY	$220m	Inclusive (Direct)	• "Make a big public statement" • Leadership on critical matter facing planet • Part of campus environmental/ sustainability efforts
Pacific School of Religion, CA	Data unavailable	Selective (CU 200)	• Alignment with values and faith • Balance "optimal" investments with social change
Peralta CC District, CA	Data unavailable	Selective (CU 200)	• Alignment with values • Providing for future students • Leadership on critical issue facing planet
Pitzer College, CA	$124m	Inclusive	• Alignment with values • Expect minimal harm to endowment • Part of campus environmental/ sustainability efforts
Pratt Institute, NY	$123m	Inclusive	• Alignment with values & teaching • Lead by example • History & commitment to sustainability
Prescott College, AZ	$4.6m	Selective (CU 200)	• Alignment with values • Long-term stability • Upholds ACUPCC
Rhode Island School of Design, RI	$328.3m	Inclusive (Direct)	• "Important issue to the school and its community" • "Right action to take"
Salem State University, MA	$18.2m	Selective (CU200)	• Addressing pressing issue facing planet • Part of campus sustainability efforts

(Continued)

Table 3. Continued.

HEI	Est. endowment	Scope	Stated motivations for FFD
San Francisco State University Foundation, CA	$51.2m	Targeted (Coal & Tar Sands)	• Previously stated sustainability policy • Commitment to social justice • Previously stated SRI policy
Santa Fe Art Institute, NM	Data unavailable	Inclusive	• Alignment with values • “Positive social force” • Leadership on critical matter facing planet
Stanford University, CA	$18.7b	Targeted (Coal)	• Alignment with values • Availability of alternative energy sources • Previously stated SRI policy • Leadership on critical matter facing planet
Sterling University, VT	$1m	Selective (CU 200)	• Alignment with values • Long-term stability • Expect minimal harm to endowment • History of environmental stewardship
SUNY College of Environmental Science and Forestry, NY	$29m	Selective (CU 200)	• Alignment with values • Leadership on critical matter facing planet
Syracuse University, NY	$1.2b	Inclusive (Direct)	• Commitment to “environmental stewardship and good corporate citizenship” • Previously stated SRI policy
Union Theological Seminary, NY	$108.4m	Inclusive (Direct)	• Alignment with moral/theological values • Expect minimal harm to endowment • “One small step” towards healing a wounded planet
Unity College, ME	$13.5m	Inclusive (Direct)	• Alignment with values • Expect minimal harm to endowment • Ethical imperative • Leadership on critical matter facing planet
University of California, CA	Data unavailable	Targeted (Coal & Tar Sands)	• Concern over risky investments • Pollution concerns and “drop in global demand”
University of Dayton, OH	$670m	Selective (CU 200)	• Alignment with religious and social values • Long-term stability • Expect minimal harm to endowment • Upholds ACUPCC • Moral imperative to act
University of Hawaii, HI	$66m	Inclusive (Direct)	• Previously stated sustainability policy • “Long-term economic argument” • Leadership on critical matter facing planet
University of Maine System, ME	$121m	Targeted (Coal)	• Alignment with values • Long-term stability • Leadership on critical matter facing planet
University of Maine at Presque Isle Foundation, ME	Data unavailable	Inclusive	• Reaffirm commitment to environmental sustainability • Alignment with values • Part of campus sustainability efforts
University of Maryland, MD	$1b	Selective (CU 200)	• Limit exposure to “most dirty energy” • Recognise the threat of climate change
University of Mary Washington, VA	$41.4m	Selective (CU 200)	• Alignment with values • Leadership on sustainability • Demonstrate commitment to environment
University of Massachusetts Foundation, MA	$770m	Targeted (Coal)	• Alignment with values • Leadership on climate change • Adoption of SRI policy • Upholds ACUPCC
University of Washington, WA	$2.8b	Targeted (Coal)	• Alignment with values • Upholds ACUPCC and Washington Business Climate Declaration
Warren Wilson College, NC	$55m	Selective (CU 200)	• Alignment with values, culture, and mission • Adoption of SRI policy
Yale University	$25.6b	Targeted (~$10 m from Coal & Oil Sands)	• Alignment with principles • Fiscally responsible • “Get ahead of” carbon pricing

Table 4. FFD rejections.

HEI	Est. endowment	Stated motivations for rejection
American University, DC	$535m	• Fiduciary responsibility • Minimal impact • Costs: $1m–$2 m per year
Amherst College, MA	$2.19b	• Fiduciary responsibility • Shareholder advocacy • Minimal impact
Bates College, ME	$233.8m	• Fiduciary responsibility • Costs and risks • Distorts college's core mission
Boston College, MA	$2.13b	• Contradictory while consuming FF • Minimal impact • Costs • Fiduciary responsibility
Bowdoin College, ME	$1.22b	• Costs and risks • Minimal impact • Do not make political statement with endowment
Brown University, RI	$3b	• "Not the right tool" • Minimal impact
Bryn Mawr College, PA	$71m	• Costs • Fiduciary responsibility • Minimal impact • Shareholder advocacy
Carleton College, MN	$792.7m	• Fiduciary responsibility • Do not make political statement with endowment • Minimal impact • Shareholder advocacy
City University of New York, NY	Data unavailable	• Costs and risks
Colby College, ME	$740m	• Effect on reducing global warming "unclear" • "Slippery slope" • Fiduciary responsibility
Colorado College, CO	$593m	• Costs and risks • Minimal impact
Columbia University, NY	$9.2b	• Shareholder advocacy • Contradictory while consuming FF • Minimal impact
Cornell University, NY	$6.2b	• Risk • Solve climate change with technological solutions • Do not make political statement with endowment
Davidson College, NC	$649.3m	• "Impede committee's mission" • Minimal impact • Question integrity while consuming FF
Duke University, NC	$7.04b	• Unknown impact • Taking "more effective" steps • Minimal impact
Fort Lewis College, CO	$17.2m	• Fiduciary responsibility • Minimal impact • Contradictory while consuming FF
George Washington University, DC	$1.62b	• Not the only/best way to address climate change • Divestment is not a "part of investment strategy"
Harvard University, MA	$36.4b	• Costs and risk • Do not make political statement with endowment • Minimal impact
Haverford College, PA	$434m	• Costs and risks • Minimal impact • "Not the right step" • Fiduciary responsibility
Middlebury College, VT	$1.08b	• Costs and risks • Fiduciary responsibility • Minimal/unknown impact
Massachusetts Institute of Technology (MIT), MA	$13.48b	• Shareholder engagement

(*Continued*)

Table 4. Continued.

HEI	Est. endowment	Stated motivations for rejection
New York University, NY	$3.5b	• Fiduciary responsibility • Not "impactful" way to address climate change
Notre Dame University, IN	$10b	• Contradictory while consuming FF
Oregon State University, OR	$700m	• Fiduciary responsibility • Unknown impact
Pomona College, CA	$1.8b	• Risk • Predict loss of "$485 million over 10 years" • Minimal impact
Princeton University, NJ	$18.8b	• Do not make political statement with endowment • Contradictory while consuming FF • Fiduciary responsibility • "Slippery slope"
Reed College, OR	$543m	• Risk to endowment • Contradictory while consuming FF • Fiduciary responsibility
Santa Clara University, CA	$884.7m	• Minimal/unknown impact • Costs • "Lack of fund choices available"
Seattle University, WA	$210.6m	• Minimal impact • "More effective ways" to address climate change • Fiduciary responsibility • Do not make political statement with endowment
Swarthmore College, PA	$1.88b	• Fiduciary responsibility – predict loss of "$10m–$20 m per year" • Minimal impact • "Cost … would outweigh any potential benefit"
Tufts University, MA	$1.44b	• Costs and risk • Predict loss of "$75 m over 10 years" • Pursue other climate action • Fiduciary responsibility
Tulane University, LA	$1.2b	• Not appropriate or effective – minimal impact • Do not make political/ideological statement with endowment • Risk to endowment
University of Colorado, CO	$1.09b	• Do not make political statement with endowment • Fiduciary responsibility • "Not the answer" – minimal impact
University of Michigan, MI	$10.26b	• Do not make political statement with endowment • No "viable alternative" to FF at "necessary scale"
University of Montana, MT	$176.9m	• Fiduciary responsibility • Do not make political statement with endowment
University of North Carolina, NC	$2.7b	• Divestment is not the "optimal way to go" • Contradictory while consuming FF
University of Oregon, OR	$627m	• Fiduciary responsibility • Minimal/unknown impact • Do not make political statement with endowment
University of Rhode Island, RI	$103m	• Costs and risks • Fiduciary responsibility • Loss of potential investment opportunities
University of Tennessee, TN	$1b	• Could affect future funding (scholarships, etc.) • "Controversial" to mission
University of Vermont, VT	$422m	• Fiduciary responsibility • Risk to endowment
University of Wisconsin, WI	$2.02b	• Minimal impact • Fiduciary responsibility • "Distraction from more important and difficult behavioral changes" • Do not make political statement with endowment
Vassar College, NY	$974.2m	• Shareholder advocacy • Unknown impact • Fiduciary responsibility
Washington University at St. Louis, MO	$6.7b	• "Other steps" can be taken to address climate change

(*Continued*)

Table 4. Continued.

HEI	Est. endowment	Stated motivations for rejection
Wellesley College, MA	$1.08b	• Minimal impact • Costs and risks • Fiduciary responsibility
Whitman College, WA	$445m	• Costs and risks • Contradictory while consuming FF • "More effective" ways to address climate change • Minimal impact
Williams College, MA	$2.34b	• Fiduciary responsibility • Minimal impact • Costs and risks

donors and short-term incentives of fund managers are not having their say" (student interview #4). This question was raised in a press release by the MIT student group:

> Climate disinformation bankroller David Koch has previously given MIT $185 million and is a Life Member of MIT's Board of Trustees. President Reif's decision also comes during a $5.5 billion capital campaign – the largest in the Institute's history. MIT receives more industry funding than almost any other university in the country. Sponsors of MIT energy research include ExxonMobil, BP, Chevron, Eni, Saudi Aramco, Shell, Statoil, Total, and the American Petroleum Institute and its 600-plus members. (Supran 2015b)

Students argued that by maintaining investments in fossil fuels, universities are "undermining the integrity of science and are forfeiting their duty and moral responsibility as an institution of learning" (participant observation, 2014 MIT Climate CoLab conference). Expressing similar concerns, Swarthmore Mountain Justice publicly called for three board members to recuse themselves from future conversations on FFD due to their considerable personal and financial ties with the fossil fuel industry: "One trustee served on a mutual fund board which held over $800 million dollar investment in ExxonMobil, while another trustee's consulting group advocated for the legalization of Arctic drilling" (student interview #12). Similar conflicts of interest were identified at other HEIs. For instance, Harvard trustee Theodore Wells currently acts as legal counsel for ExxonMobil (faculty interview #5), while a trustee at another school vehemently declared that personal investments in Exxon put his kids through college (participant observation board of trustee meeting #2). The institutional capacity to divest, divestment protagonists argued, is clearly influenced by individual and institutional ties to the fossil fuel industry.

FFD protagonists also argued that many HEI presidents and trustees are impeding critical action on climate. For example, the anti-divestment website run by the Independent Petroleum Association of America (2016) is rife with quotes from university presidents (Franta 2016). Interviews suggested that many HEI administrations chose social reproduction over social transformation, prioritized individual climate responsibility over institutional responsibility, and defended the status quo at the expense of systemic change.

In many cases, rejection of students' calls for divestment have caused an escalation in climate organising. For instance, Harvard's divestment rejection paved the way for a group of students to file a lawsuit in November 2014 (*Harvard Climate Justice v. President and Fellows of Harvard College*). In April 2015, approximately 100 students blocked Harvard administrative offices for "Harvard Heat Week". Similarly, members of Fossil Free MIT staged a 116-day sit-in outside President L. Rafael Reif's office following MIT's divestment rejection on 21 October 2015. Just a few months later (12 April 2016), four Harvard students were arrested after they staged a sit-in at the Boston Federal Reserve. Students were protesting Harvard Management Company's recent decision to invest in a private equity fund that supports struggling oil and gas companies. Similar actions took place at UMass Amherst where 34 UMass students were arrested for occupying administration buildings in the lead up to UMass divestment vote. UMass fully divested on 25 May 2016. These actions reflect the escalation of campaigns and the willingness of students to organise over the long term in the name of divestment and climate action.

Re-orienting sustainability towards a paradigm of climate justice

The divestment movement is slowly transforming the climate change narrative from a technocratic analysis of carbon emissions to a human-centred narrative that calls for systemic social and economic change. It demands a shift from compliance-oriented sustainability behaviour to a more politicised focus on the standpoint of HEIs in the modern fossil fuel economy. The FFD movement is thus sowing the seeds of an alternative mission of higher education – one that provides increasingly proactive engagement with the urgent political realities of the decarbonisation challenge. Overcoming carbon lock-in requires an explicit role from HEIs in combating climate change misinformation and confronting special-interest lobbying of policy-makers who are obstructing action on climate. Stigmatising the fossil fuel industry and creating space for meaningful political action means drastically reimagining a world without fossil fuels (Karney *et al*. 2015). The moral imperative to respond thus necessitates HEIs to urgently stress the physical and permanent social, technical, and economic changes required if we are to avoid irreversible climate change. Fully integrating sustainability into the core business of higher education requires addressing fundamental ethical questions of responsibility concerning the actions (or lack thereof) by HEI leadership in addressing the climate crisis. Resolving these challenges requires changes in institutional behaviour at all levels and re-evaluation of the core responsibility of HEIs in averting catastrophic climate change. Activists are calling on HEIs to extend their influence through a broad range of channels, approaches, and actors. Key recommendations emanating from interviews included the following:

- The urgency of the climate crisis and the inadequacy of incremental, business-as-usual approaches should encourage HEIs to consider and carry out exceptional measures (faculty interview #5);
- Taking a proactive and explicit role in tackling the immediate political economy of overcoming carbon lock-in by divesting from all fossil fuels;
- Establishing ethics advisory councils to explicitly combat misinformation and avoid inadvertently supporting disinformation through investments (Stocker *et al*. 2015);
- Requesting trustees and financial advisors to publically declare ties/interests to fossil fuel companies/energy sector. Independent ethics advisory councils should assess conflict of interests and increase transparency;
- Redefining fiduciary duty in the context of the climate crisis (see US Department of Labor 2015);
- (Re)defining sustainability in its most holistic and systemic sense, accounting for both ecological and intra- and intergenerational equity issues;
- Making the climate crisis the primary focus of curricula, research and funding; e.g. The New School and Unity College have already taken similar steps;
- Reorienting climate education to increase attention on climate justice and human rights violations, and restoring a civic pedagogy which establishes bonds with social movements (see Huckle and Wals 2015);
- Establishing regional intercollegiate councils (Stocker *et al*. 2015) whereby groups of universities team up to address critical climate issues (e.g. supply-side climate policies, climate denial, the need for systemic political-economic change). These councils could also increase public awareness about the urgent need to greatly scale up renewable energies and efficiency-technology investments.

Bridging the climate action gap

A handful of US HEIs have embraced transformative climate actions; yet, this research indicates that US higher education predominantly supports a reformist perspective on green transformations. For example, many divestment protagonists denounced HEIs' failure to acknowledge or challenge a political–economic system that supports the continued business-as-usual ideology of fossil fuel production and extraction. Divestment protagonists called for HEIs to extend their duty of care beyond incremental business-as-usual approaches. FFD is rewriting the climate narrative as an ethical problem about fossil fuels, which requires HEIs to play a greater role. In particular, HEIs can mediate social discourse on complex and contentious societal trade-offs in the transition to a low carbon world.

Helping to inform and shape public opinion and policy is important precursors to changes in regulations and incentives (e.g. carbon taxes, renewable subsidies, consumption-target tax incentives) that are ultimately necessary to meet the challenges of climate change (Karney *et al*. 2015). HEIs can play a greater leadership role in persuading governments to implement these regulations or incentives and to persuade the public to accept and to demand such policies. The movement for divestment is engaging with business-dominated communities by opening up endowments investments to critique. Divestment is impacting how institutions interpret SRI, ESG, and corporate social responsibility (CSR) spheres. California's public pension funds incurred a massive loss of $5 billion in the last year alone from their holdings in the top 200 FF companies (Fleishman and Lana 2015), thus increasing climate change awareness at an institutional level. FFD can also draw attention to the undercapitalisation of renewable energy and climate-friendly technologies.

Ultimately, FFD is a collective effort, which aims to alter what are considered appropriate priorities for society and, by extension, appropriate decisions about investment, behaviour and public policy (Karney *et al*. 2015). The movement has the capacity to catalyse public discourse and extend the web of influence and action that could bring about a normative shift in attitudes towards climate change and the fossil fuel industry (Ayling and Gunningham 2015). With the continued spread of FFD, it is possible that it will become a normative and expected action within higher education. For instance, pressure from the divestment movement prompted the US Labor Department to issue new guidance[1] for retirement plans covered by the Employee Retirement Income Security Act of 1974 (ERISA), which provides fiduciaries with greater comfort in incorporating ESG considerations in their investment decisions (Goldman Sachs 2015). Many financial intermediaries have rapidly responded to the divestment movement, developing new products and services with fossil-free investment options (e.g. the launch of a fossil-free index, by FTSE). The movement may therefore play a pivotal role in propelling the transition to a carbon-free economy.

On 4 November 2015, new legislation that would ban coal, oil, and gas extraction on US public land was introduced to US Congress. Adopting the slogan of the divestment movement, the Keep It in the Ground Act has the support of several prominent politicians, including Senator Bernie Sanders and Senator Elizabeth Warren. While the bill has little chance of passing the Senate, it is clear that the FFD movement has paved the way for conversations about the political economy of fossil fuels and the potential social, political, and ecological implications of a future independent of fossil fuels. That said, given the climate policy gridlock in the United States, it is very unlikely that the government will take action, let alone effective action, in time to avert catastrophic climate change. Nevertheless, HEIs are well positioned to radically shift sustainability discourse (and action) away from narrow debates about gradualist policies that do not challenge continued fossil fuel production and extraction. As shapers of public discourse, HEIs can play a greater role in bridging this climate action gap, through steering policy-makers, investors and decision-makers locally, nationally, and at all levels towards more immediate decarbonisation. HEIs can – and should – play a more proactive role in nudging economies along sustainable paths rather than replicating old modes of carbon-intensive development.

Postscript

The University of Oregon (listed under divestment rejections) has since committed to inclusive divestment – citing long-term stability, fiduciary responsibility, and a desire to "lead the PAC-12" collegiate division as divestment motivations.

Note

1. On 22 October 2015, the guidance stated that, although collateral goals of ESG investing may be considered only as "tie-breakers", when choosing between otherwise equal investment alternatives,

> environmental, social, and governance issues may have a direct relationship to the economic value of the plan's investment. In these instances, such issues are not merely collateral considerations or tie-breakers, but rather are proper components of the fiduciary's primary analysis of the economic merits of competing investment choices. (Goldman Sachs 2015, p. 2)

Acknowledgements

The authors would sincerely like to thank Prof. Avi Chomsky, Prof. Marcos Luna, Prof. Gregory Trencher, Dr Ben Franta, John O'Sullivan, and Joe McGuire for their helpful insights in preparing this paper.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Noel Healy http://orcid.org/0000-0002-2933-5723
Jessica Debski http://orcid.org/0000-0002-7820-9061

References

ACUPCC, 2015. *American College and University President's Climate Commitment* [online]. Available from: http://rs.acupcc.org/stats/tangible-actions/ [Accessed 27 March 2016].
Alperovitz, G., Speth, J.G., and Guinan, J., 2015. *The next system project: new political-economic possibilities for the 21st century* [online]. Available from: http://thenextsystem.org/wp-content/uploads/2015/03/NSPReport1_Digital1.pdf [Accessed 27 August 2016].
Anderson, K., 2015. Talks in the city of light generate more heat. *Nature*, 528 (7583), 437.
Anderson, K. and Bows, A., 2010. Beyond 'dangerous' climate change: emission scenarios for a new world. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 369 (1934), 20–44.
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*. Oxford, UK: SSEE/University of Oxford.
Ayling, J. and Gunningham, N., 2015. Non-state governance and climate policy: the fossil fuel divestment movement. *Climate Policy*, 1–15.
Barlett, P. and Chase, G., eds., 2004. *Sustainability on campus: stories and strategies for change*. Cambridge: MIT Press.
Barry, J., 2016. Biofuelling the hummer?: Transdisciplinary thoughts on techno-optimism and innovation in the transition from unsustainability. *In*: E. Byrne, G. Mullally, and C. Sage, eds. *Transdisciplinary perspectives on transitions to sustainability*. Manchester: Manchester University Press, 106–124.
Beynaghi, A., *et al.*, 2016. Future sustainability scenarios for universities: moving beyond the United Nations decade of education for sustainable development. *Journal of Cleaner Production*, 112 (4), 3464–3478.
Blewitt, J. and Cullingford, C., 2013. *The sustainability curriculum: the challenge for higher education*. New York: Routledge.
Bradshaw, E., 2015. Blockadia rising: rowdy greens, direct action and the Keystone XL pipeline. *Critical Criminology*, 23 (4), 433–448.
Braman, S., *et al.*, 2014. *The carbon underground: the world's top 200 public companies*. Boston: Trillium Asset Mgmt.
Bratman, E., *et al.*, 2016. Justice is the goal: divestment as climate change resistance. *Journal of Environmental Studies and Sciences*, 6 (4), 677–690.
Brennan, J., King, R., and Lebeau, Y., 2004. *The role of universities in the transformation of societies*. London: Centre for Higher Education Research and Information.
Bringle, R., Games, R., and Malloy, E., 1999. *Colleges and universities as citizen*. Boston: Allyn & Bacon.
Brown, T., 2016. Sustainability as empty signifier: its rise, fall, and radical potential. *Antipode*, 48 (1), 115–133.
Brown, P., *et al.*, 2014. *Fossil fuel divestment: building a social movement for collective climate action* [online]. Boston: Climate CoLab. Available from: http://climatecolab.org/plans/-/plans/contests/2014/shifting-behavior-for-a-changing-climate/c/proposal/1309350 [Accessed 29 March 2016].
Bulkeley, H., *et al.*, 2014. *Transnational climate change governance*. New York: Cambridge University Press.

Bullard, N. and Müller, T., 2012. Beyond the 'Green Economy': system change, not climate change. *Development*, 55 (1), 54–62.
Cai, Y., Lenton, T.M., and Lontzek, T.S., 2016. Risk of multiple interacting tipping points should encourage rapid CO_2 emission reduction. *Nature Climate Change*, 6, 520–525.
Calder, W. and Clugston, R., 2003. International efforts to promote higher education for sustainable development. *Planning for Higher Education*, 31, 30–44.
Carlson, S., 2015. *What happened to the drive for campus sustainability?* [online]. Available from: http://chronicle.com/article/Whatever-Happened-to-the-Drive/234095 [Accessed 19 August 2016].
Chatterton, P., Featherstone, D., and Routledge, P., 2013. Articulating climate justice in Copenhagen: antagonism, the commons, and solidarity. *Antipode*, 45 (3), 602–620.
Clark, P.U., *et al*. 2016. Consequences of twenty-first-century policy for multi-millennial climate and sea-level change. *Nature Climate Change*, 6, 360–369.
Cleveland, C. and Reibstein, R., 2015. The path to fossil fuel divestment for universities: climate responsible investment. Available from: https://ssrn.com/abstract=2565941.
Colucci-Gray, L., *et al.*, 2013. Science education for sustainability, epistemological reflections and educational practices: from natural sciences to transdisciplinarity. *Cultural Studies of Science Education*, 8 (1), 127–183.
Cortese, A., 2003. The critical role of higher education in creating a sustainable future. *Planning for Higher Education*, 31 (3), 15–22.
Dietz, S., *et al.*, 2016. 'Climate value at risk' of global financial assets. *Nature Climate Change*, 4 April.
Faust, D., 2013. *Fossil fuel divestment statement* [online]. Available from: http://www.harvard.edu/president/news/2013/fossil-fuel-divestment-statement [Accessed 27 March 2016].
Faust, D., 2014. *Confronting climate change* [online]. Boston: Harvard University. Available from: http://www.harvard.edu/president/news/2014/confronting-climate-change [Accessed 27 March 2016].
Ferrer-Balas, D., Buckland, H., and De Mingo, M., 2009. Explorations on the university's role in society for sustainable development through a systems transition approach: case-study of the Technical University of Catalonia. *Journal of Cleaner Production*, 17 (12), 1075–1085.
Fleishman, B. and Lana, W., 2015. *California pension funds lost over $5 billion from fossil fuel holdings* [online]. Available from: http://gofossilfree.org/usa/press-release/california-pension-funds-lost-over-5-billion-from-fossil-fuel-holdings/ [Accessed 29 March 2016].
Fossil Free, 2016. *Divestment commitments* [online]. Available from: http://gofossilfree.org/commitments/ [Accessed 23 August 2016].
Franta, B., 2016. Are universities actively thwarting efforts to combat climate change? *The Nation* [online]. 12 May. Available from: https://www.thenation.com/article/are-universities-actively-thwarting-efforts-to-combat-climate-change/ [Accessed 29 September 2016].
Geden, O., 2016. An actionable climate target. *Nature Geoscience*, 9 (5), 340–342.
Goldman Sachs, 2015. *Fiduciary responsibility: integrating environmental, social and governance issues* [online]. Available from: https://assetmanagement.gs.com/content/dam/gsam/pdfs/common/en/public/articles/perspectives/2015/FiduciaryDuty.pdf?sa = n&rd = n [Accessed 29 March 2016].
Grady-Benson, J. and Sarathy, B., 2016. Fossil fuel divestment in US higher education: student-led organizing for climate justice. *Local Environment*, 21 (6), 661–681.
Greenberg, D. and Fang, C., 2015. The myth of climate neutrality: carbon onsetting as an alternative to carbon offsetting. *Sustainability: The Journal of Record*, 8 (2), 70–75.
Harvard Faculty for Divestment, 2014. *Faculty open letter* [online]. Available from: http://www.harvardfacultydivest.com/open-letter-new [Accessed 29 March 2016].
Huckle, J. and Wals, A.E., 2015. The UN decade of education for sustainable development: business as usual in the end. *Environmental Education Research*, 21 (3), 491–505.
Independent Petroleum Association of America, 2016. *What they're saying* [online]. Available from: http://divestmentfacts.com/category/what-theyre-saying/ [Accessed 19 August 2016].
International Energy Agency, 2009. *World Energy Outlook 2009* [online]. Paris: OECD/IEA. Available from: http://www.iea.org/textbase/npsum/weo2009sum.pdf [Accessed 29 March 2016].
International Energy Agency, 2012. *World Energy Outlook 2012* [online]. Paris: OECD/IEA. Available from: http://www.worldenergyoutlook.org/weo2012/ [Accessed 19 August 2016].
Jones, D., 2012. Looking through the 'greenwashing glass cage' of the green league table towards the sustainability challenge for UK universities. *Journal of Organizational Change Management*, 25 (4), 630–647.
Jones, D., 2015a. Embodying Tao in the 'restorative university'. *Sustainability Science*, 10 (1), 3–16.
Jones, D., 2015b. Opening up the Pandora's box of sustainability league tables of universities: a Kafkaesque perspective. *Studies in Higher Education*. doi:10.1080/03075079.2015.1052737
Karney, B., *et al.*, 2015. *Report of the president's advisory committee on divestment from fossil fuels*. University of Toronto.
Karp, A., Orlowski, M., and Silverstein, J., 2014. *College endowment investment trends and best practices: an analysis of sustainability tracking, assessment, and rating system (STARS) data*. Boston: Sustainable Endowments Institute.

Kemp, R. and Loorbach, D., 2003. *Governance for sustainability through transition management*. Montreal: Human Dimensions of Global Environmental Change Research Community.

Ki-Moon, B., 2014. *Remarks at press encounter with World Bank President Jim Yong Kim and IMF Managing Director Christine Lagarde*. Washington, DC.

Klein, N., 2015. *This changes everything: capitalism vs. the climate*. New York: Simon and Schuster.

Leaton, J., *et al.*, 2013. *Unburnable carbon 2013: wasted capital and stranded assets* [online]. London: Carbon Tracker and the Grantham Research Institute, LSE. Available from: http://www.carbontracker.org/wastedcapital [Accessed 19 August 2016].

Lotz-Sisitka, H., *et al.*, 2015. Transformative, transgressive social learning: rethinking higher education pedagogy in times of systemic global dysfunction. *Current Opinion in Environmental Sustainability*, 16, 73–80.

Lozano, R., *et al.*, 2013. Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*, 48, 10–19.

Lynch, K., 2006. Neo-liberalism and marketisation: the implications for higher education. *European Educational Research Journal*, 5 (1), 1–17.

Marshall, G., 2015. *Don't even think about it: why our brains are wired to ignore climate change*. New York: Bloomsbury.

McGlade, C. and Ekins, P., 2015. The geographical distribution of fossil fuels unused when limiting global warming to 2°C. *Nature*, 517 (7533), 187–190.

McKibben, B., 2012. Global warming's terrifying new math. *Rolling Stone*, 1162, 2 August.

Meinshausen, M., *et al.*, 2009. Greenhouse-gas emission targets for limiting global warming to 2°C. *Nature*, 458 (7242), 1158–1162.

Mikhailovich, K. and Fitzgerald, R., 2014. Community responses to the removal of bottled water on a university campus. *International Journal of Sustainability in Higher Education*, 15 (3), 330–342.

MIT Faculty for Divestment, 2015. *A response to President Reif's announced 'Plan for action on climate change'* [online]. Available from: http://web.mit.edu/fnl/volume/282/climate.html [Accessed 29 March 2016].

Monbiot, G., 2015. *Why leaving fossil fuels in the ground is good for everyone* [online]. New York: Guardian News. Available from: http://www.theguardian.com/environment/georgemonbiot/2015/jan/07/why-leaving-fossil-fuels-in-ground-good-for-everyone [Accessed 27 March 2016].

Morrissey, J., 2015. Regimes of performance: practices of the normalised self in the neoliberal university. *British Journal of Sociology of Education*, 36 (4), 614–634.

Oreskes, N. and Conway, E., 2011. *Merchants of doubt: how a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. New York: Bloomsbury Press.

Patsky, M. and Samuelrich, L., 2014. *Extracting fossil fuels from your portfolio: an updated guide to personal divestment and reinvestment*. Boston: Trillium Asset Management.

Peer, V. and Stoeglehner, G., 2013. Universities as change agents for sustainability: framing the role of knowledge transfer and generation in regional development processes. *Journal of Cleaner Production*, 44, 85–95.

Rappaport, A., Creighton, S., and Bacow, L., 2007. *Degrees that matter: climate change and the university*. Cambridge: The MIT Press.

Reyes, O., 2015. *Towards a just transition*. Working Paper Draft. November. Draft. edn. Washington, DC; Institute for Policy Studies.

Ringeling, X. (2015). *Transformative reformism: a study of the UK University Fossil Fuel Divestment Movement's potential for significant change*. MA thesis. University College London.

Sedlacek, S., 2013. The role of universities in fostering sustainable development at the regional level. *Journal of Cleaner Production*, 48, 74–84.

Selby, D. and Kagawa, F., 2010. Runaway climate change as challenge to the 'closing circle' of education for sustainable development. *Journal of Education for Sustainable Development*, 4 (1), 37–50.

Starr, D., 2016. The carbon accountant. *Science*, 353 (6302), 858–861.

Stephens, J. and Graham, A., 2010. Toward an empirical research agenda for sustainability in higher education: exploring the transition management framework. *Journal of Cleaner Production*, 18 (7), 611–618.

Stephens, J., *et al.*, 2008. Higher education as a change agent for sustainability in different cultures and contexts. *International Journal of Sustainability in Higher Education*, 9 (3), 317–338.

Sterling, S. and Thomas, I., 2006. Education for sustainability: the role of capabilities in guiding university curricula. *International Journal of Sustainable Development*, 1 (4), 349–370.

Stocker, R. *et al.*, 2015. *Report of the MIT climate change conversation committee, MIT, and the Climate Challenge MIT*. Boston: Massachusetts Institute of Technology.

Su, H. and Chang, T., 2010. Sustainability of higher education institutions in Taiwan. *International Journal of Sustainability in Higher Education*, 11 (2), 163–172.

Supran, G., 2015a. How fossil fuel divestment can rewrite the climate narrative. *good.is* [online]. Available from: https://www.good.is/articles/mit-scientists-sit-in-fossil-fuel-divestment [Accessed 3 March 2016].

Supran, G., 2015b. *MIT students sit-in at President's office in protest against MIT's decision to not divest from fossil fuels, ignoring calls from thousands of MIT members and president's own committee* [online]. Boston: Fossil Free MIT. Available from: http://www.fossilfreemit.org/pressreleases/ [Accessed 29 March 2016].

Svanström, M., Lozano-García, F., and Rowe, D., 2008. Learning outcomes for sustainable development in higher education. *International Journal of Sustainability in Higher Education*, 9 (3), 339–351.
Tilbury, D., 2011. Higher education for sustainability: a global overview of commitment and progress. *Higher Education in the World*, 4, 18–28.
Trencher, G., *et al.*, 2014a. Beyond the third mission: exploring the emerging university function of co-creation for sustainability. *Science and Public Policy*, 41 (2), 151–179.
Trencher, G. *et al.*, 2014b. University partnerships for co-designing and co-producing urban sustainability. *Global Environmental Change*, 28, 153–165.
UNESCO Education Sector, 2005. *United Nations Decade of Education for Sustainable Development (2005–2014)*. International Implementation Scheme.
United Nations, 1987. *Our common future: World Commission on Environment and Development*. Oxford University Press.
US Department of Labor, 2015. *Interpretive bulletin relating to the fiduciary standard under ERISA in considering economically targeted investments*. Washington, DC: Federal Register.
Velazquez, L., Munguia, N., and Sanchez, M., 2005. Deterring sustainability in higher education institutions: an appraisal of the factors which influence sustainability in higher education institutions. *International Journal of Sustainability in Higher Education*, 6 (4), 383–391.
Wachholz, S., Artz, N., and Chene, D., 2014. Warming to the idea: university students' knowledge and attitudes about climate change. *International Journal of Sustainability in Higher Education*, 15 (2), 128–141.
Watts, M., 2005. Righteous oil? Human rights, the oil complex, and corporate social responsibility. *Annual Review of Environmental Resources*, 30, 373–407.
Whitmer, A., *et al.*, 2010. The engaged university: providing a platform for research that transforms society. *Frontiers in Ecology and the Environment*, 8 (6), 314–321.
Wright, T., 2002. Definitions and frameworks for environmental sustainability in higher education. *International Journal of Sustainability in Higher Education*, 3 (3), 203–220.
Wright, T., 2004. The evolution of sustainability declarations in higher education. *In*: P. Corcoran and A. Wals, eds. *Higher education and the challenge of sustainability*. New York, NY: Springer, 7–19.
Yarime, M., *et al.*, 2012. Establishing sustainability science in higher education institutions: towards an integration of academic development, institutionalization, and stakeholder collaborations. *Sustainability Science*, 7 (1), 101–113.

Appendices

Appendix 1. Sources for Table 3

Adler University, 2015. *Adler University divests from fossil fuels* [online]. Available from: https://www.adler.edu/page/news-events/campus-news/adler-university-divests-from-fossil-fuels [Accessed 27 March 2016].
Barlow, R., 2016. *Trustees adopt broad climate change strategy* [online]. Available from: http://www.bu.edu/today/2016/trustees-adopt-broad-climate-change-strategy/ [Accessed 24 October 2016].
California Institute of the Arts, 2015. *CalArts divests from fossil fuel investments* [online]. Available from: https://www.calarts.edu/news/2015-dec-18/calarts-divests-fossil-fuel-investments [Accessed 27 March 2016].
College of the Atlantic, 2013. *COA divests!* [online]. Available from: http://www.coa.edu/live/news/745-coa-divests [Accessed 27 March 2016].
Crossman, R., 2015. *Adler University divests from fossil fuels* [online]. Available from: http://gofossilfree.org/usa/adler-university-divests-from-fossil-fuels/ [Accessed 27 March 2016].
Derr, M., 2013. *Why Sterling College divested from fossil fuels* [online]. Available from: http://www.huffingtonpost.com/matthew-derr/college-fossil-fuel-divestment_b_2632391.html [Accessed 27 March 2016].
Donovan, B., 2013. *SF State leads state in university fossil fuel divestment* [online]. Available from: http://goldengatexpress.org/2013/10/22/sf-state-leads-state-divestment/ [Accessed 27 March 2016].
Espinoza, A., 2015. *RISD to divest from fossil fuel* [online]. Available from: http://ripr.org/post/risd-divest-fossil-fuel [Accessed 27 March 2016].
Foothill-de Anza Community College, 2014. *FHDA divests* [online]. Available from: https://foundation.fhda.edu/stories/fossil-fuel-jump-story.html#.Vske9vIrLIU [Accessed 27 March 2016].
Gallagher, D., 2016. *UMW votes to divest from fossil fuels in huge win for student power* [online]. Available from: http://chesapeakeclimate.org/blog/umw-votes-to-divest-from-fossil-fuels-in-huge-win-for-student-power/ [Accessed 19 August 2016].
Gebb, A., 2014. *Chico State University Foundation pledges to divest from fossil fuels within four years* [online]. Available from: http://www.chicoer.com/article/NA/20141215/NEWS/141219783 [Accessed 27 March 2016].
Georgetown University, 2015. *Proposed resolution adopting the recommendations of the board working group* [online]. Available from: https://georgetown.app.box.com/s/kiobphdxs6p17045w2ow284cc9x3kxqf [Accessed 27 March 2016].

Goddard College, 2015. *Goddard College divests* [online]. Available from: http://www.goddard.edu/2015/01/goddard-college-divests/ [Accessed 27 March 2016].

Gordon, L., 2015. *UC sells off $200 million in coal and oil sands* investments [online]. Available from: http://www.latimes.com/local/education/la-me-ln-uc-coal-20150909-story.html [Accessed 27 March 2016].

Heartwell, A., 2013. *California's Foothill-De Anza College becomes first community college to divest* [online]. Available from: http://gofossilfree.org/californias-foothill-de-anza-college-becomes-first-community-college-to-divest/ [Accessed 27 March 2016].

Henn, J., 2013. *San Francisco State University divests from coal and tar sands!* [online]. Available from: http://gofossilfree.org/san-francisco-state-university-divests-from-coal-and-tar-sands/ [Accessed 27 March 2016].

Hitt, M., 2015. *North Carolina's Brevard College first to divest in the Southeast* [online]. Available from: http://www.sierraclub.org/compass/2015/02/north-carolinas-brevard-college-first-divest-southeast [Accessed 27 March 2016].

Humboldt University, 2014. *Humboldt State University helps lead push for fossil-free, greener investing* [online]. Available from: http://now.humboldt.edu/news/humboldt-state-university-helps-lead-push-for-fossil-free-greener-investing/ [Accessed 27 March 2016].

Jonah, P., 2015. *UMass foundation to divest from investments in coal companies* [online]. Available from: https://www.umass.edu/newsoffice/article/umass-foundation-divest-investments-coal [Accessed 27 March 2016].

Jones, S., 2014. *Union becomes the world's first seminary to divest from fossil fuels* [online]. Available from: http://time.com/2853203/union-fossil-fuels/ [Accessed 27 March 2016].

Kiley, K., 2011. *Making green by going green* [online]. Available from: https://www.insidehighered.com/news/2011/12/16/hampshire-college-investment-policy-favors-socially-and-environmentally-responsible [Accessed 27 March 2016].

Kuta, S., 2015. *CU regents say no to fossil-fuel divestment* [online]. Available from: http://www.dailycamera.com/cu-news/ci_27924351/cus-board-regents-says-no-fossil-fuel-divestment [Accessed 19 August 2016].

Maxwell, T., 2015. *Brevard College divests from coal; first in Southeast* [online]. Available from: http://www.citizen-times.com/story/news/local/2015/02/20/brevard-college-divests-coal-first-southeast/23760715/ [Accessed 27 March 2016].

Meservey, P., 2016. *Board action: fossil fuel divestment and sustainability* [online]. Available from: https://www.salemstate.edu/news/4682/board-action-fossil-fuel-divestment/ [Accessed 24 October 2016].

Mosbergen, D., 2015. *'Big Victory': University of California sells off coal, oil sands investments* [online]. Available from: http://www.huffingtonpost.com/entry/university-of-california-divests-fossil-fuels_us_55f0fec9e4b03784e27807e3 [Accessed 27 March 2016].

Naropa University, 2013. *Naropa University divests from fossil fuels* [online]. Available from: http://www.naropa.edu/media/press-releases/press-2013/naropa-divests-from-fossil-fuels.php [Accessed 27 March 2016].

The New School, 2015. *The new school submits bold plan to tackle climate change* [online]. Available from: http://blogs.newschool.edu/news/2015/01/the-new-school-submits-bold-plan-to-tackle-climate-change/#.VskkOPIrLIU [Accessed 27 March 2016].

Penny, A., 2014. *The story of divesting at Humboldt State University* [online]. Available from: http://gofossilfree.org/usa/the-story-of-divesting-at-humboldt-state-university/ [Accessed 27 March 2016].

Peralta Community College District, 2014. *Peralta trustees pass resolution to divest from fossil fuel companies* [online]. Available from: http://web.peralta.edu/blog/peralta-trustees-pass-resolution-to-divest-from-fossil-fuel-companies/ [Accessed 27 March 2016].

Pitzer College, 2014. *Pitzer College and Robert Redford announce breakthrough fossil fuel divestment-climate action model* [online]. Available from: http://pitweb.pitzer.edu/communications/2014/04/12/pitzer-college-robert-redford-announce-breakthrough-fossil-fuel-divestment-climate-action-model/ [Accessed 27 March 2016].

Pratt Institute, 2016. *Pratt to divest from its investments in fossil fuels* [online]. Available from: https://www.pratt.edu/news/view/pratt-to-divest-from-its-investments-in-fossil-fuels [Accessed 23 August 2016].

Prescott College. *Prescott College commits to fossil fuel divestment resolution* [online]. Available from: http://www.prescott.edu/experience/news/fossil-fuel-divestment-resolution.html [Accessed 27 March 2016].

Roewe, B., 2014. *University of Dayton divests from fossil fuels* [online]. Available from: http://ncronline.org/blogs/eco-catholic/university-dayton-divests-fossil-fuels [Accessed 27 March 2016].

Santa Fe Art Institute, 2013. *Santa Fe Art Institute votes to divest from fossil fuel investments* [online]. Available from: http://greenfiretimes.com/2013/02/santa-fe-art-institute-votes-to-divest-from-fossil-fuel-investments/ [Accessed 27 March 2016].

Schappacher, E., 2015. *UCC seminary joins list of institutions divesting from fossil fuels* [online]. Available from: http://www.ucc.org/ucc_seminary_fossil_fuel_divestment_03162015 [Accessed 27 March 2016].

Schwartz, J., 2015. *The new school divests fossil fuel stock and refocuses on climate change* [online]. Available from: http://www.nytimes.com/2015/02/07/science/the-new-school-takes-a-big-step-beyond-divesting-fossil-fuel-stock.html?_r=1 [Accessed 27 March 2016].

Stanford University, 2014. *Stanford to divest from coal companies* [online]. Available from: http://news.stanford.edu/news/2014/may/divest-coal-trustees-050714.html [Accessed 27 March 2016].

Sterling College, 2013. *Sterling college commits to fossil fuel divestment* [online]. Available from: http://www.cleanyield.com/sterling-college-commits-to-fossil-fuel-divestment/ [Accessed 27 March 2016].

Stoetzer, E., 2015. *University of Hawaii becomes largest institution to divest from fossil fuels* [online]. Available from: http://college.usatoday.com/2015/06/03/university-hawaii-divests-fossil-fuels/ [Accessed 27 March 2016].
SUNY ESF, 2015. *ESF to divest from fossil fuel investments* [online]. Available from: http://www.esf.edu/communications/view.asp?newsID=3985 [Accessed 27 March 2016].
Tobin, D., 2015. *Syracuse University to divest fossil fuel investments* [online]. Available from: http://www.syracuse.com/schools/index.ssf/2015/04/syracuse_university_to_divest_fossil_fuel_investments.html [Accessed 27 March 2016].
UMPI, 2015. *UMPI Foundation Board completes total divestment from fossil fuels*2015 [online]. Available from: http://www.umpi.edu/articles/umpi-foundation-board-completes-total-divestment-from-fossil-fuels/ [Accessed 27 March 2016].
Unity College, 2013. *Unity College reports no loss from fossil fuel divestment* [online]. Available from: http://www.unity.edu/news/unity-college-reports-no-loss-fossil-fuel-divestment [Accessed 27 March 2016].
Unity College. *Our commitment to fossil fuel divestment* [online]. Available from: http://www.unity.edu/about-unity/sustainability-science/fossil-fuel-divestment [Accessed 27 March 2016].
University of Dayton, 2014. *Dayton divests* [online]. Available from: https://www.udayton.edu/news/articles/2014/06/dayton_divests_fossil_fuels.php [Accessed 27 March 2016].
University of Hawaii, 2015. *Board of regents approves fossil fuel divestment* [online]. Available from: http://www.hawaii.edu/news/2015/05/21/board-of-regents-approves-fossil-fuel-divestment/ [Accessed 27 March 2016].
University of Maine. *A resolution from the University of Maine faculty senate calling upon the administration and board of trustees to support divestment from the top 200 publicly traded fossil fuel companies* [online]. Available from: http://umaine.edu/facultysenate/files/2015/04/Divestment-Resolution_Senate_Coghlan_29April2015.pdf [Accessed 27 March 2016].
Vuynovich, M., 2015. *Pacific School of religion first seminary in California to divest in fossil fuels* [online]. Available from: http://www.prweb.com/releases/2015/02/prweb12534230.htm [Accessed 27 March 2016].
Warren Wilson College, 2015. *Warren Wilson College commits to fossil fuel divestment* [online]. Available from: https://www.warren-wilson.edu/community-news/warren-wilson-college-commits-to-fossil-fuel-divestment [Accessed 19 August 2016].

Appendix 2. Sources for Table 4

Amherst College, 2015. *Statement from Amherst College board of trustees, February 24, 2015* [online]. Available from: https://www.amherst.edu/amherst-story/facts/trustees/statements/node/600726 [Accessed 27 March 2016].
Anapol, A., 2016. *After divestment rejection, student leaders forge ahead* [online]. Available from: http://www.gwhatchet.com/2016/03/06/after-divestment-rejection-student-leaders-forge-ahead/ [Accessed 19 August 2016].
Blad, G., 2015. *Will Notre Dame answer "Pope's challenge for global warming?"* [online]. Available from: http://sustainableindiana2016.org/will-notre-dame-answer/ [Accessed 27 March 2016].
Bowen, W., 2015. *Demanding universities to divest is often bad policy* [online]. Available from: https://www.washingtonpost.com/opinions/demanding-universities-to-divest-is-often-bad-policy/2015/03/27/1382fbe4-d401-11e4-ab77-9646eea6a4c7_story.html [Accessed 27 March 2016].
Brogan, B., 2013. *Bowdoin College rejects students' calls to divest fossil-fuel investments* [online]. Available from: http://bangordailynews.com/2013/02/07/business/bowdoin-college-rejects-students-calls-to-divest-fossil-fuel-investments/ [Accessed 27 March 2016].
Brown University, 2013. *Coal divestment update* [online]. Available from: https://www.brown.edu/about/administration/president/2013-10-27-coal-divestment-update [Accessed 27 March 2016].
Chason, R., 2015. *Administration rejects divest duke proposal* [online]. Available from: http://www.dukechronicle.com/article/2015/01/administration-rejects-divest-duke-proposal [Accessed 27 March 2016].
Clemmons, T., 2014. *Wash U students protest Peabody energy* [online]. Available from: http://legacy.ksdk.com/story/news/local/2014/04/22/students-protest-peabody-energy-washington-university/8022881/ [Accessed 27 March 2016].
Colorado College, 2015. *Board of regents rejects energy company divestment* [online]. Available from: http://www.colorado.edu/news/features/board-regents-rejects-energy-company-divestment [Accessed 27 March 2016].
Cowen, S., 2014. *Response from President Cowen and the board* [online]. Available from: http://www.divesttulane.org/uploads/2/4/6/6/24661412/reponse_from_president_cowen_and_the_board_of_tulane_university.pdf [Accessed 27 March 2016].
Daily Emerald, 2014. *UO refuses to sell fossil fuel stocks, ignoring student vote* [online]. Available from: http://www.dailyemerald.com/2014/06/12/uo-refuses-to-sell-fossil-fuel-stocks-ignoring-student-vote/ [Accessed 27 March 2016].
Divestment Facts, 2015. *CUNY rejects fossil fuel divestment* [online]. Available from: http://divestmentfacts.com/cuny-rejects-fossil-fuel-divestment/ [Accessed 27 March 2016].
Edmondson, C., 2015. *ACSRI rejects fossil fuel divestment* [online]. Available from: http://columbiaspectator.com/news/2015/11/19/acsri-rejects-fossil-fuel-divestment-proposal [Accessed 27 March 2016].
Eugster, J., 2015. *Board of trustees letter* [online]. Available from: https://apps.carleton.edu/governance/cric/assets/Board_Response_to_CRIC_Report.pdf [Accessed 27 March 2016].

Faulkner, T., 2014. *URI rejects divestment in fossil fuels* [online]. Available from: http://www.ecori.org/climate-change/2014/3/18/uri-rejects-divestment-in-fossil-fuels [Accessed 27 March 2016].

Faust, D., 2013. *Fossil fuel divestment statement* [online]. Available from: http://www.harvard.edu/president/news/2013/fossil-fuel-divestment-statement [Accessed 27 March 2016].

Gelb, M., 2015. *Swarthmore chooses not to divest fossil-fuel endowment* [online]. Available from: http://articles.philly.com/2015-05-04/news/61771713_1_endowment-fossil-fuels-swarthmore-college [Accessed 27 March 2016].

Hill, C., 2016. *Shareholder role crucial in climate reform* [online]. Available from: http://miscellanynews.org/2016/02/17/opinions/shareholder-role-crucial-in-climate-reform/ [Accessed 27 March 2016].

Holland, C., 2013. *Investment policy subcommittee letter* [online]. Available from: http://news.blogs.brynmawr.edu/files/2013/08/August_27_2013BMCDivest-1.pdf [Accessed 27 March 2016].

Hongoltz-Helting, M., 2013. *Colby College won't divest fossil-fuel holdings* [online]. Available from: http://www.centralmaine.com/2013/06/01/colby-college-wont-divest-fossil-fuel-holdings/ [Accessed 27 March 2016].

Jeon, E. *Trustees say no to divestment* [online]. Available from: http://amherststudent.amherst.edu/?q=article/2015/03/03/trustees-say-no-divestment [Accessed 27 March 2016].

Johnson, T., 2013. *UVM trustees reject fossil-fuel divestment* [online]. Available from: http://www.burlingtonfreepress.com/story/news/2013/12/18/uvm-trustees-reject-fossil-fuel-divestment/4117649/ [Accessed 27 March 2016].

Kanter, C., 2014. *Letter to sustainable student action* [online]. Available from: http://www.seattleu.edu/uploadedFiles/Student_Government_of_Seattle_University/Content/2014.02.21%20Letter%20to%20SSA.pdf [Accessed 27 March 2016].

Kelley, S., 2016. *Trustees approve new standard and process for divestment consideration* [online]. Available from: http://news.cornell.edu/stories/2016/02/trustees-approve-new-standard-consider-divestment [Accessed 27 March 2016].

Liebowitz, R., 2013. *Middlebury College statement on divestment* [online]. Available from: http://www.middlebury.edu/newsroom/node/459563 [Accessed 27 March 2016].

Maxwell, T., 2015. *UNC to keep fossil fuel holdings, researches renewables* [online]. Available from: http://www.citizen-times.com/story/news/local/2015/02/13/unc-keep-fossil-fuel-holdings-researches-renewables/23352061/ [Accessed 27 March 2016].

McConville, E., 2015. *University leaders discuss commencement, crossroads in town hall meeting* [online]. Available from: http://ndsmcobserver.com/2015/02/jenkins-addresses-commencement-crossroads-town-hall-meeting/ [Accessed 27 March 2016].

McDonald, M., 2015. *MIT rejects demands to divest fossil-fuel stocks, joining Yale* [online]. Available from: http://www.bloomberg.com/news/articles/2015-10-21/mit-rejects-demands-to-divest-fossil-fuel-stocks-joining-yale [Accessed 19 August 2016].

McGarry, M., 2012. *Mills says College will not divest from fossil fuels* [online]. Available from: http://bowdoinorient.com/article/7814 [Accessed 27 March 2016].

Monaco, T., 2014. *Statement on divestment from fossil fuel companies* [online]. Available from: http://president.tufts.edu/blog/2014/02/12/statement-on-divestment-from-fossil-fuel-companies/ [Accessed 27 March 2016].

Perlmutter, R., 2014. *Reed College Board of trustees chairman responds to fossil free reed* [online]. Available from: http://www.reed.edu/news_center/press_releases/2013-2014/071714_ffrletter.html [Accessed 27 March 2016].

Pomona College, 2013. *Pomona College evaluates endowment impact of fossil fuel divestment* [online]. Available from: http://www.pomona.edu/news/2013/09/25-divestment-decision [Accessed 27 March 2016].

Reed College. *Reed won't divest* [online]. Available from: http://www.reed.edu/reed_magazine/september2014/articles/eliot_circular/divest.html [Accessed 27 March 2016].

Richardson, V., 2014. *American University the latest to reject fossil-fuel divestment demand* [online]. Available from: http://www.washingtontimes.com/news/2014/nov/21/american-u-latest-reject-fossil-fuel-divestment-de/?page=all [Accessed 27 March 2016].

Richardson, V., 2015. *University of Colorado rejects fossil-fuel divestment calls* [online]. Available from: http://www.washingtontimes.com/news/2015/apr/16/u-colorado-rejects-fossil-fuel-divestment-calls/?page=all [Accessed 27 March 2016].

Rodebaugh, D., 2014. *College foundation rejects divestment* [online]. Available from: http://www.durangoherald.com/article/20140429/NEWS01/140429517 [Accessed 27 March 2016].

Santa Clara University, 2016. *Issue areas: fossil fuel investments* [online]. Available from: https://www.scu.edu/fa/issue-areas/ [Accessed 19 August 2016].

Sigl, J., 2015. *Santa Clara U. will not make student-demanded fossil fuel divestments* [online]. Available from: http://college.usatoday.com/2015/06/02/santa-clara-u-will-not-make-student-demanded-fossil-fuel-divestments/ [Accessed 27 March 2016].

Skelding, C., 2015. *NYU working group opposes fossil-fuel divestment* [online]. Available from: http://www.capitalnewyork.com/article/city-hall/2015/03/8564868/nyu-working-group-opposes-fossil-fuel-divestment [Accessed 27 March 2016].

Spencer, C., 2014. *President Clayton Spencer's statement on climate change and divestment* [online]. Available from: http://www.bates.edu/president/2014/01/21/statement-on-climate-change-and-divestment/ [Accessed 27 March 2016].

Szpaller, K., 2016. *UM professor who shared Nobel for climate work believes UM foundation should divest* [online]. Available from: http://missoulian.com/news/local/um-professor-who-shared-nobel-for-climate-work-believes-um/article_28c17114-4cda-5392-9179-c08ac14ea827.html [Accessed 19 August 2016].

Tufts University. *Recommendations of the tufts divestment working group* [online]. Available from: http://president.tufts.edu/recommendations-of-the-tufts-divestment-working-group/ [Accessed 27 March 2016].

University of Michigan, 2015. *Addressing climate change as a powerful community* [online]. Available from: http://president.umich.edu/news-communications/on-the-agenda/addressing-climate-change-as-a-powerful-community/ [Accessed 27 March 2016].

University of Tennessee, 2014. *University of Tennessee rejects proposal for fossil fuels divestment* [online]. Available from: http://blueandgreentomorrow.com/2014/01/24/university-of-tennessee-rejects-proposal-for-fossil-fuels-divestment/ [Accessed 27 March 2016].

University of Wisconsin, 2014. *Report of the ad hoc committee on fossil fuel use and climate change* [online]. Available from: https://www.secfac.wisc.edu/senate/2014/0203/2472%20Fossil%20fuel%20use%20and%20climate%20change%20report.pdf [Accessed 27 March 2016].

Warren Wilson College, 2015. *Warren Wilson College commits to fossil fuel divestment* [online]. Available from: https://www.warren-wilson.edu/community-news/warren-wilson-college-commits-to-fossil-fuel-divestment [Accessed 27 March 2016].

Weiss, D., 2013. *Fossil fuels divestment* [online]. Available from: http://ww3.haverford.edu/fossilfuelsdivestment/?id=132428734234234 [Accessed 27 March 2016].

Wellesley College. *Divestment fact sheet* [online]. Available from: http://www.wellesley.edu/about/president/mytake/divestment/factsheet [Accessed 27 March 2016].

White, C., 2015. *University champions climate change, refuses to quit fossil fuels* [online]. Available from: http://dailycaller.com/2015/12/11/university-champions-climate-change-refuses-to-quit-fossil-fuels/ [Accessed 27 March 2016].

Williams College, 2015. *Statement by the Board of Trustees and President Adam F. Falk on the college's role in addressing climate change* [online]. Available from: http://president.williams.edu/trustees/statement-by-the-board-of-trustees-and-president-adam-f-falk-on-the-colleges-role-in-addressing-climate-change/ [Accessed 19 August 2016].

Yale University, 2014. *Statement of the Yale Corporation Committee on investor responsibility* [online]. Available from: http://acir.yale.edu/pdf%20and%20hyperlinks/CCIR%20Statement%20(2014).pdf [Accessed 27 March 2016].

Yuengert, M., 2015. *Boston College speaks up about divestment, climate justice* [online]. Available from: http://bcgavel.com/2015/03/11/boston-college-speaks-up-about-divestment-climate-justice/ [Accessed 27 March 2016].