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Comparing Divestment at the Big Ten Academic Alliance and Ivy League Higher Education Institutions

Sam King, University of Michigan

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Center for Local, State, and Urban Policy
Gerald R. Ford School of Public Policy
University of Michigan

Sam King

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ABSTRACT

Divestment of large institutions, particularly higher education institutions, from the fossil fuel industry is an important mitigation and adaptation strategy that also contributes to shifting the global culture and conversation around climate change. This paper inventories the presence or absence of fossil fuel divestment at each of the twenty-two HEIs within the Big Ten Academic Alliance and the Ivy League. The divestment processes, historical South African apartheid divestment, and demographic factors of the HEIs were analyzed and compared to determine if any of these contextual variables are indicators of divestment. This inventory demonstrates that a fossil fuel investment freeze is a key indicator of future fossil fuel divestment while other factors such as endowment size, enrollment, and tuition did not appear to significantly differ between HEIs that did and did not divest. This has implications for higher education institutions and other institutions, cities, and other policy makers that are aiming to take their first steps towards achieving full fossil fuel divestment.

INTRODUCTION

The science is clear that anthropogenic climate change will only continue to worsen as global emissions continue to saturate the atmosphere with greenhouse gases (IPCC, 2013). Mitigation efforts such as converting to green energy, going carbon neutral, and increasing our

global carbon sinks will play a key part in reducing existing emissions and adaptation will also serve a vital role in living with increasing temperature and weather extremes, rising sea levels, and countless other uncertain consequences. Drastic and long-term shifts in the fundamental structure of society must occur in the coming decades to sufficiently address this emergency, specifically from prominent and multinational institutions rather than at just the individual consumer level.

Colleges and universities hereafter referred to as higher education institutions (HEIs), have the opportunity to play a pivotal role in this transition. Although American colleges and universities directly account for only 2% of the total annual emissions from the US, they have the potential to create wide-reaching impacts (Sinha et al., 2010). As nearly 19.7 million students enter US HEIs in the past year, these institutions have the unique chance to foster attitudes of environmental stewardship and innovation in students through their curriculum and actions (National Center for Education Statistics, 2021).

One global campaign that has progressed significantly in the in last decade is the fossil fuel divestment movement. Divestment from fossil fuel industry, typically defined as corporations listed in the top 200 fossil fuel companies, aims to not only reduce the value and profitability of fossil fuels, but also stigmatize the industry and change the cultural conversation around fossil fuel use (Carlin, 2021). As each institution grapples with its current role in the climate crisis, choosing to adapt and mitigate their impacts in distinct ways, fossil fuel divestment is becoming a more widespread step towards sustainability on campus. As a mostly student-led movement, fossil fuel divestment has led to partnerships on campus with other environmental justice organizations and student groups as well as cross-campus collaboration and sharing strategies for successfully urging HEIs to divest (Yona & Lenferna, 2016). However,

there is no clearly established path for each HEI to follow when progressing towards fossil fuel divestment as each varies greatly from the other.

This has opened the door to crucial research on how divestment compares across thousands of HEIs in the US, particularly if there are any important indicators of divestment. This paper investigates if there are any identifiable trends in fossil fuel divestment across American universities in the Big 10 Academic Alliance and Ivy League. To address this, I conduct an inventory analysis of divestment at the twenty-two HEIs. This analysis will help to establish the most successful ways of HEI divestment and the most important components in achieving this important component of mitigation.

LITERATURE REVIEW

There is a growing body of research on fossil fuel divestment within the HEIs and other institutions more broadly; however, little policy research targets the process by which many HEIs are attempting to or have successfully divested from fossil fuels specifically. In order to understand the scope of existing sustainability frameworks that tackles other aspects of climate change adaptation and mitigation, the first half this literature review will focus on existing research on the HEI sustainability metrics and frameworks. The latter portion will look at literatures focused on historical HEI divestment, financial risk of fossil fuel divestment (FFD), and current divestment plans in action.

EXISTING HEI SUSTAINABILITY METRICS

There are a wide range of existing climate policies and sustainability metrics and assessments that are currently used at HEIs both in the US and internationally at HEIs. A few of

the most notable frameworks include the Sustainability Tracking, Assessment, and Rating Systems (STARS), the Green Report Card, Universitas Indonesia (UI) GreenMetric, and the American Colleges and University Climate Commitment (ACUPCC).

When looking at the national and international ranking of HEIs, it is not unsurprising that the criteria and frameworks for ranking the top universities do not include sustainability criteria (Horan & O'Regan, 2021). In light of the worsening climate crisis, it is increasingly important to address large institutions', such as HEIs', contributions to the climate crisis and their role in mitigation and adaptation. When looking at national and international frameworks that HEIs use to develop a practical campus sustainability assessment framework, STARS and UI GreenMetric are the most frequently adopted frameworks internationally (Horan & O'Regan, 2021). However, both are still flawed. Neither STARS nor UI GreenMetric utilizes direct sustainable improvement in its indicators, they instead measure the environmental intensity metrics. One new framework proposed by Horan and O'Regan utilizes 12 criteria in which both relative and absolute metrics are reported. However, this framework, when applied to data from Irish HEIs, still had significant data gaps. Again, this proposed framework is still imperfect; it fails to weigh any criteria differently which may be key in ushering in continual improvement and healthy competition on campuses towards sustainability.

Within the US, another study compared the Green Report Card, STARS, and ACUPCC to determine their criteria and possible gaps (Shi & Lai, 2013). Important flaws include that ACUPCC lacked scoring altogether, and STARS and Green Report Card had redundancies in their criteria. Again, a new sustainability ranking framework was offered by Shi & Lai with an extensive criteria tree containing 4 hierarchical levels: 1) Vision, 2) Mission, 3) University-Wide Sustainability Committee, and 4) Strategies for Fostering Sustainability. Similar to the

framework proposed by Horan and O'Regan, each of the 28 criteria in the alternative framework are all ranked equally at this point, pointing to a need to determine relative importance.

Lastly, O'Hara and Sirianni (2017) examine emissions of HEIs in the ACUPCC to fill the gap on the environmental efficiency of colleges and universities in the ACUPCC. Research-focused institutions were assessed separately from teaching-focused institutions, and the latter was found to be more efficient using the carbon-efficiency framework. A comparison of 2007 to 2011 emissions of early signature of ACUPCC was also a part of this study, and results seemed to indicate increasing efficiency.

FOSSIL FUEL DIVESTMENT

Looking more specifically at FFD, there are a range of reasons HEIs and other institutions have been wary of making the decision to do so. The first consideration is financial; understanding the financial risks, if any, will likely impact HEIs decision-making around FFD. A recent study assessed the impacts of excluding fossil fuel stocks from investments at the industry level (Plantinga and Scholtens, 2020). Using data from ten main industries and over 6,000 companies worldwide, the authors found that the fossil fuel industry accounts for 6% of the global stock market and had the highest returns from 1973 to 2016. Upon assessing the common risk factors with the Fama-French model, it was found that there are no unique components in fossil fuel returns which means that they can be replaced by any other industry returns. Moreover, the authors concluded that divestment from fossil fuel companies does not alter total financial risk for an investor. These conclusions have significant implications for stricter fossil fuel and emissions policies in the future.

Another argument against FFD by some critics is that HEIs should not put forth any sort of political statements or stances on issues such as carbon emissions as it would put the educational mission of HEIs at risk (Braungardt et al., 2019). However, this argument is challenged when looking at past HEI divestments. Divestment does, in fact, have a history as a form of social activism against injustice, namely from the South African apartheid government, the tobacco industry, the anti-violence movement in Sudan and now the fossil fuel industry (Hunt et al., 2017; Maina et al., 2019). Therefore, understanding the historical precedent of HEI divestment from political issues is vital when examining current trends in HEI FFD.

In an analysis of anti-apartheid divestment and FFD using the grounded theory approach, the similarities and differences between these divestment campaigns were assessed (Hunt et al., 2017). Although the goals and outcomes of each divestment campaign target differ greatly (abolishing apartheid regime versus decreasing/transitioning away from fossil fuels), these divestment campaigns started in similar ways (Hunt et al., 2017). Churches and universities were some of the first institutions taking steps towards divestment; however, FFD is now attempting to tackle divestment of larger endowments and institutions (Hunt et al., 2017). Moreover, from a financial perspective, FFD is targeting divestment from an entire industry whereas anti-apartheid divestment focused only on divesting from the South African market (Hunt et al., 2017). Although these divestment campaigns share many similarities and differences, their comparison adds important insight into the fact that small-scale activism at the university level and below can lead to large-scale and global divestment. It also sets an example of HEIs financially divesting from a market for political reasons which have been a point of contention for some HEIs considering divestment (Korn, 2013).

Narrowing in on a more recent study of HEI fossil fuel divestment, Maina et al., (2019) reviewed divestment at 220 Canadian HEIs. Although many HEI sustainability actions have taken place in domains such as research, curriculum, and operations, larger-scale decision-making in the financial domain often fails to uphold these same ethics (Maina et al., 2019). Therefore, climate activists tend to target endowments and HEI investments in their FFD campaigns. Main findings included that collaboration across HEIs and with other campus stakeholders such as faculty, staff, and alumni allowed for the spread of ideas and tactics. Also, smaller HEIs adjust their investments more quickly than larger and older institutions with endowments that are deep-seated in current investments, making divestment appear more difficult. Concerns held by HEIs about FFD include some aforementioned considerations such as return on investments and fiduciary duty as well as the idea that divestment will have minimal effects on the fossil fuel industry.

Summary

With little research completed assessing the current processes in place for FFD at HEIs in the United States, there is a clear gap in knowledge on the best practices and common process for divestment. Furthermore, with few financial risks and a historical precedent of politically-driven HEI divestment, there is a clear path for FFD as a valuable mitigation strategy. Based on this research gap, this study addresses the question: How does fossil fuel divestment at HEIs in the Big Ten Academic Alliance and Ivy League compare?

METHODS

This paper inventories the divestment process and plans of the Big Ten Academic Alliance and the Ivy League colleges. These twenty-two HEIs were chosen for this inventory

because they encompass two distinctly different leagues of American universities, representing a range of incomes, populations, and people.

The Big Ten Academic Alliance (the academic counterpart to the athletic league, the Big Ten Conference) consists of fourteen research universities, most of which are located in the American Midwest. All members are public universities except for Northwestern University, and, in total, educate 600,000 undergraduate and graduate students and contribute over $10.6 billion in funded research (B1G Academic Alliance, 2020). Conversely, the Ivy League consists of entirely private universities in the Eastern US, enrolling comparatively fewer students. Both leagues contain HEIs with multi-billion-dollar endowments and large alumni networks (NCES, n.d.).

This inventory focused on the presence or absence of divestment plans from fossil fuels at each HEI, based on previously collected divestment data (Luke Dillingham, Personal Communications, 2020). To determine if each HEI has a divestment plan or if their divestment status had changed, Big Ten University Regent Meeting minutes and Big Ten and Ivy League climate action plans and sustainability initiatives were assessed. If an HEI has not yet divested, their progress towards divestment (i.e. fossil fuel freeze) was evaluated. If an HEI has already divested, their actions prior to divestment were assessed. Involvement in existing sustainability frameworks including STARS, one of the most frequently adapted frameworks as noted in by Horan & Regan (2021), and President's Climate Leadership Commitments such as carbon, resilience, climate, and race to zero commitments which include stricter accountability measures, were also included. Participation was accessed via STARS reports and the Second Nature reporting platform, respectively (STARS, 2020; Second Nature, 2021). Previous divestment actions such as divestment from South African apartheid in the 1970s and 1980s by each HEI,

assessed using an existing document created by the Africa Fund in 1988, were included in the inventory to understand their other historically political financial divestments (The Africa Fund, 1988).

In addition to looking at each HEIs divestment plan, the inventory will also include demographic information of the HEI. This data will include enrollment data, a proxy for population size which was noted as important factors when implementing city climate plans (Bedworth & Hanak, 2013). Endowment size and out-of-state tuition at each HEI will also be included to gain better understanding of the university finances. Data on endowment size, enrollment and Ivy League tuition was acquired from the National Center for Education Statistics Integrated Postsecondary Education Data System 2018- 2019 data, and BTAA tuition data was accessed via the University of Wisconsin Office of the Chancellor 2018-2019 data (National Center for Education Statistics, 2019; University of Wisconsin, 2019).

RESULTS

Figure 1 shows the results of the inventory, looking solely at the presence or absence of fossil fuel divestment and fossil fuel freezes. The full inventory can be found in Appendix A for reference.

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze
University of Maryland	Big 10	Yes	Yes
University of Illinois	Big 10	Yes	Yes
University of Michigan	Big 10	Yes	Yes
Columbia University	Ivy League	Yes	Yes
Brown University	Ivy League	Yes	Yes
Pennsylvania State University	Big 10	Partial - Coal and tar sands	No
University of Pennsylvania	Ivy League	Partial - Coal and Tar Sands	No
Yale University	Ivy League	Partial	No
Cornell University	Ivy League	No	Yes
Michigan State University	Big 10	No	No
University of Nebraska-Lincoln	Big 10	No	No
University of Minnesota	Big 10	No	No
University of Wisconsin	Big 10	No	No
Northwestern University	Big 10	No	No
Ohio State University	Big 10	No	No
Indiana University	Big 10	No	No
Purdue University	Big 10	No	No
University of Iowa	Big 10	No	No
Rutgers University	Big 10	No	No
Princeton University	Ivy League	No	No
Harvard University	Ivy League	No	No
Dartmouth College	Ivy League	No	No

Figure 1. Presence or absence of divestment and fossil fuel freeze at Big Ten and Ivy League HEIs

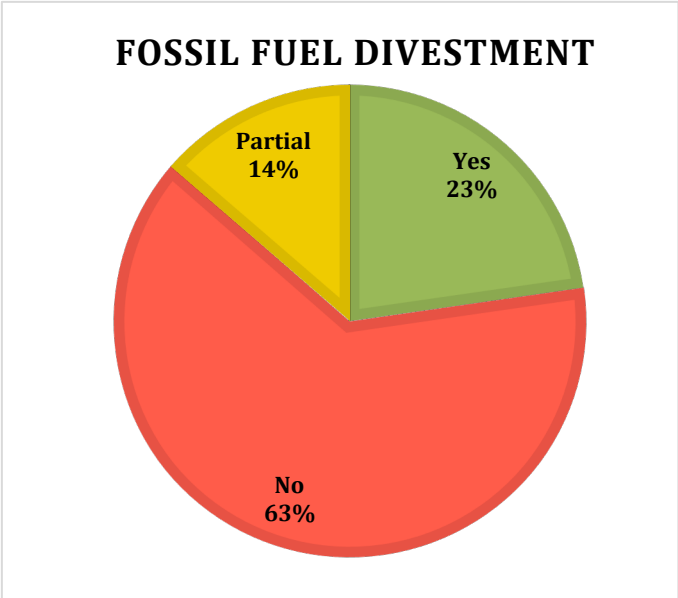

Figure 2. Fossil fuel divestment at BTAA & Ivy League HEIs

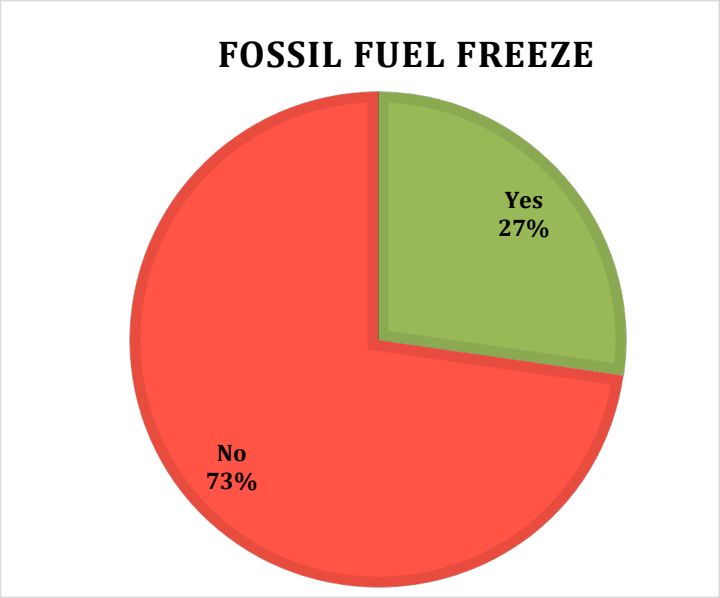

Figure 3. Fossil fuel investment freeze at BTAA & Ivy League HEIs

Figures 2 and 3 reflect the breakdown of divestment and fossil fuel freezes of all twenty-two HEIs inventoried. Only five of the twenty-two HEIs (23%) assessed have fully committed to divesting from fossil fuels (Figure 2). Additionally, three HEIs are currently partially divested from fossil fuels for example by divestment from coal and tar sands. As seen in figure 3, a total of six HEIs committed to a fossil fuel freeze on investments, five of which also divested. None of the HEIs that partially divested had frozen fuel investments and Columbia University is the only HEI with a fossil fuel investment freeze, but no commitment to divest.

When comparing the presence of BTAA and Ivy League divestment, there does not seem to be a significant difference as seen in figure 4. Three BTAA HEIs (University of Illinois, University of Maryland, University of Michigan) out of fourteen (21.4%) have committed to divesting from fossil fuels. Within the Ivy League, two HEIs (Brown University and Columbia University) of the eight (25%) have committed to fossil fuel divestment. There does appear to be

a possibly more significant difference between BTAA and Ivy League divestment when comparing the proportion of HEIs in each league that partially divested. Pennsylvania State University is the only BTAA HEI that has partially divested from coal and tar sands (7%) versus two HEIs in the Ivy League, Yale University and University of Pennsylvania (25%). However, this difference could be due to the small sample size of these two leagues being compared, resulting in a single HEI having a larger impact in these proportions.

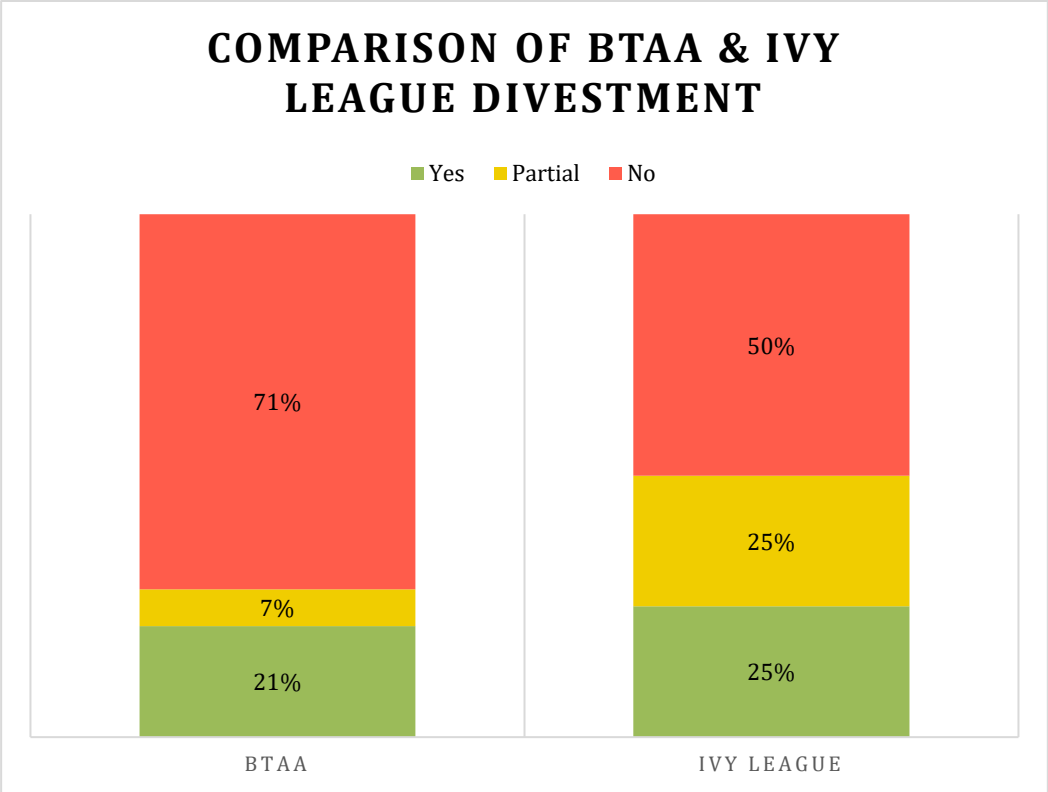

Figure 4. Comparison of Big Ten Academic Alliance (BTAA) and Ivy League divestment

Of the HEIs in the BTAA, only those who have divested have also committed to fossil fuel freezes. In the Ivy League, fossil fuel freezes occurred at the two HEIs now divested, but also at Cornell University which has yet to commit to divestment. The partially divested HEIs have not frozen fossil fuel investments.

There are a few patterns to glean from their previous divestment campaigns since nearly every HEI assessed, with the exception of two (University of Nebraska and Purdue University) had previously divested from the South African Apartheid regime in the 1970s and 1980s. Only one HEI, Michigan State University, fully divested its securities from companies that had ownership, licensing, distribution or franchising agreements in South Africa (see Appendix A), but Michigan State University has neither divested nor put a freeze on new fossil fuel investments. Three other HEIs (Ohio State University, University of Wisconsin, and Rutgers University) only divested from companies with ownership in South Africa and the remaining HEIs partially divested. Of the current HEIs that have divested from fossil fuels, all of them only partially divested from the South African apartheid. Although this data implies that HEIs can make political divestments, it does not suggest any trends in HEI apartheid divestment and fossil fuel divestment.

No significant trends were found between fossil fuel divestment and total enrollment, undergraduate out-of-state tuition, or endowment size of BTAA and Ivy League HEIs (Appendix C; Appendix D; Appendix E). Likewise, there is no direct link between participants in STARS (Appendix F) or the President's Climate Leadership Commitments (Appendix G) and fossil fuel divestment. A total of 18 HEIs participate in STARS with ratings ranging from silver to platinum and a total of six HEIs have made 1 or more President's Climate Leadership Commitments. One notable finding is that the HEI with the highest STARS rating (platinum), Cornell University, has neither divested nor frozen fossil fuel investment. Moreover, Brown University which is not a participant of STARS nor made any of the President's Climate Leadership Commitments has divested.

ANALYSIS

Fossil fuel divestment is a vital step towards addressing climate change and shifting towards renewable energy. The financial soundness, student-driven activism, previously political divestments, and undeniable climate science all support the decision to divest, yet only 5 HEIs of the 22 inventoried have fully divested (22.7%). One important indicator or step towards fossil fuel divestment seems to be a fossil fuel freeze. Of all FF divested HEIs, all previously had a fossil fuel freeze. During the writing of this paper, the University of Michigan, which had previously only frozen its fossil fuel investments, took the next step and committed to divestment from fossil fuels (McKibben, 2021). If this trend continues, Columbia University—the only university with a freeze but without divestment--may be next in line for divestment.

As previously mentioned, no significant patterns were discerned from factors such as total enrollment, undergraduate out-of-state tuition, and endowment size when sorted by these variables in the inventory. This conclusion neither counters nor supports evidence from Maina et al. (2019). The Ivy League HEIs are comparatively small to BTAA HEIs in this case, yet they are also old institutions with deeply rooted money. Their endowments are magnitudes larger than that of the largest BTAA HEI, yet their populations are half the size, on average. Although Maina et al. concluded that smaller institutions are more easily and rapidly able to transition their investments, many of the eight Ivy League institutions are also some of the oldest and most established HEIs in the US (Collier, 2021), resulting in a complicated intersection between these two findings.

It was unsurprising to find that nearly all the of the HEIs analyzed were participants in the STARS program since it is one of the most frequently adopted frameworks internationally (Horan & Regan, 2021). This may be because it does not include direct sustainable improvement

indicators, but rather just environmental intensity metrics which are more easily reported and do not necessarily require a high level of accountability on their sustainable changes (Horan & O'Regan, 2021). The President's Climate Leadership commitments, though, were fewer among the HEIs assessed in this inventory; only six HEIs committed to one or more of these commitments. This may be due to this network's stricter accountability framework through measures such as annual reporting (Second Nature, 2021). Although, this participation in these higher accountability commitments may seem like an indicator of also participating in other significant commitments such as divestment or a freeze in fossil fuel divestment, no such trend was found.

Lastly, the historical precedent set by nearly every HEI assessed also divesting at least partially from the South African apartheid indicates that HEIs and their endowments can take political stances, but that most have chosen not to do so yet in the case of fossil fuels. The key involvement of HEIs and student activism at HEIs at early stages in the anti-apartheid movement is mirrored in the fossil fuel divestment movement, hopefully indicating a trend towards growing national HEI divestment from fossil fuels in the future (Hunt et al, 2017). Based on these past divestment decisions, even if the decision to divest from fossil fuels is seen as political, HEIs should still be held accountable to take this critical step.

CONCLUSION

The Big Ten Academic Alliance and Ivy League HEIs have comparatively similar divestment steps and overall proportion of fossil fuel divestment. This inventory demonstrates that a fossil fuel investment freeze is an important indicator of future fossil fuel divestment while other factors such as endowment size, enrollment, tuition and participation in other sustainability

frameworks and commitments did not appear to significantly differ between HEIs that did and did not divest. This has important implications for policy makers and the greater divestment movement because it points towards a first step that HEIs, large institutions, and cities may be able to make before diving into full fossil fuel divestment. Moreover, previous political investments by these HEIs such as divest from South African apartheid suggest that endowments *can* be used to take a seemingly political stance. However, this research is limited by a lack of statistical testing, the use of 2 to 3-year-old data, and the small sample size. Furthermore, due to the relatively small sample size, the conclusions from this study cannot be extrapolated more broadly without further research.

These HEIs could further be compared by looking at current endowments investments in fossil fuels which would generate a better idea of the implications of their divestment. Future research could also involve expanding comparisons to also look at overarching climate plans and sustainability initiatives to understand other mitigation and adaptation strategies being undertaken. A larger and more encompassing research scope of divestment plans nationally or internationally would also give greater insight into the movement as a whole and its progression in recent decades and into the future.

REFERENCES

The Africa Fund. (1988, August). DIVESTMENT ACTION ON SOUTH AFRICA BY US AD CANADIAN COLLEGES AND UNIVERSITIES. Retrieved April 23, 2021, from http://kora.matrix.msu.edu/files/50/304/32-130-E6E-84-AL.SFF.DOCUMENT.acoa000194.pdf

B1G Academic Alliance. (2020, May 22). 2018 Big Ten Academic Alliance University Data At A Glance. Retrieved March 8, 2021, from https://www.btaa.org/docs/default-source/research-data/at-a-glance_2018btaa.pdf?sfvrsn=f74448f3_2

Braungardt, S., van den Bergh, J., & Dunlop, T. (2019). Fossil fuel divestment and climate change: reviewing contested arguments. *Energy research & social science*, *50*, 191-200.

Collier, S. (2021, April 05). 10 of the oldest universities in the US. Retrieved April 05, 2021, from https://www.topuniversities.com/blog/10-oldest-universities-us#:~:text=1.,Harvard%20University&text=Located%20in%20Massachusetts%2C%20Harvard%20University%20was%20originally%20called%20New%20College.&text=Click%20here%20to%20read%20a,the%20US%2C%20Harvard%20and%20Princeton.

Fossil Free. (2021). What is fossil fuel divestment? Retrieved April 26, 2021, from https://gofossilfree.org/divestment/what-is-fossil-fuel-divestment/

Horan, W., & O'Regan, B. (2021). Developing a Practical Framework of Sustainability Indicators Relevant to All Higher Education Institutions to Enable Meaningful International Rankings. *Sustainability*, *13*(2), 629.

Hunt, C., Weber, O., & Dordi, T. (2017). A comparative analysis of the anti-Apartheid and fossil fuel divestment campaigns. *Journal of Sustainable Finance & Investment*, *7*(1), 64-81.

IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Korn, S. Y. (2013, October 9). The politics Of Divestment: Opinion: The Harvard Crimson. Retrieved April 26, 2021, from https://www.thecrimson.com/column/the-red-line/article/2013/10/9/Harvard-Divestment-Endowment-Political/

Maina, N. M., Murray, J., & McKenzie, M. (2020). Climate change and the fossil fuel divestment movement in Canadian higher education: The mobilities of actions, actors, and tactics. Journal of Cleaner Production, 253, 119874.

McKibben, B. (2021, March 27). The University of michigan divesting from fossil Fuels shows that change is here | Bill McKibben. Retrieved April 23, 2021, from https://www.theguardian.com/commentisfree/2021/mar/27/university-of-michigan-divesting-fossil-fuels-change-is-here

National Center for Education Statistics (NCES). (2019). Endowments. Retrieved March 08, 2021, from https://nces.ed.gov/fastfacts/display.asp?id=73

National Center for Education Statistics (NCES). (2021). Fast Facts: Back to school statistics. Retrieved February 22, 2021, from https://nces.ed.gov/fastfacts/display.asp?id=372#College_enrollment

National Center for Education Statistics (NCES). (2019). Use the Data. Retrieved April 23, 2021, from https://nces.ed.gov/ipeds/use-the-data

O'Hara, M. E., & Sirianni, P. (2017). Carbon efficiency of US colleges and universities: a nonparametric assessment. *Applied Economics*, *49*(11), 1083-1097.

Plantinga, A., & Scholtens, B. (2021). The financial impact of fossil fuel divestment. *Climate Policy*, *21*(1), 107-119.

Second Nature. (2021). Frequently asked questions. Retrieved April 25, 2021, from https://secondnature.org/frequently-asked-questions/

Second Nature. (2021). The Presidents' Climate leadership commitments. Retrieved February 22, 2021, from https://secondnature.org/signatory-handbook/the-commitments/

Second Nature. (2021). Reporting Platform. Retrieved April 23, 2021, from https://reporting.secondnature.org/

Shi, H., & Lai, E. (2013). An alternative university sustainability rating framework with a structured criteria tree. *Journal of Cleaner Production*, *61*, 59-69.

Sinha, P., Schew, W. A., Sawant, A., Kolwaite, K. J., & Strode, S. A. (2010). Greenhouse gas emissions from US institutions of higher education. *Journal of the Air & Waste Management Association*, *60*(5), 568-573.

STARS. (2020). STARS participants & reports. Retrieved April 23, 2021, from https://reports.aashe.org/institutions/participants-and-reports/

University of Wisconsin. (2019). Tuition and fees at big ten universities. Retrieved April 23, 2021, from https://chancellor.wisc.edu/tuition-and-fees-at-big-ten-universities

Yona, L., & Lenferna, A. (2016, May 15). The Fossil Fuel Divestment Movement within Universities. Retrieved April 26, 2021, from https://www.e-ir.info/2016/05/15/the-fossil-fuel-divestment-movement-within-universities/

APPENDICES

Appendix A. Full Inventory Comparison of BTAA and Ivy League University Divestment

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze	Total Enrollment 2018-2019 (main campuses)	Undergrad Out-of-State Tuition	Endowment (in thousands)	Apartheid Divestment	President's Climate Leadership Commitments	STARS
University of Illinois	Big 10	Yes	Yes	54,985	$ 32,574.00	$ 1,534,717.00	Partial	Race to Zero, Climate	STARS (gold)
University of Maryland	Big 10	Yes	Yes	44,486	$ 35,216.00	$ 1,436,000.00	Partial	Race to Zero, Carbon	STARS (gold)
University of Michigan	Big 10	Yes	Yes	48,218	$ 49,350.00	$ 10,777,563.00	Partial		STARS (gold)
Columbia University	Ivy League	Yes	Yes	33,301	$ 45,508.00	$ 9,996,596.00	Partial		STARS (gold)
Brown University	Ivy League	Yes	Yes	10,760	$ 54,230.00	$ 3,245,531.00	Partial		
Pennsylvania State University	Big 10	Partial - Coal and tar sands	No	49,935	$ 34,858.00	$ 2,615,568.00	Partial		STARS (gold)
University of Pennsylvania	Ivy League	Partial - Coal and Tar Sands	No	29,813	$ 49,220.00	$ 12,213,207.00	Partial	Race to Zero, Carbon	STARS (gold)
Yale University	Ivy League	Partial	No	14,389	$ 53,430.00	$ 27,216,639.00	Partial		STARS (gold)
Cornell University	Ivy League	No	Yes	24,189	$ 54,584.00	$ 6,516,445.00	Partial	Race to Zero, Carbon	STARS (platinum)
Michigan State University	Big 10	No	No	55,332	$ 39,765.00	$ 3,084,973.00	Fully Divested		STARS (gold)
University of Nebraska-Lincoln	Big 10	No	No	28,686	$ 24,949.00	$ 958,039.00			STARS (silver)
Indiana University	Big 10	No	No	46,423	$ 35,455.00	$ 1,081,730.00	Partial		STARS (gold)
Northwestern University	Big 10	No	No	25,614	$ 54,120.00	$ 7,947,574.00	Partial		STARS (gold)
Ohio State University	Big 10	No	No	66,178	$ 30,742.00	$ 4,233,106.00	Divested		STARS (gold)
Purdue University	Big 10	No	No	47,412	$ 28,794.00	$ 2,347,515.00			STARS (silver)

Rutgers University	Big 10	No	No	57,162	$ 31,282.00	$ 985,463.00	Divested		
University of Iowa	Big 10	No	No	35,339	$ 31,233.00	$ 1,387,001.00	Partial		STARS (silver)
University of Minnesota	Big 10	No	No	61,787	$ 30,371.00	$ 3,290,771.00	Partial	Race to Zero, Carbon	STARS (gold)
University of Wisconsin	Big 10	No	No	47,392	$ 36,805.00	$ 3,759,387.00	Divested	Resilience	STARS (silver)
Harvard University	Ivy League	No	No	41,987	$ 46,340.00	$ 37,096,474.00	Partial		
Princeton University	Ivy League	No	No	8,720	$ 49,450.00	$ 23,353,233.00	Partial		STARS (gold)
Dartmouth College	Ivy League	No	No	7,081	$ 53,496.00	$ 4,956,494.00	Partial		

Appendix B. Additional Inventory Sources

HEI	Source
Northwestern University	https://news.northwestern.edu/stories/2018/april/northwestern-sets-2018-19-costs/
University of Maryland	https://www.intentionalendowments.org/university_system_of_maryland
University of Michigan	https://regents.umich.edu/files/meetings/03-20/2020-03-I-1.pdf

Appendix C. Abbreviated Inventory Sorted by Total Enrollment (largest to smallest)

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze	Total Enrollment 2018-2019 (main campuses)
Ohio State University	Big 10	No	No	66,178
University of Minnesota	Big 10	No	No	61,787
Rutgers University	Big 10	No	No	57,162
Michigan State University	Big 10	No	No	55,332
University of Illinois	Big 10	Yes	Yes	54,985
Pennsylvania State University	Big 10	Partial; Coal and tar sands	No	49,935
University of Michigan	Big 10	Yes	Yes	48,218
Purdue University	Big 10	No	No	47,412
University of Wisconsin	Big 10	No	No	47,392
Indiana University	Big 10	No	No	46,423
University of Maryland	Big 10	Yes	Yes	44,486
Harvard University	Ivy League	No	No	41,987
University of Iowa	Big 10	No	No	35,339
Columbia University	Ivy League	Yes	Yes	33,301
University of Pennsylvania	Ivy League	Partial; Coal and Tar Sands	No	29,813
University of Nebraska-Lincoln	Big 10	No	No	28,686
Northwestern University	Big 10	No	No	25,614
Cornell University	Ivy League	No	Yes	24,189
Yale University	Ivy League	Partial	No	14,389
Brown University	Ivy League	Yes	Yes	10,760
Princeton University	Ivy League	No	No	8,720
Dartmouth College	Ivy League	No	No	7,081

Appendix D. Abbreviated Inventory Sorted by Undergraduate Out-of-State Tuition (largest to smallest)

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze	Undergrad Out-of-State Tuition
Cornell University	Ivy League	No	Yes	$ 54,584.00
Brown University	Ivy League	Yes	Yes	$ 54,230.00
Northwestern University	Big 10	No	No	$ 54,120.00
Dartmouth College	Ivy League	No	No	$ 53,496.00
Yale University	Ivy League	Partial	No	$ 53,430.00
Princeton University	Ivy League	No	No	$ 49,450.00
University of Michigan	Big 10	Yes	Yes	$ 49,350.00
University of Pennsylvania	Ivy League	Partial; Coal and Tar Sands	No	$ 49,220.00
Harvard University	Ivy League	No	No	$ 46,340.00
Columbia University	Ivy League	Yes	Yes	$ 45,508.00
Michigan State University	Big 10	No	No	$ 39,765.00
University of Wisconsin	Big 10	No	No	$ 36,805.00
Indiana University	Big 10	No	No	$ 35,455.00
University of Maryland	Big 10	Yes	Yes	$ 35,216.00
Pennsylvania State University	Big 10	Partial; Coal and tar sands	No	$ 34,858.00
University of Illinois	Big 10	Yes	Yes	$ 32,574.00
Rutgers University	Big 10	No	No	$ 31,282.00
University of Iowa	Big 10	No	No	$ 31,233.00
Ohio State University	Big 10	No	No	$ 30,742.00
University of Minnesota	Big 10	No	No	$ 30,371.00
Purdue University	Big 10	No	No	$ 28,794.00
University of Nebraska-Lincoln	Big 10	No	No	$ 24,949.00

Appendix E. Abbreviated Inventory Sorted by Endowment Size (largest to smallest)

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze	Endowment (in thousands)
Harvard University	Ivy League	No	No	$ 37,096,474.00
Yale University	Ivy League	Partial	No	$ 27,216,639.00
Princeton University	Ivy League	No	No	$ 23,353,233.00
University of Pennsylvania	Ivy League	Partial; Coal and Tar Sands	No	$ 12,213,207.00
University of Michigan	Big 10	Yes	Yes	$ 10,777,563.00
Columbia University	Ivy League	Yes	Yes	$ 9,996,596.00
Northwestern University	Big 10	No	No	$ 7,947,574.00
Cornell University	Ivy League	No	Yes	$ 6,516,445.00
Dartmouth College	Ivy League	No	No	$ 4,956,494.00
Ohio State University	Big 10	No	No	$ 4,233,106.00
University of Wisconsin	Big 10	No	No	$ 3,759,387.00
University of Minnesota	Big 10	No	No	$ 3,290,771.00
Brown University	Ivy League	Yes	Yes	$ 3,245,531.00
Michigan State University	Big 10	No	No	$ 3,084,973.00
Pennsylvania State University	Big 10	Partial; Coal and tar sands	No	$ 2,615,568.00
Purdue University	Big 10	No	No	$ 2,347,515.00
University of Illinois	Big 10	Yes	Yes	$ 1,534,717.00
University of Maryland	Big 10	Yes	Yes	$ 1,436,000.00
University of Iowa	Big 10	No	No	$ 1,387,001.00
Indiana University	Big 10	No	No	$ 1,081,730.00
Rutgers University	Big 10	No	No	$ 985,463.00
University of Nebraska-Lincoln	Big 10	No	No	$ 958,039.00

Appendix F. Abbreviated Inventory Sorted by STARS Participation

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze	STARS
Yale University	Ivy League	Partial	No	STARS (gold)
Princeton University	Ivy League	No	No	STARS (gold)
University of Pennsylvania	Ivy League	Partial; Coal and Tar Sands	No	STARS (gold)
University of Michigan	Big 10	Yes	Yes	STARS (gold)
Columbia University	Ivy League	Yes	Yes	STARS (gold)
Northwestern University	Big 10	No	No	STARS (gold)
Ohio State University	Big 10	No	No	STARS (gold)
University of Minnesota	Big 10	No	No	STARS (gold)
Michigan State University	Big 10	No	No	STARS (gold)
Pennsylvania State University	Big 10	Partial; Coal and tar sands	No	STARS (gold)
University of Illinois	Big 10	Yes	Yes	STARS (gold)
University of Maryland	Big 10	Yes	Yes	STARS (gold)
Indiana University	Big 10	No	No	STARS (gold)
Cornell University	Ivy League	No	Yes	STARS (platinum)
University of Wisconsin	Big 10	No	No	STARS (silver)
Purdue University	Big 10	No	No	STARS (silver)
University of Iowa	Big 10	No	No	STARS (silver)
University of Nebraska-Lincoln	Big 10	No	No	STARS (silver)
Harvard University	Ivy League	No	No	
Dartmouth College	Ivy League	No	No	
Brown University	Ivy League	Yes	Yes	
Rutgers University	Big 10	No	No	

Appendix G. Abbreviated Inventory Sorted by President's Climate Leadership Commitment Participation

HEI	Big 10 vs. Ivy League	Divestment	Fossil Fuel Freeze	President's Climate Leadership Commitments
University of Pennsylvania	Ivy League	Partial; Coal and Tar Sands	No	Race to Zero, Carbon
University of Minnesota	Big 10	No	No	Race to Zero, Carbon
University of Maryland	Big 10	Yes	Yes	Race to Zero, Carbon
Cornell University	Ivy League	No	Yes	Race to Zero, Carbon
University of Illinois	Big 10	Yes	Yes	Race to Zero, Climate
University of Wisconsin	Big 10	No	No	Resilience
Yale University	Ivy League	Partial	No	
Princeton University	Ivy League	No	No	
University of Michigan	Big 10	Yes	Yes	
Columbia University	Ivy League	Yes	Yes	
Northwestern University	Big 10	No	No	
Ohio State University	Big 10	No	No	
Michigan State University	Big 10	No	No	
Pennsylvania State University	Big 10	Partial; Coal and tar sands	No	
Indiana University	Big 10	No	No	
Purdue University	Big 10	No	No	
University of Iowa	Big 10	No	No	
University of Nebraska-Lincoln	Big 10	No	No	
Harvard University	Ivy League	No	No	
Dartmouth College	Ivy League	No	No	
Brown University	Ivy League	Yes	Yes	
Rutgers University	Big 10	No	No	