

Report to the President
on the Considerations
Involved in Divesting the
Dartmouth College
Endowment from
Directly Held Fossil-Fuel
Related Assets

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Executive Summary

In March 2014, *Divest Dartmouth* presented President Phil Hanlon with a petition signed by many members of the Dartmouth community formally requesting that Dartmouth divest from its fossil fuel holdings. In August 2014, President Hanlon requested the Advisory Committee on Investor Responsibility (ACIR) to prepare a report objectively analyzing the pros and cons of fossil fuel divestment. This document fulfills that request. Rather than simply listing the pros and cons of divestment, however, this report takes a more comprehensive *decision analytic* approach. This approach starts with a careful consideration of the multiple objectives of fossil fuel divestment, followed by an assessment of the degree to which specific courses of action regarding divestment can achieve these objectives. These results are expressed in the form of an *outcome matrix*. If subjective judgements of the relative importance of each objective can then be made, the outcome matrix can be used to determine the overall most preferable course of action.

In consultation with selected members of Dartmouth's staff, administration, faculty, student leaders, and alumni, the authors of this report identified four broad objectives of fossil fuel divestment: 1. *Satisfy Ethical Responsibility*, 2. *Minimize Financial Impact*, 3. *Maximize Academic Opportunity*, and 4. *Realize Symbolic Importance*. These were then operationalized by identifying two or more sub-objectives for each that can be used to assess how well the various possible courses of action fulfill the College's objectives.

Deciding whether to divest is more complex than simply a binary yes/no choice. Key additional considerations are the *scope of divestment* (i.e., how broadly do you define a fossil fuel company?) and the *reinvestment strategy* (i.e., what do you do with divested funds?). Different approaches to these issues will have different ethical, financial, academic, and symbolic implications. For the purposes of this report, rather than consider every combination, we focus on four representative options: A. *No Action*, B. the *Incremental* option that divests only from direct holdings of the fifteen largest and most polluting coal companies in the U.S and reinvests funds to maximize return, C. the *Divest Dartmouth* option, representing *Divest Dartmouth's* "ask" for divestment from direct holdings in the 200 largest public coal, oil, and gas reserve owners, and D. the *Complete* option that divests from direct holdings in all fossil fuel companies and then reinvests funds into clean/green energy.

The degree to which the four divestment options fulfill the various decision objectives was assessed through a combination of literature review and interviews with Dartmouth students, faculty, staff, and administrators. The outcome matrix summarizing these assessments is akin to the list of “pros and cons” requested by President Hanlon. Because no single option was found to fulfill all objectives to the greatest degree, a determination of which option is most preferable overall will depend on a subjective prioritization of objectives. Some examples of alternative prioritizations and the different ranking of options they imply are given in an appendix.

I. Motivation

In the fall of 2013, Dartmouth's Board of Trustees was approached by a student group called *Divest Dartmouth*. *Divest Dartmouth* requested that Dartmouth initiate a dialogue to consider the possibility of the College divesting its holdings of fossil fuel companies. Fossil fuel divestment is an action with the aim of reducing carbon dioxide emissions through both direct and indirect channels by leveraging the influence of financial investment. At the time of *Divest Dartmouth* request, there were at least ten major fossil fuel companies that Dartmouth has owned in recent years, including Chevron, ConocoPhillips and ExxonMobil.

In response to this request, the Board of Trustees released the following statement¹:

The primary purpose of the endowment and other investment pools is to support Dartmouth's mission in preparing students for a lifetime of learning and of responsible leadership, through a faculty dedicated to teaching and the creation of knowledge. The values inherent in Dartmouth's mission are academic excellence and independence of thought within a culture of collaboration. Dartmouth supports vigorous open debate of ideas within a community marked by mutual respect, as well as a culture of integrity, self-reliance, collegiality and a sense of responsibility for each other and for the broader world. The use and management of Dartmouth's resources are to advance this mission and these values.

Dartmouth's endowment represents funds donated to Dartmouth which have been invested and stewarded over the years to support current students and faculty as well as future generations of students and scholars. The primary investment objective of the endowment is to generate long- term, inflation-adjusted investment returns in excess of the annual distribution to preserve intergenerational equity for the institution. Dartmouth's position regarding its investment assets is to maintain a flexible investment mandate to maximize the earning power of these resources.

In limited circumstances, there may be ethical, environmental or governance related factors to consider regarding Dartmouth's investments. The Advisory Committee on Investor Responsibility (ACIR) is comprised of members of the Dartmouth community including students, faculty, alumni and staff, and was formed by the President's Office to study and make voting recommendations for Dartmouth regarding social issues on proxy ballots for shares of publicly held companies. The ACIR also offers a forum for the Dartmouth community to present socially driven investment concerns while recognizing the need for

¹ Board of Trustees Statement on Investment and Social Responsibility Issues, Adopted September 22, 2013. http://www.dartmouth.edu/~trustees/governance/stmt_invstmt_socialresponsissues.html

Dartmouth to continue to maximize investment returns in support of its mission. In cases of broader socially-driven investment matters, the Advisory Committee may be engaged for an initial review of the issue and may make a recommendation to the Board of Trustees if the President determines that action is warranted. Dartmouth's Board ultimately has sole responsibility for all investment matters, including determination of socially-driven investment issues that arise as a result of Dartmouth's investments.

In March 2014, *Divest Dartmouth* presented President Phil Hanlon with a petition signed by many members of the Dartmouth community formally requesting that Dartmouth divest from its fossil fuel holdings. ACIR met with *Divest Dartmouth* on several occasions in 2014 to learn more about its requests and to describe ACIR's activities in making voting recommendations. In August 2014, President Hanlon requested ACIR to prepare a report objectively analyzing the pros and cons of fossil fuel divestment. This document fulfills that request. However, rather than simply listing the pros and cons of divestment, this report takes a more comprehensive *decision analytic* approach. This approach starts with a careful consideration of the multiple objectives of fossil fuel divestment, followed by an assessment of the degree to which specific courses of action regarding divestment can achieve these objectives. The outcome matrix summarizing these assessments is akin to the list of "pros and cons" requested by President Hanlon. If subjective judgements of the relative importance of each objective can then be made, this outcome matrix can be used to determine the overall most preferable course of action. Examples of alternative prioritizations and their implications for the ranking of alternative actions are given in an appendix.

II. History of Divestment at Dartmouth

Dartmouth has divested from holdings for ethical reasons four times in its nearly 250-year history.

In 1989, Dartmouth divested \$11.5 million in shares of companies with operations in South Africa. This decision was the culmination of a 17-year process that began in 1972 when Dartmouth initially divested from South African companies and financial institutions making loans to the South African Government.²

² AP, "Dartmouth Divestment Announced." *The New York Times*, November 15, 1989.

In 1993, Dartmouth divested \$6.8 million in bonds for the James Bay Hydro-Quebec dam project after concerns were raised on campus about damage to the environment and to indigenous tribes that construction and operation of the hydroelectric dam project would cause. This decision came after a concerted campaign by the Dartmouth academic community, including staff, alumni and students. These constituents felt that the ownership of Hydro-Quebec bonds was, “inconsistent with Dartmouth's traditions, history, community standards and values.”³ The decision was accompanied by a caveat that this action should result in minimal financial harm.

In 2005, Dartmouth divested from certain companies operating in Sudan. This was initiated by a petition brought to ACIR signed by approximately 300 Dartmouth community members concerned about the genocide being perpetrated in Sudan’s Darfur region. After conducting a review of the petition, the underlying facts, and the ramifications of divesting, ACIR recommended to the Board of Trustees that Dartmouth divest from shares of six particular companies with operations in Sudan. In November 2005, the Board of Trustees accepted ACIR’s recommendation and directed the Investment Office to forego any investments in the six identified companies.⁴ In addition, the Board authorized the Investment Office to “take such steps as may be necessary to avoid direct College investment in other companies that may be identified in the future as being directly complicit in the genocidal activities in the Darfur region of Sudan.”⁵ Dartmouth has since maintained a Sudan “No Hold List” that identifies companies based on whether they supply weapons or military training to the Khartoum regime, or are significantly involved in the mineral extraction and oil and gas sectors in Sudan. There are currently 21 companies on this list.

The most recent divestment decision at Dartmouth occurred in 2012 when the Board of Trustees voted to divest its direct holdings in companies that manufacture or produce tobacco or tobacco products. The Board took this action in response to a request made by ACIR in 2011 to President Jim Kim. The subject of Dartmouth’s potential divestment from tobacco holdings had been raised previously in 1993, 1998 and 1999, with no specific actions taken.

³ PRNewswire, “The Board of Trustees of Dartmouth College announced that it is divesting its holdings of US\$6.8 million of Hydro-Quebec bonds,” *The Free Library*, December 18, 1992.

⁴ Memorandum from Cheryl K. Reynolds to Adam M. Keller and David H. Russ, November 15, 2005.

⁵ Ibid.

III. Divestment Objectives

As with any major decision, the decision of whether to divest from fossil fuel assets requires a careful consideration of the goals of the proposed action, as well as the degree to which alternative courses of action achieve such goals. When there is only a single goal, identifying that goal and how well it is met by the various alternatives is often straightforward. However, when there are multiple goals, or *objectives*, it is important to give careful thought to the identification and relations among these objectives. In the field of *decision analysis*, this process is often assisted by the creation of an *objectives hierarchy*.⁶ The upper (or leftmost) levels in such a hierarchy represent the more general objectives, and the lower (or further right) levels articulate important elements of the more general levels. The lowest-level (or rightmost) objectives then provide the criteria according to which the various decision alternatives can be judged.

Figure 1 shows a working objectives hierarchy for Dartmouth's divestment decision. The contents and structure of this hierarchy were generated by the authors of this report in consultation with selected members of Dartmouth's staff, administration, faculty, student leaders, and alumni.

The most general objective, or overall goal, of the hierarchy can be stated as: *Responsibly Invest Dartmouth's Endowment while Addressing the Social Harms of Fossil Fuels*. Clearly, on its own, this is a vague statement that leaves open the question of what is "responsible" and what it means to "address" social harms. Asking ourselves and others the question, "What does this objective mean to you?" allowed us to add greater detail to the objectives hierarchy. We learned that there are four broad-level objectives to Dartmouth's consideration of divestment: ethical, financial, academic, and symbolic. In the following subsections, we describe each of these broad objectives in turn, as well as their more detailed sub-objectives.

⁶ Clemen, R. (1997) *Making Hard Decisions: An Introduction to Decision Analysis*. Duxbury Press. 664p.

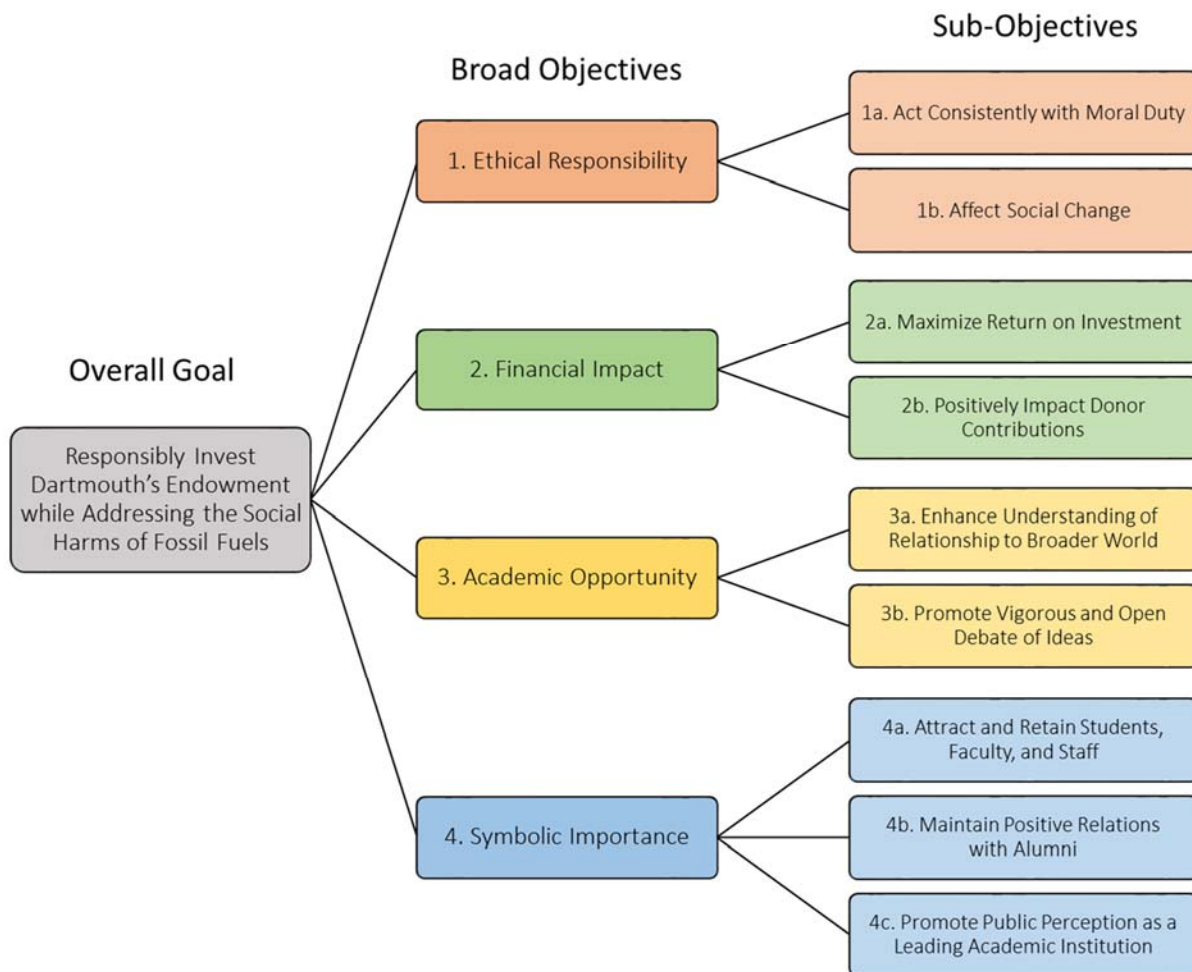


Figure 1. Proposed objectives hierarchy for Dartmouth's divestment decision.

1. Ethical Responsibility

The Board of Trustees has acknowledged the important role of ethical responsibility in managing Dartmouth's endowment with the following statement:

Dartmouth supports vigorous open debate of ideas within a community marked by mutual respect, as well as a culture of integrity, self-reliance, collegiality and a sense of responsibility for each other and for the broader world. The use and management of Dartmouth's resources are to advance this mission and these values.⁷

⁷ Dartmouth Board of Trustees Statement on Investment and Social Responsibility Issues (2013) http://www.dartmouth.edu/~trustees/governance/stmt_invstmt_socialresponissues.html

This statement suggests that the endowment is not only intended to ensure the largest return on investment, but also to reflect Dartmouth's moral values as a leading academic institution. This intention is reflected by Dartmouth's four previous decisions to divest in order to align its investment policy with the social and moral sensibilities of its community.

When asking the question, "What does it mean to have the objective of ethical responsibility?" we arrived at two more detailed sub-objectives, one that is *deontological* and one that is *consequential*. The *deontological* objective (1a) assumes that the ethical responsibility of an action depends primarily on its adherence to an individual or institution's *moral duty*. According to this principle, the taking of an action is more important than the consequences. The *consequential* objective (1b), on the other hand, judges the rightness or wrongness of an action according to its ultimate outcome – in this case the ability to *affect social change*. We believe that both perspectives are relevant to the divestment decision, and thus we include both in our objectives hierarchy.

2. Financial Impact

The Board of Trustees' statement quoted in the previous section also contains the following assertion:

The primary investment objective of the endowment is to generate long- term, inflation-adjusted investment returns in excess of the annual distribution to preserve intergenerational equity for the institution. Dartmouth's position regarding its investment assets is to maintain a flexible investment mandate to maximize the earning power of these resources.

This implies that any divestment decision should not have a negative impact on Dartmouth's financial position. We interpret this financial objective holistically to include both *return on investment* (2a) as well as *impact on donor contributions* (2b). Indeed, the leverage potential of donor contributions has been recognized in the creation of the *Multi-School Fossil Free Divestment Fund*.⁸ This fund aims to put pressure on universities to divest by collecting donations that will only be given to universities if they divest from fossil fuels by December 31,

⁸ The Multi-School Fossil Free Divestment Fund. <http://www.divestfund.org/>

2017. Thus, there are broader financial implications to the divestment decision than investment returns alone.

3. Academic Opportunity

Among the core values held by Dartmouth are the following (emphasis added):⁹

- Dartmouth fosters lasting bonds among faculty, staff, and students, which encourage a culture of integrity, self-reliance, and collegiality and *instill a sense of responsibility for each other and for the broader world.*
- Dartmouth supports the *vigorous and open debate of ideas* within a community marked by mutual respect.

The issue of how institutions can use their substantial resources to promote the greater good is one that presents faculty and students with a timely and important opportunity to *understand its responsibility to the broader world* (3a) as well as *vigorously and openly debate ideas* (3b). We see maximizing these two opportunities as the two key sub-objectives of the divestment initiative relevant to Dartmouth's academic mission.

4. Symbolic Importance

Dartmouth's decision on whether or not to divest from fossil fuels will likely have symbolic importance to the outside world. We see this symbolic act as being of interest to three major constituencies, each of which will likely have their own particular concerns. We thus state the detailed sub-objectives as follows:

4a. Enhance attractiveness to prospective students, faculty, and staff: Depending on their own views on climate change and the relative merits of divestment, prospective students, faculty, and staff may feel greater or lesser affinity for Dartmouth after learning of Dartmouth's decision on divestment. This could impact application and yield rates of students, as well as recruitment and retention success of faculty and staff.

⁹ Dartmouth Mission Statement, Adopted May 2007. <http://dartmouth.edu/mission-statement>

4b. Maintain positive relations with alumni: Again, depending on their personal views, alumni may feel greater or lesser devotion to Dartmouth after learning of Dartmouth's decision. Strong alumni relations are important to maintaining school spirit, enhancing rates of giving, and building social and professional networks for students and graduates.

4c. Promote public perception as a leading academic institution: As a globally-recognized Ivy League institution, Dartmouth has a leadership responsibility to other colleges and universities. Thus, Dartmouth's decision on this issue may have implications for what other institutions decide.

IV. Divestment Options

With the many objectives of fossil fuel divestment established, the next step is to identify the specific divestment options to be considered. The issue is more complex than a binary yes/no decision. Key additional considerations are: the type of holdings being considered (i.e. direct holdings only or all holdings?), the *scope of divestment* (i.e., how broadly do you define a fossil fuel company?) and the *reinvestment strategy* (i.e., what do you do with divested funds?). Different approaches to these issues will have different ethical, financial, academic, and symbolic implications.

1. Type of Holdings

A shareholder can have either *direct* or *indirect* holdings of stock in a particular company. Direct holdings are those for which the shareholder directly holds the stock certificates in its own name. This implies that the shareholder receives all mailings (e.g., proxy resolutions) directly from the company or its representative. A shareholder has indirect holdings in a company when it holds shares of a third party, such as a mutual fund, which then owns shares of the company. As an indirect owner, the shareholder still owns shares in the company but that company does not receive the individual shareholders' names from the third party. Because indirect holdings are dynamic and difficult to track for a large institution such as Dartmouth, and because avoiding all indirect holdings of fossil fuel companies would be constrain Dartmouth's investments to a prohibitive degree, we focus in this report only on divestment from Dartmouth's direct holdings.

2. Scope of Divestment

Another critical detail of the divestment decision is how to define a fossil fuel company. The *Carbon Underground 200* is a list used by many divestment campaigns, including *Divest Dartmouth*, as the definition for fossil fuel companies. It is an annually updated listing of the 100 largest public coal and 100 largest public oil and gas reserve owners based on the potential carbon dioxide emissions of their reported reserves.¹⁰ These companies cover greater than 95% of reported global fossil fuel reserves held by publicly-traded companies.

Another less comprehensive option is to divest only from *The Filthy Fifteen*, a group of the fifteen largest and most polluting coal companies in the U.S., as identified by *Fossil Free Funds*. *Fossil Free Funds* is a search tool that “allows users to find out whether their investments are being used to extract and consume fossil fuels.”¹¹

A more comprehensive option would be to divest from any company that has any holdings or operations in coal, oil, or gas, or is a heavy energy consumer. Identification of such companies is also assisted by *Fossil Free Funds*, using the *Global Equity Classification Structure*¹² of *Morningstar Research*. This structure “maps each equity into one of 148 industries that most accurately reflects the underlying business of that company.”¹³ *Fossil Free Funds* has identified eleven industries that comprise the coal, oil/gas, and utilities categories.

3. Reinvestment Strategy

There are at least three possible strategies for what to do with divested funds. One is to simply redirect the funds into other existing holdings. This is generally not a desirable option, as it can be expected to exacerbate the so-called “diversity penalty” that results from any constraint placed on an investor seeking to minimize financial risk through a diverse portfolio. A second option is to invest in stocks that can be expected to perform similarly to fossil fuel holdings. This

¹⁰ Fossil Free Indexes: The Carbon Underground 2015. <http://fossilfreeindexes.com/research/the-carbon-underground/>

¹¹ Fossil Free Funds: <http://fossilfreefunds.org/>

¹² Morningstar Research (2011). *Morningstar Global Equity Classification Structure*. <http://corporate.morningstar.com/us/documents/methodologydocuments/methodologypapers/equityclassmethodology.pdf>

¹³ Ibid.

option might be expected to mitigate the diversity penalty. Finally, a third option is to reinvest all or a portion of the funds specifically into clean/green energy funds. This would likely be the option with the most symbolic and practical impact on climate change mitigation.

4. Options Considered

Table 1 shows the possible combinations of divestment scope and reinvestment strategy. For the purposes of this report, rather than consider every combination, we focus on the following four representative scenarios:

A. No Action

In the “no action” option, the current investment goals and strategies are left unchanged.

B. Incremental

In this option, representing a “minimal” level of action, only the *Filthy Fifteen* are targeted for divestment and the resulting funds are reinvested to maintain diversity and maximize return.

C. Divest Dartmouth

This option represents *Divest Dartmouth*'s “ask”: divestment from the 200 largest public coal, oil, and gas reserve owners based on the potential carbon dioxide emissions of their reported reserves. In this option, the financial impact of divestment is minimized by reinvesting funds to maintain diversity.

D. Complete

This is an option that takes the most comprehensive view toward divestment by targeting all fossil fuel companies and then reinvesting all resulting funds into clean/green energy.

All subsequent analysis and discussion in this report will focus on the four options presented in this section as “scoping scenarios,” although certainly intermediate options consisting of the empty cells in Table 1 could also be considered as compromise approaches.

Table 1. Options matrix showing the combinations of divestment scope and reinvestment strategy considered in this report.

	Reinvestment Strategy		
Divestment Scope	Into Existing Holdings	Maintain Diversity	Clean Energy
Do Nothing	A. No Action		
Filthy Fifteen		B. Incremental	
Carbon Underground 200		C. Divest Dartmouth	
Comprehensive			D. Complete

V. Evaluation of Options According to Objectives

With the decision objectives identified and the divestment options delineated, it remains to consider how well each option fulfills each objective. This evaluation will be structured by considering all options according to each objective one at a time (Table 2).

1. Ethical Responsibility

1a. Act consistently with moral duty

In their book, *The Ethical Investor: Universities and Corporate Responsibility*, authors Simon, Powers, and Gunnemann argue that institutions must, as a “moral minimum”, avoid and correct social injury. They call this a *moral minimum* in order to imply that, “although reasons may exist why certain persons or institutions cannot or should not be required to pursue moral or social good in all situations, there are many fewer reasons why one should be excused from the injunction against injuring others.”¹⁴ They further emphasize that “the ‘moral minimum’ responsibility of the shareholder to take such action as he can to prevent or correct corporate social injury extends to the university when it is a corporate shareholder.”¹⁵

¹⁴ Simon, J. G., Powers, C. W., & Gunnemann, J. P. (1972). *The Ethical Investor: Universities and Corporate Responsibility*. Yale University Press. p. 18

¹⁵ Ibid. p. 65

Table 2. Matrix indicating the fulfillment of each objective by each divestment option.

Options	Objectives																		
	1. Ethical Responsibility			2. Financial Impact			3. Academic Opportunity			4. Symbolic Importance									
A. No Action	1a. Act consistently with moral duty	Unchanged	Unchanged	1b. Affect social change	Unchanged	2a. Maximize return on investment	Unchanged	2b. Positively impact donor contributions	Unchanged	3a. Enhance understanding of relationship to broader world	Unchanged	3b. Promote vigorous and open debate of ideas	Slightly Diminished	4a. Attract and retain students, faculty, and staff	Slightly Diminished	4b. Maintain positive relations with alumni	Slightly Diminished	4c. Promote public perception as a leading academic institution	Unchanged
B. Incremental	Slightly Enhanced	Unchanged	Slightly Enhanced	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
C. Divest Dartmouth	Enhanced	Unchanged	Slightly Enhanced	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Slightly Enhanced	Slightly Enhanced	Slightly Enhanced	Slightly Enhanced	Unchanged	Unchanged
D. Complete	Greatly Enhanced	Unchanged	Enhanced	Unchanged	Unchanged	Slightly Diminished	Unchanged	Unchanged	Unchanged	Slightly Enhanced	Slightly Enhanced	Enhanced	Slightly Enhanced	Slightly Enhanced	Slightly Enhanced	Uncertain	Uncertain	Slightly Enhanced	Slightly Enhanced

Simon, Powers, and Gunnemann also stress that the magnitude of the university's morally questionable investment does not matter, nor does the practical consequence of divestment: ethics is ethics. In fact, they argue that when a university agrees that the "moral minimum" obligation holds for a particular investment, the burden of proof should fall on those who wish to avoid fulfilling this obligation – not on those who argue for altering the existing (and presumably morally-deficient) investment policies.

In 2013, the Intergovernmental Panel on Climate Change (IPCC) released its Fifth Assessment Report (AR5), stating that:

Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.¹⁶

Thus, emission of greenhouse gases can be seen as a form of "social injury" that Dartmouth arguably has a moral duty to mitigate. Of course, in today's economy it would be unrealistic to expect Dartmouth, or any other institution, to immediately halt all activity that leads directly or indirectly to greenhouse gas emissions. Nevertheless, in the view of advocates of the national divestment campaign, the fossil fuel industry employs a morally "flawed" business plan that profits by knowingly harming others, in much the same way as the tobacco industry has in the past. In contrast, while a university such as Dartmouth certainly contributes to greenhouse gas emissions, its *raison d'être* is not intrinsically tied to the extraction and use of fossil fuels. Dartmouth's many sustainability initiatives demonstrate this point and in fact reveal an existing institutional commitment to combating climate change. It is arguably contrary to such initiatives, and to the values that motivate them, to continue to invest in the fossil fuel industry.

An ethical argument *against* divestment from fossil fuels is that Dartmouth should prioritize maximizing its return on investment in order to advance other ethical initiatives, such as financial aid, equal opportunity, and service opportunities. This argument has merit only if

¹⁶ IPCC Fifth Assessment Synthesis Report Summary for Policymakers, http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf, p. 8.

divestment can be shown to significantly impair Dartmouth's financial return. Thus, we defer addressing this point until the later section on financial impact.

Because of the absolutist interpretation of acting consistently with moral duty, this sub-objective of ethical responsibility is seen as being fulfilled in proportion to the scope of Dartmouth's divestment decision (Table 2). In addition, if Dartmouth decides to see its moral obligation as extending beyond avoidance of social injury to imply proactive support for clean energy (**Option D**), it will have fulfilled this sub-objective to an exceptional degree.

1b. Affect social change

The discussion of moral duty immediately above is primarily a deontological one. Another concern regarding ethical responsibility is primarily consequential: does divestment have the ability to actually affect social change?

On the one hand, there seems to be wide consensus that divestment of the scale of Dartmouth's existing fossil fuel-related holdings will have little to no direct financial impact on fossil fuel companies. Not only are Dartmouth's investments in fossil fuels minimal in comparison to the value of fossil fuel companies, but even if Dartmouth's divestment decision were to trigger a cascade of divestments at other universities, the effect would still be limited. This is because the magnitude of fossil fuel holdings across all university endowments is still small, and because neutral (non-divesting) investors would likely pick up the divested stocks, minimizing any effect on stock prices.¹⁷ Even if divestment by universities and other institutions had the power to depress stock prices, fossil fuel companies would be unlikely to suffer direct losses of profit or have to fundamentally change their business models. This is because, generally speaking, the value of a company's stock impacts operations only if the company sells newly issued stock to fund capital expenditures or operations. Fossil fuel companies' profits are typically large enough to fund capital improvements even in the absence of stock sales. In fact, many of the largest oil companies are privately owned (for example *Koch Industries* and *Hunt Oil*). This suggests that

¹⁷ Ansar, A., Caldecott, B., & Tilbury, J. (2013). Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets? Stranded Assets Programme, SSEE, University of Oxford.

fossil fuel divestment would have very little chance of impacting fossil fuel companies' profits directly.¹⁸

On the other hand, there may be significant indirect effects of divestment, most importantly the stigmatization of fossil fuel companies. Stigmatized companies face higher operating costs because their poor image drives away suppliers, subcontractors, and potential employees. Stigmatized companies also have a harder time lobbying politicians and obtaining government contracts in the face of negative public opinion. A side effect of such stigmatization may also be that fossil fuel companies decide to allocate more resources to identifying and developing renewable energy sources to improve their image. Thus, it has generally been concluded that the indirect effects of divestment are more likely to affect social change than the direct effects.¹⁹ By this reasoning, the ability of Dartmouth's divestment decision to affect social change depends more on how broadly it is publicized than on the scope of divestment (Table 2).

While scope may not be particularly important in affecting change, the reinvestment strategy may be. Diverting funds from fossil fuels companies to alternative investments

...starts to build momentum for moving money into clean energy, community development, and other more sustainable investments. Let's say our [national divestment] campaign succeeds in moving just 1% of the \$400 billion in university endowments towards sustainable alternatives. That's roughly \$4 billion worth of new investments in things like solar bonds, revolving loan funds, and advanced energy industries.... University endowments won't be enough to fuel a clean energy revolution ... but they build the case for investment in important ways.²⁰

For this reason, we consider the objective to "affect social change" to only be fully met under **Option D** in which divested funds are redirected to companies involved in developing clean energy (Table 2).

¹⁸ Connolly, S., Schultz, K., & Shallow, N. (2014). Divestment from fossil fuel investments: An analysis of potential impacts and strategies. PRS Policy Brief 1314-01. Nelson A. Rockefeller Center, Dartmouth College.

¹⁹ Ansar, A., Caldecott, B., & Tilbury, J. (2013). Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets? Stranded Assets Programme, SSEE, University of Oxford.

²⁰ Fossil Free. <http://gofossilfree.org/frequently-asked-questions/> Accessed December, 2015.

2. Financial Impact

2a. Maximize return on investment

Arguably, divestment should not be implemented if it notably compromises the investment manager's fiduciary responsibility to the university. However, the impacts of divestment on financial return are highly uncertain, in both magnitude and direction. Some impacts can be expected to be negative, while others may be beneficial for returns.

Potentially negative impacts of divestment include:

Elimination of the “sin stock” premium – It has been speculated that companies that cut costs associated with maintaining moral practices tend to be more profitable. Yet, an extensive literature review conducted by the *United Nations Environment Program* concluded that there was no basis for this phenomenon.²¹ A likely reason is that moral practices also bring financial benefits (such as increased worker retention, fewer litigation costs, more favorable government treatment, and better brand image) that may balance any lost revenue.

Reduction in inflation protection – Fossil fuel stocks tend to closely track inflation, so that removing them from a portfolio might expose it to increased inflation risk. Yet, there are other assets that track inflation, including Treasury Inflation-Protected Securities (TIPS) and Real Estate Investment Trusts (REITs), as well as other commodities that behave similarly to fossil fuels, such as agriculture, steel, and utilities.²² Therefore, it is likely that a skilled investment manager can protect a portfolio against inflation, even without having access to fossil fuel stocks.

Diversity penalty – Maintaining diversity is a fundamental principle of sound financial management. Any constraint placed on the ability of an investor to select diverse assets increases risk and, therefore, average performance. This is the major financial implication of the divestment decision of concern to most institutional investors. However, there is no consensus on the magnitude of the diversity penalty, in part because it depends on the ability of the investment manager to find alternative assets that maintain diversity. A detailed analysis of the potential

²¹ Asset Management Working Group and Mercer. (2007). Demystifying responsible investment performance. A review of key academic and border research on ESG factors. UNEP Finance Initiative

²² Punglia, Vikash and Kaplan, Paul. “Keeping Ahead of Inflation with the Morningstar Real Asset Index”. 23 January 2013. Online. <https://corporate.morningstar.com/US/documents/Indexes/KeepingAheadofInflation.pdf>

diversity penalty using a simulation model recently indicated that that removing the *Filthy Fifteen* from a portfolio could be expected to reduce returns by 0.0002% and that removing the entire oil and gas industry could be expected to reduce returns by 0.0034%.²³ Of more direct relevance to Dartmouth is the fact that, while Dartmouth directly holds approximately \$43M in fossil fuel related assets, the vast majority (>95%) of that amount is held in working capital pools, with only about \$2M held in the endowment. Thus, even with full divestment of direct endowment holdings, the potential financial impact of any reasonable estimate of the diversity penalty would be minimal.

Transaction costs – Moving funds from one asset to another involves brokerage, research, and managerial fees, costing on the order of 0.5 to 1% of the funds being transferred. For large holdings, these transaction costs can be significant. However, for the size of Dartmouth’s direct fossil fuel holdings, such transaction costs would amount to only about \$350 for divestment from the *Carbon Underground 200* and about \$2200 for comprehensive divestment fossil fuel-related companies.²⁴

There is also a potentially positive impact of divesting from fossil fuel assets:

Avoidance of the carbon bubble – It is possible that divestment can mitigate impacts from the bursting of a speculated “carbon bubble.” The idea behind the carbon bubble is that stocks of fossil fuel companies are currently inflated because of the assumption that all proven reserves are available to be extracted, sold, and burned. In reality, if society is to limit global warming to an increase of 2°C above preindustrial levels, only 20% of the world’s remaining proven fossil fuel reserves can be burned.²⁵ In other words, up to 80% of reserves owned by the world’s coal, oil and gas companies might end up as “stranded assets,” significantly reducing the value of fossil fuel stocks. Others have similarly concluded that equities in the fossil fuel industry are the least resilient to climate change and thus add significantly to long term portfolio risk.²⁶ It has been

²³ Geddes, P. (2013). Building a Carbon Free Portfolio. Available at SSRN 2214996.

²⁴ Heather Huff, Director of Investment Operations Dartmouth Investment Office, personal communication, 19 August 2015.

²⁵ Leaton, J. (2012). “Unburnable Carbon–Are the World’s Financial Markets Carrying a Carbon Bubble.” Carbon Tracker Initiative.

²⁶ Guyatt, D. J. et al. (2011). Climate Change Scenarios–Implications for Strategic Asset Allocation. Mercer. Available at SSRN 1911824.

estimated that strict carbon policies could reduce market capitalization for oil and gas companies by as much as 40 to 60%.²⁷ While this suggests the potential for a significant positive impact of divestment on financial returns, exploiting this potential does not depend on an *intentional* divestment strategy *per se*. Any investor who believes that fossil fuel stocks are currently overvalued can decide to reduce exposure to these investments as part of a wise investment strategy. Therefore, we do not believe that this can be fairly included as a benefit of divestment itself.

On the whole, we conclude that the sub-objective of maximizing return on investment will be left substantively unchanged for Dartmouth by any level of direct fossil fuel divestment (Table 2). Yet, even if clean energy companies may be considered by many to be a wise investment choice for a carbon constrained future, constraining the reinvestment of divested funds to clean energy companies alone (**Option D**) imposes a further diversity penalty that would not exist without such constraints (**Options B and C**).

2b. Positively impact donor contributions

Financial gifts, especially by alumni, are an important source of revenue for Dartmouth. It is possible that potential donors who feel strongly about climate change may decide to forego giving until the College decides to divest from fossil fuel companies. In fact, this idea is the motivation for the *Multi-School Fossil Free Divestment Fund*,²⁸ which collects donations that will only be given to universities if they divest from the top 200 fossil fuel companies.

Dartmouth is among the schools to which funds have been designated and has received the third largest number of donors of all listed schools.²⁹ Although contributions are continuing to be made to the Fund, it appears that the overall scale is not large enough to indicate a significant potential impact on total contributions to Dartmouth. On the other hand, there are a number of prominent Dartmouth alumni who are leaders in the oil and gas industry who may be affronted by a decision by Dartmouth to divest from the companies with which they are associated. It is possible that this could lead to withholding potentially sizable gifts to the College. Only those

²⁷ Spedding, P., Mehta, K., Robins, N. (2013). Oil & Carbon Revisited: Value at Risk from 'Unburnable' Reserves. HSBC Global Research.

²⁸ <http://www.divestfund.org/>

²⁹ Leehi Yona, Divest Dartmouth Member '16, personal communication, 18 November 2015.

associated with Dartmouth's Advancement Division can accurately assess this potential and that assessment is itself likely to be sensitive. Therefore, we indicate the fulfillment of this sub-objective by **Options C and D** to be "Uncertain" (Table 2).

3. Academic Opportunity

3a. Enhance understanding of relationship to broader world

Almost all fields of study at Dartmouth have the potential to consider the causes and consequences of climate change. Yet, as one student recently put it, "It seems strange to talk so much about climate change and its drastic consequences without talking about a way for Dartmouth to ameliorate that. In fact, it almost undermines our learning when the professor says one thing but the institution does another."³⁰ Given the prominence of both environmental studies and economics programs on campus, it is not surprising that many students are interested in the intersection between these two.³¹ The possible role of institutional investing in promoting social well-being and environmental improvement could be an excellent topic for such an interdisciplinary course. In fact, the recent Rockefeller Center Policy Brief,³² prepared by three undergraduates, is testament to this opportunity, as is the following statement by the ACIR:

We see education as one of the important purposes of this committee. The committee will exercise this function by providing a forum for discussion on shareholder initiatives directed at the companies in which the College has direct investments. In this way, students and other community members that have an interest in investment issues can participate in recommendations regarding the College's stance on issues arising at companies represented in the investment portfolio.³³

³⁰ Ariel Wertheim, Divest Dartmouth Member '15, personal communication, 20 August 2015.

³¹ Anne Kapuscinski, Dartmouth Environmental Studies Program, personal communication, 24 September 2015.

³² Connolly, S., Schultz, K., & Shallow, N. (2014). Divestment from fossil fuel investments: An analysis of potential impacts and strategies. PRS Policy Brief 1314-01. Nelson A. Rockefeller Center, Dartmouth College.

³³ Recommendations from the Advisory Committee on Investor Responsibility, August 2002

The Dartmouth Sustainability Office has underscored that students would definitely be interested in becoming involved with ACIR or just observing their actions to better understand how investment portfolios work and the role of investor activism.³⁴

That all being said, the opportunity to study issues such as divestment do not necessarily *depend* on Dartmouth's divestment decision, and we do not see any direct benefit of studying the impacts of Dartmouth's decision directly, given the small scope of its directly-held fossil fuel assets. Therefore, we indicate this sub-objective as being largely unchanged across options. The one exception is if Dartmouth decides to follow **Option D**, in which there may be interesting opportunities to consider how clean energy companies are defined and how a commitment to investing in clean energy may impact the potential for investment diversity.

3b. Promote vigorous and open debate of ideas

Student, faculty, staff, and alumni support of the *Divest Dartmouth* initiative seems to be growing. An online petition currently has over 1,700 signatures.³⁵ The group is becoming more organized, engaging in leadership training, connecting with representatives of other campuses and other movements, and shaping the campus discussion around climate issues.³⁶ An open letter to President Hanlon in April 2015 signed by 79 alumni further increased the pressure on the Dartmouth administration to divest. Acclaimed author Louise Erdrich '76 has been a particular proponent.

Faculty have also seen a shift among students from a focus on climate policy change and political campaigns to a focus on changing the political and moral narrative around divesting.³⁷ Additionally, the divestment issue has stimulated a conversation about Dartmouth's other climate impacts, including its use of #6 fuel oil. Our assessment is that there is currently a "vigorous and open debate of ideas" on campus. As stated by a student leader of Divest Dartmouth:

When we gathered signatures, we made clear that we were asking folks to sign on to divestment from the top 200 fossil fuel companies. Therefore, anything less than

³⁴ Rosi Kerr, Dartmouth Sustainability Office, personal communication, 14 September 2015.

³⁵ <https://campaigns.gofossilfree.org/petitions/dartmouth-college>, Accessed January 21, 2016.

³⁶ Connor Clark, Divest Dartmouth Member '17, personal communication, 29 July 2015.

³⁷ Richard Howarth, Dartmouth Environmental Studies Program, personal communication, 14 August 2015.

that (such as only coal) would be seen as a disappointment because it is less than the ask. This goes both ways: I would expect then that divestment from ALL fossil fuel companies would yield even more satisfaction than just the top 200 companies. However, this additional satisfaction would be far less substantial because we might not even own the 201st or 782nd “dirtiest” fossil fuel companies, and we don't know what they are exactly.

Thus, we conclude that the sub-objective of “promoting vigorous and open debate of ideas,” would be fulfilled by a decision to choose either **Option C** or **Option D** (Table 2), while a minor, incremental choice (**Option B**), would likely only maintain the current push for further action. Staying with **Option A** (No Action) would be discouraging to students and not be considered to fulfill this sub-objective.

4. Symbolic Importance

4a. Attract and retain students, faculty, and staff

It is unclear the degree to which a college's divestment strategy factors into a prospective student, faculty, or staff's decision to join or stay in the Dartmouth community. On the one hand, a survey of 8,200 students by *The Princeton Review* found that 69% of college applicants say that having information about a college's commitment to environmental issues would contribute to their decision to apply to or attend the school.³⁸ On the other hand, other factors, including academic reputation and financial aid still matter much more.

One source that prospectives can use to gauge a college's environmental commitment is the Princeton Review's *Guide to Green Colleges*.³⁹ Divestment from fossil fuels is not explicitly one of the considerations of the *Guide*; the most closely related is, “Does the school have a formal plan to mitigate its greenhouse gas emissions?” Dartmouth meets this criterion, but nevertheless is not among the *Top 50 Green Colleges* in the *Guide*. Peers among the *Top 50* include: Colgate, Columbia, Cornell, Middlebury, and Stanford. Also among the *Top 50* are neighbors University of Vermont and University of New Hampshire.

³⁸ Mary Beth Marklein, College hopefuls look for green universities. *USA Today online*. September 16, 2011. <http://usatoday30.usatoday.com/news/education/2011-04-20-green-college-campus-princeton-review.htm>

³⁹ 2015 Guide to 353 Green Colleges. Princeton Review. <http://www.princetonreview.com/college-rankings/green-guide>

Another source of relevant information is the Sustainability Tracking, Assessment & Rating System (STARS), which is “a transparent, self-reporting framework for colleges and universities to gauge relative progress toward sustainability. STARS was developed by AASHE with broad participation from the higher education community.”⁴⁰ Among the criteria used by STARS is, “Institution and/or its system, foundation or management company makes positive sustainability investments and/or has investor engagement policies and practices.” Dartmouth is not currently a participant in STARS, but many of its peers are, including: Columbia, Colgate, Cornell, Middlebury, Stanford (all gold rated), Bowdoin, Princeton, Tufts (all silver rated), Duke (reporter only).

Despite the lack of participation or top scores in green college ratings, Dartmouth seems to already attract environmentally-minded students, perhaps as a function of its location or its strong Outing Club. Thus, we assess any positive (or negative) impacts on recruitment and retention associated with the divestment decision to be minor, with the lack of action in **Option A** only slightly diminishing achievement of this objective and the positive actions in **Options C** and **D** only slightly enhancing achievement. The incremental action of **Option B** is unlikely to have any effect one way or another (Table 2).

4b. Maintain positive relations with alumni

The issue here is similar to the consideration of objective 2b (donor contributions) and 4a (attract and retain students, faculty, and staff) above, but without special consideration of the *Multi-School Fossil Free Divestment Fund*, the outsized consideration of potentially large donors, or the emphasis on college guide rankings. Our interviews with faculty, students, and alumni relations staff indicated that the divestment issue is potentially a point of pride for a proportion of alumni. In addition to the April 2015 open letter to President Hanlon signed by alumni from classes '58 through '14, the College hears from approximately 300 alumni each year, either directly or indirectly, on the issue.⁴¹ Yet, it is also possible that some alums will see the more comprehensive **Option D** as being a misuse of the Dartmouth endowment for social impact and may view the constraints placed on the endowment as being too limiting. For these reasons, we

⁴⁰ Association for the Advancement of Sustainability in Higher Education, STARS. <https://stars.aashe.org/>

⁴¹ Rosi Kerr, Dartmouth Sustainability Office, personal communication, 14 September 2015.

assess achievement of this objective across options as being the same as for objective 4a, but with **Option D** being assessed as “uncertain.”

4c. Promote public perception as a leading academic institution

We define this objective to address Dartmouth’s role as a leading American academic institution and its potential to serve as a model for other institutions in the Ivy League and beyond. One gauge of Dartmouth’s current ability to fulfill this leadership role is the Sierra Club’s ranking of colleges and universities. Of the 173 institutions evaluated in 2014, Dartmouth ranked 124th, well below peers Stanford (6th) Cornell (16th), Harvard (19th), Duke (23rd), and Yale (28th).

In May 2014, Stanford University announced that it would divest from its stock in coal-mining companies. With its \$18.7 billion endowment, Stanford is the wealthiest and most prominent U.S. university to have divested from fossil fuels in some way. Activists hope Stanford’s move will create a domino effect, yet thus far Stanford refuses to see itself as a role for other universities (see box on next page).

If Dartmouth were to decide to divest at some level, it would be the first Ivy League university to do so. The case of Stanford suggests that this would provide the potential for positive media coverage. On the other hand, our interview with Dartmouth’s Office of Communications suggest that the media impact of the divestment decision is expected to be insignificant. Whichever way the College decides, the Office of Communications will work with the media to explain the rationale behind Dartmouth’s position to present the College in the best possible light.⁴² For this reason, we assess that fulfillment of this objective will be left unchanged for all options but **Option D**, in which case Dartmouth could rightfully claim to be a leader among its peers by not only divesting from all fossil fuel companies but also then reinvesting in clean/green energy.

⁴² Personal communication, Diana Lawrence, Director of Media Relations, Office of Communications, Dartmouth

One Approach: Stanford University

In May 2014, Stanford announced that it would divest from its stock in coal-mining companies. That set off celebrations among climate change activists, particularly members of Fossil Free Stanford, one of more than 400 student-led U.S. campaigns in an international movement to persuade institutional investors to divest from oil, gas, and coal stocks.

As university president John Hennessy told Stanford News Service, “Stanford has a responsibility as a global citizen to promote sustainability for our planet, and we work intensively to do so through our research, our educational programs and our campus operations. The university’s review has concluded that coal is one of the most carbon-intensive methods of energy generation and that other sources can be readily substituted for it.”

Activists hope Stanford’s move will create a domino effect: Given time and momentum, the Fossil Free movement could be as successful as the apartheid-divestment efforts of the early 1980s, when at least 155 colleges partially or fully divested themselves of stocks linked to South Africa, helping pressure the country’s government to dismantle apartheid.

Despite the PR bonanza Stanford reaped, however, its divestment move was a carefully tuned and possibly painless decision.

Stanford picked “low-hanging fruit,” says Pitzer College trustee Donald Gould, the president of an asset management company and a champion of Pitzer’s recent decision to divest all fossil fuel stocks from its portfolio by the end of 2014. Stanford’s decision is narrow: The university will drop direct investments in about 100 companies involved in coal production, not the 200 fossil fuel extraction companies originally requested by Fossil Free Stanford. And its decision doesn’t affect investments in funds in which coal stocks are “commingled”—as with exchange-traded funds and mutual funds—though the university says that it will “recommend” that its external investment managers avoid investments in these funds.

The problem, Gould says, is that Stanford, like most universities, approached the divestment issue as both a financial and an ethical matter. In fact, Stanford’s Statement on Investment Responsibility, first adopted in 1971, affirms the trustees’ primary obligation to maximize financial returns – although when the trustees determine that “corporate policies or practices create substantial social injury,” they can factor it into their decision. “If you start with the question ‘What’s this going to cost?’ it’s the wrong way,” Gould says. “You don’t have to view divestment from that standpoint. You can start by asking, ‘What’s best aligned with our values?’”

Pitzer also determined that its \$125 million endowment wouldn’t suffer if it divested \$5.4 million from fossil fuel stocks. It turns out, Gould says, that fossil fuel stocks perform about as well as other investments. That makes shuffling university assets less painful—though perhaps still complicated. He suspects that Stanford’s conservative focus on direct coal investments partly reflects the complexity of untangling commingled funds. For the same reason, Pitzer chose to “substantially” divest from its fossil fuel stocks rather than commit to ferreting out every last fossil fuel-tainted fund. (“You don’t need to take things literally,” Gould says.)

Nevertheless, Pitzer expects to be 99 percent free of fossil fuel stock by the end of the year. Stanford says that it limited its decision to coal stocks partly to avoid charges of ivory tower posturing. “It would have been viewed as hypocritical to say, ‘You should divest from fossil fuels,’ when everyone on this campus consumes fossil fuels,” Stanford’s Hennessy told the New Republic. Since California relies on coal for only 7.5 percent of its energy—less than half the state’s share of renewable energy—moving against coal hardly causes ripples. But Pitzer’s Gould thinks that worries of hypocrisy are exaggerated. “We’re embedded in a fossil fuel economy,” he says. “I don’t see hypocrisy in selling your oil stock while still filling your gas tank.”

Other critics, of course, argue that Stanford and Pitzer are wrong. They reason that any university fossil fuel divestment is just feel-good symbolism, since neither coal company stock prices nor global coal consumption will drop as a result. That argument, along with fears that endowment value will decline, has been a standard defense of university administrators at Swarthmore, Brown, Middlebury, and—most notably—Harvard. “The endowment is a resource, not an instrument to impel social or political change,” Harvard president Drew Gilpin Faust wrote in a statement last fall as on-campus climate actions heated up over the impact and future of the school’s \$32.7 billion endowment. “If we and others were to sell our shares, those shares would no doubt find other willing buyers.”

But that outlook considers only divestment’s immediate financial effect and not the cultural and public policy clout that Harvard or Stanford wields. In the long term, “stigmatization poses a far-reaching threat to fossil fuel companies,” says Ben Caldecott, a program director at the University of Oxford’s Smith School of Enterprise and the Environment and an author of Oxford’s divestment report. “Any direct impacts of divestment pale in comparison.”

Even Stanford is missing an opportunity to capitalize on its high-profile divestment move, refusing interviews and referring reporters to its published announcement. “We are not leading a charge,” insists Susan Weinstein, Stanford’s assistant vice president for business development and chair of the school’s Advisory Panel on Investment Responsibility and Licensing, which brought the divestment proposal to the board of trustees. “Every university needs to make its own decision.”

“That upsets me,” says Yari Greaney, an organizer of Fossil Free Stanford. “We wish Stanford would share information with other institutions.” Greaney’s group was delighted that the university moved quickly on coal, but will continue to push for its broader goals. Says Greaney: “Divesting coal stocks is a great step, but a small step.”

Excerpted from R. McManus. Financial Statement: Universities divest from fossil fuel stocks—with varying degrees of commitment. Sierra Magazine. September/October 2014.

VI. Reaching a Decision

Reviewing the overall assessment of options according to each objective (Table 2), some conclusions can be drawn:

- If no action is taken on divestment, there will be a decline in the fulfillment of objectives associated with the disappointment that this choice will generate among students and alumni who have been calling for divestment over the past several years. This choice may also slightly diminish Dartmouth's standing in Green College rankings, which could impact the perceptions of prospective students, faculty, and staff. For these reasons, Option B *dominates* Option A, in the sense that according to all objectives, Option B performs at least as well, if not better, than Option A. This implies that no matter how the objectives are prioritized, if one agrees with the assessments contained in the outcome matrix, choosing a "minimal" level of action by divesting only from the Filthy Fifteen and then prioritizing financial return in the reinvestment would be preferable to not taking any action. Choosing between Options B, C, and D is not straightforward, in large part because of uncertainty around how the more extensive divestment Options C and D will be perceived by potential donors (Objective 2b) and alumni at large (Objective 4b). While these latter two options perform better in meeting the ethical and academic sets of objectives, there is the potential for them to underperform in comparison to Option B on the financial and symbolic sets. Therefore, a determination of which option is most preferable overall depends on a subjective prioritization of objectives. To reveal how alternative prioritizations influence the ranking of options, some examples of alternative viewpoints are given in an appendix. Before reaching a decision, it would thus be advisable for the Dartmouth administration to carefully consider the relative importance it places on the ethical, financial, academic, and symbolic sets of objectives.
- The relative desirability of the various divestment options is also sensitive to the degree of support among potential donors and alumni. It would thus be useful for the Dartmouth administration to "test the waters" through candid conversations with key donors and/or conduct a survey of alumni before reaching a decision.

Appendix

In this appendix we show how the overall desirability of each divestment option can be calculated using a *multi-objective value function*. Value functions convert the rows of the outcome matrix into a numerical score that indicates how well the option represented by that row fulfills the multiple objectives indicated by the columns. We used an additive form for the value function:

$$v(x_1, \dots, x_n) = w_1v(x_1) + w_nv(x_n)$$

where $v(x_1, \dots, x_n)$ is the multi-objective value score, the $v(x_i)$ are single-objective value scores that convert each of the n sub-objectives x_i to a common scale, and the w_i are the tradeoff weights for each sub-objective.

To begin with, we convert the descriptive categorizations of objective fulfillment in Table 2 to single-objective value scores using a scale of 0 to 4 stars (Table A1). In this conversion, the lowest category of objective fulfillment, “Slightly Diminished”, receives 0 stars, “Unchanged” receives 1 star, “Slightly Enhanced” receives 2 stars, “Enhanced” receives 3 stars, and “Greatly Enhanced” receives 4 stars. We interpret the “Uncertain” assessments to imply the possibility of either 0 stars (“Slightly Diminished”) or 2 stars (“Slightly Enhanced”).

Table A1. Conversion of descriptive categorizations of objective fulfillment to value scores employing a scale of 0 to 4 stars.

Options	Objectives								
	1. Ethical Responsibility		2. Financial Impact		3. Academic Opportunity		4. Symbolic Importance		
	1a. Act consistently with moral duty	1b. Affect social change	2a. Maximize return on investment	2b. Positively impact donor contributions	3a. Enhance understanding of relationship to broader world	3b. Promote vigorous and open debate of ideas	4a. Attract and retain students, faculty, and staff	4b. Maintain positive relations with alumni	4c. Promote public perception as a leading academic institution
A. No Action	★	★	★	★	★	○	○	○	★
B. Incremental	★★	★★	★	★	★	★	★	★	★
C. Divest Dartmouth	★★★	★★	★	○ or ★★	★	★★	★★	★★	★
D. Complete	★★★★	★★★★	○	○ or ★★	★★	★★★★	★★	○ or ★★	★★

We then proceed by considering three possible sets of tradeoff weights representing three different prioritizations with respect to the various objectives: (i) a *Balanced Weighting Scenario* in which the ethical, financial, academic, and symbolic sets of objectives receive equal weight, (ii) a *Financial Prioritization Scenario*, in which the financial set of objectives receives half the total weight, with the remainder split equally among the other three sets of objectives, and (iii) an

Ethical Prioritization Scenario, in which the ethical set of objectives receives half the total weight, with the remainder split equally among the other three sets of objectives. In addition, each scenario is evaluated under *best* and *worst* case scenarios with respect to fulfilling objectives pertaining to the support of potential donors (2b) and alumni (4b). Results are reported as the multi-objective value scores calculated as the weighted average number of stars for each option. Pie charts depict the relative contribution of each of the objectives to the overall score.

1. *Balanced Weighting Scenario*

When all four groups of objectives receive equal weight, Option A (*No Action*) results in an average rating of 0.7 stars, somewhat less than the status quo, making it the least preferable option (Figure A1, upper left). This is because, if the College decides not to take any action, this is likely to be discouraging to students and alumni who have been proactive over the past several years in calling for divestment. It is also likely to slightly diminish Dartmouth's standing in Green College rankings, such as that of the Princeton Review and STARS. Thus, objectives 3b, 4a, and 4b contribute 0 stars to the weighted average of the *No Action* option.

All other options are assessed to improve the overall fulfillment of objectives relative to the status quo, even under the worst case scenario with regard to objectives 2b and 4b (Figure A1). This is because of the substantial enhancement in fulfilling the ethical and academic objectives. Under this scenario of balanced weightings, these improvements are more than sufficient to offset any risk of negative impacts on donors and alumni. **In fact, in both best and worst case scenarios, Option D (complete divestment from fossil fuels and reinvestment in clean energy) leads to the greatest overall fulfillment of the considered objectives.**

Our weighted average approach assumes that overall preferences for options are *additive* with respect to the various objectives, meaning that lesser fulfillment of one type of objective (e.g., financial) can be substituted with greater fulfillment of another type (e.g., ethical). **If this substitutability is not a valid representation of the College's preferences, then a more balanced fulfillment of objectives – even under a worst case scenario – could come from choosing Option B (divesting only from the *Filthy Fifteen* and prioritizing diversity in the reinvestments).** While this option does not receive the highest weighted average number of stars, it does not score lower than one star on any of the objectives or sub-objectives.

Balanced Weighting

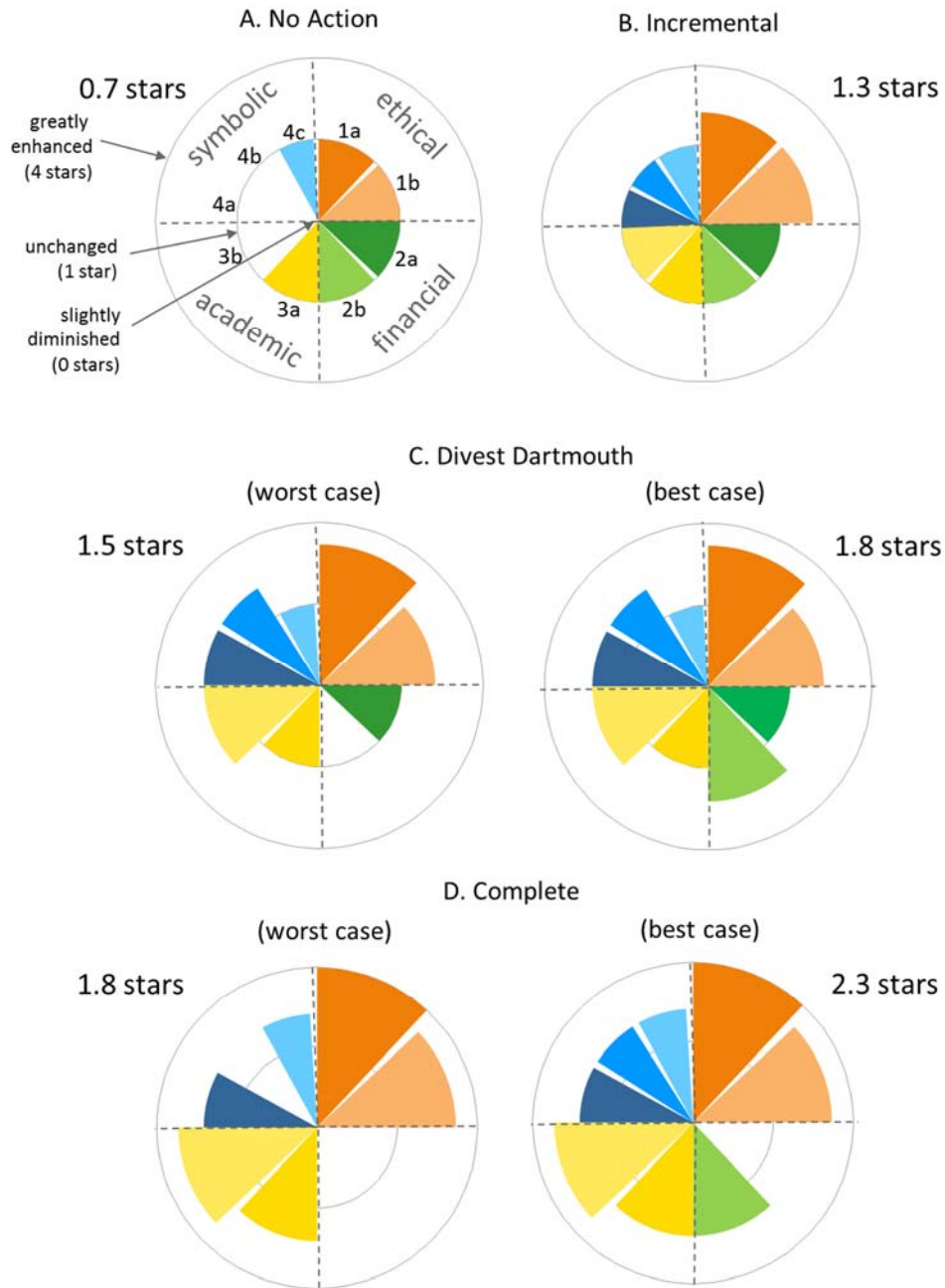


Figure A1. Comparison of the various divestment options according to decision objectives. The length (radius) of each wedge indicates the degree of fulfillment of each objective expressed in terms of number of stars indicated in Table A1. The width (angle) of each wedge indicates the relative weight placed on that objective in this scenario. The total area of each pie thus indicates the overall desirability of that option, reported as the weighted average number of stars earned. Worst and best case scenarios refer to low and high support, respectively, of alumni for the indicated option. In the hypothetical prioritization shown in this figure, the ethical, financial, academic, and symbolic groups of objectives are given equal weight.

Financial Emphasis

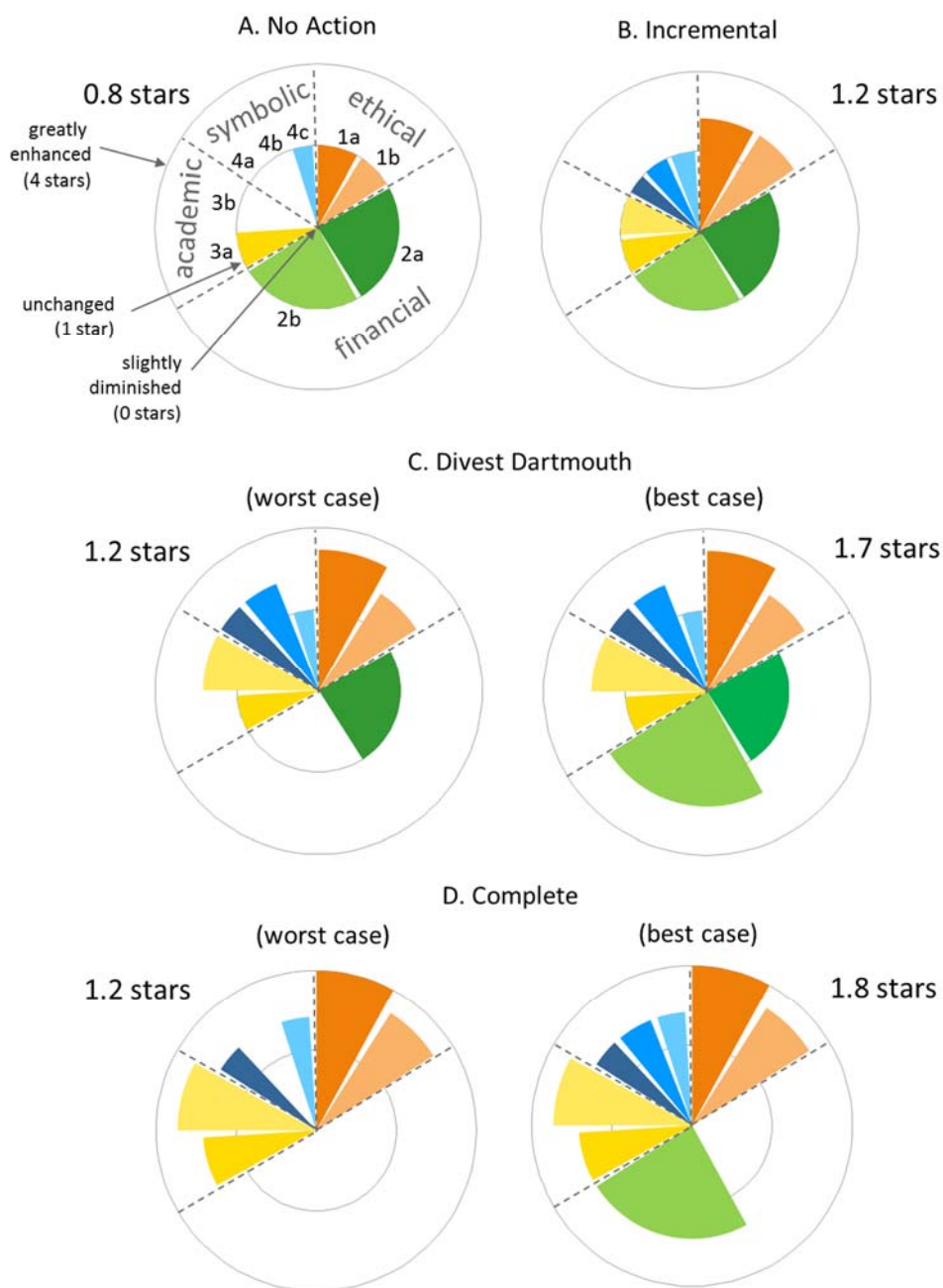


Figure A2. Comparison of the various divestment options according to decision objectives. The length (radius) of each wedge indicates the degree of fulfillment of each objective expressed in terms of number of stars indicated in Table A1. The width (angle) of each wedge indicates the relative weight placed on that objective in this scenario. The total area of each pie thus indicates the overall desirability of that option, reported as the weighted average number of stars earned. Worst and best case scenarios refer to low and high support, respectively, of alumni for the indicated option. In the hypothetical prioritization shown in this figure, the financial group of objectives receives half the total weight, with the remainder split equally among the ethical, academic, and symbolic groups of objectives.

Ethical Emphasis

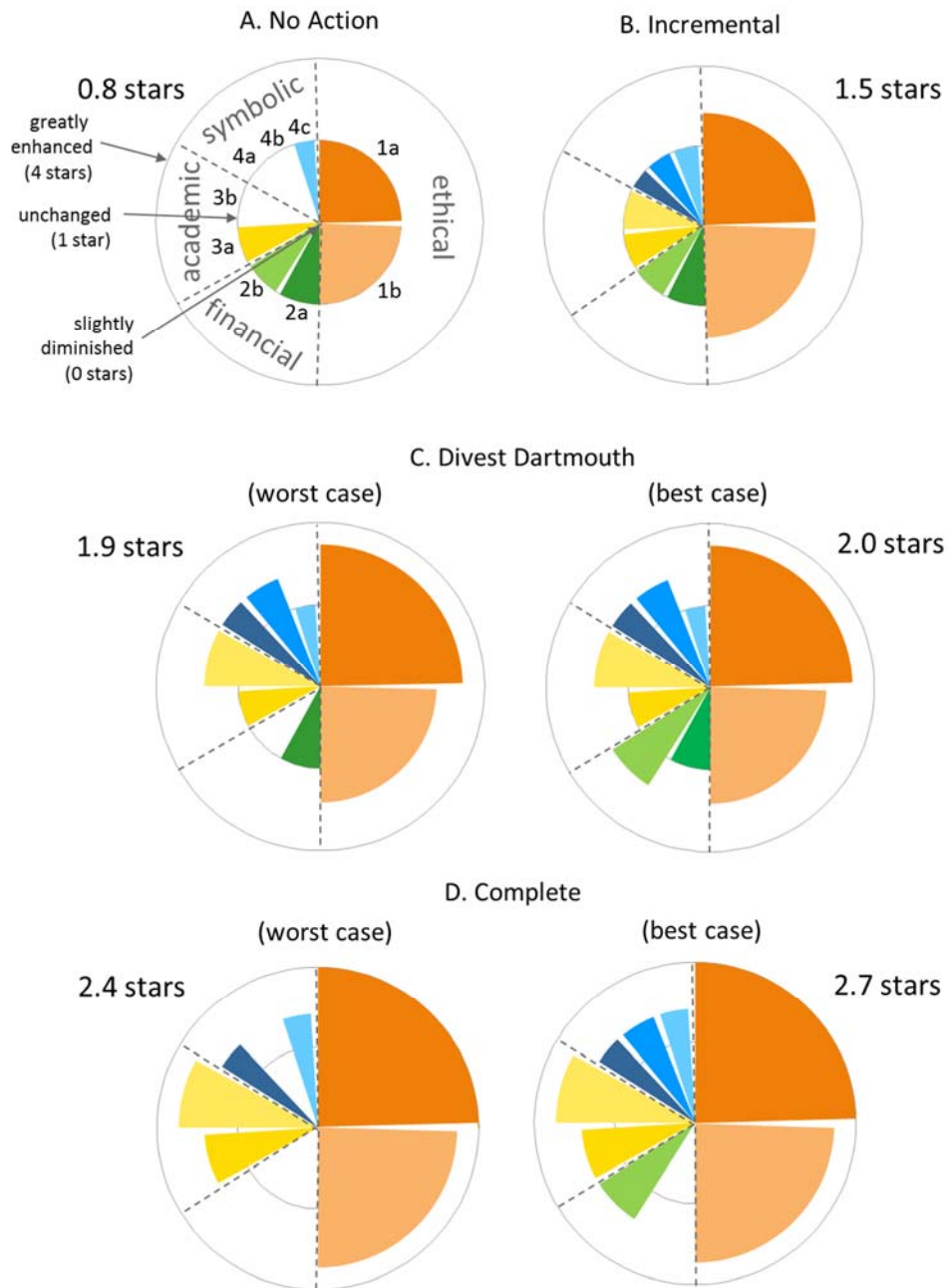


Figure A3. Comparison of the various divestment options according to decision objectives. The length (radius) of each wedge indicates the degree of fulfillment of each objective expressed in terms of number of stars indicated in Table A1. The width (angle) of each wedge indicates the relative weight placed on that objective in this scenario. The total area of each pie thus indicates the overall desirability of that option, reported as the weighted average number of stars earned. Worst and best case scenarios refer to low and high support, respectively, of alumni for the indicated option. In the hypothetical prioritization shown in this figure, the ethical group of objectives receives half the total weight, with the remainder split equally among the financial, academic, and symbolic groups of objectives.

2. Financial Prioritization Scenario

If the two objectives related to potential financial impact are highly prioritized, then Option A (No Action) is still the least desirable option (Figure A2, upper left). However, the choice among the three divestment options is now ambivalent, with all receiving 1.2 stars under the worst case scenario with respect to objectives 2b and 4b, and Options C and D receiving a similar number of stars under the best case scenario. A balanced achievement of objectives is achieved by Option B or by Option C under the best case scenario. **Thus, the most preferable option in this prioritization depends primarily on how optimistic or pessimistic one is about the potential for divestment to receive strong support among donors and alumni.** This suggests that it would be useful for the Dartmouth administration to have conversations on this issue with potential donors and/or to conduct a widespread survey of alumni.

3. Ethical Prioritization Scenario

If the highest priority for divestment is to fulfill the two objectives related to ethical responsibility, than it is clear that some type of action is required and that the more comprehensive the divestment effort, the more preferable is the outcome (Figure A3). Option D receives the highest average number of stars in both the worst and best case scenarios for donor and alumni support. Again, a very balanced achievement of objectives can be achieved by Option B, but in this case Option C is also well-balanced.