

HARVARD CLIMATE JUSTICE COALITION,  
ALICE M. CHERRY,  
BENJAMIN A. FRANTA,  
SIDNI M. FREDERICK,  
JOSEPH E. HAMILTON,  
OLIVIA M. KIVEL,  
TALIA K. ROTHSTEIN,  
KELSEY C. SKAGGS,  
and FUTURE GENERATIONS,

Plaintiffs,

v.

PRESIDENT AND FELLOWS OF HARVARD COLLEGE ("HARVARD CORPORATION"),  
HARVARD MANAGEMENT COMPANY, INC.,  
and MARTHA M. COAKLEY as she is Attorney General of the Commonwealth of  
Massachusetts,

Defendants.

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## COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF

### THE PARTIES

1. Plaintiff Harvard Climate Justice Coalition is an unincorporated association with its principal place of business in Cambridge, Middlesex, Massachusetts. Its members educate the Harvard community about the facts of climate change and advocate for environmental and climate justice by calling upon institutional investors to withdraw financial support from companies whose primary business activities involve the extraction and sale of prehistoric, or non-renewable, carbon-based fuels ("fossil fuel companies").
2. Plaintiff Harvard Climate Justice Coalition also brings this suit as next friend of Plaintiffs Future Generations, individuals not yet born or too young to assert their rights but whose future health, safety, and welfare depends on current efforts to slow the pace of climate change.

3. Plaintiff Alice M. Cherry is a student enrolled at Harvard Law School and a resident of Cambridge, Middlesex, Massachusetts. She is a member of Harvard Climate Justice Coalition. She studies environmental law and plans to become an environmental lawyer in order to protect valuable natural resources and human health.
4. Plaintiff Benjamin A. Franta is a graduate student enrolled at the Harvard School of Engineering and Applied Sciences and a resident of Cambridge, Middlesex, Massachusetts. He is a member of Harvard Climate Justice Coalition. He studies applied physics and plans to help develop the next generation of solar cells to move our economy away from fossil fuels.
5. Plaintiff Sidni M. Frederick is a student enrolled at Harvard College and a resident of Cambridge, Middlesex, Massachusetts. She is a member of Harvard Climate Justice Coalition. She studies history and literature and plans to work in the renewable energy industry.
6. Plaintiff Joseph E. Hamilton is a student enrolled at Harvard Law School and a resident of Cambridge, Middlesex, Massachusetts. He is a member of Harvard Climate Justice Coalition. He studies environmental law and plans to become a defense lawyer for environmentalists advocating for action on climate change.
7. Plaintiff Olivia M. Kivel is a student enrolled at Harvard College and a resident of Cambridge, Middlesex, Massachusetts. She is a member of Harvard Climate Justice Coalition. She studies organismic and evolutionary biology and plans to become an organic farmer to move our economy away from fossil fuel-intensive agricultural practices.
8. Plaintiff Talia K. Rothstein is a student enrolled at Harvard College and a resident of Cambridge, Middlesex, Massachusetts. She is a member of Harvard Climate Justice Coalition. She studies history and literature and plans to become a journalist and organizer building public support for action on climate change.
9. Plaintiff Kelsey C. Skaggs is a student enrolled at Harvard Law School and a resident of Cambridge, Middlesex, Massachusetts. She is a member of Harvard Climate Justice Coalition. She studies environmental law and plans to become an environmental lawyer in order to protect valuable natural resources and human health.
10. Defendant Harvard Corporation is a nonprofit corporation and public charity chartered and organized under the laws of the Commonwealth of Massachusetts, M.G.L.A. 180 § 4 and 12 § 8, and overseeing Harvard University's endowment, with its principal place of business at Massachusetts Hall, Cambridge, Middlesex, Massachusetts 02138.
11. Defendant Harvard Management Company, Inc. is a nonprofit corporation and public charity organized under the laws of the Commonwealth of Massachusetts, M.G.L.A. 180 § 4 and 12 § 8, with its principal place of business at 600 Atlantic Avenue, Boston, Suffolk, Massachusetts 02210. Defendant Harvard Management Company provides

financial management services to Defendant Harvard Corporation, including oversight related to the investment of Defendant Harvard Corporation's endowment.

12. Defendants may be sued in tort in the Commonwealth of Massachusetts when the torts committed were in the course of an activity carried out to accomplish the charitable purposes of Defendants Harvard Corporation and Harvard Management Company, Inc. M.G.L.A. 231 § 85K.
13. Plaintiffs name the Attorney General as a party pursuant to M.G.L.A. 12 §§ 8 and 8G, which vest supervisory powers over charitable corporations in the Attorney General and which require that she be named a party to actions involving charitable corporations.

#### JURISDICTION AND VENUE

14. This court has jurisdiction over this matter pursuant to M.G.L.A. 212 § 4 and 214 § 1. All parties currently reside in the Commonwealth of Massachusetts.
15. Venue is proper under M.G.L.A. 223 § 1. Defendants Harvard Management Corporation and Martha M. Coakley have their primary places of business in Suffolk County.

#### STATEMENT OF FACTS

16. The burning of fossil fuels results in the emission of greenhouse gases that become trapped in the atmosphere. As these gases accumulate, they prevent heat from radiating back into outer space and lead to increased average temperatures on the surface of the Earth. *See Exhibit A.*
17. This increase in global average surface temperature and its concomitant effects are colloquially known as "climate change."
18. The effects of climate change include changes in the amount of precipitation, increased frequency and intensity of extreme weather events such as storms, drought, and flooding, and disruption of ecosystems, biological resources useful for humans, and agriculture. *See Exhibit B at 13-16.*
19. Many of the physical changes to the Earth's ecosystems caused by climate change, including the extinction of plant and animal species, the melting of the polar ice caps, ocean acidification, sea level rise, and changing climate zones, are irreversible on a human timescale. *See Exhibit B at 16.*
20. The deleterious geopolitical, economic, and social consequences of climate change are increasingly well documented. Climate change will decrease food security, increase displacement of people, and increase the risk of violent conflict. *See Exhibit B at 14-16.* These impacts are, in fact, already occurring: For instance, it is well documented that climate change helped create the conditions that contributed to political instability and violence linked to the Arab Spring. *See Exhibit C.*

21. Carbon dioxide is the primary greenhouse gas contributing to climate change and persists in the atmosphere for hundreds to thousands of years. *See* Exhibit B at 4 and D at 1.
22. Pre-industrial levels of atmospheric carbon dioxide were approximately 280 parts per million. *See* Exhibit B at 3.
23. Current atmospheric carbon dioxide levels are elevated compared to pre-industrial levels due to human activity, predominantly the burning of fossil fuels. Current atmospheric carbon dioxide levels are approximately 400 parts per million and are associated with observable changes in the earth's climate that harm human welfare. As carbon dioxide concentrations continue to rise, further changes in the earth's climate are expected to occur, along with harms to human welfare, and the risks of encountering tipping points increase. Such tipping points would make climate change more difficult to control with severe consequences for human societies. *See* Exhibits B at 3 and 79 and E at 3.
24. According to the United States Environmental Protection Agency, "[t]he evidence points ineluctably to the conclusion that climate change is upon us as a result of greenhouse gas emissions, that climatic changes are already occurring that harm our health and welfare, and that the effects will only worsen over time in the absence of regulatory action." *See* Exhibit F at 18,904.
25. Therefore, emissions of carbon dioxide and other greenhouse gases endanger the health, safety, and welfare of current and future generations.
26. International negotiators have agreed that the maximum "safe" amount of rise in global average surface temperature resulting from climate change is two degrees Celsius above the pre-industrial average. *See* Exhibit G at 50.
27. Fossil fuel companies' exploration and development activities have already resulted in global fossil fuel reserves greater than the amount that would likely result in an increase of two degrees Celsius. *See* Exhibit B at 66 and 68.
28. Burning of fossil fuels could result in more than four degrees Celsius of warming in this century, with additional warming thereafter, if current trajectories continue unabated. This amount of warming would have catastrophic consequences. *See* Exhibit B at 67.
29. The Charter of the Harvard Corporation ("Charter"), written in 1650 and subsequently amended, vests responsibility in the "President and Fellows" for furthering the goals specified therein, which include, *inter alia*, "the advancement and education of youth" and the maintenance of the University's physical campus. *See* Exhibit H.
30. The Constitution of the Commonwealth of Massachusetts recognizes a unique public interest in the mission and governance of Harvard University by vesting authority in the legislature to "mak[e] such alterations in the government of the said university, as shall be conducive to its advantage and the interest of the republic of letters," Mass. Const. pt. 2, ch. 5, § 1, art. III, and by establishing a duty of "legislatures and magistrates" to ensure the charitable operation of schools, especially Harvard, Mass. Const. pt. 2, ch. 5, § 2. The charitable operation of schools requires acting in the public interest, furthering the



- education and welfare of students, and refraining from actions known to cause harm to the public and students. *See* Exhibit I.
31. Defendant Harvard Corporation has recognized its obligation as an economic and intellectual leader to respond to climate change. Defendant Harvard Corporation has stated that this leadership extends to its investments, acknowledging the causal connection between its investments and the harms caused by climate change. *See* Exhibit J.
  32. As of November 14, 2014, the Harvard University endowment contained direct holdings in publicly-traded fossil fuel companies worth at least \$79 million and, upon information and belief, additional indirect holdings worth an unknown amount. *See* Exhibit K.
  33. Upon information and belief, Defendants' investments help finance fossil fuel companies' business activities, which include exploration, development, transportation, and the promotion of scientific falsehoods. These activities create greenhouse gas emissions, among other environmental and social harms, and perpetuate worldwide dependence on the burning of fossil fuels for energy.
  34. According to research produced at Harvard University, large portions of the Harvard campus in Cambridge and Allston are at risk of severe physical damage as a result of sea level rise and intensified storms caused by climate change. Under optimistic scenarios, much of the area of the campus bordering the Charles River will be flooded every two to three years by 2050. *See* Exhibit L at 231-35.
  35. There is still time to avert the most catastrophic effects of climate change. *See* Exhibit B at 18.
  36. The divestment of assets from companies whose activities run counter to the mission of nonprofit and educational institutions has long been recognized as an effective tool for changing such companies' behavior. Divestment from companies doing business in apartheid South Africa and from companies selling tobacco products was crucial in building public opposition to such companies' activities. *See* Exhibit M at 9-15.
  37. Defendants Harvard Corporation and Harvard Management Company have previously divested from companies whose activities ran counter to the University's educational mission, recognizing the power of divestment and their obligation to conduct their investment practices in accordance with their duties as nonprofit institutions. *See* Exhibit N.
  38. An increasing number of prominent political and business leaders, as well as shareholders, argue that investment in fossil fuel companies is financially shortsighted and inconsistent with sustainable development goals. *See* Exhibits O, P, and Q.
  39. A broad array of Harvard alumni and faculty, as well as influential political leaders and scientists, have called upon Defendant Harvard Corporation to withdraw its investments in fossil fuel companies, citing Defendant Harvard Corporation's duties as an educational

nonprofit and its ability to mitigate the harms caused by climate change by changing its investments. *See* Exhibits R and S.

40. An increasing number of public and private institutions and funds, including 13 American universities, 27 American cities and towns, religious institutions including the World Council of Churches, and many others have committed to withdrawing or have already withdrawn their investments in fossil fuel companies. *See* Exhibit T.

## STATEMENT OF CLAIMS

### COUNT I

#### Mismanagement of Charitable Funds

41. Plaintiffs reassert and reallege paragraphs 1-40 of this Complaint and incorporate them herein by reference.
42. Defendant Harvard Corporation, as a nonprofit corporation organized for educational purposes under M.G.L.A. 180 § 4 and as a public charity bound by the purposes enumerated in its Charter, has a duty to promote “the advancement and education of youth” and to maintain its physical campus for the wellbeing of its students. *See* Exhibit H.
43. Defendant Harvard Corporation, as a nonprofit corporation organized for educational purposes under M.G.L.A. 180 § 4, as a public charity bound by the purposes enumerated in its Charter, and as affirmed by President Drew Faust, has “a special obligation and accountability to the future, to the long view needed to anticipate and alter the trajectory and impact of climate change.” *See* Exhibits H and J.
44. Defendant Harvard Corporation is bound to the due application of funds given in trust to further its charitable purposes, M.G.L.A. 12 § 8, including its “special obligation and accountability to the future, to the long view needed to anticipate and alter the trajectory and impact of climate change.” *See* Exhibit J.
45. Defendant Harvard Corporation’s investments are an integral part of the due application of its charitable funds, and Defendant Harvard Corporation is bound to consider each of its “asset’s special relationship or special value, if any, to the charitable purposes of the institution,” M.G.L.A. 180A § 2 (e)(2)(viii).
46. Defendant Harvard Corporation’s investment in fossil fuel companies is a breach of its fiduciary and charitable duties as a public charity and nonprofit corporation to uphold the purposes as described in paragraphs 29-31 above, including its “special obligation and accountability to the future, to the long view needed to anticipate and alter the trajectory and impact of climate change,” because such investments contribute to climate change, the degradation of biological resources, damage to public enjoyment of nature, harm to

the public's prospects for a secure and healthy future, and the efforts of industry to impede any attempts to alter the trajectory and impact of climate change.

47. Defendant Harvard Corporation's investment in fossil fuel companies is a breach of its fiduciary and charitable duties as a public charity and nonprofit corporation to uphold the purposes as described in paragraphs 29-31 above, including its "special obligation and accountability to the future, to the long view needed to anticipate and alter the trajectory and impact of climate change," because such investments contribute to current and future damage to the University's reputation and to that of its students and graduates, to the ability of students to study and thrive free from the threat of catastrophic climate change, and to future damage to the university's physical campus as a result of sea level rise and increased storm activity.
48. Massachusetts permits individuals with a special interest in a charitable organization to bring claims to enforce the lawful management of charitable funds when such an interest is "personal, specific, and exist[s] apart from any broader community interest." *See* Exhibit U at \*245.
49. Plaintiff Harvard Climate Justice Coalition and Individual Plaintiffs have a special interest in the management of Defendant Harvard Corporation's charitable funds, to the extent that the investment of such funds directly affects "the advancement and education of youth" and the maintenance of the university's physical campus.
50. A. As to Plaintiff Harvard Climate Justice Coalition, this interest is personal because such investment may support or impede Plaintiff Harvard Climate Justice Coalition's mission to educate the Harvard community on the facts of climate change. This mission is protected by Defendant Harvard Corporation's duty to promote "the advancement of all good literature, arts, and sciences in Harvard College," as articulated in its Charter. *See* Exhibit H.  
 B. This interest is specific because it exists only when such investment demonstrably supports or impedes Plaintiff Harvard Climate Justice Coalition's mission to educate the Harvard community on the facts of climate change and to promote a safe transition to a healthy and secure energy future.  
 C. This interest exists apart from any broader community interest because Plaintiff Harvard Climate Justice Coalition's membership is composed exclusively of Harvard University students and its mission is restricted to the discussion of climate change within Harvard University.
51. A. As to Plaintiffs Alice M. Cherry, Benjamin A. Franta, Sidni M. Frederick, Joseph E. Hamilton, Olivia M. Kivel, Talia K. Rothstein, and Kelsey C. Skaggs, this interest is personal because these Plaintiffs, as members of the "youth" named in the Charter of Harvard College, as students of Harvard University, and as future Harvard graduates, are and will be especially affected by the University's current and long-term reputational and physical health.

B. This interest is specific because the interest exists only when such investment demonstrably affects these Plaintiffs' work, enjoyment, and opportunities as students and graduates of Harvard University.

C. This interest exists apart from any broader community interest because, as Harvard University students, these Plaintiffs do and will reap particular academic, economic, and quality-of-life benefits when such investment is conducted in accordance with Defendant Harvard Corporation's fiduciary and charitable duties.

52. Defendant Harvard Corporation's investment in fossil fuel companies causes direct and particularized harms to Plaintiff Harvard Climate Justice Coalition and Individual Plaintiffs that are distinct from those suffered by the public.
53. Plaintiff Harvard Climate Justice Coalition and Individual Plaintiffs are harmed by the management of Defendant Harvard Corporation's charitable funds, to the extent that the investment of such funds directly affects "the advancement and education of youth" and the maintenance of the university's physical campus.
54. Plaintiff Harvard Climate Justice Coalition is harmed because investment in fossil fuel companies directly supports climate change denial, which interferes with Plaintiff Harvard Climate Justice Coalition's mission to educate students on the facts of climate change and to promote a safe transition to a healthy and secure energy future. *See Exhibits V and W.*
55. Plaintiffs Alice M. Cherry, Benjamin A. Franta, Sidni M. Frederick, Joseph E. Hamilton, Olivia M. Kivel, Talia K. Rothstein, and Kelsey C. Skaggs' enjoyment of Harvard University's academic resources and scholarly environment is damaged by Defendant Harvard Corporation's support of fossil fuel companies, which has a chilling effect on academic freedom and the willingness of faculty, students, and administrators to publicly confront climate change. These Plaintiffs are unable to enjoy the full benefits of their study of environmental law because Defendant Harvard Corporation's support of fossil fuel companies impedes their ability to associate with like-minded colleagues and to avail themselves of the open scholarly environment that Defendant Harvard Corporation has a duty to maintain.
56. Plaintiffs Alice M. Cherry, Benjamin A. Franta, Sidni M. Frederick, Joseph E. Hamilton, Olivia M. Kivel, Talia K. Rothstein, and Kelsey C. Skaggs' future enjoyment of the University's physical campus will be greatly lessened by damage to that campus caused by sea level rise and increased storm activity resulting from climate change.
57. Plaintiffs Alice M. Cherry and Kelsey C. Skaggs' study of environmental law and their preparation for careers as environmental lawyers are impeded by fossil fuel companies' promotion of scientific falsehoods, which Defendant Harvard Corporation funds and enables. Fossil fuel companies' undue and deleterious influence distorts academic research into legal remedies for climate change and stymies efforts to use the law to address climate change. Defendant Harvard Corporation's financial support of this

- influence contributes to the diminishment of Plaintiffs Alice M. Cherry and Kelsey C. Skaggs' education.
58. Plaintiff Benjamin A. Franta's study of renewable energy technology and his preparation for a career as a renewable energy scientist are impeded by fossil fuel companies' promotion of scientific falsehoods, which Defendant Harvard Corporation funds and enables. Fossil fuel companies' undue and deleterious influence distorts academic research into scientific remedies for climate change and stymies efforts to make a transition to a clean energy economy. Defendant Harvard Corporation's financial support of this influence contributes to the diminishment of Plaintiff Benjamin A. Franta's education.
  59. Plaintiff Sidni M. Frederick's study of history and literature and her preparation for a career in renewable energy are impeded by fossil fuel companies' promotion of scientific falsehoods, which Defendant Harvard Corporation funds and enables. Fossil fuel companies' undue and deleterious influence distorts academic research into scientific remedies for climate change and stymies efforts to make a transition to a clean energy economy. Defendant Harvard Corporation's financial support of this influence contributes to the diminishment of Plaintiff Sidni M. Frederick's education.
  60. Plaintiff Joseph E. Hamilton's study of environmental law and his preparation for a career as a defense lawyer for environmental activists are impeded by fossil fuel companies' promotion of scientific falsehoods, which Defendant Harvard Corporation funds and enables. Fossil fuel companies' undue and deleterious influence distorts academic research into legal remedies for climate change and stymies efforts to use the law to address climate change. Defendant Harvard Corporation's financial support of this influence contributes to the diminishment of Plaintiff Joseph E. Hamilton's education.
  61. Plaintiff Olivia M. Kivel's study of organismic and evolutionary biology and her preparation for a career as an organic farmer are impeded by fossil fuel companies' promotion of scientific falsehoods, which Defendant Harvard Corporation funds and enables. Fossil fuel companies' undue and deleterious influence distorts academic research into low-carbon farming and stymies efforts to make a transition to energy-safe agriculture. Defendant Harvard Corporation's financial support of this influence contributes to the diminishment of Plaintiff Olivia M. Kivel's education.
  62. Plaintiff Talia K. Rothstein's study of history and literature and her preparation for a career as a journalist and organizer building support for action on climate change are impeded by fossil fuel companies' promotion of scientific falsehoods, which Defendant Harvard Corporation funds and enables. Fossil fuel companies' undue and deleterious influence distorts academic research into solutions to climate change and stymies efforts to build popular support to address climate change. Defendant Harvard Corporation's financial support of this influence contributes to the diminishment of Plaintiff Talia K. Rothstein's education.

## COUNT II

### Intentional Investment in Abnormally Dangerous Activities

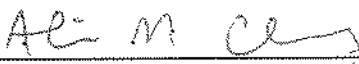
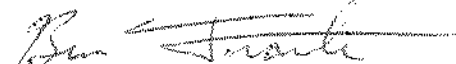
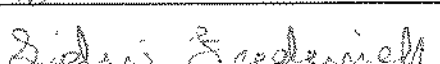
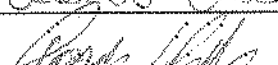
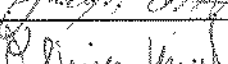
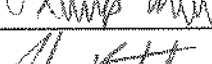

63. Plaintiffs reassert and reallege paragraphs 1-62 of this Complaint and incorporate them herein by reference.
64. Defendant Harvard Corporation currently invests at least \$79 million in fossil fuel companies, as alleged in Paragraph 32.
65. Defendant Harvard Management Company provides services to facilitate those investments, as alleged in Paragraph 11.
66. Fossil fuel companies' business activities are abnormally dangerous because they inevitably contribute to climate change, causing serious harm to Plaintiffs Future Generations' persons and property, as alleged in paragraphs 16-28 above; because this harm outweighs the value of fossil fuel companies' business activities by threatening the future habitability of the planet, as alleged in paragraphs 16-28 above; and because this harm is appreciably more serious and more irreparable than that created by comparable industries, making fossil fuel companies' business activities not a matter of common usage.
67. No amount of reasonable care by fossil fuel companies can substantially reduce the risk of such harm because doing so would require either curtailment of fossil fuel companies' own business activities or mitigation efforts by other parties that would likely lower demand for fossil fuel companies' products.
68. Defendants know with substantial certainty, or should know with substantial certainty, that Defendant Harvard Corporation's investments fund fossil fuel companies' business activities and that those activities harm Plaintiffs Future Generations by contributing to climate change. Past action and statements by Defendant Harvard Corporation demonstrate its knowledge that its investments have environmental and social consequences, including climate impacts; that fossil fuel companies' business activities are significant contributors to climate change; and that climate change "poses a serious threat to our future." *See* Exhibits J, X, and Y. Additionally, the role of fossil fuel companies' business activities in perpetuating climate change and its attendant harms is widely understood, particularly among institutions of higher education.
69. Upon information and belief, Defendants' investments influence the decisions of other institutional investors because Defendants are leaders among institutions of higher education. Any withdrawal of Defendant Harvard Corporation's investments therefore would likely inspire action elsewhere.
70. By contributing directly and indirectly to Plaintiff Future Generations' harm, Defendants' investments make an appreciable difference to the magnitude of that harm, and any withdrawal of such investments would likely mitigate it.

71. Plaintiffs Harvard Climate Justice Coalition and Individual Plaintiffs assert Plaintiffs Future Generations' rights on their behalf because Plaintiffs Future Generations are unable to appear before the court.
72. Plaintiffs Harvard Climate Justice Coalition and Individual Plaintiffs also assert Plaintiffs Future Generations' rights in recognition of the values enshrined in the Preamble of the Massachusetts Constitution, which aspires to create a "solemn compact with each other . . . for ourselves and posterity."
73. Plaintiffs Harvard Climate Justice Coalition and Individual Plaintiffs also assert Plaintiffs Future Generations' rights in recognition of the values enshrined in the Preamble of the United States Constitution, which declares a shared interest in "promot[ing] the general welfare . . . and secur[ing] the Blessings of Liberty to ourselves and our Posterity."

#### PRAYER FOR RELIEF

74. WHEREFORE, Plaintiffs pray for a judgment against Defendants as follows:
- A. An injunction ordering Defendants to immediately withdraw Defendant Harvard Corporation's direct holdings in fossil fuel companies;
  - B. An injunction ordering Defendants to take immediate steps to begin withdrawing indirect holdings and to complete withdrawal within a reasonable period of time to be determined by the court;
  - C. A declaration that Defendant Harvard Corporation is in breach of the obligations contained in its Charter; and
  - D. Such other relief as this court deems just.

Dated this 19th day of November, 2014.

Alice M. Cherry	
Benjamin A. Franta	
Sidni M. Frederick	
Joseph E. Hamilton	
Olivia M. Kivel	
Talia K. Rothstein	
Kelsey C. Skaggs	

# Exhibit A



ipcc

INTERGOVERNMENTAL PANEL ON climate change



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## IPCC Fourth Assessment Report: Climate Change 2007

## | Climate Change 2007: Working Group I: The Physical Science Basis

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## FAQ 1.3 What is the Greenhouse Effect?

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## Frequently Asked Question 1.3

## What is the Greenhouse Effect?

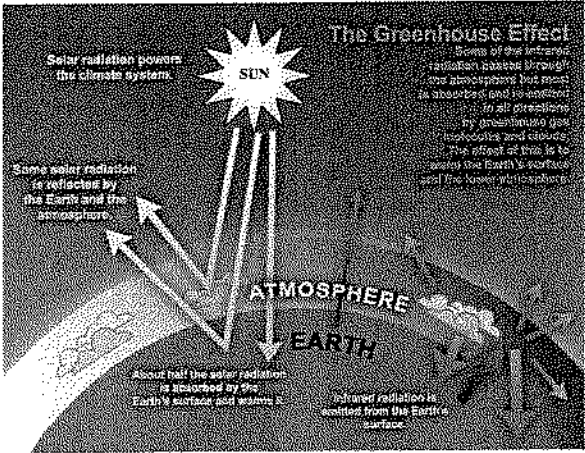
*The Sun powers Earth's climate, radiating energy at very short wavelengths, predominately in the visible or near-visible (e.g., ultraviolet) part of the spectrum. Roughly one-third of the solar energy that reaches the top of Earth's atmosphere is reflected directly back to space. The remaining two-thirds is absorbed by the surface and, to a lesser extent, by the atmosphere. To balance the absorbed incoming energy, the Earth must, on average, radiate the same amount of energy back to space. Because the Earth is much colder than the Sun, it radiates at much longer wavelengths, primarily in the infrared part of the spectrum (see Figure 1). Much of this thermal radiation emitted by the land and ocean is absorbed by the atmosphere, including clouds, and reradiated back to Earth. This is called the greenhouse effect. The glass walls in a greenhouse reduce airflow and increase the temperature of the air inside. Analogously, but through a different physical process, the Earth's greenhouse effect warms the surface of the planet. Without the natural greenhouse effect, the average temperature at Earth's surface would be below the freezing point of water. Thus, Earth's natural greenhouse effect makes life as we know it possible. However, human activities, primarily the burning of fossil fuels and clearing of forests, have greatly intensified the natural greenhouse effect, causing global warming.*

The two most abundant gases in the atmosphere, nitrogen (comprising 78% of the dry atmosphere) and oxygen (comprising 21%), exert almost no greenhouse effect. Instead, the greenhouse effect comes from molecules that are more complex and much less common. Water vapour is the most important greenhouse gas, and carbon dioxide (CO<sub>2</sub>) is the second-most important one. Methane, nitrous oxide, ozone and several other gases present in the atmosphere in small amounts also contribute to the greenhouse effect. In the humid equatorial regions, where there is so much water vapour in the air that the greenhouse effect is very large, adding a small additional amount of CO<sub>2</sub> or water vapour has only a small direct impact on downward infrared radiation. However, in the cold, dry polar regions, the effect of a small increase in CO<sub>2</sub> or water vapour is much greater. The same is true for the cold, dry upper atmosphere where a small increase in water vapour has a greater influence on the greenhouse effect than the same change in water vapour would have near the surface.

Several components of the climate system, notably the oceans and living things, affect atmospheric concentrations of greenhouse gases. A prime example of this is plants taking CO<sub>2</sub> out of the atmosphere and converting it (and water) into carbohydrates via photosynthesis. In the industrial era, human activities have added greenhouse gases to the atmosphere, primarily through the burning of fossil fuels and clearing of forests.

Adding more of a greenhouse gas, such as CO<sub>2</sub>, to the atmosphere intensifies the greenhouse effect, thus warming Earth's climate. The amount of warming depends on various feedback mechanisms. For example, as the atmosphere warms due to rising levels of greenhouse gases, its concentration of water vapour increases, further intensifying the greenhouse effect. This in turn causes more warming, which causes an additional increase in water vapour, in a self-reinforcing cycle. This water vapour feedback may be strong enough to approximately double the increase in the greenhouse effect due to the added CO<sub>2</sub> alone.

Additional important feedback mechanisms involve clouds. Clouds are effective at absorbing infrared radiation and therefore exert a large greenhouse effect, thus warming the Earth. Clouds are also effective at reflecting away incoming solar radiation, thus cooling the Earth. A change in almost any aspect of clouds, such as their type, location, water content, cloud altitude, particle size and shape, or lifetimes, affects the degree to which clouds warm or cool the Earth. Some changes amplify warming while others diminish it. Much research is in progress to better understand how clouds change in response to climate warming, and how these changes affect climate through various feedback mechanisms.



FAQ 1.3, Figure 1. An idealised model of the natural greenhouse effect. See text for explanation.

# Exhibit B

# CLIMATE CHANGE 2014

## Synthesis Report

Edited by

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IPCC

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Chairman  
IPCC

**Leo Meyer**

Head, Technical Support Unit  
IPCC

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### Technical Support Unit for the Synthesis Report

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## Summary for Policymakers

### SPM Introduction

This Synthesis Report is based on the reports of the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC), including relevant Special Reports. It provides an integrated view of climate change as the final part of the IPCC's Fifth Assessment Report (AR5).

This summary follows the structure of the longer report, which addresses the following topics: Observed changes and their causes; Future climate change, risks and impacts; Future pathways for adaptation, mitigation and sustainable development; Adaptation and mitigation.

In the Synthesis Report, the certainty in key assessment findings is communicated as in the Working Group Reports and Special Reports. It is based on the author teams' evaluations of underlying scientific understanding and is expressed as a qualitative level of confidence (from *very low* to *very high*) and, when possible, probabilistically with a quantified likelihood (from *exceptionally unlikely* to *virtually certain*)<sup>1</sup>. Where appropriate, findings are also formulated as statements of fact without using uncertainty qualifiers.

This report includes information relevant to Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC).

### SPM 1. Observed Changes and their Causes

**Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems. *{1}***

#### SPM 1.1 Observed changes in the climate system

**Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen. *{1.1}***

Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. The period from 1983 to 2012 was *likely* the warmest 30-year period of the last 1400 years in the Northern Hemisphere, where such assessment is possible (*medium confidence*). The globally averaged combined land and ocean surface temperature data as calculated by a linear trend, show a warming of 0.85 [0.65 to 1.06] °C<sup>2</sup> over the period 1880 to 2012, when multiple independently produced datasets exist (Figure SPM.1a). *{1.1.1, Figure 1.1}*

In addition to robust multi-decadal warming, the globally averaged surface temperature exhibits substantial decadal and interannual variability (Figure SPM.1a). Due to this natural variability, trends based on short records are very sensitive to the beginning and end dates and do not in general reflect long-term climate

<sup>1</sup> Each finding is grounded in an evaluation of underlying evidence and agreement. In many cases, a synthesis of evidence and agreement supports an assignment of confidence. The summary terms for evidence are: limited, medium, or robust. For agreement, they are low, medium, or high. A level of confidence is expressed using five qualifiers: very low, low, medium, high, and very high, and typeset in italics, e.g., *medium confidence*. The following terms have been used to indicate the assessed likelihood of an outcome or a result: virtually certain 99–100% probability, very likely 90–100%, likely 66–100%, about as likely as not 33–66%, unlikely 0–33%, very unlikely 0–10%, exceptionally unlikely 0–1%. Additional terms (extremely likely: 95–100%, more likely than not >50–100%, more unlikely than likely 0–<50% and extremely unlikely 0–5%) may also be used when appropriate. Assessed likelihood is typeset in italics, e.g., *very likely* (see Guidance Note on Uncertainties, 2010, IPCC for more details).

<sup>2</sup> Ranges in square brackets or following “±” are expected to have a 90% likelihood of including the value that is being estimated, unless otherwise stated.

trends. As one example, the rate of warming over the past 15 years (1998–2012; 0.05 [–0.05 to 0.15] °C per decade), which begins with a strong El Niño, is smaller than the rate calculated since 1951 (1951–2012; 0.12 [0.08 to 0.14] °C per decade). {1.1.1, Box 1.1}

Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010 (*high confidence*), with only about 1% stored in the atmosphere. On a global scale, the ocean warming is largest near the surface, and the upper 75 m warmed by 0.11 [0.09 to 0.13] °C per decade over the period 1971 to 2010. It is *virtually certain* that the upper ocean (0–700 m) warmed from 1971 to 2010, and it *likely* warmed between the 1870s and 1971. {1.1.2, Figure 1.2}

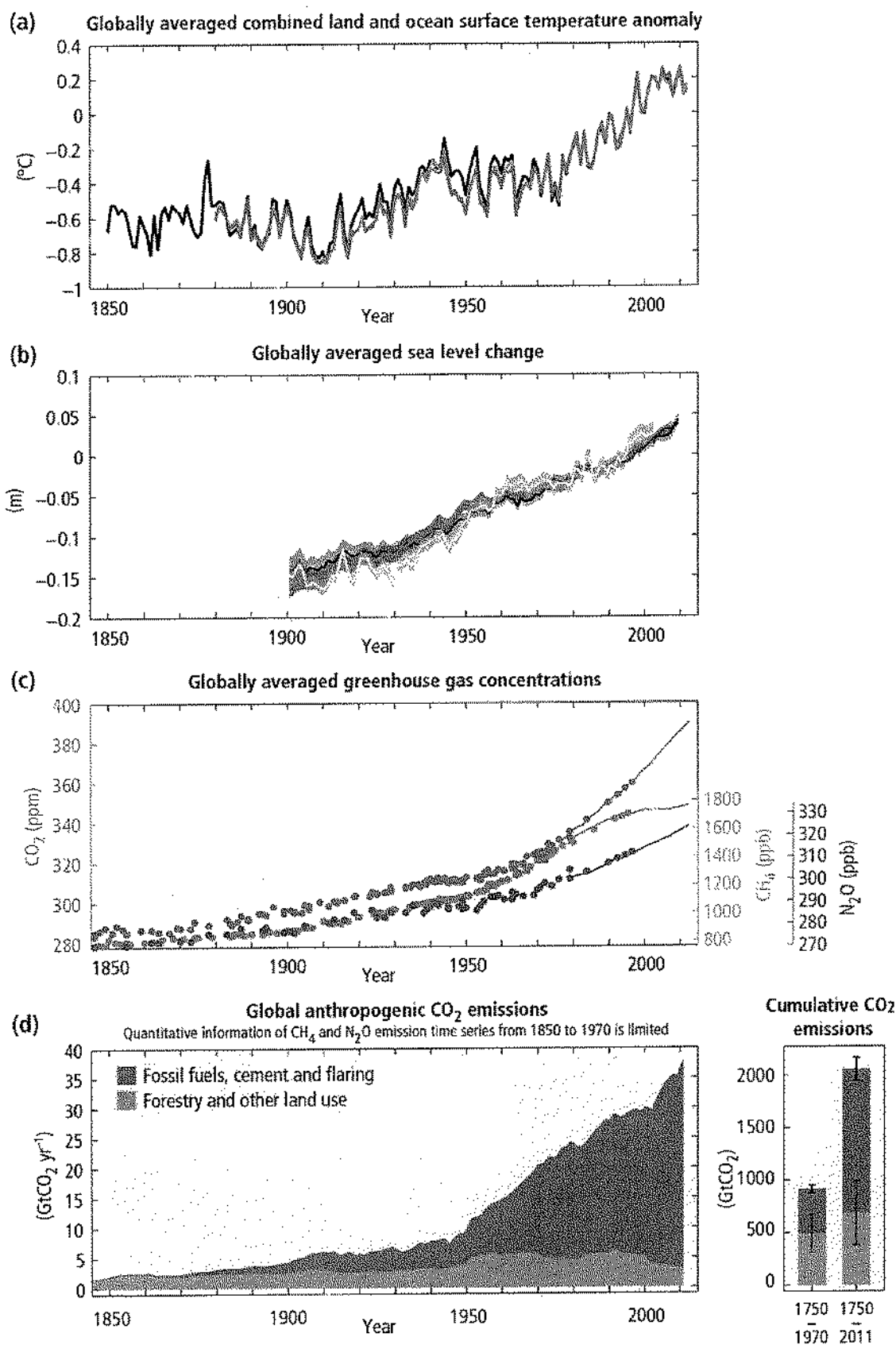
Averaged over the mid-latitude land areas of the Northern Hemisphere, precipitation has increased since 1901 (*medium confidence* before and *high confidence* after 1951). For other latitudes, area-averaged long-term positive or negative trends have *low confidence*. Observations of changes in ocean surface salinity also provide indirect evidence for changes in the global water cycle over the ocean (*medium confidence*). It is *very likely* that regions of high salinity, where evaporation dominates, have become more saline, while regions of low salinity, where precipitation dominates, have become fresher since the 1950s. {1.1.1, 1.1.2}

Since the beginning of the industrial era, oceanic uptake of CO<sub>2</sub> has resulted in acidification of the ocean; the pH of ocean surface water has decreased by 0.1 (*high confidence*), corresponding to a 26% increase in acidity, measured as hydrogen ion concentration. {1.1.2}

Over the period 1992 to 2011, the Greenland and Antarctic ice sheets have been losing mass (*high confidence*), *likely* at a larger rate over 2002 to 2011. Glaciers have continued to shrink almost worldwide (*high confidence*). Northern Hemisphere spring snow cover has continued to decrease in extent (*high confidence*). There is *high confidence* that permafrost temperatures have increased in most regions since the early 1980s in response to increased surface temperature and changing snow cover. {1.1.3}

The annual mean Arctic sea-ice extent decreased over the period 1979 to 2012, with a rate that was *very likely* in the range 3.5 to 4.1% per decade. Arctic sea-ice extent has decreased in every season and in every successive decade since 1979, with the most rapid decrease in decadal mean extent in summer (*high confidence*). It is *very likely* that the annual mean Antarctic sea-ice extent increased in the range of 1.2 to 1.8% per decade between 1979 and 2012. However, there is *high confidence* that there are strong regional differences in Antarctica, with extent increasing in some regions and decreasing in others. {1.1.3, Figure 1.1}

Over the period 1901 to 2010, global mean sea level rose by 0.19 [0.17 to 0.21] m (Figure SPM.1.b). The rate of sea-level rise since the mid-19th century has been larger than the mean rate during the previous two millennia (*high confidence*). {1.1.4, Figure 1.1}



**Figure SPM.1: The complex relationship between the observations (panels a, b, c, yellow background) and the emissions (panel d, light blue background) is addressed in Section 1.2 and topic 1.** Observations and other indicators of a changing global climate system. Observations: (a) Annually and globally averaged combined land and ocean surface temperature anomalies relative to the average over the period 1986 to 2005. Colours indicate different data sets. (b) Annually and globally averaged sea-level change relative to the average over the period 1986 to 2005 in the longest-running dataset. Colours indicate different data sets. All datasets are aligned to have the same value in 1993, the first year of satellite altimetry data (red). Where assessed, uncertainties are indicated by coloured shading. (c) Atmospheric concentrations of the greenhouse gases carbon dioxide (CO<sub>2</sub>, green), methane (CH<sub>4</sub>, orange), and nitrous oxide (N<sub>2</sub>O, red) determined from ice core data (dots) and from direct atmospheric measurements (lines). Indicators: (d) Global anthropogenic CO<sub>2</sub> emissions from forestry and other land use as well as from burning of fossil fuel, cement production, and flaring. Cumulative emissions of CO<sub>2</sub> from these sources and their uncertainties are shown as bars and whiskers, respectively, on the right hand side. The global effects of the accumulation of CH<sub>4</sub> and N<sub>2</sub>O emissions are shown in panel c). Greenhouse gas emission data from 1970 to 2010 are shown in Figure SPM.2. {Figures 1.1, 1.3, 1.5}

## SPM 1.2 Causes of climate change

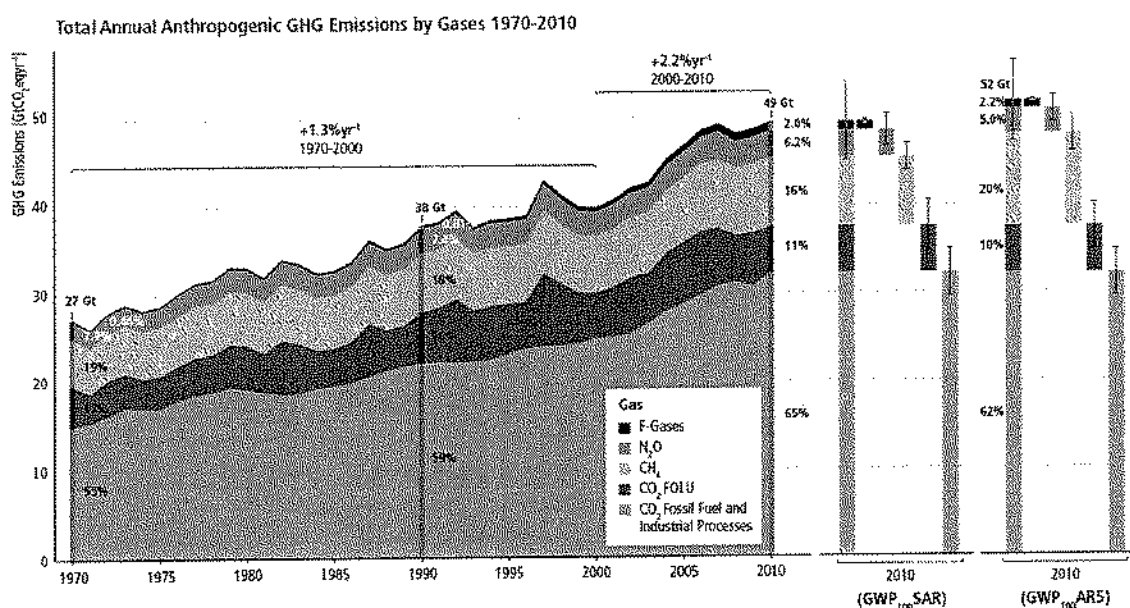
**Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are *extremely likely* to have been the dominant cause of the observed warming since the mid-20th century. {1.2, 1.3.1}**

Anthropogenic greenhouse gas (GHG) emissions since the pre-industrial era have driven large increases in the atmospheric concentrations of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O (Figure SPM.1c). Between 1750 and 2011, cumulative anthropogenic CO<sub>2</sub> emissions to the atmosphere were  $2040 \pm 310$  GtCO<sub>2</sub>. About 40% of these emissions have remained in the atmosphere ( $880 \pm 35$  GtCO<sub>2</sub>); the rest was removed from the atmosphere and stored on land (in plants and soils) and in the ocean. The ocean has absorbed about 30% of the emitted anthropogenic CO<sub>2</sub>, causing ocean acidification. About half of the anthropogenic CO<sub>2</sub> emissions between 1750 and 2011 have occurred in the last 40 years (*high confidence*) (Figure SPM.1d). {1.2.1, 1.2.2}

Total anthropogenic greenhouse gas emissions have continued to increase over 1970 to 2010 with larger absolute increases between 2000 and 2010, despite a growing number of climate change mitigation policies. Anthropogenic greenhouse gas emissions in 2010 have reached  $49 \pm 4.5$  GtCO<sub>2</sub> eq/yr.<sup>3</sup> Emissions of CO<sub>2</sub> from fossil fuel combustion and industrial processes contributed about 78% of the total greenhouse gas emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010 (*high confidence*) (Figure SPM.2). Globally, economic and population growth continued to be the most important drivers of increases in CO<sub>2</sub> emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to the previous three decades, while the contribution of economic growth has risen sharply. Increased use of coal has reversed the long-standing trend of gradual decarbonization (i.e., reducing the carbon intensity of energy) of the world's energy supply (*high confidence*). {1.2.2}

<sup>3</sup> Greenhouse gas emissions are quantified as CO<sub>2</sub>-equivalent (GtCO<sub>2</sub>-eq) emissions using weightings based on the 100 year Global Warming Potentials, using IPCC Second Assessment Report values unless otherwise stated. {Box 3.2}

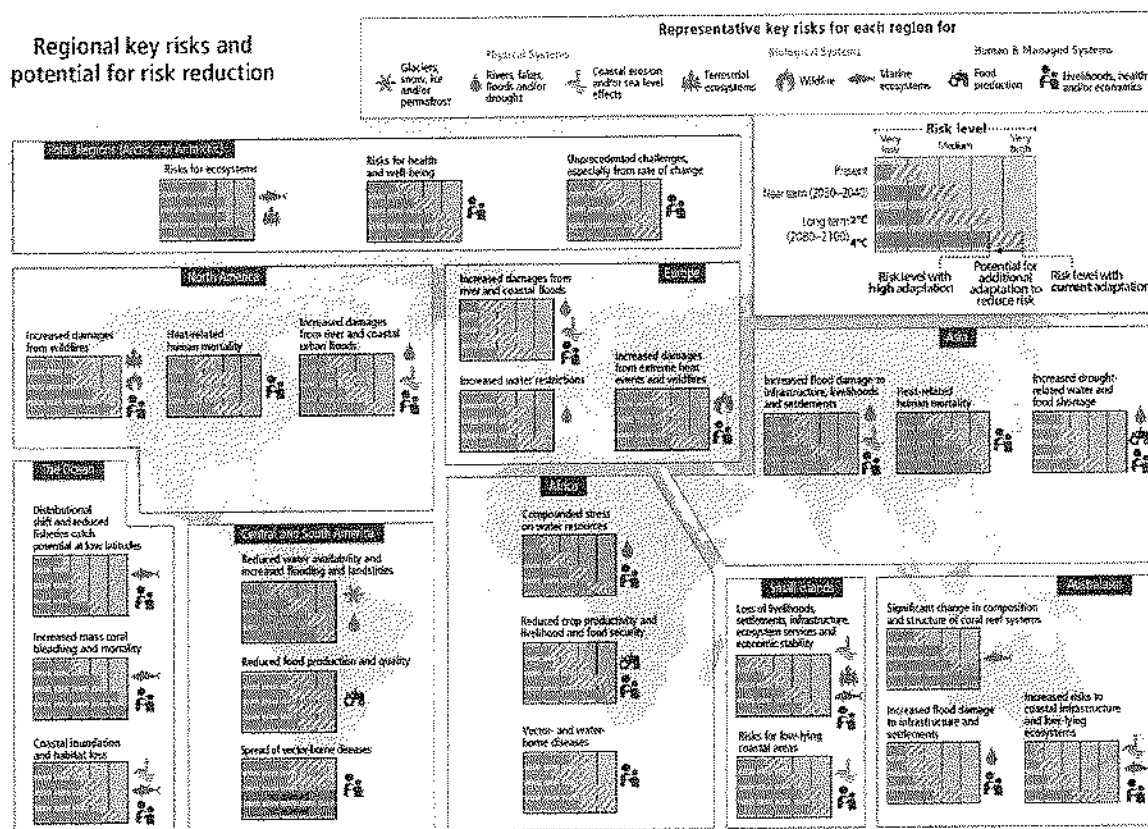




**Figure SPM.2:** Total annual anthropogenic greenhouse gas (GHG) emissions (gigatonne of CO<sub>2</sub>-equivalent per year, GtCO<sub>2</sub>-eq/yr) for the period 1970 to 2010 by gases: CO<sub>2</sub> from fossil fuel combustion and industrial processes; CO<sub>2</sub> from Forestry and Other Land Use (FOLU); methane (CH<sub>4</sub>); nitrous oxide (N<sub>2</sub>O); fluorinated gases covered under the Kyoto Protocol (F-gases). Right hand side shows 2010 emissions, using alternatively CO<sub>2</sub>-equivalent emission weightings based on Second Assessment Report (SAR) and AR5 values. Unless otherwise stated, CO<sub>2</sub>-equivalent emissions in this report include the basket of Kyoto gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O as well as F-gases) calculated based on 100-year Global Warming Potential (GWP<sub>100</sub>) values from the SAR (see Glossary). Using the most recent 100-year Global Warming Potential values from the AR5 (right-hand bars) would result in higher total annual greenhouse gas emissions (52 GtCO<sub>2</sub>-eq/yr) from an increased contribution of methane, but does not change the long-term trend significantly. {Figure 1.6, Box 3.2}

The evidence for human influence on the climate system has grown since the Fourth Assessment Report (AR4). It is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forcings together. The best estimate of the human-induced contribution to warming is similar to the observed warming over this period (Figure SPM.3). Anthropogenic forcings have *likely* made a substantial contribution to surface temperature increases since the mid-20th century over every continental region except Antarctica<sup>4</sup>. Anthropogenic influences have *likely* affected the global water cycle since 1960 and contributed to the retreat of glaciers since the 1960s and to the increased surface melting of the Greenland ice sheet since 1993. Anthropogenic influences have *very likely* contributed to Arctic sea-ice loss since 1979 and have *very likely* made a substantial contribution to increases in global upper ocean heat content (0–700 m) and to global mean sea-level rise observed since the 1970s. {1.3, Figure 1.10}

<sup>4</sup> For Antarctica, large observational uncertainties result in *low confidence* that anthropogenic forcings have contributed to the observed warming averaged over available stations.



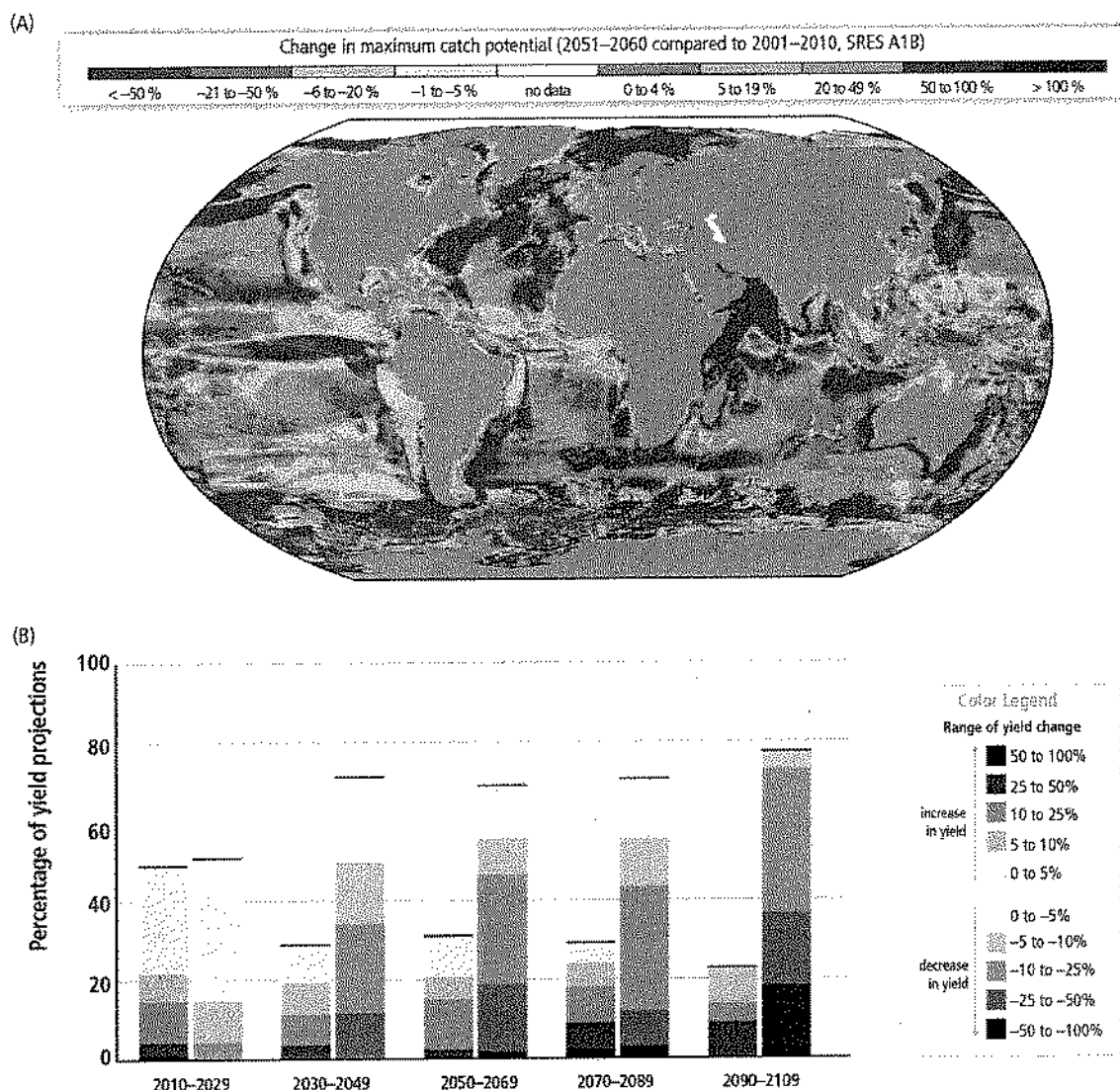
**Figure SPM.8:** Representative key risks<sup>13</sup> for each region, including the potential for risk reduction through adaptation and mitigation, as well as limits to adaptation. Each key risk is assessed as very low, low, medium, high, or very high. Risk levels are presented for three time frames: present, near term (here, for 2030-2040), and long term (here, for 2080-2100). In the near term, projected levels of global mean temperature increase do not diverge substantially across different emission scenarios. For the long term, risk levels are presented for two possible futures (2°C and 4°C global mean temperature increase above pre-industrial levels). For each timeframe, risk levels are indicated for a continuation of current adaptation and assuming high levels of current or future adaptation. Risk levels are not necessarily comparable, especially across regions. (Figure 2.4)

Climate change is projected to undermine food security (Figure SPM.9). Due to projected climate change by the mid-21st century and beyond, global marine species redistribution and marine biodiversity reduction in sensitive regions will challenge the sustained provision of fisheries productivity and other ecosystem services (*high confidence*). For wheat, rice, and maize in tropical and temperate regions, climate change without adaptation is projected to negatively impact production for local temperature increases of 2°C or more above late-20th century levels, although individual locations may benefit (*medium confidence*). Global temperature increases of ~4°C or more<sup>14</sup> above late-20th century levels, combined with increasing food demand, would pose large risks to food security globally (*high confidence*). Climate change is projected to reduce renewable surface water and groundwater resources in most dry subtropical regions (*robust evidence, high agreement*), intensifying competition for water among sectors (*limited evidence, medium agreement*). {2.3.1, 2.3.2}

<sup>13</sup> Identification of key risks was based on expert judgment using the following specific criteria: large magnitude, high probability, or irreversibility of impacts; timing of impacts; persistent vulnerability or exposure contributing to risks; or limited potential to reduce risks through adaptation or mitigation.

<sup>14</sup> Projected warming averaged over land is larger than global average warming for all RCP scenarios for the period 2081-2100 relative to 1986-2005. For regional projections, see Figure SPM.7. {2.2}

## Climate change poses risks for food production



**Figure SPM.9:** (A) Projected global redistribution of maximum catch potential of ~1000 exploited marine fish and invertebrate species. Projections compare the 10-year averages 2001–2010 and 2051–2060 using ocean conditions based on a single climate model under a moderate to high warming scenario, without analysis of potential impacts of overfishing or ocean acidification. (B) Summary of projected changes in crop yields (mostly wheat, maize, rice, and soy), due to climate change over the 21st century. Data for each timeframe sum to 100%, indicating the percentage of projections showing yield increases versus decreases. The figure includes projections (based on 1090 data points) for different emission scenarios, for tropical and temperate regions, and for adaptation and no-adaptation cases combined. Changes in crop yields are relative to late-20th century levels. {Figure 2.6.a, Figure 2.7}

Until mid-century, projected climate change will impact human health mainly by exacerbating health problems that already exist (*very high confidence*). Throughout the 21st century, climate change is expected to lead to increases in ill-health in many regions and especially in developing countries with low income, as compared to a baseline without climate change (*high confidence*). By 2100 for RCP8.5, the combination of high temperature and humidity in some areas for parts of the year is expected to compromise common human activities, including growing food and working outdoors (*high confidence*). {2.3.2}

In urban areas, climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air

pollution, drought, water scarcity, sea-level rise, and storm surges (*very high confidence*). These risks are amplified for those lacking essential infrastructure and services or living in exposed areas. {2.3.2}

Rural areas are expected to experience major impacts on water availability and supply, food security, infrastructure, and agricultural incomes, including shifts in the production areas of food and non-food crops around the world (*high confidence*). {2.3.2}

Aggregate economic losses accelerate with increasing temperature (*limited evidence, high agreement*) but global economic impacts from climate change are currently difficult to estimate. From a poverty perspective, climate change impacts are projected to slow down economic growth, make poverty reduction more difficult, further erode food security, and prolong existing and create new poverty traps, the latter particularly in urban areas and emerging hotspots of hunger (*medium confidence*). International dimensions such as trade and relations among states are also important for understanding the risks of climate change at regional scales. {2.3.2}

Climate change is projected to increase displacement of people (*medium evidence, high agreement*). Populations that lack the resources for planned migration experience higher exposure to extreme weather events, particularly in developing countries with low income. Climate change can indirectly increase risks of violent conflicts by amplifying well-documented drivers of these conflicts such as poverty and economic shocks (*medium confidence*). {2.3.2}

#### SPM 2.4 Climate change beyond 2100, irreversibility and abrupt changes

**Many aspects of climate change and associated impacts will continue for centuries, even if anthropogenic emissions of greenhouse gases are stopped. The risks of abrupt or irreversible changes increase as the magnitude of the warming increases. {2.4}**

Warming will continue beyond 2100 under all RCP scenarios except RCP2.6. Surface temperatures will remain approximately constant at elevated levels for many centuries after a complete cessation of net anthropogenic CO<sub>2</sub> emissions. A large fraction of anthropogenic climate change resulting from CO<sub>2</sub> emissions is irreversible on a multi-century to millennial time scale, except in the case of a large net removal of CO<sub>2</sub> from the atmosphere over a sustained period. {2.4, Figure 2.8}

stabilization of global average surface temperature does not imply stabilization for all aspects of the climate system. Shifting biomes, soil carbon, ice sheets, ocean temperatures and associated sea-level rise all have their own intrinsic long timescales which will result in changes lasting hundreds to thousands of years after global surface temperature is stabilized. {2.1, 2.4}

There is *high confidence* that ocean acidification will increase for centuries if CO<sub>2</sub> emissions continue, and will strongly affect marine ecosystems. {2.4}

It is *virtually certain* that global mean sea-level rise will continue for many centuries beyond 2100, with the amount of rise dependent on future emissions. The threshold for the loss of the Greenland ice sheet over a millennium or more, and an associated sea-level rise of up to 7 m, is greater than about 1°C (*low confidence*) but less than about 4°C (*medium confidence*) of global warming with respect to pre-industrial temperatures. Abrupt and irreversible ice loss from the Antarctic ice sheet is possible, but current evidence and understanding is insufficient to make a quantitative assessment. {2.4}

Magnitudes and rates of climate change associated with medium- to high-emission scenarios pose an increased risk of abrupt and irreversible regional-scale change in the composition, structure, and function of marine, terrestrial and freshwater ecosystems, including wetlands (*medium confidence*). A reduction in permafrost extent is *virtually certain* with continued rise in global temperatures. {2.4}

### SPM 3. Future Pathways for Adaptation, Mitigation and Sustainable Development

Adaptation and mitigation are complementary strategies for reducing and managing the risks of climate change. Substantial emissions reductions over the next few decades can reduce climate risks in the 21st century and beyond, increase prospects for effective adaptation, reduce the costs and challenges of mitigation in the longer term, and contribute to climate-resilient pathways for sustainable development. {3.2, 3.3, 3.4}

#### SPM 3.1 Foundations of decision-making about climate change

Effective decision making to limit climate change and its effects can be informed by a wide range of analytical approaches for evaluating expected risks and benefits, recognizing the importance of governance, ethical dimensions, equity, value judgments, economic assessments and diverse perceptions and responses to risk and uncertainty. {3.1}

Sustainable development and equity provide a basis for assessing climate policies. Limiting the effects of climate change is necessary to achieve sustainable development and equity, including poverty eradication. Countries' past and future contributions to the accumulation of GHGs in the atmosphere are different, and countries also face varying challenges and circumstances and have different capacities to address mitigation and adaptation. Mitigation and adaptation raise issues of equity, justice, and fairness. Many of those most vulnerable to climate change have contributed and contribute little to GHG emissions. Delaying mitigation shifts burdens from the present to the future, and insufficient adaptation responses to emerging impacts are already eroding the basis for sustainable development. Comprehensive strategies in response to climate change that are consistent with sustainable development take into account the co-benefits, adverse side-effects and risks that may arise from both adaptation and mitigation options. {3.1, 3.5, Box 3.4}

The design of climate policy is influenced by how individuals and organizations perceive risks and uncertainties and take them into account. Methods of valuation from economic, social and ethical analysis are available to assist decision making. These methods can take account of a wide range of possible impacts, including low-probability outcomes with large consequences. But they cannot identify a single best balance between mitigation, adaptation and residual climate impacts. {3.1}

Climate change has the characteristics of a collective action problem at the global scale, because most greenhouse gases accumulate over time and mix globally, and emissions by any agent (e.g., individual, community, company, country) affect other agents. Effective mitigation will not be achieved if individual agents advance their own interests independently. Cooperative responses, including international cooperation, are therefore required to effectively mitigate GHG emissions and address other climate change issues. The effectiveness of adaptation can be enhanced through complementary actions across levels, including international cooperation. The evidence suggests that outcomes seen as equitable can lead to more effective cooperation. {3.1}

#### SPM 3.2 Climate change risks reduced by mitigation and adaptation

Without additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high to very high risk of severe, widespread, and irreversible impacts globally (*high confidence*). Mitigation involves some level of co-benefits and of risks due to adverse side-effects, but these risks do not involve the same possibility of severe, widespread, and irreversible impacts as risks from climate change, increasing the benefits from near-term mitigation efforts. {3.2, 3.4}

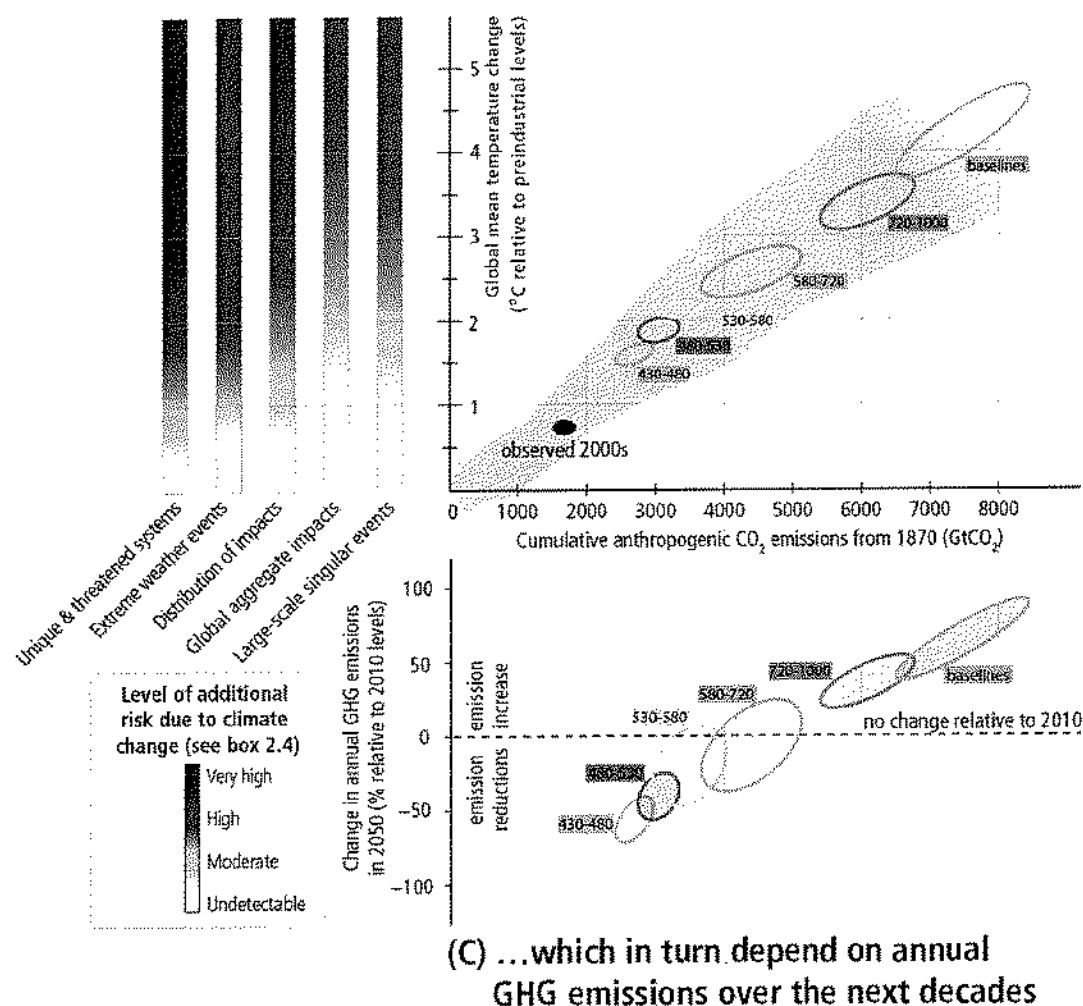
Mitigation and adaptation are complementary approaches for reducing risks of climate change impacts over different time scales (*high confidence*). Mitigation, in the near-term and through the century, can substantially reduce climate change impacts in the latter decades of the 21st century and beyond. Benefits from adaptation can already be realized in addressing current risks, and can be realized in the future for addressing emerging risks. {3.2, 4.5}

Five "Reasons For Concern" (RFCs) aggregate climate change risks and illustrate the implications of warming and of adaptation limits for people, economies, and ecosystems across sectors and regions. The Five RFCs are associated with: (1) Unique and threatened systems, (2) Extreme weather events, (3) Distribution of impacts, (4) Global aggregate impacts, and (5) Large-scale singular events. In this report, the RFCs provide information relevant to Article 2 of UNFCCC. {Box 2.4}

Without additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high to very high risk of severe, widespread, and irreversible impacts globally (*high confidence*) (Figure SPM.10). In most scenarios without additional mitigation efforts (those with 2100 atmospheric concentrations >1000ppm CO<sub>2</sub>-eq), warming is *more likely than not* to exceed 4°C above pre-industrial levels by 2100. The risks associated with temperatures at or above 4°C include substantial species extinction, global and regional food insecurity, consequential constraints on common human activities, and limited potential for adaptation in some cases (*high confidence*). Some risks of climate change, such as risks to unique and threatened systems and risks associated with extreme weather events, are moderate to high at temperatures 1°C to 2°C above pre-industrial levels. {2.3, Figure 2.5, 3.2, 3.4, Box 2.4, Table SPM.1}

Substantial cuts in greenhouse gas emissions over the next few decades can substantially reduce risks of climate change by limiting warming in the second half of the 21st century and beyond. Cumulative emissions of CO<sub>2</sub> largely determine global mean surface warming by the late 21st century and beyond. Limiting risks across RFCs would imply a limit for cumulative emissions of CO<sub>2</sub>. Such a limit would require that global net emissions of CO<sub>2</sub> eventually decrease to zero and would constrain annual emissions over the next few decades (Figure SPM.10) (*high confidence*). But some risks from climate damages are unavoidable, even with mitigation and adaptation. {2.2.5, 3.2, 3.4}

Mitigation involves some level of co-benefits and risks, but these risks do not involve the same possibility of severe, widespread, and irreversible impacts as risks from climate change. Inertia in the economic and climate system and the possibility of irreversible impacts from climate change increase the benefits from near-term mitigation efforts (*high confidence*). Delays in additional mitigation or constraints on technological options increase the longer-term mitigation costs to hold climate change risks at a given level (Table SPM.2). {3.2, 3.4}

(A) Risks from climate change... (B) ...depend on cumulative CO<sub>2</sub> emissions...

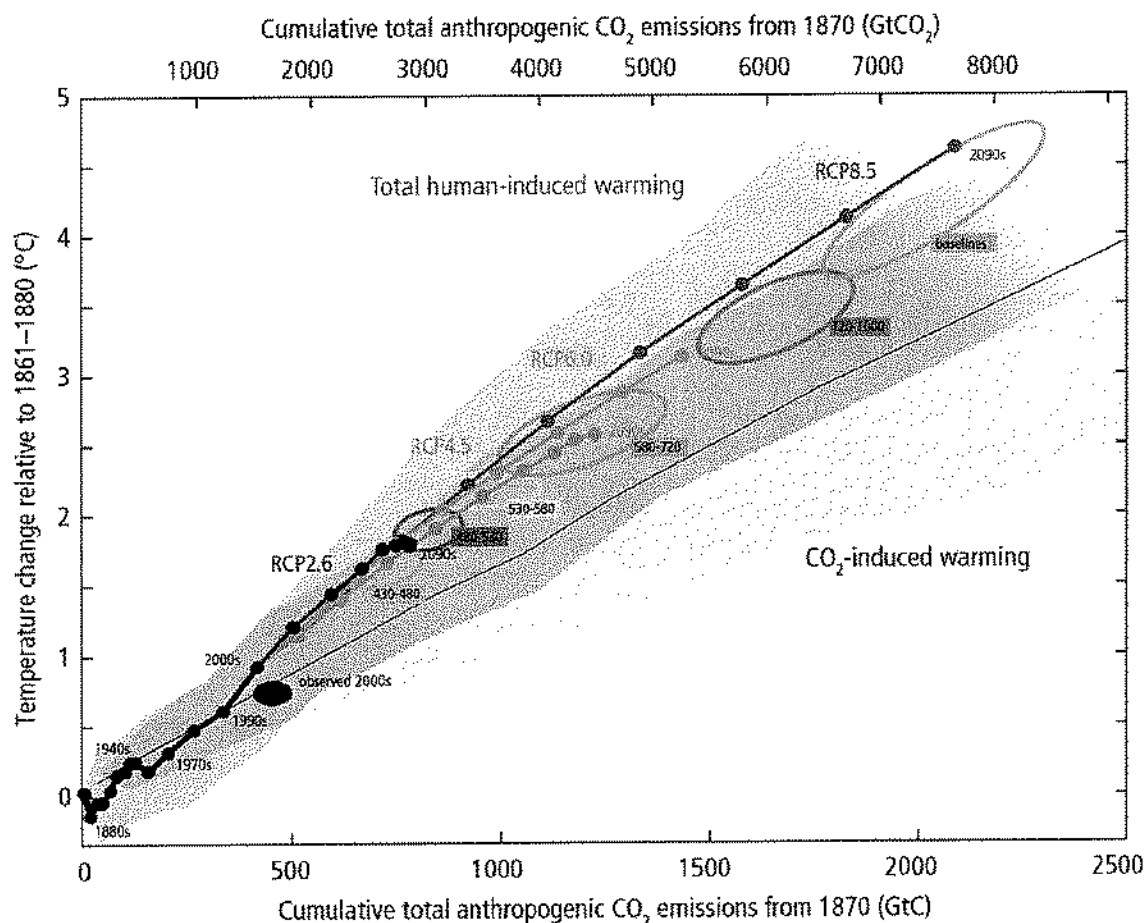
**Figure SPM.10:** The relationship between risks from climate change, temperature change, cumulative CO<sub>2</sub> emissions, and changes in annual GHG emissions by 2050. Limiting risks across Reasons For Concern (panel A) would imply a limit for cumulative emissions of CO<sub>2</sub> (panel B), which would constrain annual GHG emissions over the next few decades (panel C). (A) reproduces the five Reasons For Concern (Box 2.4). (B) links temperature changes to cumulative CO<sub>2</sub> emissions (in GtCO<sub>2</sub>) from 1870. They are based on CMIP5 simulations (pink plume) and on a simple climate model (median climate response in 2100), for the baselines and five mitigation scenario categories (six ellipses). Details are provided in Figure SPM.5. (C) shows the relationship between the cumulative CO<sub>2</sub> emissions (in GtCO<sub>2</sub>) of the scenario categories and their associated change in annual GHG emissions by 2050, expressed in percentage change (in percent GtCO<sub>2</sub>-eq per year) relative to 2010. The ellipses correspond to the same scenario categories as in Panel B, and are built with a similar method (see details in Figure SPM.5). (Figure 3.1)

### SPM 3.3 Characteristics of adaptation pathways

Adaptation can reduce the risks of climate change impacts, but there are limits to its effectiveness, especially with greater magnitudes and rates of climate change. Taking a longer-term perspective, in the context of sustainable development, increases the likelihood that more immediate adaptation actions will also enhance future options and preparedness. {3.3}

Adaptation can contribute to the well-being of populations, the security of assets, and the maintenance of ecosystem goods, functions and services now and in the future. Adaptation is place- and context-specific (*high confidence*). A first step towards adaptation to future climate change is reducing vulnerability and

would require total CO<sub>2</sub> emissions from all anthropogenic sources since 1870 to be limited to about 2900 GtCO<sub>2</sub> when accounting for non-CO<sub>2</sub> forcing as in the RCP2.6 scenario, with a range of 2550–3150 GtCO<sub>2</sub> arising from variations in non-CO<sub>2</sub> climate drivers across the scenarios considered by WGIII (Table 2.2). About 1900 [1650 to 2150] GtCO<sub>2</sub> were emitted by 2011, leaving about 1000 GtCO<sub>2</sub> to be consistent with this temperature goal. Estimated total fossil carbon reserves exceed this remaining amount by a factor of 4 to 7, with resources much larger still. {WGI SPM E.8, WGI 12.5.4, Figure 12.45; WGI TS TFE.8, Figure 1, TS.SM.10, WG III Tables SPM.1, 6.3 and 7.2}



**Figure 2.3:** Global mean surface temperature increase as a function of cumulative total global CO<sub>2</sub> emissions from various lines of evidence. Multi-model results from a hierarchy of climate carbon-cycle models for each RCP until 2100 are shown (coloured lines). Model results over the historical period (1860 to 2010) are indicated in black. The coloured plume illustrates the multi-model spread over the four RCP scenarios and fades with the decreasing number of available models in RCP8.5. Dots indicate decadal averages, with selected decades labelled. Ellipses show total anthropogenic warming in 2100 versus cumulative CO<sub>2</sub> emissions from 1870 to 2100 from a simple climate model (median climate response) under the scenario categories used in WGIII. Temperature values are always given relative to the 1861–1880 period, and emissions are cumulative since 1870. Black filled ellipse shows observed emissions to 2005 and observed temperatures in the decade 2000–2009 with associated uncertainties. {WGI SPM E.8, WGI 12.5.4, Figure 12.45; WGI TS TFE.8, Figure 1, TS.SM.10, WG III Tables SPM.1 and 6.3}



**Table 2.2:** Cumulative CO<sub>2</sub> emission consistent with limiting warming to less than stated temperature limits at different levels of probability, based on different lines of evidence. {WG1 12.5.4; WGIII, 6}

Cumulative CO <sub>2</sub> emissions from 1870 in GtCO <sub>2</sub>									
Net anthropogenic warming <sup>a</sup>	<1.5°C			<2°C			<3°C		
Fraction of simulations meeting goal <sup>b</sup>	66%	50%	33%	66%	50%	33%	66%	50%	33%
Complex models, RCP scenarios only <sup>c</sup>	2250	2250	2550	2900	3000	3300	4200	4500	4850
Simple model, WGIII scenarios <sup>d</sup>	No data	2300–2350	2400–2950	2550–3150	2900–3200	2950–3800	n.a. <sup>e</sup>	4150–5750	5250–6000
Cumulative CO <sub>2</sub> emissions from 2011 in GtCO <sub>2</sub>									
Complex models, RCP scenarios only <sup>c</sup>	400	550	850	1000	1300	1500	2400	2800	3250
Simple model, WGIII scenarios <sup>d</sup>	No data	550–600	600–1150	750–1400	1150–1400	1150–2050	n.a. <sup>e</sup>	2350–4000	3500–4250
Total fossil carbon available in 2011 <sup>f</sup> : 3670–7100 GtCO <sub>2</sub> (reserves) & 31300–50050 GtCO <sub>2</sub> (resources)									

<sup>a</sup> Warming due to CO<sub>2</sub> and non-CO<sub>2</sub> drivers. Temperature values are given relative to the 1861–1880 base period.

<sup>b</sup> Note that the 66% range in this table should not be equated to the likelihood statements in Table SPM.1 and Table 3.1 and IPCC AR5 WG3 Table SPM.1. The assessment in these latter tables is not only based on the probabilities calculated for the full ensemble of scenarios in WG3 using a single climate model, but also the assessment in WG1 of the uncertainty of the temperature projections not covered by climate models.

<sup>c</sup> Cumulative CO<sub>2</sub> emissions at the time the temperature threshold is exceeded that are required for 66%, 50% or 33% of the CMIP5 complex models ESM and EMIC simulations, assuming non-CO<sub>2</sub> forcing follows the RCP8.5 scenario. Similar cumulative emissions are implied by other RCP scenarios. For most scenario–threshold combinations, emissions and warming continue after the threshold is exceeded. Nevertheless, because of the cumulative nature of CO<sub>2</sub> emissions, these figures provide an indication of the cumulative CO<sub>2</sub> emissions implied by the CMIP5 model simulations under RCP-like scenarios. Values are rounded to the nearest 50.

<sup>d</sup> Cumulative CO<sub>2</sub> emissions at the time of peak warming from WGIII scenarios for which a fraction of greater than 66% (66–100%), greater than 50% (50–66%) or greater than 33% (33–50%) of climate simulations keep global mean temperature increase to below the stated threshold. Ranges indicate the variation in cumulative CO<sub>2</sub> emissions arising from differences in non-CO<sub>2</sub> drivers across the WGIII scenarios. The fraction of climate simulations for each scenario is derived from a 600-member parameter ensemble of a simple carbon-cycle climate model (MAGICC6) in a probabilistic mode. Parameter and scenario uncertainty are explored in this ensemble. Structural uncertainties cannot be explored with a single model set-up. Ranges show the impact of scenario uncertainty, with 80% of scenarios giving cumulative CO<sub>2</sub> emissions within the stated range for the given fraction of simulations. Simple model estimates are constrained by observed changes over the past century, do not account for uncertainty in model structure and may omit some feedback processes: they are hence slightly higher than the CMIP5 complex models estimates. Values are rounded to the nearest 50.

<sup>e</sup> The numerical results for the cumulative CO<sub>2</sub> emissions for staying below 3°C with greater than 66% (66–100%) is greatly influenced by a large number of scenarios that would also meet the 2°C objective and therefore not comparable with numbers provided for the other temperature threshold.

<sup>f</sup> Reserves are quantities able to be recovered under existing economic and operating conditions; resources are those where economic extraction is potentially feasible. {WGIII Table 7.2}

### 2.3 Future risks and impacts caused by a changing climate

**Climate change will amplify existing risks and create new risks for natural and human systems. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. Increasing magnitudes of warming increase the likelihood of severe, pervasive, and irreversible impacts for people, species and ecosystems. Continued high emissions would lead to mostly negative impacts for biodiversity, ecosystem services, and economic development and amplify risks for livelihoods and for food and human security.**

Risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems, including their ability to adapt. Rising rates and magnitudes of warming and other changes in the climate system, accompanied by ocean acidification, increase the risk of severe, pervasive, and in some cases irreversible detrimental impacts. Future climate change will amplify existing climate-related risks and create new risks.

Key risks are potentially severe impacts relevant to understanding dangerous anthropogenic interference with the climate system. Risks are considered key due to high hazard or high vulnerability of societies and systems exposed, or both. Their identification is based on large magnitude or high probability of impacts; irreversibility or timing of impacts; persistent vulnerability or exposure; or limited potential to reduce risks. Some risks are particularly relevant for individual regions (Figure 2.4), while others are global (Table 2.3). For risk assessment it is important to evaluate the widest possible range of impacts, including low-probability outcomes with large consequences. Risk levels often increase with temperature (Box 2.3) and are sometimes more directly linked to other dimensions of climate change, such as the rate of warming, as well as the magnitudes and rates of ocean acidification, and sea-level rise (Figure 2.5). *{WGII SPM A-3, B-1}*

**Key risks that span sectors and regions include the following (*high confidence*):**

1. Risk of severe ill-health and disrupted livelihoods resulting from storm surges, sea-level rise, and coastal flooding; inland flooding in some urban regions; and periods of extreme heat.
2. Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services.
3. Risk of food and water insecurity and loss of rural livelihoods and income, particularly for poorer populations.
4. Risk of loss of ecosystems, biodiversity, and ecosystem goods, functions, and services. *{WGII SPM B-1}*

**The overall risks of future climate change impacts can be reduced by limiting the rate and magnitude of climate change, including ocean acidification.** Some risks are considerable even at 1°C global mean temperature increase above pre-industrial levels. Many global risks are high to very high for global temperature increases of 4°C or more (see Box 2.4). These risks include severe and widespread impacts on unique and threatened systems, the extinction of many species, large risks to food security, and compromised normal human activities, including growing food or working outdoors in some areas for parts of the year, due to the combination of high temperature and humidity (*high confidence*). The precise levels of climate change sufficient to trigger abrupt and irreversible change remain uncertain, but the risk associated with crossing such thresholds in the earth system or in interlinked human and natural systems increases with rising temperature (*medium confidence*). *{WGII SPM B-1}*

**Adaptation can substantially reduce the risks of climate change impacts, but greater rates and magnitude of climate change increase the likelihood of exceeding adaptation limits (*high confidence*).** The potential for adaptation, as well as constraints and limits to adaptation, varies among sectors, regions, communities, and ecosystems. The scope for adaptation changes over time, and is closely linked to socioeconomic development pathways and circumstances. See Figure 2.4 and Table 2.3, along with topics 3 and 4. *{WGII SPM B, SPM C, TS B, TS C}*

# Exhibit C

Center for American Progress



STIMSON

THE CENTER FOR  
CLIMATE AND  
SECURITY



# The Arab Spring and Climate Change

A Climate and Security Correlations Series

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Edited by Caitlin E. Werrell and Francesco Femia  
Preface by Anne-Marie Slaughter

February 2013

[WWW.AMERICANPROGRESS.ORG](http://WWW.AMERICANPROGRESS.ORG)

# Preface

Anne-Marie Slaughter

Crime-show devotees will be familiar with the idea of a “stressor”—a sudden change in circumstances or environment that interacts with a complicated psychological profile in a way that leads a previously quiescent person to become violent. The stressor is by no means the only cause of the crimes that ensue, but it is an important factor in a complex set of variables that ultimately lead to disaster.

“The Arab Spring and Climate Change” does not argue that climate change caused the revolutions that have shaken the Arab world over the past two years. But the essays collected in this slim volume make a compelling case that the consequences of climate change are stressors that can ignite a volatile mix of underlying causes that erupt into revolution.

This volume of essays includes the following contributions:

- Troy Sternberg of Oxford University begins by investigating the connections between climate events in other parts of the world and social unrest in the Arab world. More specifically, he looks at drought conditions in China, subsequent global wheat shortages, and how those shortages may have influenced the Egyptian uprisings. In his own words, he paints a picture of “how a localized hazard became globalized.”
- Sarah Johnstone and Jeffrey Mazo of the International Institute for Strategic Studies investigate the vulnerability of the Middle East and North Africa region to fluctuations of food supply and prices both globally and locally, and how current and projected climatic changes interact with those phenomena. They conclude that, “The Arab Spring would likely have come one way or another, but the context in which it did is not inconsequential. Global warming may not have caused the Arab Spring, but it may have made it come earlier.”

- Francesco Femia and Caitlin Werrell of the Center for Climate and Security address the influence of climate change before social and political unrest developed into large-scale conflict in Syria—a country many analysts initially deemed impervious to the Arab Spring, also known as the Arab Awakening—the projected influence of climate change after the Arab Awakening in Libya, and possible water-security solutions for building climate resilience that may simultaneously enhance cooperation and aid in resolving conflict.
- Michael Werz and Max Hoffman of the Center for American Progress investigate how “security in one place is irrevocably linked to stability in distant regions.” Werz and Hoffman use the Arab Awakening as a backdrop to explore how a 21st-century security strategy must account for “transcendent challenges,” including the nexus between climate change, human rights, and migration.
- David Michel and Mona Yacoubian of the Stimson Center explore how the Arab world could transform the risks posed by climate-change factors into sustainable economic growth and job-creating opportunities. Michel and Yacoubian look specifically at how “greening” Arab economies by adopting innovative technologies and forward-leaning government policies can simultaneously bolster employment and mitigate environmental risks, “turning two of the region’s pre-eminent challenges into a significant opportunity.”

All of these authors are admirably cautious in acknowledging the complexity of the events they are analyzing and the difficulty of drawing precise causal arrows. But consider the following statements:

- “A once-in-a-century winter drought in China contributed to global wheat shortages and skyrocketing bread prices in Egypt, the world’s largest wheat importer.” (Sternberg, p. 7)
- Of the world’s major wheat-importing companies per capita, “the top nine importers are all in the Middle East; seven had political protests resulting in civilian deaths in 2011.” (Sternberg, p. 12)
- “The world is entering a period of ‘agflation,’ or inflation driven by rising prices for agricultural commodities.” (Johnstone and Mazo, p. 21)
- “Drought and desertification across much of the Sahel—northern Nigeria, for example, is losing 1,350 square miles a year to desertification—have under-

mined agricultural and pastoral livelihoods,” contributing to urbanization and massive flows of migrants. (Werz and Hoffman, p. 37)

- “As the region’s population continues to climb, water availability per capita is projected to plummet. ... Rapid urban expansion across the Arab world increasingly risks overburdening existing infrastructure and outpacing local capacities to expand service.” (Michel and Yacoubian, p. 45)
- “We have reached the point where a regional climate event can have a global extent.” (Sternberg, p. 10)

These assertions are all essentially factual. None of them individually might be cause for alarm. Taken together, however, the phenomena they describe weave a complex web of conditions and interactions that help us understand the larger context for the Arab Awakening. Indeed, as Johnstone and Mazo argued as early as April–May 2011, in an article written just at the outset of the Tunisian and Egyptian revolutions, it was already possible to see that climate change played a role in the complex causality of the revolts spreading across the region. They called it a “threat multiplier.”<sup>1</sup> It significantly increased the interactive effects—and hence the overall impact—of political, economic, religious, demographic, and ethnic forces.

This concept of a “threat multiplier” is a helpful way to think about climate change and security more broadly. In Syria, for instance, as Femia and Werrell tell us, a combination of “social, economic, environmental and climatic changes ... eroded the social contract between citizen and government in the country, strengthened the case for the opposition movement, and irreparably damaged the legitimacy of the Assad regime.” In Libya, according to the same authors, Qaddafi used oil revenues to finance the “Great Man-Made River Project,” one of the largest water engineering projects in the world—and quite unsustainable. Libya is 93 percent arid, and the aquifers it is draining for the project are shared by Egypt, Chad, and Sudan. Moreover, climate projections estimate that Libya’s “drought days” per annum will rise from more than 100 to more than 200—an enormous and potentially devastating increase. It is not difficult to see how these conditions multiply the threats already facing Libya’s fragile new government. On the other hand, Femia and Werrell outline a much more positive vision of how water-management projects could help bring otherwise-divided parts of Libyan society together.

Beyond individual countries, if we accept the conclusions of the authors collected here, then we must expect a continuing and increasing interplay between climate,

land, water, food, migration, urbanization, and economic, social, and political stress. Yet almost none of those issues shows up in a traditional course on international relations, which focuses far more on the traditional geopolitics of interstate relations, particularly the distribution of military and economic power among a handful of the most important states. Insecurity in this world is defined largely in terms of military threats posed by rising or declining powers; security dilemmas between rival states, which must assume worst-case motivations on one another's part; physical and virtual terrorist attacks; and denial of access to any of the world's common spaces—ocean, air, outer space, and, increasingly, cyberspace.

Yet intrastate violence, instability, and revolution all create their own turmoil. The geopolitical results of the Arab Awakening are felt in the political realignment of states such as Egypt following the political victory of the Muslim Brotherhood in recent elections, and the determination of states such as Saudi Arabia and Qatar to arm specific factions in the civil war in Syria as part of a proxy war with Iran. Moreover, violence and pervasive political uncertainty across the Middle East inflicts its own economic costs: unstable oil prices, streams of refugees and migrants to more developed countries, and the opportunity costs of investment forgone across a region that has served as a global crossroads since the beginning of human civilization.

It follows, as Werz and Hoffman conclude, that, "The United States, its allies, and the global community must de-emphasize traditional notions of hard security more suited to the Cold War and focus on more appropriate concepts such as human security, livelihood protection, and sustainable development." Foreign policy initiatives focused on human-security issues offer ways to:

- Diminish distrust of the United States
- Bring together a wide range of civic and corporate partners, both in country and from abroad
- Transcend conflicts over resources such as water and grazing land among rival groups by creating avenues for constructive cooperation on issues including water management and crop adaptation
- Engage specific groups of a population such as women, youth, entrepreneurs, or religious communities

In response to this new emphasis on human security, Michel and Yacoubian detail a number of encouraging international initiatives to "establish networks of renewable energy projects linking Arab countries to each other and to export markets in Europe and Africa" and laying the foundations for green growth.



Former U.S. Secretary of State Hillary Clinton understood the value of this type of engagement from the very outset of her tenure. The first Quadrennial Diplomacy and Development Review in 2010 sought to develop and institutionalize new organizational structures and policy tools specifically designed to engage societies, as well as governments. Consider the creation of an under secretary for civilian security, democracy, and human rights replacing the under secretary for democracy and global affairs in the State Department. The new under secretary oversees five important bureaus, two of which—the Bureau of Counterterrorism and the Bureau of Conflict and Stabilization Operations—are newly created. The other three are the Bureau of International Narcotics and Law Enforcement, the Bureau of Democracy, Human Rights, and Labor, and the Bureau of Population, Refugees, and Migration. Each of these bureaus focuses on a different dimension of human security:

- Protection from violence in conflict-torn states and the rebuilding of state institutions
- Protection from the violence and corruption inflicted by global criminal networks in drugs, arms, money, people, and violent extremism
- Protection of basic human rights
- The meeting of basic human needs in times of migration and displacement

Within these bureaus and in offices reporting directly to the secretary of state can be found a host of new ambassadors and senior representatives for issues such as:

- Global empowerment of women
- Creation and maintenance of public-private partnerships
- Global youth issues
- Establishment of regional and global networks of entrepreneurs
- Outreach to Muslim communities around the world
- Support of civil society

The new Bureau of Energy Resources also focuses on energy security for the United States and its allies—a task that requires close coordination with the special representative for climate change.

These initiatives are far more than one secretary of state's whim. They build on a growing recognition beginning at the end of the Cold War that global problems, crises, and conflicts were resulting from a more complex and intertwined set of causes. Over the past two decades, the role of planetary changes—the human impact on climate, biodiversity, and natural resources, from water to fish to for-

ests—have exacerbated the perils of the human condition even as technological advances have created whole new worlds. Foreign policy, which has always been about advancing one nation's interests and values with respect to those of other nations, is now increasingly about solving national, regional, and global problems that affect us all in myriad and often unpredictable ways.

"The Arab Spring and Climate Change" is a title that will still strike many readers as a very strange juxtaposition. But as the contents of this volume make clear, it describes the interplay of factors that will demand an increasing amount of our attention going forward.

# Exhibit D

# The millennial atmospheric lifetime of anthropogenic CO<sub>2</sub>

David Archer · Victor Brovkin

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**Abstract** The notion is pervasive in the climate science community and in the public at large that the climate impacts of fossil fuel CO<sub>2</sub> release will only persist for a few centuries. This conclusion has no basis in theory or models of the atmosphere/ocean carbon cycle, which we review here. The largest fraction of the CO<sub>2</sub> recovery will take place on time scales of centuries, as CO<sub>2</sub> invades the ocean, but a significant fraction of the fossil fuel CO<sub>2</sub>, ranging in published models in the literature from 20–60%, remains airborne for a thousand years or longer. Ultimate recovery takes place on time scales of hundreds of thousands of years, a geologic longevity typically associated in public perceptions with nuclear waste. The glacial/interglacial climate cycles demonstrate that ice sheets and sea level respond dramatically to millennial-timescale changes in climate forcing. There are also potential positive feedbacks in the carbon cycle, including methane hydrates in the ocean, and peat frozen in permafrost, that are most sensitive to the long tail of the fossil fuel CO<sub>2</sub> in the atmosphere.

## 1 Introduction

The ocean contains 50 times more dissolved oxidized carbon than the atmosphere does, and 70% of the surface of the earth is covered by ocean. For these reasons, the prevalent opinion among earth scientists in the early twentieth century was that the oceans would prevent industrial activity from increasing the pCO<sub>2</sub> of the atmosphere. This view prevailed until precise measurements of free-atmosphere pCO<sub>2</sub> values showed an increasing trend of (at that time) 0.8 ppm yr<sup>-1</sup> (Keeling 1961).

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# Exhibit E

# Climate Sensitivity, Sea Level, and Atmospheric CO<sub>2</sub>

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Cenozoic temperature, sea level and CO<sub>2</sub> co-variations provide insights into climate sensitivity to external forcings and sea level sensitivity to climate change. Climate sensitivity depends on the initial climate state, but potentially can be accurately inferred from precise paleoclimate data. Pleistocene climate oscillations yield a fast-feedback climate sensitivity  $3 \pm 1^\circ\text{C}$  for  $4 \text{ W/m}^2$  CO<sub>2</sub> forcing if Holocene warming relative to the Last Glacial Maximum (LGM) is used as calibration, but the error (uncertainty) is substantial and partly subjective because of poorly defined LGM global temperature and possible human influences in the Holocene. Glacial-to-interglacial climate change leading to the prior (Eemian) interglacial is less ambiguous and implies a sensitivity in the upper part of the above range, i.e.,  $3\text{--}4^\circ\text{C}$  for  $4 \text{ W/m}^2$  CO<sub>2</sub> forcing. Slow feedbacks, especially change of ice sheet size and atmospheric CO<sub>2</sub>, amplify total Earth system sensitivity by an amount that depends on the time scale considered. Ice sheet response time is poorly defined, but we show that the slow response and hysteresis in prevailing ice sheet models are exaggerated. We use a global model, simplified to essential processes, to investigate state-dependence of climate sensitivity, finding an increased sensitivity towards warmer climates, as low cloud cover is diminished and increased water vapor elevates the tropopause. Burning all fossil fuels, we conclude, would make much of the planet uninhabitable by humans, thus calling into question strategies that emphasize adaptation to climate change.

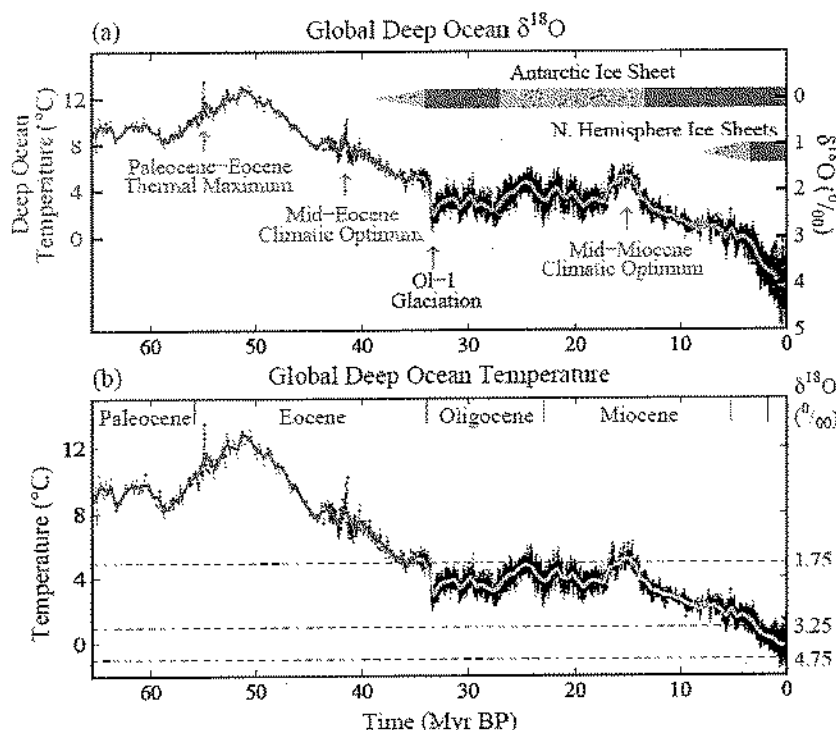
## 1. Introduction

Humanity is now the dominant force driving changes of Earth's atmospheric composition and climate (IPCC, 2007a). The largest climate forcing today, i.e., the greatest imposed perturbation of the planet's energy balance (IPCC, 2007a; Hansen et al., 2011), is the human-made increase of atmospheric greenhouse gases, especially CO<sub>2</sub> from burning of fossil fuels.

Earth's response to climate forcings is slowed by the inertia of the global ocean and the great ice sheets on Greenland and Antarctica, which require centuries, millennia or longer to approach their full response to a climate forcing. This long response time makes the task of avoiding dangerous human alteration of climate particularly difficult, because the human-made climate forcing is being imposed rapidly, with most of the current forcing having been added in just the past several decades. Thus observed climate changes are only a partial response to the current climate forcing, with further response still "in-the-pipeline" (Hansen et al., 1984).

Climate models, numerical climate simulations, provide one way to estimate climate response to forcings, but it is difficult to include realistically all real-world processes. Earth's paleoclimate history allows empirical assessment of climate sensitivity, but the data have large uncertainties. These approaches are usually not fully independent, and the most realistic eventual assessments will be ones combining their greatest strengths.

We use the rich climate history of the Cenozoic era in the oxygen isotope record of ocean sediments to explore the relation of climate change with sea level and atmospheric CO<sub>2</sub>, inferring climate sensitivity empirically. We use Zachos et al. (2008) isotope data, which are improved over data used in our earlier study (Hansen et al., 2008), and we improve our prescription for separating effects of deep ocean temperature and ice volume in the oxygen isotope record as well as our prescription for relating deep ocean temperature to surface air temperature. Finally, we use an efficient climate model to expand our estimated climate sensitivities beyond the Cenozoic climate range to snowball Earth and runaway greenhouse conditions.



**Fig. 1.** (a) Global deep ocean  $\delta^{18}\text{O}$  from Zachos et al. (2008) and (b) estimated deep ocean temperature based on the prescription in our present paper. Black data points are 5-point running means of original temporal resolution; red and blue curves have 500 kyr resolution. Coarse temporal sampling reduces the amplitude of glacial-interglacial oscillations in intervals 7-17, 35-42 and 44-65 Myr BP.

## 2. Overview of Cenozoic Climate and Our Analysis Approach

The Cenozoic era, the past 65.5 Myr (million years), provides a valuable perspective on climate (Zachos et al., 2001; Hansen et al., 2008) and sea level change (Gasson et al., 2012), and Cenozoic data help clarify our analysis approach. The principal data set we use is the temporal variation of the oxygen isotope ratio ( $\delta^{18}\text{O}$  relative to  $\delta^{16}\text{O}$ , Fig. 1a right scale) in the shells of deep-ocean-dwelling microscopic shelled animals (foraminifera) in a near-global compilation of ocean sediment cores (Zachos et al., 2008).  $\delta^{18}\text{O}$  yields an estimate of deep ocean temperature (Fig. 1b), as discussed in section 3. Note that coarse temporal resolution of  $\delta^{18}\text{O}$  data in intervals 7-17, 35-42 and 44-65 Myr reduces the apparent amplitude of glacial-interglacial climate fluctuations (see Fig. S1, Supplementary Material). We use additional proxy measures of climate change to supplement the  $\delta^{18}\text{O}$  data in our quantitative analyses.

Carbon dioxide is involved in climate change throughout the Cenozoic era, both as a climate forcing and as a climate feedback. Long-term Cenozoic temperature trends, the warming up to about 50 Myr BP (before present) and subsequent long-term cooling, are likely to be, at least in large part, a result of the changing natural source of atmospheric  $\text{CO}_2$ , which is volcanic emissions that occur mainly at continental margins due to plate tectonics (popularly "continental drift"); tectonic activity also affects the weathering sink for  $\text{CO}_2$  by exposing fresh rock. The  $\text{CO}_2$  tectonic source grew from 60 to 50 Myr BP as India subducted carbonate-rich ocean crust while moving through the present Indian Ocean prior to its collision with Asia about 50 Myr BP (Kent and Muttoni, 2008), causing atmospheric  $\text{CO}_2$  to reach levels of the order of 1000 ppm (parts per million) at 50 Myr BP (Beerling & Royer, 2011). Since then, atmospheric  $\text{CO}_2$  declined as the Indian and Atlantic Oceans have been major depocenters for carbonate and organic sediments while subduction of carbonate-rich crust has been limited mainly to small

regions near Indonesia and Central America (Edmond and Huh, 2003), thus allowing CO<sub>2</sub> to decline to levels as low as 170 ppm during recent glacial periods (Petit et al., 1999). Climate forcing due to CO<sub>2</sub> change from 1000 ppm to 170 ppm is more than 10 W/m<sup>2</sup>, which compares with forcings of the order of 1 W/m<sup>2</sup> for competing climate forcings during the Cenozoic (Hansen et al., 2008), specifically long-term change of solar irradiance and change of planetary albedo (reflectance) due to the overall minor displacement of continents in that era.

Superimposed on the long-term trends are occasional global warming spikes, "hyperthermals", most prominently the Paleocene-Eocene Thermal Maximum (PETM) at ~ 56 Myr BP (Kennett & Stott, 1991) and the Mid-Eocene Climatic Optimum (MECO) at ~ 42 Myr BP (Bohaty et al., 2009), coincident with large temporary increases of atmospheric CO<sub>2</sub>. The most studied hyperthermal, the PETM, caused global warming of at least 5°C coincident with injection of a likely 4000-7000 Gt of isotopically light carbon into the atmosphere and ocean (Dunkley Jones et al., 2010). The size of the carbon injection is estimated from changes in the stable carbon isotope ratio <sup>13</sup>C/<sup>12</sup>C in sediments and from ocean acidification implied by changes in the ocean depth below which carbonate dissolution occurred.

The potential carbon source for hyperthermal warming that received most initial attention was methane hydrates on continental shelves, which could be destabilized by sea floor warming (Dickens et al., 1995). Alternative sources include release of carbon from Antarctic permafrost and peat (DeConto et al., 2012). Regardless of the carbon source(s), it has been shown that the hyperthermals were astronomically paced, spurred by coincident maxima in Earth's orbit eccentricity and spin axis tilt (Lourens et al., 2005), which increased high latitude insolation and warming. The PETM was followed by successively weaker astronomically-paced hyperthermals, suggesting that the carbon source(s) partially recharged in the interim (Lunt et al., 2011). A high temporal resolution sediment core from the New Jersey continental shelf (Sluijs et al., 2007) reveals that PETM warming in at least that region began about 3000 years prior to a massive release of isotopically light carbon. This lag and climate simulations (Lunt et al., 2010a) that produce large warming at intermediate ocean depths in response to initial surface warming are consistent with the concept of a methane hydrate role in hyperthermal events.

The hyperthermals confirm understanding about the long recovery time of Earth's carbon cycle (Archer, 2005) and reveal the potential for threshold or "tipping point" behavior with large amplifying climate feedback in response to warming (Thomas et al., 2002). One implication is that if humans burn most of the fossil fuels, thus injecting into the atmosphere an amount of CO<sub>2</sub> at least comparable to that injected during the PETM, the CO<sub>2</sub> would stay in the surface carbon reservoirs (atmosphere, ocean, soil, biosphere) for tens of thousands of years, long enough for the atmosphere, ocean, and ice sheets to fully respond to the changed atmospheric composition. In addition, there is the potential that global warming from fossil fuel CO<sub>2</sub> could spur release of CH<sub>4</sub> and CO<sub>2</sub> from methane hydrates or permafrost. Carbon release during the hyperthermals required several thousand years, but that long injection time may have been a function of the pace of the astronomical forcing, which is much slower than the pace of fossil fuel burning.

The Cenozoic record also reveals the amplification of climate change that occurs with growth or decay of ice sheets, as is apparent at about 34 Myr BP when Earth became cool enough for large scale glaciation of Antarctica and in the most recent 3-5 Myr with growth of Northern Hemisphere ice sheets. Global climate fluctuated in the 20 Myr following Antarctic glaciation with warmth during the Mid-Miocene Climatic Optimum (MMCO, 15 Myr BP) possibly comparable to that at 34 Myr BP, as, e.g., Germany became warm enough to harbor snakes and crocodiles that require annual temperature about 20°C or higher and winter temperature above 10°C (Ivanov and Bohme, 2011). Antarctic vegetation in the MMCO implies summer temperature about 11°C warmer than today (Feakins et al., 2012) and annual sea surface temperatures ranging from 0 to 11.5°C (Warny et al., 2009).



# Exhibit F

74 FR 18886-01  
PROPOSED RULES  
ENVIRONMENTAL PROTECTION AGENCY  
40 CFR Chapter 1  
[EPA-HQ-OAR-2009-0171; FRL-8895-5]  
RIN 2060-ZA14

Proposed Endangerment and Cause or Contribute Findings for  
Greenhouse Gases Under Section 202(a) of the Clean Air Act

Friday, April 24, 2009

AGENCY: Environmental Protection Agency (EPA).

**\*18886 ACTION:** Proposed rule.

**SUMMARY:** Today the Administrator is proposing to find that greenhouse gases in the atmosphere endanger the public health and welfare of current and future generations. Concentrations of greenhouse gases are at unprecedented levels compared to the recent and distant past. These high atmospheric levels are the unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic changes. The effects of climate change observed to date and projected to occur in the future—including but not limited to the increased likelihood of more frequent and intense heat waves, more wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems—are effects on public health and welfare within the meaning of the Clean Air Act. In light of the likelihood that greenhouse gases cause these effects, and the magnitude of the effects that are occurring and are very likely to occur in the future, the Administrator proposes to find that atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202(a) of the Clean Air Act. She proposes to make this finding specifically with respect to six greenhouse gases that together constitute the root of the climate change problem: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

The Administrator is also proposing to find that the combined emissions of carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons from new motor vehicles and new motor vehicle engines are contributing to this mix of greenhouse gases in the atmosphere. Thus, she proposes to find that the emissions of these substances from new motor vehicles and new motor vehicle engines are contributing to air pollution which is endangering public health and welfare under section 202(a) of the Clean Air Act.

**DATES:** Comments on this proposed action must be received on or before June 23, 2009. If you submitted comments on the issues raised by this proposal in dockets for other Agency efforts (e.g., the Advance Notice of Proposed Rulemaking on Regulating Greenhouse Gases under the Clean Air Act), you must still submit your comments to the docket for this action (EPA-HQ-OAR-2009-0171) by the deadline if you want them to be considered.

There will be two public hearings. One hearing will be held on May 18, 2009 in Arlington, VA. The other hearing will be on May 21, 2009 in Seattle, WA. To obtain information about the public hearings or to register to speak at the hearings, please see the SUPPLEMENTARY INFORMATION section below or go to <http://www.epa.gov/climatechange/endangerment.html>.

Proposed Endangerment and Cause or Contribute Findings for..., 74 FR 18886-01

The Administrator concludes that, in the circumstances presented here, the case for finding that greenhouse gases in the atmosphere endanger public health and welfare is compelling and, indeed, overwhelming. The scientific evidence described here is the product of decades of research by thousands of scientists from the U.S. and around the world. The evidence points ineluctably to the conclusion that climate change is upon us as a result of greenhouse gas emissions, that climatic changes are already occurring that harm our health and welfare, and that the effects will only worsen over time in the absence of regulatory action. The effects of climate change on public health include sickness and death. It is hard to imagine any understanding of public health that would exclude these consequences. The effects on welfare embrace every category of effect described in the Clean Air Act's definition of "welfare" and, more broadly, virtually every facet of the living world around us. And, according to the scientific evidence relied upon in making this finding, the probability of the consequences is shown to range from likely to virtually certain to occur. This is not a close case in which the magnitude of the harm is small and the probability great, or the magnitude large and the probability small. In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger public health and welfare within the meaning of the Clean Air Act.

#### **IV. The Administrator's Cause or Contribute Finding**

As noted above, the Administrator has proposed to define the air pollution for purposes of the endangerment finding to be the mix of six key greenhouse gases in the atmosphere. The Administrator must also define the air pollutant or pollutants for purposes of making the cause or contribute determination. In this section, the air pollutant(s) that may cause or contribute to the proposed definition of air pollution are discussed.

As noted earlier, to help appreciate the distinction between these terms, the air pollution can be thought of as the total, cumulative stock in the atmosphere. The air pollutants, on the other hand, are the emissions and can be thought of as the flow that changes the size of the total stock. EPA did not conduct climate modeling analyses to determine what fraction of global greenhouse gas concentrations are due to the emissions from section 202(a) source categories. Rather, consistent with prior practice and with current science, EPA used emissions as a perfectly reasonable proxy for contributions to atmospheric concentrations. Indeed, cumulative emissions are responsible for the cumulative change in the stock of concentrations in the atmosphere (i.e., the fraction of a country's or an economic sector's cumulative emissions compared to the world's greenhouse gas emissions over a long time period will be directly proportional to that fraction of the change in concentrations attributable to that country or economic sector); likewise, annual emissions are a perfectly reasonable proxy for annual incremental changes in atmospheric concentrations.

##### **A. The Air Pollutant(s)**

This section discusses the proposed definition of the air pollutant for the cause or contribute finding as the collective class of six greenhouse gases rather than the individual greenhouse gases.

##### **1. Proposed Definition of Air Pollutant**

When making a cause or contribute finding under section 202(a), the Administrator must first look at the emissions from the source category and decide how to define the air pollutant being evaluated. In this case, the source category emits four gases, which share common physical properties relevant to climate change: all are long-lived in the atmosphere; all become globally well mixed in the atmosphere; all trap outgoing heat that would otherwise escape to space; and all are directly emitted as greenhouse gases rather than forming as a greenhouse gas in the atmosphere after emission of a pre-cursor gas. There are other gases which share these common properties which are not emitted by the section 202(a) source categories. Nonetheless, it is entirely appropriate for the Administrator to define the air pollutant in a manner that recognizes the shared relevant properties of all of these six gases, even though they are not all emitted from the source category before her.

Proposed Endangerment and Cause or Contribute Findings for..., 74 FR 18886-01

The Administrator is proposing to define a single air pollutant that is the collective class of the six greenhouse gases. It is the Administrator's judgment that this collective approach for the contribution test is most consistent with the treatment of greenhouse gases by those studying climate change science and policy, where it has become common practice to evaluate greenhouse gases on a collective CO<sub>2</sub>-equivalent basis. For example, under the UNFCCC, the U.S. and other Parties report their annual emissions of the six greenhouse gases in CO<sub>2</sub>-equivalent units. This facilitates comparisons of the multiple greenhouse gases from different sources and from different countries, and provides a measure of the collective warming potential of multiple greenhouse gases. There are also several federal and state climate programs, such as EPA's Climate Leaders program and California's Climate Action Registry that encourage firms to report (and reduce) emissions of all six greenhouse gases. Furthermore, the Administrator recently signed (March 10, 2009) the Proposed Greenhouse Gas Mandatory Reporting Rule, which proposes the reporting of greenhouse gas emissions on a CO<sub>2</sub>-equivalent basis above certain CO<sub>2</sub>-equivalent thresholds, thereby also recognizing the common and collective treatment of the six greenhouse gases.

This proposed definition of air pollutant is not unique, as EPA has previously treated a class of substances with similar impacts on the environment as a single pollutant (e.g., particulate matter, volatile organic compounds). These six greenhouse gases are being considered collectively in the endangerment determination **\*18905** because they share the same relevant properties regarding their effect on the global climate and the associated changes throughout the climate system that can result. Thus, the Administrator believes it is appropriate to consider the six greenhouse gases as constituents of a single air pollutant.

The Administrator recognizes that only four of the six greenhouse gases covered in the definition of air pollution are emitted by section 202(a) source categories. It is not unusual for a particular source category to emit only a subset of a class of substances that constitute a single air pollutant. For example, a source may emit only 20 of the possible 200 plus chemicals that meet the definition of volatile organic compound (VOC) in the regulations, but that source is evaluated based on its emissions of "VOCs," and not its emissions of the 20 chemicals by name.

Nonetheless, the Administrator recognizes that each greenhouse gas could be considered a separate air pollutant. Thus, although proposing to define air pollutant as the class of six greenhouse gases, and basing the proposed contribution finding on that air pollutant, the Administrator also considered each greenhouse gas individually, as discussed below.

## 2. How the Definition of Air Pollutant in the Endangerment Determination Affects Section 202(a) Standards

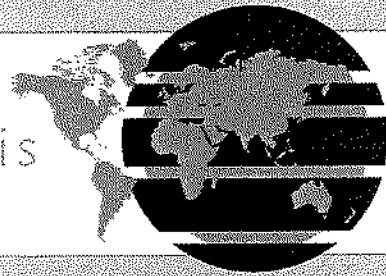
The Administrator believes that she has significant discretion when establishing greenhouse gas emission standards under section 202(a) with respect to whether the greenhouse gases are treated as a single collective pollutant or each greenhouse gas is defined as a separate air pollutant. Under section 202(a), the Administrator is required to set "standards applicable to the emission of any air pollutant" that the Administrator determines causes or contributes to air pollution that endangers. If the Administrator defines the air pollutant as the collection of six greenhouse gases, and makes the appropriate cause or contribute and endangerment findings for section 202(a) sources, then she is called on to set standards applicable to the emission of this air pollutant. The term "standards applicable to the emission of any air pollutant" is not defined, and the Administrator has the discretion to interpret it in a reasonable manner to effectuate the purposes of section 202(a).

If the Administrator defines the air pollutant as the group of greenhouse gases, she believes she would have the discretion to set standards that either control the emissions of the group as a whole, and/or standards that control emissions of individual greenhouse gases, as constituents of the class. For example, it might be appropriate to set a standard that measures and controls the aggregate emissions of the group of greenhouse gases, weighted by CO<sub>2</sub> equivalent. Depending on the circumstances, however, it may be appropriate to set standards for individual gases, or some combination of group and individual standards. These and other similar approaches could appropriately be considered setting a standard or standards applicable to the emission of the group of greenhouse gases that are defined as the air pollutant. The Administrator would consider a variety of factors

# Exhibit G

# The Copenhagen Diagnosis

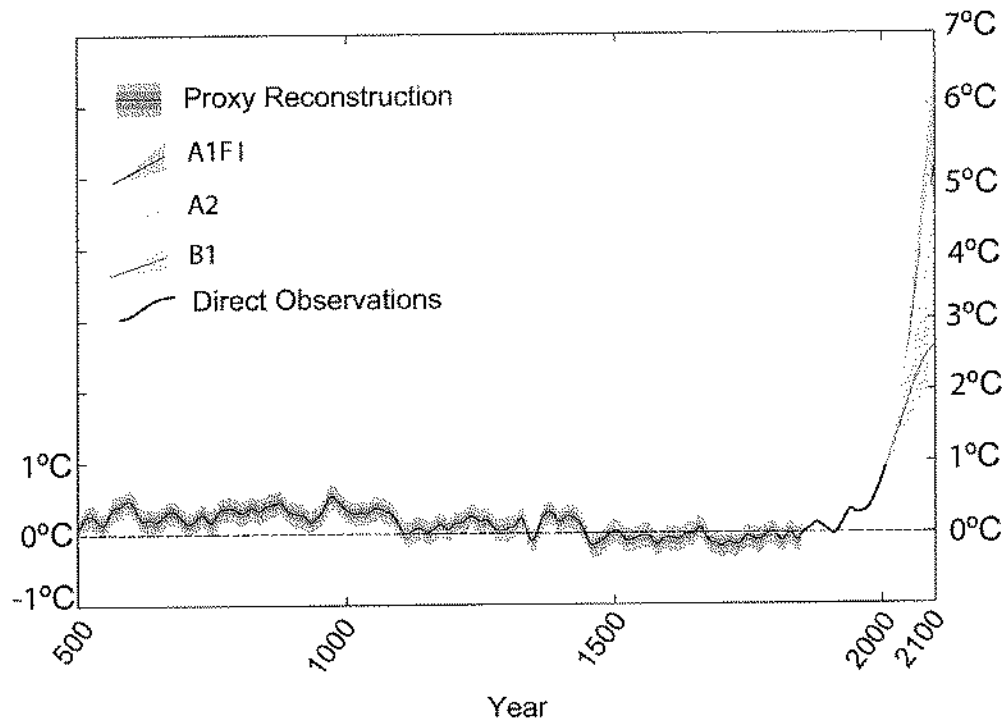
*Updating the World on the Latest Climate Science*



2009



## Global Temperature Relative to 1800-1900 (°C)



**Figure 21.** Reconstructed global-average temperature relative to 1800-1900 (blue) and projected global-average temperature out to 2100 (the latter from IPCC AR4). The envelopes B1, A2, A1FI refer to the IPCC AR4 projections using those scenarios. The reconstruction record is taken from Mann et al. (2008)

### Mitigating global warming

While global warming can be stopped, it cannot easily be reversed due to the long lifetime of carbon dioxide in the atmosphere (Solomon et al. 2009; Eby et al. 2009). Even a thousand years after reaching a zero-emission society, temperatures will remain elevated, likely cooling down by only a few tenths of a degree below their peak values. Therefore, decisions taken now have profound and practically irreversible consequences for many generations to come, unless affordable ways to extract CO<sub>2</sub> from the atmosphere in massive amounts can be found in the future. The chances of this do not appear to be promising.

The temperature at which global warming will finally stop depends primarily on the total amount of CO<sub>2</sub> released to the atmosphere since industrialization (Meinshausen et al. 2009, Allen et al. 2009, Zickfeld et al. 2009). This is again due to the long life-time of atmospheric CO<sub>2</sub>. Therefore if global warming is to be stopped, global CO<sub>2</sub> emissions must eventually decline to zero. The sooner emissions stop, the lower the final warming will be. From a scientific point of view, a cumulative CO<sub>2</sub> budget for the world would thus be a natural element of a climate policy agreement. Such an agreed global budget could then be distributed amongst countries, for example on the basis of equity principles (e.g., WBGU 2009).

The most widely supported policy goal is to limit global warming to at most 2 °C above the preindustrial temperature level (often taken for example as the average 19th Century temperature, although the exact definition does not matter much due to the small variations in preindustrial temperatures). Many nations have publically recognized the importance of this 2°C limit. Furthermore, the group of Least Developed Countries as well as the 43 small island states (AOSIS) are calling for limiting global warming to only 1.5°C. The Synthesis Report of the Copenhagen climate congress (Richardson et al. 2009), the largest climate science conference of 2009, concluded that "Temperature rises above 2 °C will be difficult for contemporary societies to cope with, and are likely to cause major societal and environmental disruptions through the rest of the century and beyond."

A number of recent scientific studies have investigated in detail what global emissions trajectories would be compatible with limiting global warming to 2 °C. The answer has to be given in terms of probabilities, to reflect the remaining uncertainty in the climate response to elevated CO<sub>2</sub>, and the uncertainty in the stability of carbon stored in the land and ocean systems. Meinshausen et al. (2009) found that if a total of 1000 Gigatons of CO<sub>2</sub> is emitted for the period 2000-2050, the likelihood of exceeding the 2-degree warming limit is around 25%. In 2000-2009, about 350 Gigatons have already been emitted, leaving

# Exhibit H



Harvard University Archives

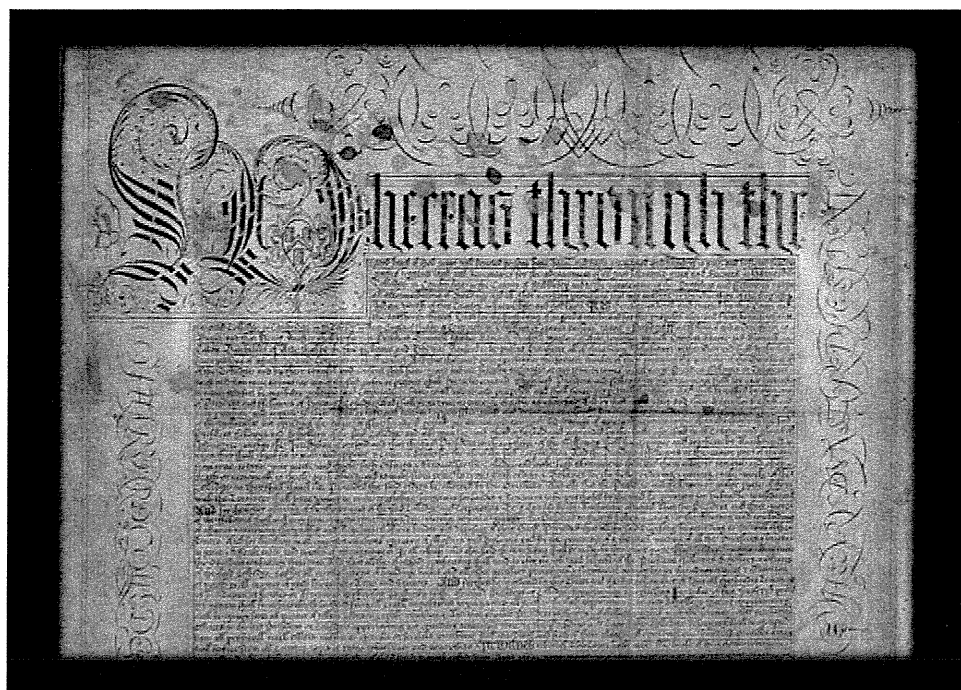
See Also:

[Back to Online Resources](#)

## The Charter of 1650

Signed by Governor Thomas Dudley, established the Harvard Corporation and defined its authority as the College's primary governing board. Harvard continues to operate under the authority of the 1650 charter to this day.

UAI 15.100



**The Charter of the President and Fellows of Harvard College,  
under the seal of the Colony of Massachusetts Bay, and bearing the  
date May 31st, A. D. 1650**

**Whereas, through the** good hand of God, many well devoted persons have been, and daily are moved, and stirred up, to give and bestow, sundry gifts, legacies, lands, and revenues for the advancement of all good literature, arts, and sciences in Harvard College, in Cambridge in the County of Middlesex, and to the maintenance of the President and Fellows, and for all accommodations of buildings, and all other necessary provisions, that may conduce to the education of the English and Indian youth of this country, in knowledge and godliness: **It is** therefore ordered, and enacted by this Court, and the authority thereof, that for the furthering of so good a work and for the purposes aforesaid, from henceforth that the said College, in Cambridge in Middlesex, in New England, shall be a Corporation, consisting of seven persons, to wit, a President, five Fellows, and a Treasurer or Bursar: and that Henry Dunster shall be the first President, Samuel Mather, Samuel Danforth, Masters of Arts, Jonathan Mitchell, Comfort Starr, and Samuel Eaton, Bachelors of Arts, shall be the five Fellows, and Thomas Danforth to be present Treasurer, all of them being inhabitants in the Bay, and shall be the first seven persons of which the said Corporation shall consist: and that the said seven persons, or the greater number of them, procuring the presence of the Overseers of the College, and by their counsel and consent, shall have power, and are hereby authorized, at any time or times, to elect a new President, Fellows, or Treasurer, so oft, and from time to time, as any of the said person or persons shall die, or be removed, which said President and Fellows, for the time being, shall for ever hereafter, in name and fact, be one body politic and corporate in law, to all intents and purposes; and shall have perpetual succession; and shall be called by the name of President and Fellows of Harvard College, and shall, from time to time, be eligible as aforesaid. And by that name they, and their successors, shall and may purchase and acquire to themselves, or take and receive upon free-gift and donation, any lands, tenements, or hereditaments, within this jurisdiction of the Massachusetts, not exceeding the value of five hundred pounds per annum, and any goods and sums of money whatsoever, to the use and behoof of the said President, Fellows, and scholars of the said College: and also may sue and plead, or be sued and impleaded by the name aforesaid, in all Courts and places of judicature, within the jurisdiction aforesaid.

And that the said President, with any three of the Fellows, shall have power, and are hereby authorized, when they shall think fit, to make and appoint a common seal, for the use of the said Corporation.

And the President and Fellows, or the major part of them, from time to time, may meet and choose such officers and servants for the College, and make such allowance to them, and them also to remove, and after death, or removal, to choose such others, and to make, from time to time, such orders and by-laws, for the better ordering, and carrying on the work of the College, as they shall think fit: Provided, the said orders be allowed by the Overseers. And also, that the President and Fellows, or major part of them with the Treasurer, shall

have power to make conclusive bargains for lands and tenements, to be purchased by the said Corporation, for valuable considerations. **And** for the better ordering of the government of the said College and Corporation, Be it enacted by the authority aforesaid, that the President, and three more of the Fellows, shall and may, from time to time, upon due warning or notice given by the President to the rest, hold a meeting, for the debating and concluding of affairs concerning the profits and revenues of any lands and disposing of their goods, (provided that all the said disposings be according to the will of the donors:) and for direction in all emergent occasions; execution of all orders and by-laws; and for the procuring of a general meeting of all the Overseers and Society, in great and difficult cases; and in cases of non-agreement; in all which cases aforesaid, the conclusion shall be made by the major part, the said President having a casting voice, the Overseers consenting thereunto. And that all the aforesaid transactions shall tend to, and for the use and behoof of the President, Fellows, scholars, and officers of the said College, and for all accommodations of buildings, books, and all other necessary provisions, and furnitures, as may be for the advancement and education of youth, in all manner of good literature, arts, and sciences. **And** further be it ordered by this Court, and the authority thereof, that all the lands, tenements, or hereditaments, houses, or revenues, within this jurisdiction, to the aforesaid President or College appertaining, not exceeding the value of five hundred pounds per annum, shall, from henceforth, be freed from all civil impositions, taxes, and rates; all goods to the said Corporation, or to any scholars thereof appertaining, shall be exempted from all manner of toll, customs, and excise whatsoever. And that the said President, Fellows, and scholars, together with the servants, and other necessary officers to the said President, or College appertaining, not exceeding ten, viz. three to the President, and seven to the College belonging, shall be exempted from all personal civil offices, military exercises, or services, watchings, and wardings: and such of their estates, not exceeding one hundred pounds a man, shall be free from all country taxes, or rates whatsoever, and none others.

**In witness** whereof, the Court hath caused the seal of the colony to be hereunto affixed. Dated the one and thirtieth day of the third month, called May, anno 1650.

THOMAS DUDLEY, Governor.

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[Zoom view \(http://ids.lib.harvard.edu/ids/view/6597921?buttons=y\)](http://ids.lib.harvard.edu/ids/view/6597921?buttons=y)

A detailed inventory of the *Charters and legislative acts relating to the governance of*

# Exhibit I

Art. I. Harvard College, MA CONST Pt. 2, C. 5, § 1, Art. 1

Massachusetts General Laws Annotated  
Constitution or Form of Government for the Commonwealth of Massachusetts [Annotated]  
Part the Second the Frame of Government (Refs & Annos)  
Chapter V. The University at Cambridge, and Encouragement of Literature, Etc.  
Section I. The University

M.G.L.A. Const. Pt. 2, C. 5, § 1, Art. 1

Art. I. Harvard College

Currentness

ART. I. Whereas our wise and pious ancestors, so early as the year one thousand six hundred and thirty-six, laid the foundation of Harvard College, in which university many persons of great eminence have, by the blessing of GOD, been initiated in those arts and sciences, which qualified them for public employments, both in church and state: and whereas the encouragement of arts and sciences, and all good literature, tends to the honor of GOD, the advantage of the Christian religion, and the great benefit of this and the other United States of America--it is declared, that the PRESIDENT AND FELLOWS OF HARVARD COLLEGE, in their corporate capacity, and their successors in that capacity, their officers and servants, shall have, hold, use, exercise and enjoy, all the powers, authorities, rights, liberties, privileges, immunities and franchises, which they now have or are entitled to have, hold, use, exercise and enjoy: and the same are hereby ratified and confirmed unto them, the said president and fellows of Harvard College, and to their successors, and to their officers and servants, respectively, forever.

Notes of Decisions (3)

M.G.L.A. Const. Pt. 2, C. 5, § 1, Art. 1, MA CONST Pt. 2, C. 5, § 1, Art. 1  
Current through amendments approved October 1, 2014

End of Document

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**Art. II. Confirmation of gifts, grants, etc., MA CONST Pt. 2, C. 5, § 1, Art. 2**

Massachusetts General Laws Annotated

Constitution or Form of Government for the Commonwealth of Massachusetts [Annotated]

Part the Second the Frame of Government (Refs & Annos)

Chapter V. The University at Cambridge, and Encouragement of Literature, Etc.

Section I. The University

M.G.L.A. Const. Pt. 2, C. 5, § 1, Art. 2

Art. II. Confirmation of gifts, grants, etc.

Currentness

ART. II. And whereas there have been at sundry times, by divers persons, gifts, grants, devises of houses, lands, tenements, goods, chattels, legacies and conveyances, heretofore made, either to Harvard College in Cambridge, in New England, or to the president and fellows of Harvard College, or to the said college, by some other description, under several charters successively: it is declared, that all the said gifts, grants, devises, legacies and conveyances, are hereby forever confirmed unto the president and fellows of Harvard College, and to their successors in the capacity aforesaid, according to the true intent and meaning of the donor or donors, grantor or grantors, devisor or devisors.

Notes of Decisions (1)

M.G.L.A. Const. Pt. 2, C. 5, § 1, Art. 2, MA CONST Pt. 2, C. 5, § 1, Art. 2

Current through amendments approved October 1, 2014

End of Document

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Art. III. Overseers of Harvard College; alterations in government, MA CONST Pt. 2, C....

Massachusetts General Laws Annotated  
Constitution or Form of Government for the Commonwealth of Massachusetts [Annotated]  
Part the Second the Frame of Government (Refs & Annos)  
Chapter V. The University at Cambridge, and Encouragement of Literature, Etc.  
Section I. The University

M.G.L.A. Const. Pt. 2, C. 5, § 1, Art. 3

Art. III. Overseers of Harvard College; alterations in government

Currentness

ART. III. [And whereas, by an act of the general court of the colony of Massachusetts Bay passed in the year one thousand six hundred and forty-two, the governor and deputy-governor, for the time being, and all the magistrates of that jurisdiction, were, with the president, and a number of the clergy in the said act described, constituted the overseers of Harvard College: and it being necessary, in this new constitution of government to ascertain who shall be deemed successors to the said governor, deputy-governor and magistrates; it is declared, that the governor, lieutenant governor, council and senate of this commonwealth, are and shall be deemed, their successors, who with the president of Harvard College, for the time being, together with the ministers of the congregational churches in the towns of Cambridge, Watertown, Charlestown, Boston, Roxbury, and Dorchester, mentioned in the said act, shall be, and hereby are, vested with all the powers and authority belonging, or in any way appertaining to the overseers of Harvard College; provided, that] nothing herein shall be construed to prevent the legislature of this commonwealth from making such alterations in the government of the said university, as shall be conducive to its advantage and the interest of the republic of letters, in as full a manner as might have been done by the legislature of the late Province of the Massachusetts Bay.

M.G.L.A. Const. Pt. 2, C. 5, § 1, Art. 3, MA CONST Pt. 2, C. 5, § 1, Art. 3

Current through amendments approved October 1, 2014

End of Document

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# Exhibit J



# Office of the President

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- [Biography](#)
- [News](#)
- [Speeches](#)
- [History](#)
- [Contact](#)

## Confronting climate change

April 7, 2014

Cambridge, Mass.

Dear Members of the Harvard Community,

Worldwide scientific consensus has clearly established that climate change poses a serious threat to our future—and increasingly to our present. Universities like ours have produced much of the research supporting that consensus, as well as many of the emerging ideas helping us to begin confronting that challenge. Yet we have far more work ahead to chart the path from societies and economies fundamentally dependent on fossil fuels to a system of sustainable and renewable energy. We must devote ourselves to enabling and accelerating that transition—by developing the technologies, policies and practices that would make it possible—if we are to mitigate the damage that rising greenhouse gas levels are inflicting on the planet.

Harvard has a vital leadership role to play in this work. As a university, it has a special obligation and accountability to the future, to the long view needed to anticipate and alter the trajectory and impact of climate change. Harvard also possesses the wide range of capacities across fields and disciplines that must be mobilized and conjoined in order to create effective solutions. Ideas, innovation, discovery and rigorous independent thought will serve as indispensable elements in combating the climate threat; these are the special province of universities.

Already we support [research](#) at the vanguard of energy and climate science—from new technologies for energy storage, to solar ovens to reduce pollution in the developing world, to an “artificial leaf” that mimics photosynthesis to produce renewable fuel, to give just three examples. Our faculty are deeply engaged as well in informing the development of [law](#) and [policy](#) to advance sustainability and to address the hazards of climate change worldwide, from advancing climate agreements, to fashioning legal frameworks for regulating shale extraction, to designing models for sustainable businesses. The Harvard University Center for the Environment engages more than 200 faculty sharing their insights and their commitment to these urgent issues. And our educational programs, with some 250 courses across the University focusing on aspects of environmental sustainability, will prepare leaders with the insight and foresight to safeguard our environment in the years and decades to come.

Harvard has the opportunity and the responsibility to help create the path to a sustainable future. We can and must galvanize the deep commitment of students, faculty, staff and alumni to work together to move us closer to a world founded on renewable energy. Today I would like to highlight three areas in which we are focusing special attention as part of our obligation to our planet and our collective future.

\*

**First**, and at the heart of our mission as a university, is research. Our research across Harvard—in climate science, engineering, law, public health, policy, design and business—has an unparalleled capacity to accelerate the progression from nonrenewable to renewable sources of energy. The Harvard Campaign has identified energy and environment as a priority, and we have already raised \$120 million to support activities in this area. As part of this broader campaign focus, I intend to catalyze the aspects of that research specifically focused on shaping and accelerating the transition to a sustainable energy system.

I challenge our talented and dedicated faculty and students to identify how their efforts can propel societies and individuals along this path. And I challenge our alumni and friends to assist me in raising \$20 million for a fund that will seed and spur innovative approaches to confronting climate change, as an element of our broader campaign efforts in energy and environment. To launch this new Climate Change Solutions Fund, I will immediately make available \$1 million in grants to be allocated at the outset of the coming academic year. (Please see

[here](#) for further information on this fund and the application process.)

\*

**Second,** Harvard must model an institutional pathway toward a more sustainable future. We have the opportunity to serve as a living laboratory for strategies and initiatives that reduce energy consumption and greenhouse gas (GHG) emissions in the ways we live and work. In 2008, the University set an ambitious goal of achieving a 30 percent reduction in our GHG emissions from our 2006 baseline by 2016, including growth. Thanks to the leadership of our GHG reduction executive committee and our Office for Sustainability, and the dedicated efforts of individuals across Harvard, we have so far achieved a reduction of 21 percent, when we include the effects of growth and renovation in our physical plant, and 31 percent, when we do not. (For details on how we have joined as One Harvard to accomplish this, please see [here](#).)

As we recognize our remarkable progress, we must also recommit to the work ahead. I have accepted the recommendations of the task force empaneled to review Harvard's [progress](#) toward its GHG reduction goal. Co-chaired by Jeremy Bloxham, Dean of Science in the Faculty of Arts and Sciences; Robert S. Kaplan, Professor of Management Practice at Harvard Business School; and Katie Lapp, Executive Vice President, the task force has proposed, and I have agreed, to the following:

- We will continue to explore and exhaust all on-campus efficiency and reduction projects to the maximum extent possible.
- We recognize, as we did when we set our goal in 2008, that even after our aggressive on-campus efficiency efforts, a gap will likely remain to achieve our goal of 30 percent reduction (including growth) by 2016, requiring us to explore complementary mechanisms, including offsets. We will establish an advisory group of faculty, students and staff to evaluate and recommend complementary off-campus emissions reduction options that are additive and real.
- We will create a sustainability committee led by senior faculty to shape the next generation of sustainability solutions and strategy on our campus.

\*

**Third,** in addition to our academic work and our greenhouse gas reduction efforts, Harvard has a role to play as a long-term investor. Last fall, I wrote on behalf of the Corporation to affirm our judgment that divestment from the fossil fuel industry would not be wise or effective as a means for the University to advance progress towards addressing climate change. I also noted that, with the arrival of a first-ever vice president for sustainable investing at Harvard Management Company, we would strengthen our approach to how we consider material environmental, social and governance factors as we seek robust investment returns to support our academic mission.

Today I am pleased to report that we have decided to become a [signatory to two organizations](#) internationally recognized as leaders in developing best-practice guidelines for investors and in driving corporate disclosure to inform and promote sustainable investment.

Specifically, Harvard's endowment will become a signatory to the United Nations-supported Principles for Responsible Investment (PRI). The PRI joins together a network of international investors working to implement a set of voluntary principles that provide a framework for integrating environmental, social and governance factors into investment analysis and ownership practices aligned with investors' fiduciary duties. Harvard Management Company will manage Harvard's endowment consistent with these principles.

In addition, we will become a signatory to the Carbon Disclosure Project's (CDP) climate change program. The CDP is an international nonprofit organization that works with investors to request that portfolio companies account for and disclose information on greenhouse gas emissions, energy use and carbon risks associated with their business activities in order to increase transparency and encourage action.

Both these significant steps underscore our growing efforts to consider environmental, social and governance issues among the many factors that inform our investment decision-making, with a paramount concern for how the endowment can best support the academic aspirations and educational opportunities that define our distinctive purposes as a university.

\*

As we take these steps forward—supporting innovative research focused on climate change solutions, reducing our own carbon footprint, advancing our commitments as a long-term investor—we should also step back and see the bigger picture. In the broad domain of energy and environment, as in many other fields, people at Harvard make extraordinary contributions, in myriad ways, to generating the knowledge, ideas and tools that in time can help society's most complex and intractable problems seem amenable to effective solutions. Ultimately, Harvard will contribute to confronting climate change not through presidential pronouncements, and not through a sudden burst

of eureka moments, but through the steadfast, unrelenting commitment of faculty, students, staff and alumni who train their minds on hard questions, combine their imagination with rigorous analysis and convert their insights into effective action.

Whatever your own particular academic interests, I hope you will take the time to learn more about our collective efforts in energy and environment, highlighted [here](#) and elsewhere. More than that, whatever part of Harvard you inhabit, I hope you will count yourself among the thousands of people across the University who increasingly embrace a concern for environmental sustainability as an integral part of our academic work, our institutional practices and our daily lives.

Sincerely,  
Drew Faust

*Harvard University*  
*Cambridge, MA 02138*  
*617.495.1000 | [Feedback](#)*

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# Exhibit K

The Securities and Exchange Commission has not necessarily reviewed the information in this filing and has not determined if it is accurate and complete.  
The reader should not assume that the information is accurate and complete.

## UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

## FORM 13F

## FORM 13F INFORMATION TABLE

## OMB APPROVAL

OMB Number: 3235-0006  
Expires: July 31, 2015  
Estimated average burden  
hours per response: 23.8

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7	COLUMN 8
			VALUE	SHRS OR SH/	PUT/	INVESTMENT	OTHER
NAME OF ISSUER	TITLE OF CLASS	CUSIP	(x\$1000)	PRN AMT	PRN CALL	DISCRETION	MANAGER
							SOLE SHARED NONE
1ST UNITED BANCORP INC FLA	COM	33740N105	2,800	328,648 SH		SOLE	328,648 0 0
500 COM LTD	SPON ADR REP A	33829R100	3,440	102,000 SH		SOLE	102,000 0 0
AMBEV SA	SPONSORED ADR	02319V103	1,146	175,000 SH		SOLE	175,000 0 0
AMER RLTY CAP HEALTHCAR TR I	COM	02917R108	6,281	599,369 SH		SOLE	599,369 0 0
AMERICA MOVIL SAB DE CV	SPON ADR L SHS	02364W105	22,451	890,923 SH		SOLE	890,923 0 0
AMERICAN RLTY CAP PPTYS INC	COM	02917T104	888	73,606 SH		SOLE	73,606 0 0
ANADARKO PETE CORP	COM	032511107	57,421	566,060 SH		SOLE	566,060 0 0
ANNIES INC	COM	03600T104	19,146	417,120 SH		SOLE	417,120 0 0
APPLE INC	COM	037833100	19,606	194,600 SH		SOLE	194,600 0 0
ATHLON ENERGY INC	COM	047477104	10,773	185,000 SH		SOLE	185,000 0 0
ATLAS ENERGY LP	COM UNITS LP	04930A104	5,958	135,410 SH		SOLE	135,410 0 0
ATLAS RESOURCE PARTNERS LP	COM UNT LTD PR	04941A101	428	21,993 SH		SOLE	21,993 0 0
BANCO BRADESCO S A	SP ADR PFD NEW	059460303	2,326	163,260 SH		SOLE	163,260 0 0
BANCO SANTANDER CHILE NEW	SP ADR REP COM	05965X109	287	12,987 SH		SOLE	12,987 0 0
BARCLAYS BK PLC	IPMS INDIA ETN	06739F291	10,829	154,254 SH		SOLE	154,254 0 0
BARRACUDA NETWORKS INC	COM	068323104	281	10,971 SH		SOLE	10,971 0 0
BRF SA	SPONSORED ADR	10552T107	714	30,000 SH		SOLE	30,000 0 0
CEMEX SAB DE CV	SPON ADR NEW	151290889	20,201	1,549,150 SH		SOLE	1,549,150 0 0
CHINA LIFE INS CO LTD	SPON ADR REP H	16939P106	1,692	40,571 SH		SOLE	40,571 0 0
CHINA MOBILE LIMITED	SPONSORED ADR	16941M109	4,966	84,525 SH		SOLE	84,525 0 0

CHINA TELECOM CORP LTD	SPON ADR H SHS	169426103	247	4,026	SH	SOLE	4,026	0	0
CIVEO CORP	COM	178787107	128	11,000	SH	SOLE	11,000	0	0
COBALT INTL ENERGY INC	COM	19075F106	2,665	195,950	SH	SOLE	195,950	0	0
COCA COLA FEMSA S A B DE C V	SPON ADR REP L	191241108	1,663	16,513	SH	SOLE	16,513	0	0
COMPANHIA ENERGETICA DE MINA	SP ADR N-V PFD	204409601	115	18,445	SH	SOLE	18,445	0	0
COMPANIA DE MINAS BUENAVENTU	SPONSORED ADR	204448104	2,205	190,435	SH	SOLE	190,435	0	0
CONCHO RES INC	COM	20605P101	9,604	76,596	SH	SOLE	76,596	0	0
CONCUR TECHNOLOGIES INC	COM	206708109	31,705	250,000	SH	SOLE	250,000	0	0
COVIDIEN PLC	SHS	G2554F113	13,409	155,000	SH	SOLE	155,000	0	0
CREDICORP LTD	COM	G2519Y108	9,958	64,918	SH	SOLE	64,918	0	0
DARLING INGREDIENTS INC	COM	237266101	8,803	480,500	SH	SOLE	480,500	0	0
DIRECTV	COM	23490A309	28,119	325,000	SH	SOLE	325,000	0	0
DRESSER-RAND GROUP INC	COM	261608103	69,236	841,675	SH	SOLE	841,675	0	0
EINSTEIN NOAH REST GROUP INC	COM	28257U104	2,016	100,000	SH	SOLE	100,000	0	0
EL PASO PIPELINE PARTNERS L	COM UNIT LPI	283702108	2,008	50,000	SH	SOLE	50,000	0	0
EMPRESA NACIONAL DE ELCTRICID	SPONSORED ADR	29244T101	1,165	26,490	SH	SOLE	26,490	0	0
ENERSIS S A	SPONSORED ADR	29274F104	1,446	91,652	SH	SOLE	91,652	0	0
EROS INTL PLC	SHS NEW	G3788M114	877	60,000	SH	SOLE	60,000	0	0
FACEBOOK INC	CL A	30303M102	1,556	19,680	SH	SOLE	19,680	0	0
FAMILY DLR STORES INC	COM	307000109	16,800	217,500	SH	SOLE	217,500	0	0
FIBRIA CELULOSE S A	SP ADR REP COM	31573A109	220	20,000	SH	SOLE	20,000	0	0
FIREEYE INC	COM	31816Q101	2,183	71,435	SH	SOLE	71,435	0	0
FOMENTO ECONOMICO MEXICANO S	SPON ADR UNITS	344419106	7,432	80,742	SH	SOLE	80,742	0	0
GAFISA S A	SPONS ADR	362607301	571	238,800	SH	SOLE	238,800	0	0
GENERAL MTRS CO	COM	37045V100	6,391	200,100	SH	SOLE	200,100	0	0
GRUPO TELEVISIA SA	SPON ADR REP ORD	40049J206	6,026	177,850	SH	SOLE	177,850	0	0
HDFC BANK LTD	ADR REPS 3 SHS	40415F101	1,631	35,005	SH	SOLE	35,005	0	0
HOWARD HUGHES CORP	COM	44267D107	18,750	125,000	SH	SOLE	125,000	0	0
HUDSON CITY BANCORP	COM	443683107	74,549	7,669,692	SH	SOLE	7,669,692	0	0

INFOSYS LTD	SPONSORED ADR	456788108	1,210	20,000	SH	SOLE	20,000	0	0
INTERNATIONAL GAME TECHNOLOG	COM	459902102	6,748	400,000	SH	SOLE	400,000	0	0
ISHARES	MSCI TURKEY ETF	464286715	2,454	50,000	SH	SOLE	50,000	0	0
ISHARES	MSCI STH KOR ETF	464286772	42,433	701,262	SH	SOLE	701,262	0	0
ISHARES	MSCI MALAYSI ETF	464286830	4,588	297,940	SH	SOLE	297,940	0	0
ISHARES TR	CORE S&P500 ETF	464287200	24,325	122,692	SH	SOLE	122,692	0	0
ISHARES TR	CORE S&P MCP ETF	464287507	8,700	63,628	SH	SOLE	63,628	0	0
ISHARES TR	CHINA LG-CAP ETF	464287184	22,462	586,782	SH	SOLE	586,782	0	0
ISHARES TR	PUT	464287954	786	8,500	SH Put	SOLE	8,500	0	0
ITAU UNIBANCO HLDG SA	SPON ADR REP PFD	465562106	2,753	198,316	SH	SOLE	198,316	0	0
JUMEI INTL HLDG LTD	SPONSORED ADR	48138L107	897	38,200	SH	SOLE	38,200	0	0
KB FINANCIAL GROUP INC	SPONSORED ADR	48241A105	1,040	28,712	SH	SOLE	28,712	0	0
KINDER MORGAN ENERGY PARTNER	UT LTD PARTNER	494550106	97,944	1,050,000	SH	SOLE	1,050,000	0	0
KINDER MORGAN INC DEL	COM	49456B101	47,925	1,250,000	SH	SOLE	1,250,000	0	0
KOREA ELECTRIC PWR	SPONSORED ADR	500631106	1,159	51,637	SH	SOLE	51,637	0	0
KOSMOS ENERGY LTD	SHS	G5315B107	4,980	500,000	SH	SOLE	500,000	0	0
KT CORP	SPONSORED ADR	48268K101	561	34,588	SH	SOLE	34,588	0	0
LATAM AIRLS GROUP S A	SPONSORED ADR	51817R106	128	11,282	SH	SOLE	11,282	0	0
LG DISPLAY CO LTD	SPONS ADR REP	50186V102	923	58,589	SH	SOLE	58,589	0	0
MARKET VECTORS ETF TR	INDONESIA ETF	57060U753	25,152	1,006,063	SH	SOLE	1,006,063	0	0
MEMORIAL RESOURCE DEV CORP	COM	58605Q109	11,669	430,421	SH	SOLE	430,421	0	0
MOBILE TELESYSTEMS OJSC	SPONSORED ADR	607409109	7,867	526,579	SH	SOLE	526,579	0	0
NATIONAL BK GREECE S A	SPN ADR REP 1 SH	633643705	1,477	490,709	SH	SOLE	490,709	0	0
P T TELEKOMUNIKASI INDONESIA	SPONSORED ADR	715684106	1,016	21,121	SH	SOLE	21,121	0	0
PHILIPPINE LONG DISTANCE TEL	SPONSORED ADR	718252604	621	9,000	SH	SOLE	9,000	0	0
PIONEER NAT RES CO	COM	723787107	9,335	47,394	SH	SOLE	47,394	0	0
POSCO	SPONSORED ADR	693483109	1,443	19,015	SH	SOLE	19,015	0	0

POWERSHS DB MULTI SECT COMM	DB ENERGY FUND	73936B101	4,359	161,930	SH	SOLE		161,930	0	0
POWERSHS DB MULTI SECT COMM	DB BASE METALS	73936B705	1,643	97,156	SH	SOLE		97,156	0	0
POWERSHS DB MULTI SECT COMM	PS DB AGRICUL FD	73936B408	4,828	188,949	SH	SOLE		188,949	0	0
PRECISION CASTPARTS CORP	COM	740189105	2,369	10,000	SH	SOLE		10,000	0	0
PRICELINE GRP INC	COM NEW	741503403	1,946	1,680	SH	SOLE		1,680	0	0
PROTECTIVE LIFE CORP	COM	743674103	97,174	1,400,000	SH	SOLE		1,400,000	0	0
RANGE RES CORP	COM	75281A109	2,198	32,407	SH	SOLE		32,407	0	0
RINGCENTRAL INC	CL A	76680R206	775	60,978	SH	SOLE		60,978	0	0
RSP PERMIAN INC	COM	74978Q105	250	9,786	SH	SOLE		9,786	0	0
SELECT SECTOR SPDR TR	PUT	81369Y956	3,466	4,900	SH	Put	SOLE	4,900	0	0
SEARS HLDGS CORP	PUT	812350956	1,913	4,500	SH	Put	SOLE	4,500	0	0
SERVICE CORP INTL	COM	81756S104	25,530	1,207,659	SH	SOLE		1,207,659	0	0
SOCIEDAD QUIMICA MINERA DE C	SPON ADR SER B	83363S105	784	30,000	SH	SOLE		30,000	0	0
SOUTHERN COPPER CORP	COM	84265V105	4,840	163,231	SH	SOLE		163,231	0	0
SPDR GOLD TRUST	GOLD SHS	78463V107	1,780	15,318	SH	SOLE		15,318	0	0
SPDR S&P MIDCAP 400 ETF TR	UTSER1 S&PDCRP	78467Y107	4,545	18,230	SH	SOLE		18,230	0	0
SPDR SER TR	SPDR RUSSEL 2000	78468R853	6,208	94,562	SH	SOLE		94,562	0	0
SPDR SERIES TRUST	PUT	78464A950	2,450	3,475	SH	Put	SOLE	3,475	0	0
STERLITE INDS' INDIA LTD	NOTE 4.000%10/3	859737AB4	6,578	6,594,000	PRN	SOLE		6,594,000	0	0
TATA MTRS LTD	SPONSORED ADR	876568502	437	10,000	SH	SOLE		10,000	0	0
TELEFONICA BRASIL SA	SPONSORED ADR	87936R106	305	15,500	SH	SOLE		15,500	0	0
TIM HORTONS INC	COM	88706M103	8,207	104,000	SH	SOLE		104,000	0	0
TIM PARTICIPACOES S A	SPONSORED ADR	88706P205	202	7,700	SH	SOLE		7,700	0	0
TW TELECOM INC	COM	87311L104	3,890	93,490	SH	SOLE		93,490	0	0
TWITTER INC	COM	90184L102	4,356	84,445	SH	SOLE		84,445	0	0
URS CORP NEW	COM	903236107	10,095	175,237	SH	SOLE		175,237	0	0
VALLEY NATL BANCORP	COM	919794107	2,018	208,217	SH	SOLE		208,217	0	0
VANGUARD INTL EQUITY INDEX F	FTSE EMR MKT ETF	922042858	6,260	150,072	SH	SOLE		150,072	0	0



VANGUARD SPECIALIZED PORTFOL	DIV APP ETF	921908844	6,546	85,064	SH	SOLE	85,064	0	0
VANGUARD TAX MANAGED INTL FD	FTSE DEV MKT ETF	921943858	13,227	332,764	SH	SOLE	332,764	0	0
VIPSHOP HLDGS LTD	NOTE 1.500% 3/1	92763WAA1	18,103	15,000,000	PRN	SOLE	15,000,000	0	0
VIPSHOP HLDGS LTD	SPONSORED ADR	92763W103	1,470	7,777	SH	SOLE	7,777	0	0
WILLIAMS COS INC DEL	PUT	969457950	901	3,400	SH Put	SOLE	3,400	0	0
WILLIAMS COS INC DEL	COM	969457100	33,232	600,397	SH	SOLE	600,397	0	0
WIX COM LTD	SHS	M98068105	932	10,778	SH	SOLE	10,778	0	0
WORKDAY INC	CL A	98138H101	2,283	27,669	SH	SOLE	27,669	0	0
WPX ENERGY INC	COM	98212B103	979	40,678	SH	SOLE	40,678	0	0
YADKIN FINL CORP	COM	984303102	17,716	912,716	SH	SOLE	912,716	0	0

# Exhibit L

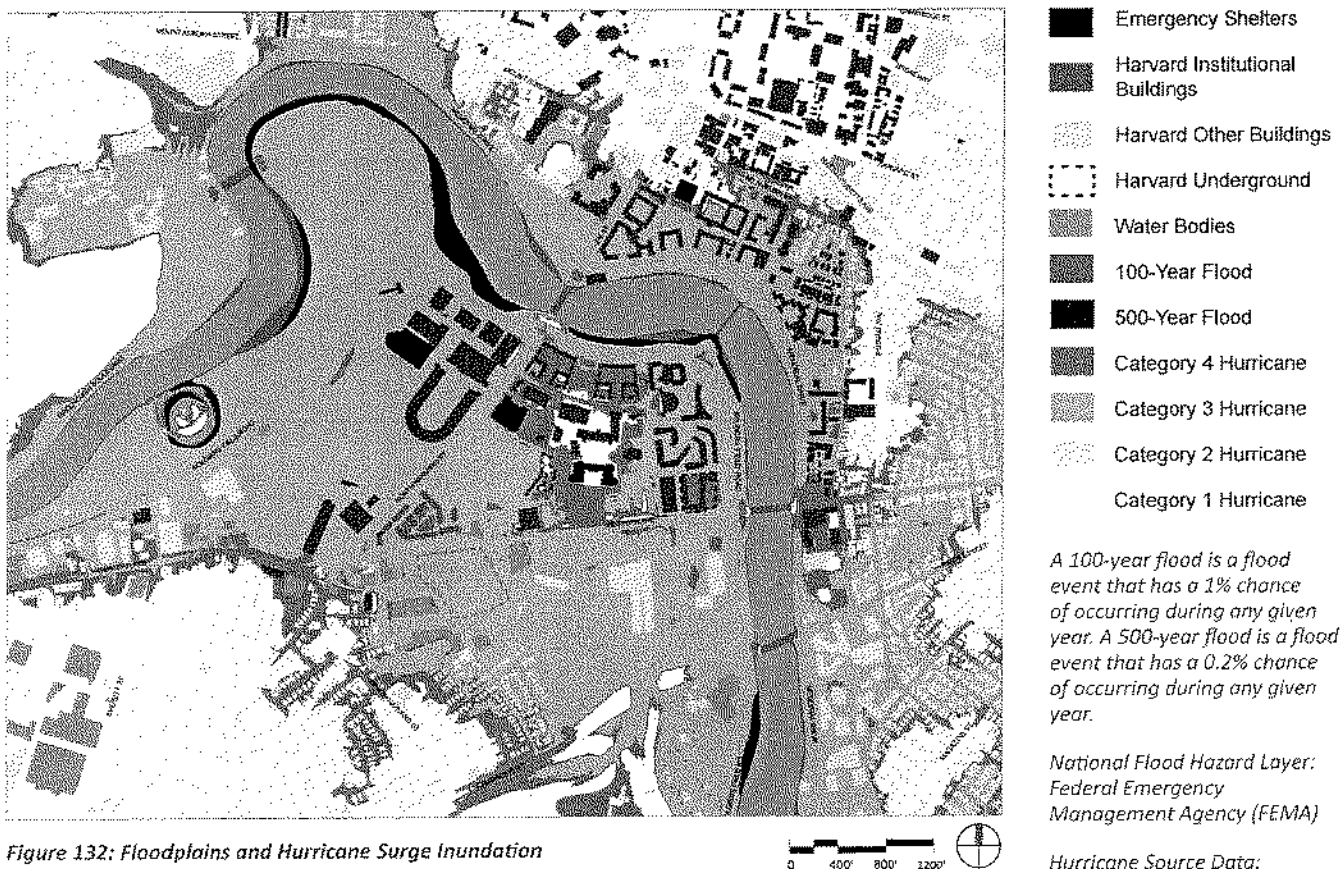
## 6.4 Climate Change Adaptation

Harvard University proposes to adopt climate change adaptation procedural guidelines and climate change resilience strategies for the development of the Allston campus. These adaptation procedural guidelines are the implementation process for the climate change resilience policies. In implementing these guidelines and policies, Harvard plans to conduct a detailed Allston campus-wide vulnerability assessment and adaptation plan, and ensure that all new development is resilient to the impacts of climate change.

### EXISTING CONDITIONS AT THE ALLSTON CAMPUS

In the past, Harvard University has considered historic conditions when planning new buildings and facilities. In the face of climate change, future conditions must also be considered. Buildings and facilities need to be designed to a different standard to withstand the impacts of climate change.

The Allston campus is located on the Charles River. As shown in Figure 132, some areas lay within the 100-year and 500-year floodplain and the current buildings and facilities would not be greatly impacted by these levels of floods. However, some of the athletic facilities and parts of the Harvard Business School in Allston are already vulnerable to storm surge inundation from hurricanes. A small portion of the Allston campus is vulnerable to flooding from a Category 1 hurricane and this area expands as the category of hurricane increases. Harvard expects these impacts to become more frequent as a result of climate change, and that new impacts will arise.



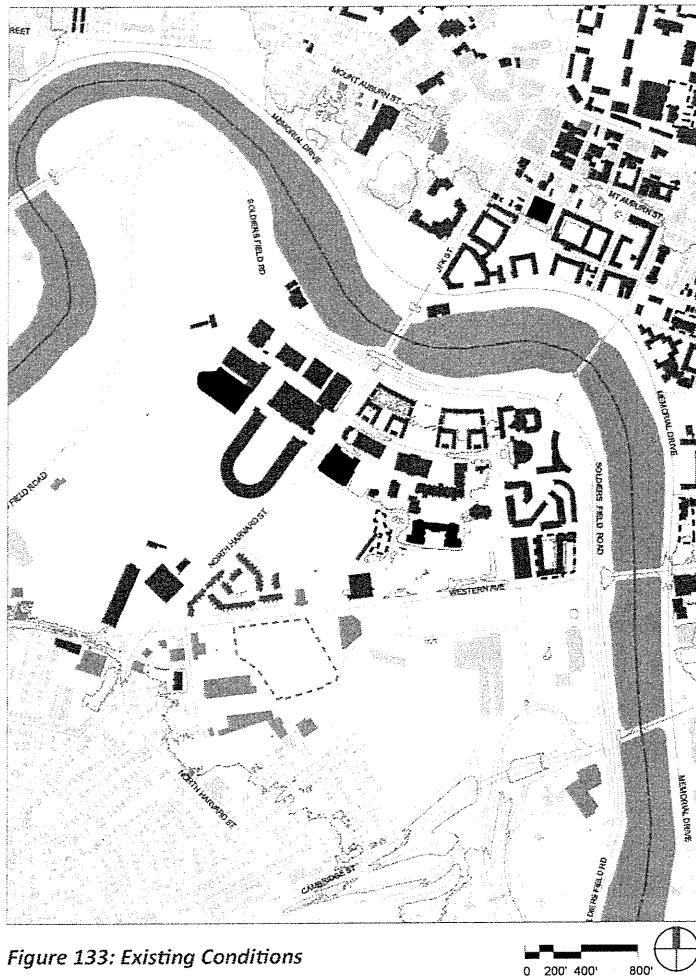


Figure 133: Existing Conditions

The following figures are based on analysis conducted and presented by The Boston Harbor Association (TBHA) in the 2013 report, *Preparing for the Rising Tide*. Figure 133 depicts the existing flood conditions in the area. Figure 134 and Figure 135 respectively depict two scenarios of coastal flooding that could result from a combination of factors (sea level rise, storm surge, astronomical high tides, etc.). Figure 134 depicts a 50 year scenario with a 5½ foot Coastal Flood. As shown in the figure, the analysis assumes that the conditions within the Charles River Basin are managed by the Charles River Dam. Figure 135 depicts a 100 year scenario with a 7½ foot Coastal Flood. As shown on this figure, the flood elevation of 7½ feet exceeds the top of the Charles River Dam and would result in widespread flooding within the Charles River Basin.

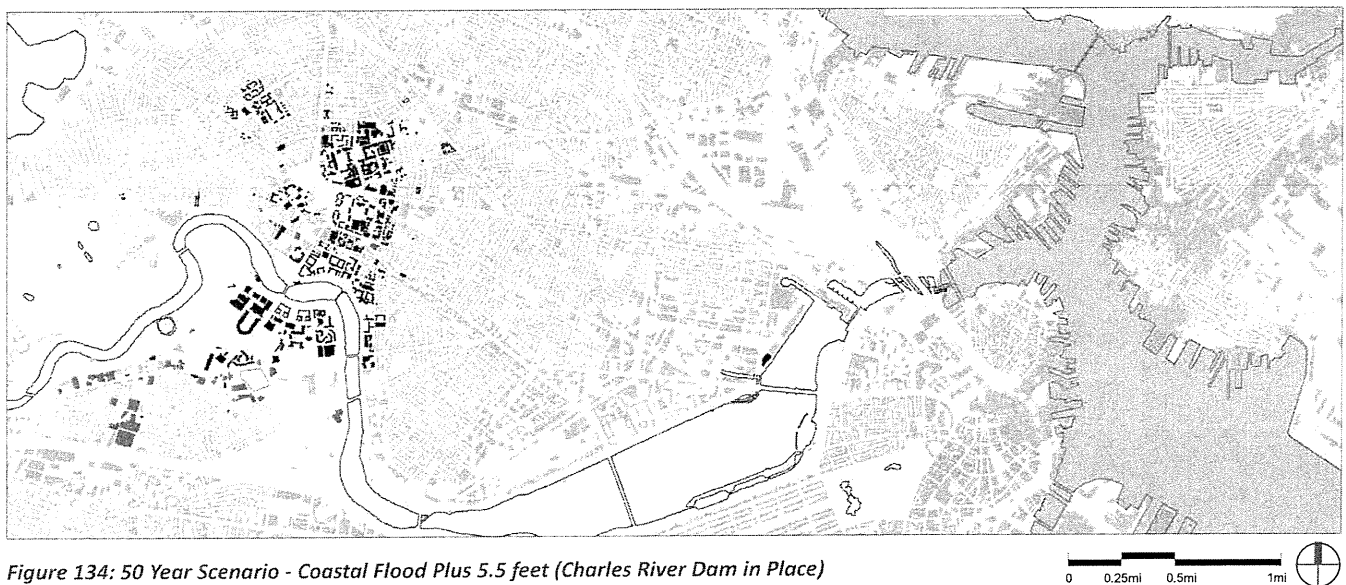


Figure 134: 50 Year Scenario - Coastal Flood Plus 5.5 feet (Charles River Dam in Place)

Methodology for Figure 133, Figure 134, and Figure 135: *Preparing for the Rising Tide Report*, The Boston Harbor Association 2013

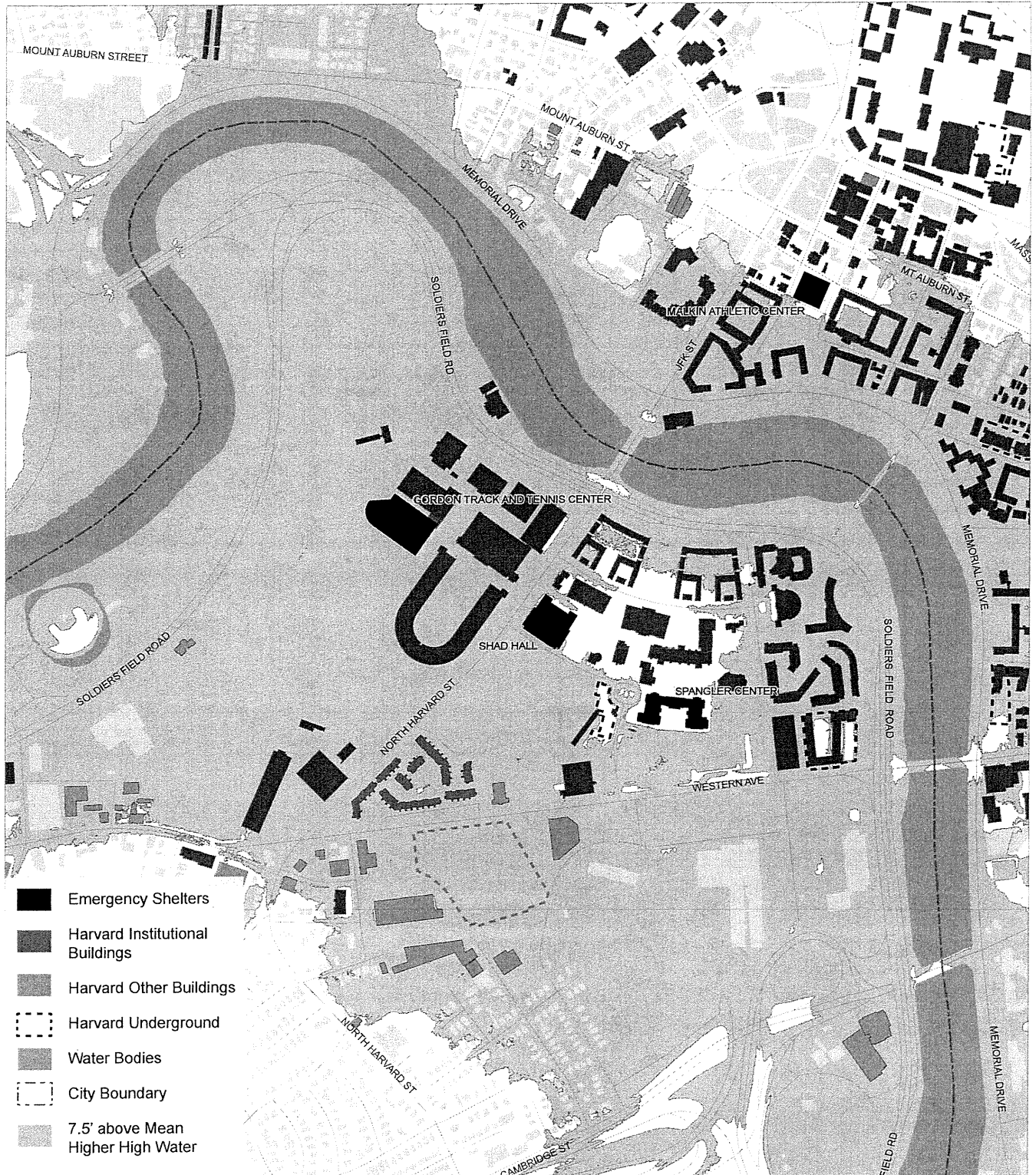
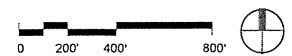


Figure 135: 100 Year Scenario - Coastal Flood Plus 7.5 feet (Charles River Dam Breached)



## THE MASSACHUSETTS CLIMATE CHANGE ADAPTATION REPORT

Harvard reviewed the Massachusetts Climate Change Adaptation Report to assess the possible climate change impacts to the Allston campus. The Massachusetts Global Warming Solutions Act of 2008 required the state to investigate the likely climate change impacts in Massachusetts. In September 2011, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) and the Climate Change Adaptation Advisory Committee published the Massachusetts Climate Change Adaptation Report.

The Report identifies and summarizes the likely changes to the climate, climate impacts, vulnerabilities, and possible adaptation measures in Massachusetts. The Report uses the most recent information and climate predictions available, including from the International Panel on Climate Change (IPCC) and other peer-reviewed scientific climate change projections. The Boston Harbor Association's recent report, *Preparing for the Rising Tide*, also uses key climate stressors from the Massachusetts report in their analysis.

The Report refers to climate change impacts in terms of a low range and high range; these represent the lowest low emissions scenario and the highest high emissions scenario from the IPCC Fourth Assessment Report (AR4).<sup>1</sup> Climate change impacts are discussed in terms of current conditions (average of the years 1961-1990), future mid-century conditions (average of 2035-2064, often referred to as conditions in 2050), and end of century conditions (2100). Table 34 is from the Report, and shows the expected changes to Massachusetts' climate.

Each of these expected climate changes in Massachusetts have multiple consequences or impacts that Harvard will take into consideration to make projects more resilient to these effects – essentially preparing for and adapting to the changing climate.

Table 34: Changes in Massachusetts' Climate: Current, Future Mid-Century, & End of Century Conditions

Parameter	Current Conditions (1961–1990)	Predicted Range of Change by 2050	Predicted Range of Change by 2100
Annual temperature <sup>a</sup> (°C/°F)	8/46	2 to 3 / 4 to 5	3 to 5/5 to 10**
Winter temperature <sup>a</sup> (°C/°F)	-5/23	1 to 3 / 2 to 5	2 to 5 / 4 to 10**
Summer temperature <sup>a</sup> (°C/°F)	20/68	2 to 3 / 4 to 5	2 to 6 / 4 to 10**
Over 90 °F (32.2 °C) temperature <sup>a</sup> (days/yr)	5 to 20	—	30 to 60
Over 100 °F (37.7 °C) temperature <sup>a</sup> (days/yr)	0 to 2	—	3 to 28
Ocean pH <sup>a</sup>	7 to 8	—	-0.1 to -0.3 <sup>a</sup>
Annual sea surface temperature (°C/°F)	12/53 <sup>a</sup>	2/3 (in 2050) <sup>a</sup>	4/8
Annual precipitation <sup>a</sup>	103 cm/41 in.	5% to 8%	7% to 14%**
Winter precipitation <sup>a</sup>	21 cm/8 in.	6% to 16%	12% to 30%**
Summer precipitation <sup>a</sup>	28 cm/11 in.	-1% to -3%	-1% to 0%**
Streamflow—timing of spring peak flow <sup>a</sup> (number of calendar days following January 1)	85	-5 to -8	-11 to -13**
Droughts lasting 1–3 months <sup>a</sup> (#/30 yrs)	13	5 to 7	3 to 10**
Snow days (number of days/month) <sup>a</sup>	5	2	-2 to -4**
Length of growing season <sup>a</sup> (days/year)	184	12 to 27	29 to 43

1. The lowest low emissions scenario is referred to as "B1" which predicts that carbon dioxide concentrations in the atmosphere will be 550 ppm or above. The highest high emissions scenario, "A1F1", predicts that carbon dioxide concentrations in the atmosphere will be 970 ppm.

## CLIMATE CHANGE AND IMPACTS IN ALLSTON

For Harvard's Allston campus, the most impactful climate changes will be the changes in air and sea surface temperature, precipitation, and sea level rise. It is reasonable to assume that the areas which are currently at risk for flooding and hurricane surge in Allston today, will continue to be of concern in the future. The impacts from each of these climate changes that are of particular importance for the development of the Allston campus are outlined below, however they are not inclusive of all possible climate change consequences.

- *Ambient Air Temperature:* Increases in ambient temperature will result in more frequent days above 90°F and 100°F. The Report predicts 30-60 days over 90°F by 2100 (up from 12 under current conditions), and between 3-28 days above 100°F by 2100, depending on the emissions scenario. There will also be longer durations of heat waves. These conditions will place a high demand on the electric grid, risking more frequent power outages. There are also air quality implications leading to health concerns of the occupants of the buildings. These conditions may be worse in urban areas, because of the heat-absorbing pavement and buildings.
- *Sea Surface Temperature:* Increases in sea surface temperature may increase the frequency and intensity of severe ocean storms, which could cause flooding events on the Allston campus.
- *Sea Level Rise:* Sea level rise is caused by local coastal subsidence, plus the expansion of water with increased temperatures and the melting of land ice in places such as Greenland and Antarctica. Of concern to the Allston campus are the impacts from sea level rise, coupled with waves from an on-shore storm occurring at high tide (storm surge). The Allston campus is behind the Charles River Dam, owned by the Massachusetts Department of Conservation and Recreation (DCR). However, DCR has yet to study the effectiveness of the dam in a severe storm event, to take into account sea level rise, and more intense storms. If the dam was overtopped or not effective, there is a possibility of flooding in the Allston campus.
- *Precipitation:* There are expected changes in precipitation patterns in Massachusetts that will affect the Allston campus. There will be an increase in overall precipitation. However, it is expected that the precipitation will fall more frequently in the winter and less so in the summer – leading to the extremes of both flooding and droughts. Winter precipitation may increase as much as 30 percent under the high emissions scenario, but due to the changes in air temperatures, it may fall more frequently in the form of rain and ice rather than snow. Ice storms have different implications for building safety and power reliability than snow and rain storms. Extreme precipitation events (those with greater than 2 inches of rainfall) are predicted to increase in frequency. The Allston campus is expected to experience a 100-year flood every two or three years by 2050, and every year to two years by 2100.

For the Allston campus to be resilient to climate change, Harvard University will plan for the key impacts outlined above – especially flooding events, power loss, and extreme heat.



## BRA CLIMATE CHANGE PREPAREDNESS QUESTIONNAIRE

In April 2013, the BRA released a Climate Change Preparedness Questionnaire. Harvard University understands that all development projects subject to Article 80 (including IMP modifications and updates) must complete the Questionnaire regarding project specific strategies and actions to make the projects more resilient to the effects of climate change.

The BRA's priority in requiring climate change adaptation as a component under Article 80 is to ensure that institutions and developers make themselves aware of climate risks and take steps to safeguard existing and future assets. In particular, the BRA is interested in features that incorporate climate change mitigation and adaptation together. The topics addressed in the Questionnaire include:

- Planning for higher temperatures and heat waves.
- Preparing for sea-level rise and storms.
- Flood proofing buildings.
- Building resilience and adaptability.
- Energy demand, including active and passive strategies.
- Green building design components.

These topics closely align with the most likely climate change impacts expected for the Allston campus.

## CLIMATE CHANGE ADAPTATION PROCEDURAL GUIDELINES

The climate change adaptation procedural guidelines described below will serve as a checklist of the climate change related items to be addressed as each of the nine projects in this IMP move through the planning and development stages. They are specific actions that will be undertaken to help the projects incorporate the anticipated climate impacts and vulnerabilities into the design, so the resulting project is more climate resilient and adaptive.

The United States Agency for International Development (USAID) created guidelines to incorporate climate change into project development. Harvard University will use this procedure to ensure that the climate change vulnerabilities are assessed for each of the nine projects in this IMP and that appropriate adaptation measures are implemented. These steps in the procedure are summarized below.

1. *Vulnerability Screening:* A vulnerability screening assesses the potential climate change impacts to a project. If climate change could compromise a project, it should be taken into account. This step is directly in line with the BRA's priority to ensure that institutions and developers make themselves aware of climate risks and take steps to safeguard existing and future assets.
2. *Identify Adaptations:* Based on the expected climate change impacts, identify how to make a project resilient. The climate change resilience strategies outlined in the next section inform this step, to help identify the type of adaptation measures, based on Harvard University's priorities.
3. *Conduct Analysis:* Conduct an analysis to determine how effective the identified adaptation measures will be to make the project climate resilient. Cost and feasibility of a project should be assessed.



4. **Select Course of Action:** A course of action should be determined for the project; including determining which adaptation measures are appropriate, based on the analysis.
5. **Implement Adaptations:** Adaptation measures should be incorporated into the design, construction, and operations of the projects.
6. **Evaluate Adaptations:** The adaptation measure should be assessed based on their effectiveness in making the project more climate resilient and the cost.

The flow chart below explains each of these steps in more detail.

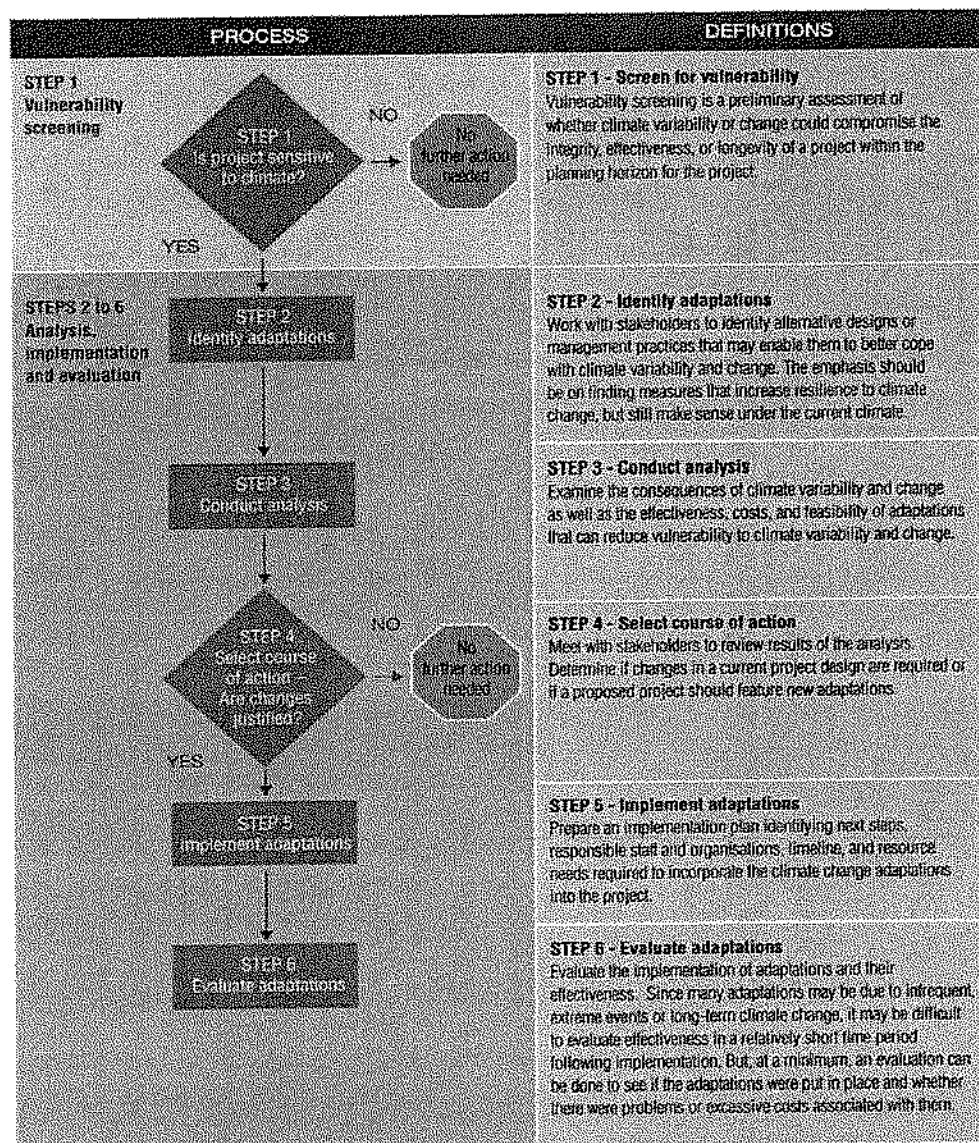


Figure 136: USAID's Process for Incorporating Climate Change into Project Development

Source: Organisation for Economic Co-operation and Development. 2009. *Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance*.

## CLIMATE CHANGE RESILIENCE POLICIES

Infrastructure is generally designed based on historic weather patterns. The key to making the Allston campus resilient is to design an infrastructure plan based on the expected climate change impacts. It will be important to keep system redundancies in mind, design for synergies, and for extremes.

This IMP addresses climate change adaptation by providing a detailed framework of climate change resilience strategies and adaptation measures that each project on the Allston campus will follow, to ensure the buildings remain sound, that all damage from climate impacts are minor and easily repairable, and that the occupants remain safe. The planning and development guidelines which follow are suggested adaptation measures that will be evaluated by Harvard as projects move forward in early planning and in the design process. They inform the climate change adaptation guidelines from the previous section. Harvard University will evaluate the appropriateness and feasibility of these climate change resilience policies in the design of each of the projects in this IMP.

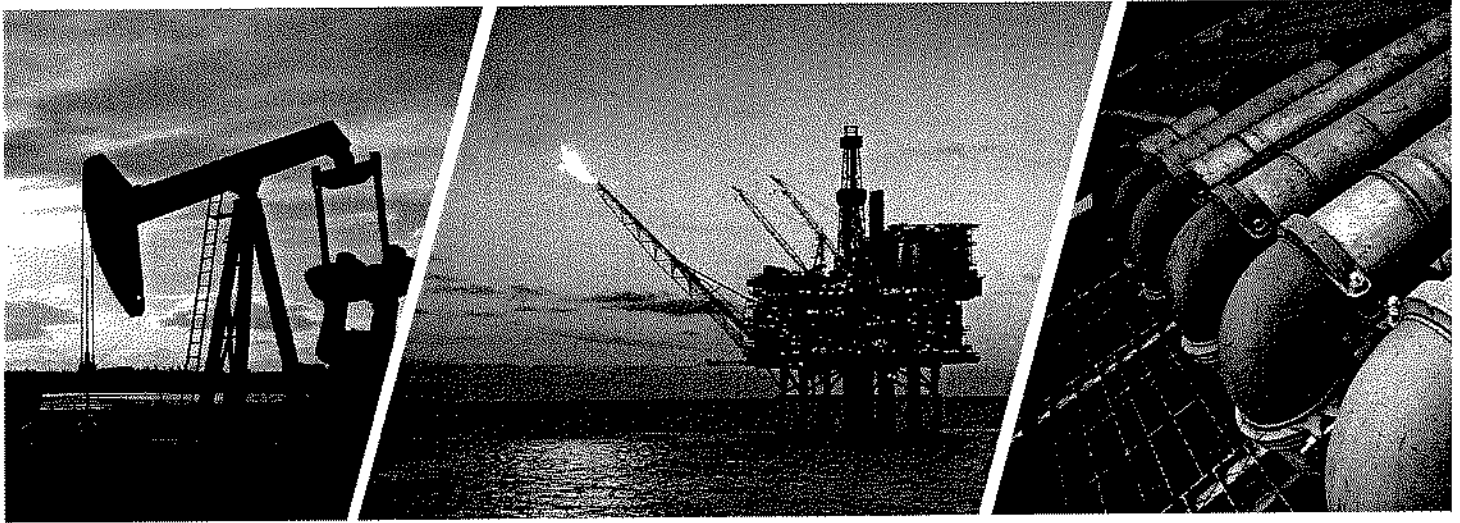
Table 35: Climate Change Resilience Policies

Climate change resilience addressing the change in climate related to:	Ambient Air Temperature	Increased Storm Severity	Sea Level Rise, Storm Surge	Precipitation, Local Flooding
Design stormwater management plans for extreme precipitation events; consider Adaptive Management Techniques		•	•	•
Build infrastructure to withstand and recover from severe storm impacts, included extended flooding events		•	•	•
Diversify the energy supply to the buildings and incorporate redundant energy systems	•	•	•	•
Incorporate innovative renewable energy options to the extent feasible, to hedge against grid power outages	•	•	•	•
Create a microgrid to generate, distribute and regulate within the Allston campus	•	•	•	•
Locate mechanical and electrical installations on the roof, with mechanisms to refuel in the case of a power outage	•	•	•	•
Strategically plants trees to provide shading around buildings, thus providing natural shading canopies	•			
Work with the Department of Conservation and Recreation to ensure that the Charles River Dam continues to be able to regulate the level of the Charles River in the face of severe storms to sea level rise		•	•	•
Incorporate non-mechanical strategies to support building functionality during climate events (e.g. key-operable windows for emergency ventilation)	•	•	•	•
Elevate buildings to or above expected 100-year flood elevations. Methods include building on alternative fill, pier and beams, or bored piles		•	•	•
Locate critical facilities above the first floors and basements of structures		•	•	•

# Exhibit M

# STRANDED ASSETS

PROGRAMME



Stranded assets and the fossil fuel  
divestment campaign: what does  
divestment mean for the valuation  
of fossil fuel assets?

**Authors** Atif Ansar | Ben Caldecott | James Tilbury

## Executive Summary

‘Stranded assets’, where assets suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities, can be caused by a range of environment-related risks. This report investigates the fossil fuel divestment campaign, an extant social phenomenon that could be one such risk. We test whether the divestment campaign could affect fossil fuel assets and if so, how, to what extent, and over which time horizons.

Divestment is a socially motivated activity of private wealth owners, either individuals or groups, such as university endowments, public pension funds, or their appointed asset managers.<sup>1</sup> Owners can decide to withhold their capital—for example, by selling stock market-listed shares, private equities or debt—firms seen to be engaged in a reprehensible activity. Tobacco, munitions, corporations in apartheid South Africa, provision of adult services, and gaming have all been subject to divestment campaigns in the 20th century.

Building on recent empirical efforts, we complete two tasks in this report. First, we articulate a theoretical framework that can evaluate and predict, albeit imperfectly, the direct and indirect impacts of a divestment campaign.

Second, we explore the case of the recently launched fossil fuel divestment campaign. We have documented the fossil fuel divestment movement and its evolution, and traced the direct and indirect impacts it might generate. In order to forecast the potential impact of the fossil fuel campaign, we have investigated previous divestment campaigns such as tobacco and South African apartheid.

## Aims of the fossil fuel divestment campaign

The aims of the fossil fuel divestment campaign are threefold: (i) ‘force the hand’ of the fossil fuel companies and pressure government—e.g. via legislation—to leave the fossil fuels (oil, gas, coal) ‘down there’<sup>2</sup>; (ii) pressure fossil fuel companies to undergo ‘transformative change’ that can cause a drastic reduction in carbon emissions—e.g. by switching to less carbon-intensive forms of energy supply; (iii) pressure governments to enact legislation such as a ban on further drilling or a carbon tax. Inspiration for the fossil fuel divestment idea leans heavily on the perceived success of the 1980s South Africa divestment campaign to put pressure on the South African government to end apartheid.

### Footnotes:

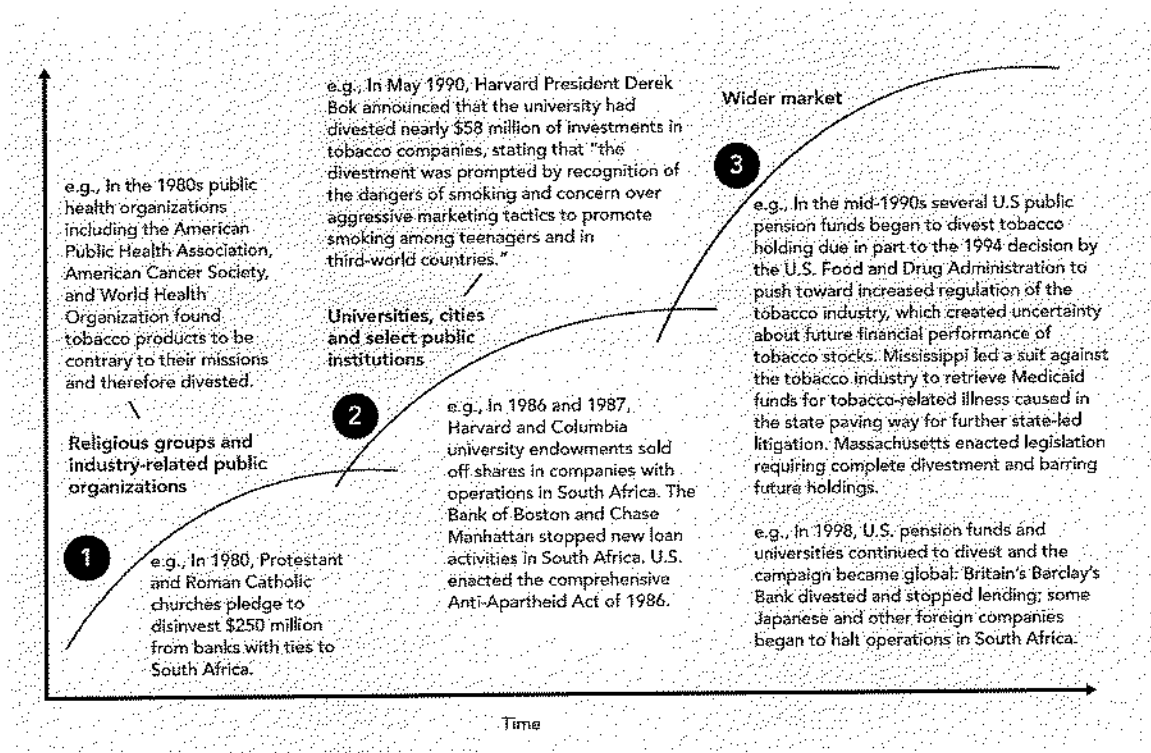
<sup>1</sup> Kasper, Lahn, and Lowenberg, ‘Divestment, Investment Sanctions, and Disinvestment.’

<sup>2</sup> The Economist, ‘Unburnable Fuel.’

## Evolution of divestment campaigns

Divestment campaigns typically evolve over three waves, with examples drawn from the tobacco and South African experiences included in the figure below.

### *The three waves of a divestment campaign*



The first wave begins with a core group of investors divesting from the target industry. All previous divestment campaigns have found their origin in the United States and in the first phase focus on US-based investors and international multilateral institutions. The amounts divested in the first phase tend to be very small but create wide public awareness about the issues.

Both in the case of tobacco and South Africa the campaigns took some years to gather pace during the first wave until universities such as Harvard, Johns Hopkins and Columbia announced divestment in the second phase. Previous research typically credits divestment by these prominent American universities as heralding a tipping point<sup>1</sup> that paved the way for other universities, in the US and abroad, and select public institutions such as cities to also divest.

#### Footnotes:

<sup>1</sup> Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott.'

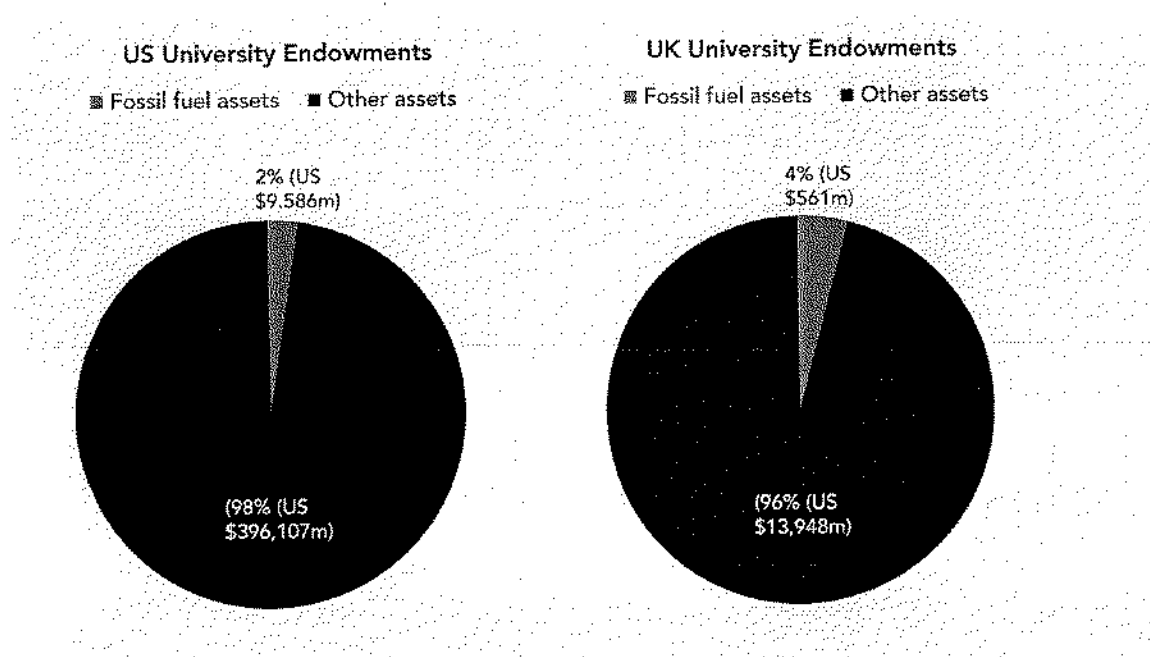
In the third wave, the divestment campaign goes global and begins to target very large pension funds and market norms, such as through the establishment of social responsibility investment (SRI) funds.

Like all previous divestment campaigns, the fossil fuel divestment campaign has started in the US and in the short term focused on US-based investors. In recent months, the campaign has attempted to build global momentum by targeting other universities with large endowments such as the universities of Oxford and Cambridge in the United Kingdom. Despite its relatively short history, the fossil fuel campaign can be said to entering the second wave of divestment.

## Exposure of university endowments and public pension funds to fossil fuel assets

Fossil fuel equity exposure is a ratio of the broader equity market exposure for each fund. Thus, on average, university endowments in the US have 2-3% of their assets committed to investable fossil fuel public equities. The proportion in the UK is higher with an average of 5% largely because the FTSE has a greater proportion of fossil fuel companies.

*Equity exposure to fossil fuel stocks is relatively limited<sup>4</sup>*



Public pension funds, likewise, have 2-5% of their assets invested in fossil fuel related public equities.

### Footnotes:

<sup>4</sup> NACUBO-Commonfund, Study of Endowments; The Economist, 'Unburnable Fuel'; World Federation of Exchanges, 'Statistics'; Acharya, Endowment Asset Management: Investment Strategies in Oxford and Cambridge.



University endowments and public pension funds also invest in bonds. In summary, of the \$12 trillion assets under management among university endowments and public pension funds — the likely universe of divestment candidates — the plausible upper limit of possible equity divestment for oil & gas companies is in the range of \$240-\$600 billion (2-5%) and about another half that for debt.

## Direct impact of divestment

In this report we find that the direct impacts of fossil fuel divestment on equity or debt are likely to be limited. The maximum possible capital that might be divested by university endowments and public pension funds from the fossil fuel companies represents a relatively small pool of funds. Even if the maximum possible capital was divested from fossil fuel companies, their shares prices are unlikely to suffer precipitous declines.

*the direct impacts of fossil fuel divestment on equity or debt are likely to be limited.*

Divested holdings are likely to find their way quickly to neutral investors. Some investors may even welcome the opportunity to increase their holding of fossil fuel companies, particularly if the stocks entail a short-term discount.

We find that there are likely to be greater direct effects on coal valuations. Coal companies represent a small fraction of the market capitalisation of fossil fuel companies. Coal stocks are also less liquid. Divestment announcements are thus more likely to impact coal stock prices since alternative investors cannot be as easily matched as in the oil & gas sector.

Looking back to earlier divestment campaigns also suggests that only a very small proportion of the total divestable funds are actually withdrawn. For example, despite the huge interest in the media and a three-decade evolution only about 80 organisations and funds (out of a likely universe of over 1,000) have ever substantially divested from tobacco equity and even fewer from tobacco debt.

*We find that there are likely to be greater direct effects on coal valuations.*

As a result, if divestment outflows are to have any direct impact on the valuations of fossil fuel companies, they would have to emerge from (i) changes in market norms, or (ii) constrained debt markets.

### *Changes in market norms*

Even when divestment outflows are small or short term and do not directly effect future cash flows, if they trigger a change in market norms that closes off channels of previously available money, then a downward pressure on the stock price of a targeted firm is possible.

The potential trajectory of a divestment campaign might entail small outflows from 'lead investors' in a trickle-like fashion in early phases of a campaign, followed by a more drastic deluge once a certain tipping point has been reached.

### *Debt financing*

The withdrawal of debt finance from fossil fuel companies by some banks or an increase in discount rate is unlikely to pose serious debt financing problems (either in terms of short-term liquidity or Capex) for fossil fuel companies. Our analysis, however, suggests two caveats. First, change in market norms are more relevant in relatively poorly functioning markets. In particular, borrowers in countries with low financial depth will experience a restricted pool of debt financing if any banks pre-eminent in the local financial network withdraw. Second, while an increase in discount rate is unlikely to have an effect on overall corporate finance of major fossil fuel companies, their ability to undertake large Capex projects in difficult technical or political environments will be diminished due to a higher hurdle rate and lower availability of debt financing.

*A diminishing pool of debt finance and a higher hurdle rate will thus have the greatest effect on companies and marginal projects related to coal and the least effect on those related to crude oil.*

While markets for crude oil and many oil products are very liquid, markets for coal are more fragmented and less liquid, with markets for natural gas in-between. A diminishing pool of debt finance and a higher hurdle rate will thus have the greatest effect on companies and marginal projects related to coal and the least effect on those related to crude oil.

### *Indirect impact of divestment*

Even if the direct impacts of divestment outflows are meagre in the short term, a campaign can create long-term impact on the enterprise value of a target firm if the divestment campaign causes neutral equity and/or debt investors to lower the subjective probability of target firm's net cash flows. The outcome of the stigmatisation process, which the fossil fuel divestment campaign has now triggered, poses the most far-reaching threat to fossil fuel companies and the vast energy value chain. Any direct impacts pale in comparison.

*The outcome of the stigmatisation process, which the fossil fuel divestment campaign has now triggered, poses the most far-reaching threat to fossil fuel companies and the vast energy value chain.*

### Stigmatisation outcomes

As with individuals, a stigma can produce negative consequences for an organisation. For example, firms heavily criticised in the media suffer from a bad image that scares away suppliers, subcontractors, potential employees, and customers.<sup>5</sup> Governments and politicians prefer to engage with 'clean' firms<sup>6</sup> to prevent adverse spill-overs that could taint their reputation or jeopardise their re-election. Shareholders can demand changes in management or the composition of the board of directors of stigmatised companies. Stigmatised firms may be barred from competing for public tenders, acquiring licences or property rights for business expansion, or be weakened in negotiations with suppliers. Negative consequences of stigma also include cancellation of multibillion-dollar contracts or mergers/acquisitions.<sup>7</sup> Stigma attached to merely one small area of a large company may threaten sales across the board.

*In almost every divestment campaign we reviewed from adult services to Darfur, from tobacco to South Africa, divestment campaigns were successful in lobbying for restrictive legislation affecting stigmatised firms.*

### Restrictive legislation

One of the most important ways in which stigmatisation could impact fossil fuel companies is through new legislation. In almost every divestment campaign we reviewed from adult services to Darfur, from tobacco to South Africa, divestment campaigns were successful in lobbying for restrictive legislation affecting stigmatised firms.

If during the stigmatisation process, campaigners are able to create the expectation that the government might legislate to levy a carbon tax, which would have the effect of depressing demand, then they will materially increase the uncertainty surrounding the future cash flows of fossil fuel companies. This will indirectly influence all investors—those considering divestment due to moral outrage and those who are neutral—to go underweight on fossil fuel stocks and debt in their portfolios.

*a handful of fossil fuel companies are likely to become scapegoats.*

### Multiple compression

Stigmatisation can lead to a permanent compression in the trading multiples, e.g. the share price to earnings (P/E) ratio, of a target company. For example, Rosneft (RNFTF) produces 2.3 million barrels of oil of day, slightly more than ExxonMobil (XOM). Rosneft was, however, valued at \$88 billion versus \$407 billion for ExxonMobil as of June 2013. Rosneft suffers from the stigma of weak corporate governance. Investors thus place a lower probability on its reserves being converted into positive cash flows. If ExxonMobil (and similar publicly traded fossil fuel firms) was to become stigmatised due to the divestment campaign, its enterprise value per 2P reserves ratio might also slide towards that of Rosneft permanently lowering the value of the stock.

#### Footnotes:

<sup>5</sup>Verger, 'Stigmatiser Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2002.'

<sup>6</sup>Jagers and Kuipers.

<sup>7</sup>Ibid.

### *Stigma dilution*

While the above negative consequences are economically relevant, stigma does not necessarily drive whole industries out of business such that a particular activity stops altogether. Target firms, particularly when a whole industry is being stigmatised, take steps to counteract it. For example, in stigmatised industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification.

*in stigmatised industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification.*

Fossil fuel companies will attempt to dilute stigma and while stigmatisation will slow fossil fuel companies down, its outcomes are unlikely to threaten their survival. The outcomes of stigmatisation will be more severe for companies seen to be engaged in willful negligence and 'insincere' rhetoric<sup>8</sup> saying one thing and doing another.<sup>9</sup> Moreover, a handful of fossil fuel companies are likely to become scapegoats. From this perspective, coal companies appear more vulnerable than oil & gas.

Due to the phased nature of the process of stigmatisation, investors seeking to reduce their fossil fuel exposure in general are thus likely to begin by liquidating coal stocks. Storebrand—a Scandinavian asset manager with \$74 billion under management—has taken precisely such a step.

#### **Footnotes:**

<sup>8</sup> Yoon, Günter-Conti, and Schwan, 'The Effects of Corporate Social Responsibility (CSR) Activities on Companies With Bad Reputations.'

<sup>9</sup> Sæverudi and Skjærseth, 'Oil Companies and Climate Change: Inconsistencies Between Strategy Formulation and Implementation?.'

# Exhibit N

# The Harvard Crimson

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## Harvard's Divestment History

NO WRITER ATTRIBUTED   February 17, 2006

1

**1972:** Students take over Mass. Hall for several days to protest Harvard's ownership of Gulf Oil. Harvard eventually divests.

**1972:** The Advisory Committee on Shareholder Responsibility (ACSR) is created to advise the Corporation Committee on Shareholder Responsibility (CCSR) on issues of ethical investing. The ACSR is made up of 12 members—four students (one undergraduate), four faculty, and four alumni. The CCSR agrees with the ACSR 80% of the time.

**1978:** Harvard divests from South African companies but not companies with investments in South Africa.

**1979:** President Bok defends the 1978 decision in an open letter. Bok writes that “total divestment would almost certainly cause the University to divert millions of dollars in pursuit of a strategy that is legally questionable, widely disputed on its merits, and very likely to prove ineffective in achieving its objectives.”

**1986:** After Archbishop Desmond Tutu calls on Harvard to divest from South Africa, a semester of protest ensues. Activists build shanties in Harvard Yard, and Harvard eventually divests from several other companies with ties to South Africa.

**1990:** Harvard divests from tobacco companies.

**Sept. 17, 2002:** Sixty-five professors sign a petition calling for the University to divest from Israel.

President Summers rejects the petition, saying in a speech that any calls for divestment from Israel are “anti-Semitic in their effect if not in their intent.”

**April 4, 2005:** After considerable student pressure, Harvard announces it will divest from PetroChina, a firm linked to the genocide in Darfur. In doing so, the Corporation points to Bok's writings and upholds the precedent of “a strong presumption against [divestment]” unless there are “exceptional circumstances.”

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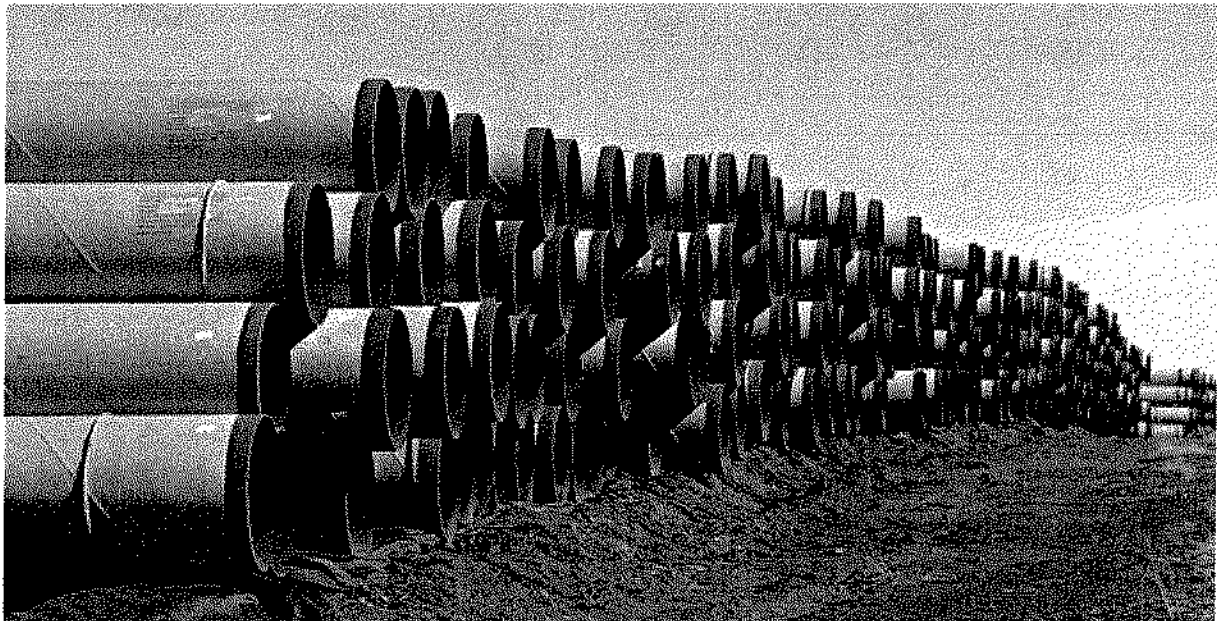
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# We need an apartheid-style boycott to save the planet

## Desmond Tutu

We must stop climate change. And we can, if we use the tactics that worked in South Africa against the worst carbon emitters





'The negative impacts of Keystone XL will affect the whole world, our shared world, the only world we have.'  
Photograph: Sue Ogrocki/AP

Thursday 10 April 2014 12.00 EDT

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29,960	557

Twenty-five years ago people could be excused for not knowing much, or doing much, about climate change. Today we have no excuse. No more can it be dismissed as science fiction; we are already feeling the effects.

This is why, no matter where you live, it is appalling that the US is debating whether to approve a massive pipeline transporting 830,000 barrels of the world's dirtiest oil from Canada to the Gulf of Mexico. Producing and transporting this quantity of oil, via the Keystone XL pipeline, could increase Canada's carbon emissions by over 30%.

If the negative impacts of the pipeline would affect only Canada and the US, we could say good luck to them. But it will affect the whole world, our shared world, the only world we have. We don't have much time.

This week in Berlin, scientists and public representatives have been weighing up radical options for curbing emissions contained in the third report of the UN's Intergovernmental Panel on Climate Change. The bottom line is that we have 15 years to take the necessary steps. The horse may not have bolted, but it's well on its way through the stable door.

Who can stop it? Well, we can, you and I. And it is not just that we can stop it, we have a responsibility to do so. It is a responsibility that begins with God commanding the first human inhabitants of the garden of Eden "to till it and keep it". To keep it; not to abuse it, not to destroy it.

The taste of "success" in our world gone mad is measured in dollars and francs and rupees and yen. Our desire to consume any and everything of

perceivable value - to extract every precious stone, every ounce of metal, every drop of oil, every tuna in the ocean, every rhinoceros in the bush - knows no bounds. We live in a world dominated by greed. We have allowed the interests of capital to outweigh the interests of human beings and our Earth.

Throughout my life I have believed that the only just response to injustice is what Mahatma Gandhi termed "passive resistance". During the anti-apartheid struggle in South Africa, using boycotts, divestment and sanctions, and supported by our friends overseas, we were not only able to apply economic pressure on the unjust state, but also serious moral pressure.

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It is clear that those countries and companies primarily responsible for emitting carbon and accelerating climate change are not simply going to give up; they stand to make too much money. They need a whole lot of gentle persuasion from the likes of us. And it need not necessarily involve trading in our cars and buying bicycles!

There are many ways that all of us can fight against climate change: by not wasting energy, for instance. But these individual measures will not make a big enough difference in the available time.

People of conscience need to break their ties with corporations financing the injustice of climate change. We can, for instance, boycott events, sports teams and media programming sponsored by fossil-fuel energy companies. We can demand that the advertisements of energy companies carry health warnings. We can encourage more of our universities and municipalities and cultural institutions to cut their ties to the fossil-fuel industry. We can organise car-free days and build broader societal awareness. We can ask our religious communities to speak out.

We can actively encourage energy companies to spend more of their resources on the development of sustainable energy products, and we can reward those companies that do so by using their products. We can press our governments to invest in renewable energy and stop subsidising fossil fuels. Where possible, we can install our own solar panels and water heaters.

We cannot necessarily bankrupt the fossil fuel industry. But we can take steps to reduce its political clout, and hold those who rake in the profits accountable for cleaning up the mess.

And the good news is that we don't have to start from scratch. Young people across the world have already begun to do something about it. The fossil fuel divestment campaign is the fastest growing corporate campaign of its kind in history.

Last month, the General Synod of the Church of England voted overwhelmingly to review its investment policy in respect of fossil fuel companies, with one bishop referring to climate change as "the great demon of our day". Already some colleges and pension funds have declared they want their investments to be congruent with their beliefs.

It makes no sense to invest in companies that undermine our future. To serve as custodians of creation is not an empty title; it requires that we act, and with all the urgency this dire situation demands.

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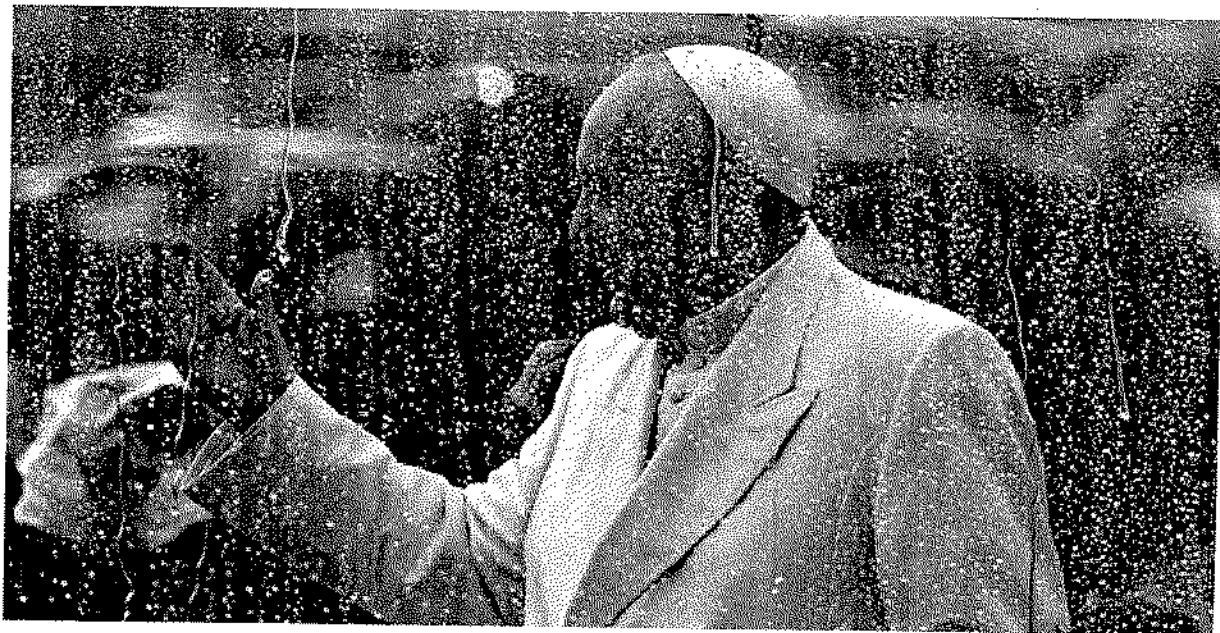
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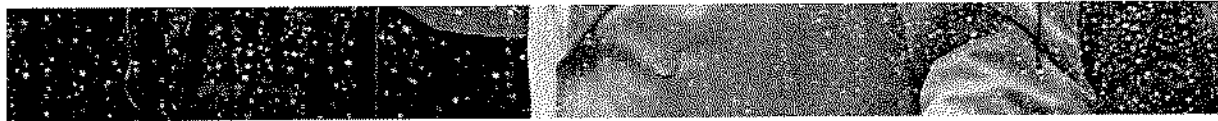
[Climate change](#)

# Faith leaders need to find their voice on climate change

## Christiana Figueres

Religious institutions need to find their voice and set their moral compass on one of the great humanitarian issues of our time





Pope Francis greets pilgrims gathered at Saint Peter's square in Vatican city, Rome. Photograph: Vincenzo Pinto/AFP/Getty Images

Wednesday 7 May 2014 08.17 EDT

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1,310	219

Saving the Earth and its peoples from dangerous climate change is an economic, social and environmental issue - and a moral and ethical one too that goes to the core of many if not all of the world's great faiths.

Unchecked, the rise in greenhouse gas emissions is likely to visit ever higher high levels of suffering on the vulnerable, the marginalised and indeed people everywhere.

The Himalayan country of Nepal, which I have just visited, is a case in point: here unstable lakes are forming from melting glaciers high in the mountains. Some have already burst their banks sending the equivalent of vertical tsunamis down valleys washing away power lines, homes and lives.

Many forward-looking cities, progressive companies and concerned citizens are urging their governments to ink a new climate agreement in 2015.

It is time for faith groups and religious institutions to find their voice and set their moral compass on one of the great humanitarian issues of our time.

Overcoming poverty, caring for the sick and the infirm, feeding the hungry and a whole range of other faith-based concerns will only get harder in a climate challenged world.

In supporting greater ambition by nations, religious and faith groups can assist in shaping a world that is less polluted and damaged and healthier, safer and more secure for every man, woman and child.

There are a myriad of ways in which churches and mosques to synagogues and temples can assist towards an ambitious climate agreement.

[Ourvoices.net](#) is a new 'prayer platform': it will offer a pathway for contemplation, empowerment and action across faiths east and west, north and south.

A world-wide campaign by universities and cities, aimed at divesting pension and endowment funds from fossil fuel shares, is also gaining ground.

South African Anglican Archbishop Desmond Tutu recently called for an anti-apartheid style boycott and disinvestment campaign against the fossil fuel industry.

Some smaller churches are already moving including in Australia and New Zealand.

In the US, 12 religious institutions have already divested from the fossil fuel industry.

In 2013, the United Church of Christ (UCC) in the US became the first national faith communion to vote to divest from fossil fuel companies, with the support of its major investment institution, United Church Funds (UCF). UCF manages investment funds of over 1,000 churches, conferences, associations and other ministries, with more than half a billion dollars in assets.

In February this year, the congregation of Trinity-St Paul's United in Toronto voted unanimously to ensure that its own funds are not invested in any of the world's 200 largest fossil fuel companies.

Multi-faith groups in Australia and North America recently sent a letter to Pope Francis saying it is "immoral" to profit from fossil fuels.

The World Council of Churches at its last Assembly in Busan, Republic of Korea urged its members to act on fossil fuels by 2018.

The Synod of the Church of England recently voted to review its



investment policy in respect to fossil fuels – again a step in the right direction and a potentially powerful signal to its 28 million followers.

Divestment may be a question of morality, but it is prudent too.

Experts estimate that greenhouse gas emissions need to peak in around ten years' time and then come down sharply afterwards.

The organisation Carbon Tracker estimates that in order to achieve this, 60-80% of the fossil fuel reserves of public listed companies need to stay in the ground, unburnt. It means that many fossil fuel investments could rapidly become devalued and 'stranded assets' undermining the value and the return to pensioners of those funds which are heavily exposed.

Many mainstream funds are also going one step further, seeing higher rates of return from a switch into renewables.

Pension Denmark, which divested and then re-invested into clean energy in Europe and the developing world, says this has boosted profits while reducing greenhouse gas emissions.

The good news is that governments have agreed to secure a new universal agreement on climate change when they meet in Paris, France at the end of next year – that is not the challenge. If the world and its people are to be spared dangerous climate change that agreement needs to also be *meaningful* with policies and pathways for carbon neutrality in the second half of the century if a global temperature rise is to be kept under 2C.

Leaders of faith groups, from Christians and Muslims to Hindus, Jews and Buddhists have a responsibility and an opportunity over the next 18 months to provide a moral compass to their followers and to political, corporate, financial and local authority leaders. It is a point I will underline this week when I address a special gathering of church leaders, City of London financiers, security experts and the public at St Paul's Cathedral in London.

In doing so, faiths and religions can not only secure a healthy and habitable world for all but contribute to the spiritual and physical

well-being of humanity now and for generations to come.

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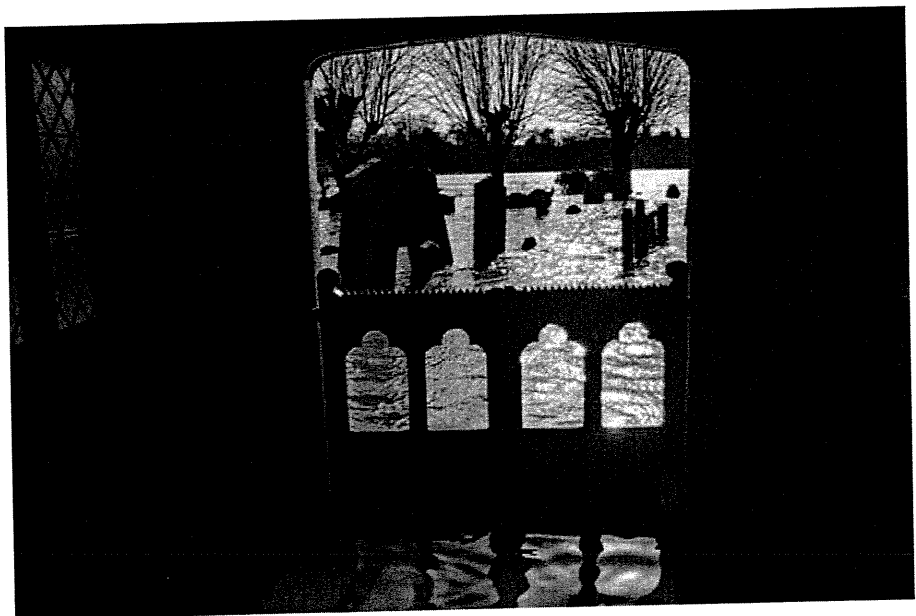
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7 May 2014



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## opinion

# Exhibit Q

EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC), 2012 WL 8141313 (2012)

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**EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC)**

February 10, 2012

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References:

Securities Exchange Act of 1934, Section 14(a); Rule 14a-8

..... Washington Service Bureau Summary .....

**[INQUIRY LETTER]**

February 10, 2012

*VIA E-MAIL*

Office of Chief Counsel

Division of Corporation Finance

Securities and Exchange Commission

100 F Street, NE

Washington, DC 20549

***Re: Exxon Mobil Corporation Shareholder Proposal of the Sisters of St. Dominic of Caldwell, New Jersey et al. Exchange Act of 1934—Rule 14a-8***

Ladies and Gentlemen:

EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC), 2012 WL 8141313 (2012)

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In a letter dated January 23, 2012 (the "No-Action Request"), we requested that the staff of the Division of Corporation Finance of the Securities and Exchange Commission concur that Exxon Mobil Corporation (the "Company") could properly exclude from its proxy statement and form of proxy for its 2012 Annual Meeting of Shareholders (collectively, the "2012 Proxy Materials") a shareholder proposal (the "Proposal") and statements in support thereof submitted by the Sisters of St. Dominic of Caldwell, New Jersey; the Sisters of Charity of Saint Elizabeth; American Baptist Home Mission Societies; Abby O. Caulkins; Catholic Health East; Northwest Women Religious Investment Trust; the Sisters of St. Joseph of Carondelet, St. Louis Province; Home Missioners of America; Gwendolen Noyes; the Sisters of the Holy Family; Walden Asset Management; the Sisters of Providence, Mother Joseph Province; Connecticut Retirement Plans and Trust Funds; the Ursuline Sisters of Tildonk; the Dominican Sisters of Hope; the Sisters of the Holy Names of Jesus and Mary U.S. Ontario Province; the Sisters of the Holy Cross of Notre Dame, Indiana; Catholic Health Partners; Mercy Investment Services, Inc.; the Sisters of St. Joseph, Chestnut Hill, Philadelphia; Jennifer R. Nolan; Convent Academy of the Incarnate Word; Abby A. Rockefeller; Steven C. Rockefeller; Maryknoll Sisters of St. Dominic, Inc.; Congregation of St. Joseph; Congregation of Sisters of St. Agnes; Catholic Healthcare West; the Basilian Fathers of Toronto; and the Benedictine Sisters of Virginia (the "Proponents").

Following submission of the No-Action Request, the Company subsequently has determined (absent withdrawal of the Proposal by the Proponents) to include the Proposal in the 2012 Proxy Materials. Based on this determination, the Company hereby withdraws the No-Action Request relating to the Company's ability to exclude the Proposal pursuant to Rule 14a-8 under the Securities Exchange Act of 1934.

If we can be of any further assistance in this matter, please do not hesitate to call me at (202) 955-8287 or James E. Parsons, the Company's Senior Counsel - Corporate and Securities Law, at (972) 444-1478.

Sincerely,

/s/

Elizabeth A. Ising

Enclosures

cc: James E. Parsons, Exxon Mobil Corporation

Sister Patricia A. Daly, OP, Sisters of St. Dominic of Caldwell, New Jersey

Sister Barbara Aires, SC, Sisters of Charity of Saint Elizabeth

Joyce Haboucha, Rockefeller Financial Asset Management

Sister Kathleen Coll, SSJ, Catholic Health East

Deborah R. Fleming, Northwest Women Religious Investment Trust

Sister Patricia Giljum, CSJ, Sisters of St. Joseph of Carondelet, St. Louis Province

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EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC), 2012 WL 8141313 (2012)

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Donald Kirshbaum, Connecticut Retirement Plans and Trust Funds

Valerie Heinonen, o.s.u., Mercy Investment Services, Inc.

Sister Mary Ellen Holohan, SNJM, Sisters of the Holy Names of Jesus and Mary

Vicki Cummings, Sisters of the Holy Names of Jesus and Mary

Geraldine M. Hoyler, CSC, Sisters of the Holy Cross of Notre Dame, Indiana

Jerome R. Judd, Catholic Health Partners

Susan Smith Makos, Mercy Investment Services, Inc.

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Beatrice A. Reyes, Convent Academy of the Incarnate Word

Catherine Rowan, Maryknoll Sisters of St. Dominic, Inc.

Joellen Sbrissa, CSJ, Congregation of St. Joseph

Stella Storch, OP, Congregation of Sisters of St. Agnes

Susan Vickers, RSM, Catholic Healthcare West

Sister Henry Marie Zimmermann, OSB, Benedictine Sisters of Virginia

101234631.1

**[INQUIRY LETTER]**

January 23, 2012

*VIA E-MAIL*

Office of Chief Counsel

EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC), 2012 WL 8141313 (2012)

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Division of Corporation Finance

Securities and Exchange Commission

100 F Street, NE

Washington, DC 20549

**Re: Exxon Mobil Corporation Shareholder Proposal of the Sisters of St. Dominic of Caldwell, New Jersey et al. Exchange Act of 1934—Rule 14a-8**

Ladies and Gentlemen:

This letter is to inform you that our client, Exxon Mobil Corporation (the “Company”), intends to omit from its proxy statement and form of proxy for its 2012 Annual Meeting of Shareholders (collectively, the “2012 Proxy Materials”) a shareholder proposal (the “Proposal”) and statements in support thereof submitted by the Sisters of St. Dominic of Caldwell, New Jersey; the Sisters of Charity of Saint Elizabeth; American Baptist Home Mission Societies; Abby O. Caulkins; Catholic Health East; Northwest Women Religious Investment Trust; the Sisters of St. Joseph of Carondelet, St. Louis Province; Home Missioners of America; Gwendolyn Noyes; the Sisters of the Holy Family; Walden Asset Management; the Sisters of Providence, Mother Joseph Province; Connecticut Retirement Plans and Trust Funds; the Ursuline Sisters of Tildonk; the Dominican Sisters of Hope; the Sisters of the Holy Names of Jesus and Mary U.S. Ontario Province; the Sisters of the Holy Cross of Notre Dame, Indiana; Catholic Health Partners; Mercy Investment Services, Inc.; the Sisters of St. Joseph, Chestnut Hill, Philadelphia; Jennifer R. Nolan; Convent Academy of the Incarnate Word; Abby A. Rockefeller; Steven C. Rockefeller; Maryknoll Sisters of St. Dominic, Inc.; Congregation of St. Joseph; Congregation of Sisters of St. Agnes; Catholic Healthcare West; the Basilian Fathers of Toronto; and the Benedictine Sisters of Virginia (the “Proponents”).

Pursuant to Rule 14a-8(j), we have:

- filed this letter with the Securities and Exchange Commission (the “Commission”) no later than eighty (80) calendar days before the Company intends to file its definitive 2012 Proxy Materials with the Commission; and
- concurrently sent copies of this correspondence to the Proponents.

Rule 14a-8(k) and Staff Legal Bulletin No. 14D (Nov. 7, 2008) (“SLB 14D”) provide that shareholder proponents are required to send companies a copy of any correspondence that the proponents elect to submit to the Commission or the staff of the Division of Corporation Finance (the “Staff”). Accordingly, we are taking this opportunity to inform the Proponents that if they elect to submit additional correspondence to the Commission or the Staff with respect to this Proposal, a copy of that correspondence should concurrently be furnished to the undersigned on behalf of the Company pursuant to Rule 14a-8(k) and SLB 14D.

### THE PROPOSAL

The Proposal states the following:

Shareholders request that the Board of Directors adopt quantitative goals, based on current technologies, for reducing total greenhouse gas emissions from the Company's products and operations; and that the Company report to shareholders by

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November 30, 2012, on its plans to achieve these goals. Such a report will omit proprietary information and be prepared at reasonable cost.

A copy of the Proposal and related correspondence with the Proponents is attached to this letter as *Exhibit A*.

### BASIS FOR EXCLUSION

We hereby respectfully request that the Staff concur in our view that the Proposal may be excluded from the 2012 Proxy Materials pursuant to Rule 14a-8(i)(11) because the Proposal substantially duplicates another proposal previously submitted to the Company that the Company intends to include in the Company's 2012 Proxy Materials. The Company has submitted a letter to the Staff stating its intention to omit the earlier proposal, but to the extent the Staff does not agree with the Company's position, the Company asserts that it may properly exclude the Proposal under Rule 14a-8(i)(11).

### ANALYSIS

#### **The Proposal May Be Excluded Under Rule 14a-8(i)(11) Because It Substantially Duplicates Another Proposal That The Company Intends to Include In Its Proxy Materials.**

Rule 14a-8(i)(11) provides that a shareholder proposal may be excluded if it "substantially duplicates another proposal previously submitted to the company by another proponent that will be included in the company's proxy materials for the same meeting." The Commission has stated that "the purpose of [Rule 14a-8(i)(11)] is to eliminate the possibility of shareholders having to consider two or more substantially identical proposals submitted to an issuer by proponents acting independently of each other." Exchange Act Release No. 12999 (Nov. 22, 1976). When two substantially duplicative proposals are received by a company, the Staff has indicated that the company must include the first of the proposals in its proxy materials, unless that proposal may otherwise be excluded. *See Great Lakes Chemical Corp.* (avail. Mar. 2, 1998); *Pacific Gas and Electric Co.* (avail. Jan. 6, 1994).

On December 7, 2011, before the December 11, 2011 date upon which the Company received the Proposal, the Company received a proposal from the Province of St. Joseph of the Capuchin Order (the "St. Joseph Proposal"). *See Exhibit B*. The Company has submitted a separate letter to the Staff stating its intention to omit the St. Joseph Proposal, but if the Staff does not agree with the Company that the St. Joseph Proposal may be excluded, then the Company intends to include the St. Joseph Proposal in its 2012 Proxy Materials. In such a case, the Company believes that it may exclude the Proposal under Rule 14a-8(i)(11). The St. Joseph Proposal provides:

**RESOLVED:**shareholders request ExxonMobil's Board of Directors create a Climate Future Task Force including outside climate change experts to study how, like the insurance industry, ExxonMobil, at all levels, will "factor climate change into their models for measuring, pricing, and distributing risk" and other alternatives to its existing business model that depends on continued fossil fuel production and marketing. Barring competitive information, its conclusions shall be shared with requesting shareholders at reasonable cost within a year of the annual meeting.

As discussed below, the Proposal is substantially duplicative of the St. Joseph Proposal because both proposals focus on the same core issue: assessing the business-planning issues related to the risks associated with carbon-based fuel products.

The standard that the Staff traditionally has applied for determining whether proposals are substantially duplicative is whether the proposals present the same "principal thrust" or "principal focus." *Pacific Gas & Electric Co.* (avail. Feb. 1, 1993). If they do so, the more recent proposal may be excluded as substantially duplicative of the first proposal despite differences in the terms or breadth of the proposals and even if the proposals request different actions. *See, e.g., Wells Fargo & Co.* (avail.



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Feb. 8, 2011) (concurring that a proposal seeking a review and report on the company's internal controls related to loan modifications, foreclosures and securitizations was substantially duplicative of a proposal seeking a report that would include "home preservation rates" and "loss mitigation outcomes," which would not necessarily be covered by the other proposal); *Ford Motor Co. (Leeds)* (avail. Mar. 3, 2008) (concurring that a proposal to establish an independent committee to prevent Ford family shareholder conflicts of interest with non-family shareholders substantially duplicated a proposal requesting that the board take steps to adopt a recapitalization plan for all of the company's outstanding stock to have one vote per share); *Siebel Systems, Inc.* (avail. Apr. 15, 2003) (permitting the exclusion of a proposal requesting that the board "adopt a policy that a significant portion of future stock option grants to senior executives shall be performance-based" because it substantially duplicated a prior proposal requesting that the company "adopt and disclose in the Proxy Statement, an 'Equity Policy' designating the intended use of equity in management compensation programs"); *Wal-Mart Stores, Inc.* (avail. Apr. 3, 2002) (permitting the exclusion of a proposal requesting a report on gender equality in employment at Wal-Mart because the proposal substantially duplicated another proposal requesting a report on affirmative action policies and programs addressing both gender and race).

The Staff has previously concurred that multiple proposals addressing business risks associated with carbon-based fuels were substantially duplicative despite differences in their scope and breadth. In *Exxon Mobil Corp. (Goodwin et al.)* (avail. Mar. 19, 2010), the Staff permitted the exclusion of a proposal calling for the Board to consider, in its strategic planning process, the risk that future demand for fossil fuels could be significantly lower than the company projected (the "Fossil Fuel Proposal") as substantially duplicative of an earlier proposal requesting a report on the financial risks of climate change (the "Climate Change Proposal"). Even though the details of the proposals' resolutions varied, with one addressing forecasts concerning consumption of fossil fuels and the other addressing climate change, both spoke principally to concerns about the use of, and reliance on, carbon-based fuels. Similarly, in *Chevron Corp.* (avail. Mar. 23, 2009, *recon. denied* Apr. 6, 2009), the Staff agreed that a proposal on the environmental effect of "the company's expanding oil sands operations in the Canadian boreal forest" could be excluded as substantially similar to a proposal regarding "reducing total greenhouse gas emissions from [Chevron's] products and operations." Both of these proposals addressed environmental concerns arising out of the production and use of carbon-based fuels. Despite the differences in the scope and requested action of these proposals, the Staff agreed that the proposals shared the same principal thrust.

Consistent with the precedent cited above, the Proposal and the St. Joseph Proposal share the same principal thrust. The Proposal, like the Fossil Fuel Proposal in *Exxon Mobil*, addresses a concern that increased regulation of greenhouse gas emissions will make it necessary for companies not to be overly reliant on carbon-based fuel products. Similarly the St. Joseph Proposal, like the *Exxon Mobil* Climate Change Proposal, discusses the risk that climate change, which is believed to be a side effect of carbon-based fuel, might pose to a company's value. And, as with the proposals in *Chevron*, the St. Joseph Proposal, which requests that the Company examine how climate change factors into its models for measuring, pricing and distributing risk, has the same principal focus as the Proposal, which concerns the greenhouse gases released by carbon-based fuels that are believed to represent the most controllable human input to climate change.

Similar to the precedent discussed above, the principal thrust addressed by the Proposal and the St. Joseph Proposal is the same: assessing the business-planning issues related to the risks associated with carbon-based fuel products.

This shared principal thrust and focus is evidenced by the following:

- Both proposals refer to the risk of increased regulation on carbon-based forms of energy and the negative impact this could have on the Company's business model. The Proposal highlights the concern that the Company's current business model might be placed at risk by the "restrictions on high carbon energy" which "[o]ne can presume" will eventually be enacted. It continues to say that "[e]conomists are now concerned about a 'carbon bubble' as current investments will produce reserves that will be stranded by such policy restrictions." Similarly, the St. Joseph Proposal quotes an article stating that "insurers already factor

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climate change into their models for measuring, pricing, and distributing risk,” and notes that a companion editorial promotes “legislation to curb carbon emissions.”

- Each proposal claims that the Company has not taken sufficient steps to mitigate possible risks stemming from reliance on carbon-based fuel products. The Proposal notes that, despite the Company’s disclosures to the Carbon Disclosure Project, it “had a net increase of 3 percent in [greenhouse gas] emissions from operations in 2010 over 2009.” The Proposal also states that “[n]one of [the Company’s] major strategies to date are low carbon.” Similarly, the St. Joseph Proposal states that despite the Company’s contributions to MIT “it resists using MIT’s finding when these might force [the Company] to rethink its existing business model which is almost totally dependent on continuing fossil fuel burning.”

- Both proposals address business planning. The Proposal states that it “is long overdue for ExxonMobil to articulate a clear and cohesive business strategy for wide scale emissions reductions.” It calls for clear-cut goals to “focus management on our company’s ability to significantly reduce our carbon footprint by implementing a disciplined business strategy to cut emissions from our operations and products.” The St. Joseph Proposal criticizes the Company for not “rethink[ing] its existing business model,” and it requests a task force that will both study how the Company can revise its risk models by factoring climate change into them and “offer alternatives to its existing business model that depends on continued fossil fuel production and marketing.”

- Each proposal cites climate change as an example of a risk associated with carbon-based fuels. The Proposal notes that “businesses and countries are taking significant steps to reduce emissions, as costs to taxpayers, shareholders and economies from severe weather events mount.” The St. Joseph Proposal warns that, without “drastic changes to energy and industrial policy” long-term average global temperatures may rise more than two degrees Celsius, “seen by many scientists as the maximum increase without serious climate disruption.”

While the Proposal and the St. Joseph Proposal request slightly different actions—the Proposal requests that the board adopt quantitative goals for reducing greenhouse gas emissions, while the St. Joseph Proposal requests that the Company form a task force to study how the Company will factor climate change into its risk models and to offer alternatives to its existing business model—that does not change the fact that they have the same principal focus. The Staff previously concurred that two proposals were substantially similar where one, paralleling the language of the Proposal, called for the company to adopt quantitative goals on reducing greenhouse gases and the other requested a company to assess the steps it was taking to reduce greenhouse gases and fuel standards. *See General Motors Corp.* (avail. Mar. 13, 2008). *See also Ford Motor Co.* (avail. Feb. 19, 2004) (concurring in the exclusion of a proposal calling for internal goals related to greenhouse gases as substantially similar to a proposal calling for a report on historical data on greenhouse gas emissions and the company’s planned response to regulatory scenarios).

Finally, because the Proposal substantially duplicates the St. Joseph Proposal, if the Company were required to include both proposals in its proxy materials, there is a risk that the Company’s shareholders would be confused when asked to vote on both proposals. In such a circumstance, shareholders could assume incorrectly that there must be substantive differences between the two proposals and the requested reports. As noted above, the purpose of Rule 14a-8(i)(11) “is to eliminate the possibility of shareholders having to consider two or more substantially identical proposals submitted to an issuer by proponents acting independently of each other.” Exchange Act Release No. 12999 (Nov. 22, 1976).

Accordingly, the Company believes that the Proposal may be excluded as substantially duplicative of the St. Joseph Proposal.

### **CONCLUSION**

Based upon the foregoing analysis, we respectfully request that the Staff concur that it will take no action if the Company excludes the Proposal from its 2012 Proxy Materials.

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We would be happy to provide you with any additional information and answer any questions that you may have regarding this subject. Correspondence regarding this letter should be sent to [shareholderproposals@gibsondunn.com](mailto:shareholderproposals@gibsondunn.com). If we can be of any further assistance in this matter, please do not hesitate to call me at (202) 955-8287 or James E. Parsons, the Company's Senior Counsel - Corporate and Securities Law, at (972) 444-1478.

Sincerely,

/s/

Elizabeth A. Ising

Enclosures

cc: James E. Parsons, Exxon Mobil Corporation

Sister Patricia A. Daly, OP, Sisters of St. Dominic of Caldwell, New Jersey

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cc: Jerome R. Judd, Catholic Health Partners

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Susan Vickers, RSM, Catholic Healthcare West

Sister Henry Marie Zimmermann, OSB, Benedictine Sisters of Virginia

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**[APPENDIX]**

December 12, 2011

Mr. Rex W. Tillerson, CEO

ExxonMobil Corporation

5959 Las Colinas Blvd.

Irving, TX 75039-2298

Dear Mr. Tillerson,

As long time investors in ExxonMobil the Dominican Sisters of Caldwell, NJ are increasingly concerned about the impact of climate change on future generations on this planet. We have been grateful for the dialogues we have had with executives of ExxonMobil over the years. We believe that now more than ever our company needs to produce a clear business plan committing to greenhouse gas emissions reductions in both operations and product.

The Community of the Sisters of St. Dominic of Caldwell, NJ is the beneficial owner of two hundred (200) shares of ExxonMobil, which we intend to hold at least until after the next annual meeting. Verification of ownership is attached.

I am hereby authorized to notify you of our intention to file the attached proposal regarding reducing greenhouse gas emissions for consideration and action by the stockholders at the next annual meeting. I hereby submit it for inclusion in the proxy statement in accordance with rule 14-a-8 of the general rules and regulations of The Securities and Exchange Act of 1934.

**EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC), 2012 WL 8141313 (2012)**

While there will be other shareholders submitting this resolution, I will serve as the primary contact for these concerns. However, all co-filers respectfully request direct communication from the company. I am happy to help provide addresses for electronic communication to facilitate time, and avoid the waste of resources.

Sincerely,

/s/

Sister Patricia A. Daly, OP

Corporate Responsibility Representative

**[APPENDIX]**

**Reduce Greenhouse Gas Emissions ExxonMobil 2012**

**WHEREAS:**

2010 was a record year for greenhouse gas (GHG) emissions with a 5.9 percent increase over the 2009 global estimate. The increase is larger than the worst-case scenario expected by United Nations scientists when the 2008 Intergovernmental Panel on Climate Change report was issued.

It is widely agreed that research has understated the enormity of the impact of GHG emissions. Investors expect ExxonMobil to take leadership in developing solutions to this global challenge as the company plays such a critical role in energy markets.

ExxonMobil discloses its GHG emissions to the Carbon Disclosure Project (CDP) as do well over 3,000 corporations. The CDP "Carbon Action Initiative," backed by investors managing US \$7.6 trillion in assets under management, asks the world's largest companies to make emissions reductions, implement investments in GHG reductions, and publicly disclose emissions reductions targets through the established CDP annual survey.

Our company though had a net increase of 3 percent in GHG emissions from operations in 2010 over 2009.

ExxonMobil's December 2011 Energy Outlook suggests our company will make significant investments in deepwater, shale oil and fracking plays, all of which contribute significant GHGs emissions. None of its major strategies to date are low carbon. Even though substantial U.S. and international policy is stalled, businesses and countries are taking significant steps to reduce emissions, as costs to taxpayers, shareholders and economies from severe weather events mount. One can presume that restrictions on high carbon energy will eventually be enacted. Economists are now concerned about a "carbon bubble" as current investments will produce reserves that will be stranded by such policy restrictions.

It is long overdue for ExxonMobil to articulate a clear and cohesive business strategy for wide scale emissions reductions. Shareholders' request for GHG reduction goals during the last six years are consistent with ExxonMobil's own Environmental Business Planning process, which is used "to identify key environmental drivers, set targets in key focus areas, and identify projects and actions to achieve these targets." Clear-cut goals will focus management on our company's ability to significantly reduce our carbon footprint by implementing a disciplined business strategy to cut emissions from our operations and products.

EXXON MOBIL CORP. (SISTERS OF ST. DOMINIC), 2012 WL 8141313 (2012)

**AESOLVED:** Shareholders request that the Board of Directors adopt quantitative goals, based on current technologies, for reducing total greenhouse gas emissions from the Company's products and operations; and that the Company report to shareholders by November 30, 2012, on its plans to achieve these goals. Such a report will omit proprietary information and be prepared at reasonable cost.

**[STAFF REPLY LETTER]**

February 10, 2012

Elizabeth A. Ising

Gibson, Dunn & Crutcher LLP

Eising@gibsondunn.com

**Re: Exxon Mobil Corporation**

Dear Ms. Ising:

This is in regard to your letter dated February 10, 2012 concerning the shareholder proposal submitted by The Sisters of St. Dominic of Caldwell, New Jersey and several co-proponents for inclusion in ExxonMobil's proxy materials for its upcoming annual meeting of security holders. Your letter indicates that ExxonMobil will include the proposal in its proxy materials for its upcoming annual meeting of security holders, and that ExxonMobil therefore withdraws its January 23, 2012 request for a no-action letter from the Division. Because the matter is now moot, we will have no further comment.

Copies of all of the correspondence related to this matter will be made available on our website at <http://www.sec.gov/divisions/corpfin/cf-noaction/14a-8.shtml>. For your reference, a brief discussion of the Division's informal procedures regarding shareholder proposals is also available at the same website address.

Sincerely,

Michael J. Reedich

Special Counsel

cc: Sister Patricia A. Daly

pdaly@tricri.org

...The staff will not comment on a shareholder proposal, which requests that this company's board of directors adopt quantitative goals for reducing total greenhouse gas emissions from the company's products and operations, where the company's agreement to include the proposal in its proxy materials and withdrawal of its request for a no-action letter has rendered the matter moot.

# Exhibit R

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**Fossil fuels** Guardian Environment Network

# Al Gore backs growing fossil fuel divestment campaign

A US campaign to encourage universities and cities to drop their investments in fossil fuel companies is gaining momentum







Al Gore is backing a US campaign of divestment in fossil fuel companies. Photograph: Mark Lennihan/AP

## Carey L. Biron for IPS, part of the Guardian Environment Network

Monday 11 February 2013 12.36 EST

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A months-old national campaign to convince U.S. colleges, universities and city governments to withdraw investments from the world's largest oil and gas companies has seen some notable initial successes.

On Tuesday, a city supervisor in San Francisco introduced resolutions calling on the city's retirement fund to "divest" all money it has in fossil fuel companies and gun manufacturers. That followed a significant recent decision by the city of Seattle's two-billion-dollar retirement fund to actively shed its stocks in companies that contribute to climate change.

And Wednesday, former U.S. vice-president Al Gore, a prominent climate activist and Harvard alum, sided with a strengthening campaign to get that school to back out of its oil and gas investments.

"If I were a student, I would support what you're doing," Gore told students, speaking on campus at Harvard. "But if I were a board member I would do what I did when we took up the Apartheid issue. This is an opportunity for learning and the raising of awareness, for the discussion of sustainable capitalism."

In fact, the divestment movement here in the U.S., which has burgeoned following the November presidential election, took its inspiration from the anti-Apartheid experience.

"During the 1980s, 155 schools came out against the South African Apartheid, and so we're modelling a lot of what we're doing now on that," Jamie Henn, communications director for 350.org, an advocacy group that has spearheaded the divestment push, told IPS.

“So, it made perfect sense for us to start with universities, as these institutions have a special responsibility to make their investments live up to their missions. Many have publicly committed to sustainability and solving the big issues of the day, yet many are still putting tens of millions of dollars into companies that are wreaking havoc on the planet.”

Hampshire College, a small school in Massachusetts, was the first to follow the campaign’s lead; in 1979, it was also the first school in the United States to divest from South African holdings. Two more colleges have now followed suit.

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While these are each small and notably progressive schools, Henn reports that student groups have sprung up around the issue on the campuses of at least 230 schools, including at each of the elite Ivy League schools and several large state schools. At least 20 institutions have now started processes to look at divestment options.

“We’ve been blown away by how quickly the campaign has spread - right now it’s the fastest-moving student environmental campaign of the past decade, maybe ever,” Henn says.

“And an increasing number of students are also increasing pressure on politicians to take action. Look at these numbers - Harvard’s endowment is 32 billion dollars. That perks up the ears of a lot of people.”

The Harvard administration was initially cold on the idea of divestment, however, reportedly refusing for months to agree to a meeting between the school president and student representatives on the issue. But following a concerted campaign - and a campus-wide referendum in which nearly three-quarters of students voted in favour of divestment - recent weeks have seen a significant softening of tone.

“Finally, at the end of the semester, the administration felt enough pressure to agree to a meeting with a couple of members of the school’s board, and that took place last Friday,” Alli Welton, a co-coordinator of Divest Harvard, a student group, told IPS.

“In that meeting, the board members said they were very concerned about climate change, but questioned whether divestment would have a significant impact on the issue. However, they also noted that divestment of direct holdings wouldn’t have a large impact on the school’s endowment.”

Indeed, that latter contention is supported by a recent report by Aperio Group, an investment management firm, which found that divesting of climate change-related holdings would bring with it remarkably little risk for university endowments.

Welton notes that negotiations between students and the administration are going to continue (“That’s pretty good after a semester of not talking to us”), with a decision slated for February 15. While she says she’s “very encouraged” by the administration’s new willingness to talk, Welton refers to a far larger impact on the student body.

“I’ve never seen anything like this happen around climate change on campus - it seems like students know a lot more about this issue and are feeling its urgency,” she says. “It really feels as though divestment is a very clear way that we can effect change.”

Critically for such a large issue as climate change - and one on which many activists have repeatedly felt let down by failures at the national and international levels to agree on substantive long-term solutions - Welton notes that organising around investments makes a massive issue feel more immediate.

“These local-level initiatives make climate change more accessible for people, and make it more possible for them to get involved,” she says. “We can see very clearly that we’re part of something gigantic, and that definitely creates identity for a national and even international movement.”

According to 350.org's Henn, the second phase of the organisation's divestment strategy will focus on city governments and pension funds. In this, Seattle's actions have already become a model of sorts.

Led by the city's mayor, Mike McGinn, in turn responding to exhortations by 350.org, last month Seattle's retirement and pension funds reported that they had some 17 million dollars invested in oil and gas companies. On Jan. 31, those funds moved to create a mechanism to look into how potential divestments could take place.

"This was a critical first step, as there was no such mechanism even in existence," Aaron Pickus, a spokesperson for the mayor, told IPS.

While no decision has yet been made on how that money should now be used, Pickus says, "There has been a general request that it not be re-invested in companies that are polluting our climate."

The public response has been positive, he notes, even while constituents understand that the city is at the beginning of a process that could span the next half-decade.

"There is a rapidly growing sense that something - in fact, many concrete things - need to start happening to change the trend on how we approach climate change," Pickus says.

"That includes how we invest - not just in pensions but also, more generally, how we're spending taxpayer money. For instance, are we going to invest in new, wider highways or in green transit options?"

This article was amended on February 11, 2013, to correct a quote by Alli Welton relating to the effect of divestment on the endowment of Harvard College.

Fossil fuels   Al Gore   Greenhouse gas emissions   Activism

# Exhibit S

# Harvard Faculty For Divestment

**Moving Our Endowment Beyond Fossil Fuels**

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## Harvard Faculty: Join Us



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**We began with 93 signatures.**

**We now have 210,**

**and we continue to grow.**

**Join us!**

To view our original Faculty Open Letter of April 10, 2013, [please click here](#).

**Harvard Faculty Members: Add Your Name to the Open Letter**

FIRST NAME \*

LAST NAME \*

EMAIL \*

HARVARD TITLE AND SCHOOL

The statements construe divestment as a political act discordant with purposes of the endowment. We do not dispute the political character of divestment. We wish to remind the Corporation that Harvard boasts a tradition of divestment for ethical purposes—and that now, with massive global consequences from climate change occurring, continued investment represents a political act, too. We therefore ask that the Corporation begin, as soon as possible, to divest from fossil fuel corporations.

[Signature]

**Sign Now!**

210 signatures

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# Exhibit T

# FOSSIL FREE

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## DIVESTMENT COMMITMENTS

A growing number of institutions are committing to divest from fossil fuels. This page lists the commitments from colleges and universities, cities, counties, religious institutions, and other institutions. You can click on each name for more information about the type of commitment they're making.

### Colleges and Universities

[College of the Atlantic +](#)[Foothill-De Anza Community College Foundation +](#)[University of Glasgow, United Kingdom +](#)[Green Mountain College +](#)[Hampshire College +](#)[Naropa University +](#)[Peralta Community College District +](#)

**Pitzer College +**

**Prescott College +**

**San Francisco State University Foundation +**

**Stanford University +**

**Sterling College +**

**Unity College +**

**University of Dayton +**

## **Cities**

**Seattle, WA +**

**San Francisco, CA +**

**Portland, OR +**

**Eugene, OR +**

**Berkeley, CA +**

**Richmond, CA +**



**Santa Monica, CA +**

**Boulder, CO +**

**Santa Fe, NM +**

**Madison, WI +**

**Bayfield, WI +**

**State College, PA +**

**Ithaca, NY +**

**Truro, MA +**

**Provincetown, MA +**

**Providence, RI +**

**Cambridge, MA +**

**Northampton, MA +**

**Ann Arbor, MI +**

**Boxtel, the Netherlands +**

**New London, CT +**

**Amherst, MA +**

**Sudbury, MA +**

**Concord, MA +**

**Framingham, MA +**

**Dunedin, New Zealand +**

**Oakland, California +**

**Oxford, United Kingdom +**

**Eugene, OR +**

**City of Brisbane, CA +**

## **Counties**

San Francisco, CA

Dane County, WI

## **Religious Institutions**

United Church of Christ – National

Massachusetts United Church of Christ

Minnesota United Church of Christ

Evangelical Lutheran Church of Oregon

First Unitarian Church of Salt Lake City, UT

First Parish Unitarian Universalist Church in Cambridge, MA

Portsmouth South Church Unitarian First Unitarian Church of Pittsfield, ME  
First Unitarian Society of Milwaukee, WI  
First Presbyterian Palo Alto, CA  
Uniting Church, New South Wales & ACT, Australia  
Dover Friends Meeting, Dover, NH  
Melbourne Unitarian Church, Australia  
Unitarian Universalist Society of Amherst, MA  
Anglican Diocese of Wellington, New Zealand  
Anglican Diocese of Auckland, New Zealand  
Anglican Diocese of Dunedin, New Zealand  
Anglican Diocese of Waipapu, New Zealand  
Anglican Diocese of Waikato and Taranaki, New Zealand  
Anglican Church of Aotearoa, New Zealand and Polynesia  
Brighthelm Church, Brighton, UK  
Society for Community Work  
Episcopal Diocese of Massachusetts, MA  
Maine Council of Churches, ME  
Trinity St. Paul's United Church, Toronto, Canada  
Quakers in Britain  
Diakonia, Sweden  
Colorado Ratnashri Sangha  
First Unitarian Church, Ottawa  
Union Theological Seminary, New York City  
First Religious Society of Newburyport, MA  
Unitarian Society of Northampton & Florence, MA  
Unitarian Universalist Association  
Central Philadelphia Monthly Quaker Meeting, PA, USA  
Lansdowne Monthly Quaker Meeting, PA, USA  
Westtown Monthly Quaker Meeting, PA, USA  
Lehigh Valley Monthly Quaker Meeting, PA, USA  
Old Haverford Monthly Quaker Meeting, PA, USA  
Newtown Monthly Quaker Meeting, PA, USA  
Haverford Quarterly Quaker Meeting, PA, USA  
Jamaica Plain Unitarian Universalist, NY, USA  
World Council of Churches  
Community Friends, OH, USA  
Uniting Church in Australia Assembly, Australia  
Franciscan Sisters of Mary, MO, USA  
Episcopal Diocese of Western Massachusetts, MA, USA  
Church of Sweden

## Foundations

Divest-Invest Philanthropic Group  
 Sierra Club Foundation  
 Wallace Global Fund  
 Jubitz Family Foundation  
 The Educational Foundation of America  
 Park Foundation  
 The Russell Family Foundation  
 Compton Foundation  
 KL Felicitas Foundation  
 The Chorus Foundation  
 Singing Field Foundation  
 Nia Community Foundation  
 The John Merck Fund  
 The Joseph Rowntree Charitable Trust  
 Solidago Foundation  
 Jessie Smith Noyes Foundation  
 Granary Foundation  
 The Schmidt Family Foundation  
 Ben & Jerry's Foundation  
 Pax Fund  
 Ross Knowles Fund  
 Madden Sainsbury Foundation  
 Earth Welfare Foundation  
 McKinnon Family Foundation  
 The Hunt Foundation  
 Pace Foundation  
 Mullum Trust  
 NSRC Fund  
 Robert and Patricia Switzer Foundation

## Other Institutions

Conservation Breeding Specialist Group  
 Santa Fe Art Institute  
 New Progressive Alliance  
 Council of Canadians  
 Santa Clara Valley Water District  
 Students' Society of McGill University (pdf)  
 Island Institute, Maine, US  
 British Medical Association

# Exhibit U

Maffei v. Roman Catholic Archbishop of Boston, 449 Mass. 235 (2007)

867 N.E.2d 300

449 Mass. 235  
Supreme Judicial Court of Massachusetts,  
Middlesex.

- 1 Of the Waldo M. Maffei Revocable Trust.  
2 Maureen Maffei, as trustee of the Waldo M. Maffei  
Revocable Trust, and Eileen Hanafin.

Catherine R. MAFFEI, individually  
& as trustee,<sup>1</sup> & others<sup>2</sup>

v.

ROMAN CATHOLIC ARCHBISHOP OF BOSTON.

Argued Feb. 8, 2007. | Decided May 25, 2007.

**Synopsis**

**Background:** Parishioners who had gifted real property to Roman Catholic Archbishop of Boston (RCAB), a corporation sole, for use as church brought action challenging RCAB's transfer of the real estate and other property to diocese, in connection with "suppression" of parish, i.e., end of existence of parish under Roman Catholic Code of Canon Law, with plaintiffs seeking declaratory and injunctive relief in the form of resulting or constructive trust in their favor, and also asserting claims for breach of contract and negligent misrepresentation. The Superior Court Department, Middlesex County, Herman J. Smith, Jr., J., 2006 WL 4496669, granted summary judgment to defendant. Direct appellate review was granted.

**Holdings:** The Supreme Judicial Court, Marshall, C.J., held that:

- [1] First Amendment restricted the issues which were within jurisdiction of the courts;  
[2] evidence did not establish fiduciary duty;  
[3] evidence did not establish fraud; and  
[4] imposition of resulting trust was not warranted.

Affirmed.

**Attorneys and Law Firms**

**\*\*305** Paul S. Hughes, Newton, & Joseph J. Balliro, Jr., for the plaintiffs.

Francis J. O'Connor, Boston (Mark C. Rogers & Wilson D. Rogers, Jr., with him) for the defendant.

Sharon M. Harrington, for Council of Parishes, amicus curiae, submitted a brief.

Mary K. Ames & John M. Galvin, for Grace Corrigan & others, amici curiae, submitted a brief.

Present: MARSHALL, C.J., GREANEY, IRELAND, SPINA, COWIN, & CORDY, JJ.

**Opinion**

MARSHALL, C.J.

**\*236** In this case concerning the transfer of real estate and other property from parishioners to their diocese, the plaintiff parishioners ask us, among other claims, to rule that the spiritual authority of a clergy member over members of his faith, without more, gives rise to a cognizable fiduciary relationship, or alternatively a legal relationship of "trust and confidence." We decline to do so.

The case arises from the suppression<sup>3</sup> of St. James the Great Parish in Wellesley (St. James) in 2004 by the Roman Catholic Archbishop of Boston (RCAB), a corporation sole. See St. 1897, c. 506. St. James was built in 1958 on an eight-acre parcel of land (property) acquired by the RCAB in 1946 from Waldo M. Maffei (Waldo) and his five siblings. Waldo and his sister voluntarily transferred their respective interests in the property to the RCAB for no monetary payment, and Waldo's four brothers each received \$3,000 for their respective shares. In connection with the property transaction, Waldo's wife, Catherine Maffei (Catherine), released her rights of "dower and homestead." The church was named in honor of Waldo's father, James Maffei (James), allegedly in fulfillment of an oral agreement between the RCAB and the Maffei family that the property would "forever" be used as the site of a church so named, although the plaintiffs' verified complaint alleges, and the judge found, that Waldo had been prepared to donate his interest in the property to the RCAB

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before any alleged oral agreement about the future use of the property was made.

3 “Suppression” is a term of the Roman Catholic Code of Canon Law, which means to end the existence of a parish.

After St. James closed, Catherine, individually, and with her daughter, Maureen Maffei, as trustee of the Waldo M. Maffei Revocable Trust<sup>4</sup> (collectively, Maffeis), filed a verified complaint in the Superior Court seeking declaratory and injunctive relief in the form of a resulting or constructive trust on the property in their favor, and for breach of contract and negligent misrepresentation. Their claims center on the alleged oral agreement between the Maffei siblings and the RCAB that the property \*237 would be maintained in perpetuity as a church in honor of Waldo's father, as well as on the RCAB's failure to draft a deed reflecting that, if the property were not so used, ownership would revert to the Maffeis. The Maffeis were joined by plaintiff Eileen Hanafin, who sought recovery from the RCAB for alleged negligent misrepresentation in connection with a donation of \$35,000 she made to St. James more than two years before its closure.

4 The record does not disclose when the trust was created, although, as we discuss *infra*, it is undisputed that the trust is not a party to the property dispute at issue.

The claims of all three plaintiffs rest, in whole or in part, on the presumption that \*\*306 the RCAB owed them a legal duty, grounded in the “trust and confidence” inherent (they allege) in the priest-parishioner relationship, to inform them that, under canon law, St. James could be suppressed at a future time. A judge in the Superior Court allowed the RCAB's motion for summary judgment on all counts and dismissed the case. We granted the plaintiffs' application for direct appellate review.

[1] We conclude that summary judgment in the RCAB's favor was proper. First, as we explain below, insofar as the plaintiffs' causes of action are predicated on the alleged fiduciary or confidential relationship between a member of the Roman Catholic Church clergy and his congregants, the claims in this case raise matters of internal church governance that the First Amendment to the United States Constitution forbids us to consider.<sup>5</sup> We may not, consistent with the First Amendment, inquire into any alleged pastoral duties owed by the Roman Catholic priesthood to its laity concerning matters

of canon law. See, e.g., *Serbian E. Orthodox Diocese for the U.S. & Can. v. Milivojevic*, 426 U.S. 696, 710, 96 S.Ct. 2372, 49 L.Ed.2d 151 (1976); *Fortin v. Roman Catholic Bishop of Worcester*, 416 Mass. 781, 785, 625 N.E.2d 1352, cert. denied, 511 U.S. 1142, 114 S.Ct. 2164, 128 L.Ed.2d 887 (1994). Second, to the extent that the plaintiffs' claims pertain to matters legally cognizable in our civil courts, they fail in one or more of their essential elements. See Mass. R. Civ. P. 56, 365 Mass. 824 (1974). We may not address grievances that are insufficiently supported by cognizable evidence.<sup>6</sup>

5 The First Amendment to the United States Constitution states, in relevant part, that “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof....”

6 We acknowledge the amicus briefs of the members of St. Jeremiah Parish and others, and the Council of Parishes.

1. *Facts.* We summarize the judge's findings and other uncontested \*238 material of record, as viewed in the plaintiffs' favor. *Kourouvacilis v. General Motors Corp.*, 410 Mass. 706, 716, 575 N.E.2d 734 (1991). The RCAB was incorporated by the Legislature in 1897, and empowered, among other things, to “receive, take and hold, by sale, gift, lease, devise or otherwise, real and personal estate of every description, for religious, charitable and burial purposes, and to manage and dispose of the same for the religious and charitable purposes of the Roman Catholic church.” St. 1897, c. 506, § 2. In the 1940's, Reverend Robert H. Lord of St. Paul's Parish in Wellesley sought permission from the RCAB to purchase land to establish a church to serve the needs of the growing Roman Catholic population of East Natick and the adjacent “Fells section” of Wellesley, who were geographically isolated from existing parishes in those towns. The RCAB approved the request, and Reverend Lord began searching for a suitable location for the new church. He soon identified a tract of approximately eight acres of land on the Worcester Turnpike in Wellesley as “the best site—and, indeed, the only good site—for such a church.” The land was held in equal shares as tenants in common by James's six children.<sup>7</sup>

7 James Maffei, an Italian immigrant, established a successful sand and gravel business and owned several tracts of land in Wellesley and the surrounding area. He

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purchased the property in 1925. James Maffei died in 1937, and his wife, Angela, died in 1943.

Some time in 1946, Reverend Lord had several conversations with Waldo in Waldo's home during which he inquired about \*\*307 the Maffei family's donating the property to the RCAB for use as the site of a church. The conversations apparently occurred in the presence or within the hearing of Catherine. According to a "statement under oath" that Catherine gave to her attorneys in May, 2005, Reverend Lord came to the Maffei house several times to explore obtaining the property for use as a church.<sup>8</sup> Waldo thereafter contacted his sister and four brothers about the RCAB's request, but they rejected it. On the third visit to Waldo's \*239 home,<sup>9</sup> in the presence of Catherine, Reverend Lord told Waldo that the church would be named "St. James" in honor of Waldo's father, and that the church would remain a tribute to James "forever." He also told Waldo that the RCAB would pay each of the other four Maffei brothers \$3,000 to transfer their respective interests in the property.<sup>10</sup> According to Catherine, who is the sole surviving participant of these events,<sup>11</sup> during negotiations for the property Reverend Lord did not inform any members of the Maffei family that canon law permitted the closure of the church in the future.<sup>12</sup>

<sup>8</sup> The verified complaint avers that, prior to any subsequent conversation between Waldo and Reverend Lord about naming the church for James, "[t]he Maffei brothers, other than Waldo, desired to receive money for the transfer of their interests."

<sup>9</sup> The judge's statement that Reverend Lord visited Waldo's home three times to ask about the property is consistent with the number of visits alleged in the verified complaint. A letter from Reverend Lord to his superiors introduced in evidence by the Maffeis referred to "protracted negotiations" with the Maffei family. Catherine, in her sworn statement, testified that Reverend Lord "came back [to her home] several times" to talk about the property.

<sup>10</sup> The verified complaint and Catherine's sworn statement are often at odds on key factual representations. According to Catherine's sworn statement, it was Waldo who first raised the issue of naming the church after his father, after Reverend Lord told Waldo that he had made inquiries of his superiors and determined that this was possible, Waldo said that the deal could be finalized

if the RCAB were willing to give his brothers "some little thing," such as "\$3,000 apiece" to transfer their respective interests. The verified complaint alleges that Reverend Lord is the person who broached the idea of naming the church for James Maffei (James), and that Waldo's brothers asked to be paid \$3,000 each for their interests in the property. The judge's findings follow the version of events set out in the verified complaint rather than Catherine's relatively more spontaneous sworn statement, and we discern no abuse of discretion in his choosing between the plaintiffs' own conflicting facts.

<sup>11</sup> Reverend Lord died in 1954, and Waldo died on January 13, 2003.

<sup>12</sup> The Maffeis submitted the affidavit of an expert in canon law, that Canon 515, § 2, of the Roman Catholic Code of Canon Law governs suppression of a parish. Canon 515, § 2, promulgated by Pope John Paul II in 1983, provides: "It is only for the diocesan bishop to erect, suppress, or alter parishes. He is neither to erect, suppress, nor alter notably parishes, unless he has heard the presbyteral council."

In their verified complaint, the plaintiffs state their "belief" that the suppression provisions of canon law in effect in 1946, when the deed to the property was transferred, were similar to those promulgated by Pope John Paul II. Although the RCAB denies the allegation of similarity in its answer, it does not contest the fact of suppression under prevailing canon law. Whether the 1983 code or any other code of canon law authorizes suppression of a parish is not relevant to our resolution of the claims in this case.

The Maffei family agreed to transfer the property to the RCAB \*240 for \$12,000 (representing payment of \$3,000 to each of Waldo's four brothers), a price that amounted to \$1,500 per acre.<sup>13</sup> The parties \*\*308 did not enter into a purchase and sales agreement, but executed a deed transferring all legal and beneficial interest in the property to the RCAB in exchange "for consideration paid." An attorney hired by the RCAB prepared the deed, which the Maffei siblings, choosing not to be represented by counsel, had the opportunity to read and then signed before a notary in Waldo's home.<sup>14</sup> The spouses of the four married Maffei brothers, Catherine among them, also executed the deed, relinquishing their rights of "dower and homestead."<sup>15</sup> The deed, in fee simple absolute, makes no reference to naming the church in honor of James. Nor does it recite any alleged agreement concerning using the property "forever" as a church. The



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deed contains no reservation of rights or right to enter or retake the property. The Maffeis claimed that the family never would have executed the deed had they been informed that the property might not always be used as the locus of a church named for James.

13 The Maffeis alleged that similar property sold for \$2,000 to \$2,200 per acre at the time. This estimate is consistent with the statements of Reverend Lord to his superior in a letter dated September 16, 1946, in which, among other things, Reverend Lord states that similar land "usually sells at around \$2,000 an acre. For a tract just across the street from the one I want (and inferior to it) the owner demands \$2,400 an acre. The Town of Wellesley recently paid \$2,200 for one acre of land adjacent to the tract I am bargaining for." Reverend Lord also stated in the letter that, according to a member of the planning board of Wellesley whom he consulted, "\$12,000 is really a very cheap price for the Maffei land."

14 Although the verified complaint states that counsel hired by the RCAB prepared the deed and that the Maffei family was not represented by counsel when they sold the property, Catherine in her sworn statement states that one of the Maffeis' neighbors, who was an attorney, prepared the deed at their request ("we got ahold of [the attorney], and she put everything together") and was present when the deed was executed. The neighbor, identified by Catherine in her sworn statement as the lawyer who prepared the deed, is named in the verified complaint only as the person who notarized the deed.

15 In her sworn statement, Catherine testified that she did not read the deed, relying instead on Waldo's business acumen in such matters.

In 1950, the RCAB erected St. James as a parish, and by 1958, a new St. James Church (renamed St. James the Great to avoid confusion with another church in the area) was constructed. Waldo and Catherine, founding parishioners, became heavily involved in the affairs of St. James. Waldo paid \$10,000 for the \*241 church altar, and he and his wife frequently volunteered their time and resources to benefit the parish.<sup>16</sup> In 2002, the church served approximately 900 families.

16 In her sworn statement, Catherine was asked whether Waldo would "have been this much involved if the church had not been named after his father." She replied: "Oh, sure, sure. Sure. We were religious. We believed

in the priests and the church. We were very good Catholics."

By that time, however, questions, real or rumored, had arisen concerning St. James's continued viability. In 1999, an article appeared in a local newspaper stating that the RCAB had included St. James on a list of parish churches to be closed. Shortly thereafter, Reverend George Vartzelis, then pastor of St. James, assured his congregation that the article was incorrect and that St. James would remain open. In June, 2002, the RCAB launched a capital endowment campaign in which each of its 368 parishes was to raise a specific amount in donations. St. James's target was \$370,000. In conjunction with the capital campaign, Reverend Vartzelis sent solicitation letters to his parishioners requesting funds for the RCAB campaign, and also asked for \$35,000 in donations to refurbish St. James "to keep it as good as it needs to be and as we all want it to be now and for the future." Reverend Vartzelis, at the \*\*309 time he made these statements, had no knowledge of the RCAB's plans, if any, to close the church. Based on Reverend Vartzelis's representation that a gift would benefit St. James "now and for the future," Hanafin, then a retiree in her eighties, donated \$35,000 to the church. Hanafin states in her affidavit: "If I had known that the Archdiocese ... was giving any consideration to closing St. James, I would not have made the gift of \$35,000."

Reverend Vartzelis retired in the spring of 2003, and the RCAB replaced him with an administrator, an interim position, rather than with a pastor. In January, 2004, the RCAB required each "cluster"<sup>17</sup> of parishes to investigate and report on which parishes in the cluster might be closed in a "reconfiguration" plan. The Wellesley-Weston cluster, to which St. James belonged, reported in their "reconfiguration response" that, while it would be best for all parishes in the cluster to remain open, St. James would be the "most feasible" church to close \*242 as it "has the smallest number of recorded families and individuals; the smallest Mass count; the smallest religious education program; and the smallest sacramental index." On October 5, 2004, the RCAB issued a decree of suppression of St. James, effective October 31, 2004. The decree reassigned the territory covered by St. James to other parishes, transferred the canonical registers of St. James to another parish, and transferred "the goods and obligations" of St. James to the RCAB.<sup>18</sup> The RCAB retained legal title to the property. During one of the last Masses before the church closed, Hanafin asked Reverend

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Vartzelis, "Father, why didn't you tell us the church was closing?" He replied, "I really didn't know it, Eileen," and he seemed, Hanafin stated in her affidavit, "visibly upset."

17 A "cluster" is an administrative unit of churches that share a common geographic location.

18 The plaintiffs have alleged that, in accordance with canon law, a group calling itself "the Friends of St. James the Great Parish" appealed from the decree of suppression to the RCAB and, when that appeal failed, next appealed to the Vatican. The plaintiffs are among the signatories to the appeal to the Vatican. The present status of the religious appeal is unknown; it has no bearing on the questions of civil law we decide today.

The plaintiffs filed their six-count verified complaint on June 8, 2005.<sup>19</sup> They subsequently moved for *lis pendens* on the property and, in light of Catherine and Hanafin's advanced age, for a speedy trial. The RCAB moved to dismiss the complaint pursuant to Mass. R. Civ. P. 12(b)(6), 365 Mass. 754 (1974). The judge denied the RCAB's motion to dismiss and allowed the plaintiffs' motion for *lis pendens* and motion for a speedy trial. Thereafter, all parties moved for summary judgment.

19 Count I sought declaratory and injunctive relief to, among other things, declare the alleged oral agreement between the RCAB and the Maffei family enforceable, and for reversion of the property to the family; Count II sought to impose a resulting trust on the RCAB in the Maffeis' favor to enforce a conditional gift; Count III was a claim by the Maffeis for "breach of fiduciary duty and constructive trust"; Count IV was the Maffeis' breach of contract claim; Count V, their claim for negligent misrepresentation; and Count VI, Hanafin's claim for negligent misrepresentation.

We turn now to the merits.

[2] [3] 2. *Scope of review.* As the movant for summary judgment on all counts, the RCAB must affirmatively establish the absence of a triable issue as to each of the plaintiffs' claims. In deciding the motion, the judge was required to consider all factual allegations, and all reasonable inferences drawn therefrom, favorably \*243 for the plaintiffs. *Kourouvacilis* \*\*310 v. *General Motors Corp.*, 410 Mass. 706, 716, 575 N.E.2d 734 (1991). We review the judge's legal conclusions *de novo*. *Ritter v.*

*Massachusetts Cas. Ins. Co.*, 439 Mass. 214, 215, 786 N.E.2d 817 (2003).

[4] [5] [6] Our consideration of the plaintiffs' appeal is also informed, and limited, by bedrock principles of the First Amendment. It is axiomatic that the First Amendment protects an individual's freedom to worship, or not to worship, as he or she chooses. It also places beyond our jurisdiction disputes involving church "doctrine, canon law, polity, discipline, and ministerial relationships." *Williams v. Episcopal Diocese of Mass.*, 436 Mass. 574, 579, 766 N.E.2d 820 (2002). See *Hiles v. Episcopal Diocese of Mass.*, 437 Mass. 505, 515, 773 N.E.2d 929 (2002); *Wheeler v. Roman Catholic Archdiocese of Boston*, 378 Mass. 58, 61, 389 N.E.2d 966, cert. denied, 444 U.S. 899, 100 S.Ct. 208, 62 L.Ed.2d 135 (1979). Among the religious controversies off limits to our courts are promises by members of the clergy to keep a church open. See *Fortin v. Roman Catholic Bishop of Worcester*, 416 Mass. 781, 785, 625 N.E.2d 1352, cert. denied, 511 U.S. 1142, 114 S.Ct. 2164, 128 L.Ed.2d 887 (1994) ("To inquire into an alleged promise by the Bishop to keep a parish open or refrain from merging it with another parish was an impermissible intrusion into the Bishop's ecclesiastical authority"). See also *Serbian E. Orthodox Diocese for the U.S. & Can. v. Milivojevich*, 426 U.S. 696, 721, 96 S.Ct. 2372, 49 L.Ed.2d 151 (1976) ("reorganization of the Diocese involves a matter of internal church government, an issue at the core of ecclesiastical affairs").

[7] [8] This is not to say that every property dispute between a church and its adherents is beyond the review of civil courts. "The State has an obvious and legitimate interest in the peaceful resolution of property disputes, and in providing a civil forum where the ownership of church property can be determined conclusively." *Jones v. Wolf*, 443 U.S. 595, 602, 99 S.Ct. 3020, 61 L.Ed.2d 775 (1979). But even in the property arena, we must proceed with caution, for the First Amendment also "circumscribes the role that civil courts may play in resolving church property disputes." *Id.*, quoting *Presbyterian Church in the U.S. v. Mary Elizabeth Blue Hull Memorial Presbyterian Church*, 393 U.S. 440, 449, 89 S.Ct. 601, 21 L.Ed.2d 658 (1969). We have jurisdiction over church property disputes if and to the extent, and only to the extent, that they are capable of resolution under "neutral principles of law"—which the United \*244 States Supreme Court has defined as "well-established concepts of trust and

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property law familiar to lawyers and judges.” *Jones v. Wolf*, *supra* at 603, 99 S.Ct. 3020. See *Fortin v. Roman Catholic Bishop of Worcester*, *supra* at 786, 625 N.E.2d 1352; *Mitchell v. Albanian Orthodox Diocese in Am., Inc.*, 355 Mass. 278, 282, 244 N.E.2d 276 (1969).

[9] [10] The standards enunciated above clearly forbid our consideration of the religious obligations, if any, of a clergy member to his or her congregants, or of the “trust and confidence” that may be engendered in congregants solely by virtue of the clergy’s religious authority. We certainly must also stand apart from questions of canon law: we must avoid inquiry into whether the RCAB, Reverend Lord, or Reverend Vartzelis owed a fiduciary, confidential, or any other duty to discuss with the plaintiffs the nature of property ownership under canon law. We may not inquire into the ecclesiastical authority of Reverend Vartzelis and Reverend Lord to bind the RCAB by making oral promises about church property, to examine the actual status or disposition of church property under canon law, or to attempt to interpret any particular provision of canon law. **\*\*311** As a matter of constitutional law, such disputes are beyond our authority. *Alberts v. Devine*, 395 Mass. 59, 72, 479 N.E.2d 113, cert. denied sub nom. *Carroll v. Alberts*, 474 U.S. 1013, 106 S.Ct. 546, 88 L.Ed.2d 475 (1985).

In this case, the RCAB did not raise the constitutional issue of jurisdiction. The judge in the Superior Court, however, properly noted the necessary restraint in analyzing the plaintiffs’ ownership claims. For the purposes of this appeal, we shall presume jurisdiction strictly limited by the constitutional principles stated above.

[11] 3. *Standing*. As an initial matter, the judge rejected for lack of standing the Maffei’s claim that they gifted the property to the RCAB in trust. He ruled that, because the Maffei’s interests in the alleged charitable trust were indistinguishable from those of other parishioners of St. James, only the Attorney General was authorized to prosecute claims to enforce the trust’s provisions. See G.L. c. 12, § 8.<sup>20</sup> Although it is not clear whether the judge’s ruling on standing applied also to Hanafin, **\*245** on appeal the defendant urges that we also deny Hanafin standing to bring her claim. We shall accordingly address standing as to all of the plaintiffs. Although we agree with the judge that the standing of some

of the plaintiffs is problematic, we do so for reasons different from those he articulated.

20 General Laws c. 12, § 8, provides: “The attorney general shall enforce the due application of funds given or appropriated to public charities within the commonwealth and prevent breaches of trust in the administration thereof.” The Attorney General’s exclusive authority under the statute encompasses charitable “assets” in general as well as charitable “funds.” See *Weaver v. Wood*, 425 Mass. 270, 275, 680 N.E.2d 918 (1997).

[12] [13] [14] Turning first to the judge’s reasoning, it is clear that the plaintiffs have alleged individual stakes in this dispute that make them, and not the Attorney General, the parties to bring suit, assuming no other impediments to their standing to pursue this litigation. A “gift to a church generally creates a public charity.” *Sears v. Parker, Attorney Gen.*, 193 Mass. 551, 555, 79 N.E. 772 (1907). “[I]t is the exclusive function of the Attorney General to correct abuses in the administration of a public charity by the institution of proper proceedings. It is his duty to see that the public interests are protected ... or to decline so to proceed as those interests may require.” *Lopez v. Medford Community Ctr., Inc.*, 384 Mass. 163, 167, 424 N.E.2d 229 (1981), quoting *Ames v. Attorney Gen.*, 332 Mass. 246, 250–251, 124 N.E.2d 511 (1955). However, a plaintiff who asserts an individual interest in the charitable organization distinct from that of the general public has standing to pursue her individual claims. *Lopez v. Medford Community Ctr., Inc.*, *supra*. See *Weaver v. Wood*, 425 Mass. 270, 276, 680 N.E.2d 918 (1997) (standing arises from claim of “personal right that directly affects the individual member”).

[15] In this case, the plaintiffs’ claims are readily distinguishable from those of the general class of parishioner-beneficiaries. The Maffei allege that they conditionally gifted their land to the RCAB and that they personally have an equitable reversionary interest in the property as a result of the actions of the RCAB. Hanafin claims that she lost substantial personal funds as the result of the RCAB’s negligent misrepresentation to her. These claims are personal, specific, and exist apart from any broader community interest in keeping St. James open. See *id.* The plaintiffs have alleged personal rights that would, in the ordinary course, entitle them to standing.

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**\*\*312** However, the issue of standing for the Maffei plaintiffs is **\*246** clouded by the fact that they have brought suit as the sole trustees of the Waldo M. Maffei Revocable Trust (trust),<sup>21</sup> and as the trust's sole beneficiaries. But the real property they seek to recover is property that Waldo, in his individual capacity, voluntarily alienated from his estate in 1946, possibly before the trust was created, see note 4, *supra*, and almost sixty years before the trust proceeds became distributable to the trustees at Waldo's death in 2003.<sup>22</sup> The RCAB raises the issue of the trustees' standing only in passing, without citation. See, e.g., *Greater Media, Inc. v. Department of Pub. Utils.*, 415 Mass. 409, 418, 614 N.E.2d 632 (1993) (cursory argument not supported by meaningful authority does not rise to the level of proper appellate argument). We address the merits of the trustees' argument because the RCAB has effectively waived any claim of standing, see *John Hancock Mut. Life Ins. Co. v. Banerji*, 447 Mass. 875, 887 n. 20, 858 N.E.2d 277 (2006), because the Maffei plaintiffs raise substantial issues that may arise again, see *Knapp Shoes, Inc. v. Sylvania Shoe Mfg. Corp.*, 418 Mass. 737, 738–739 n. 1, 640 N.E.2d 1101 (1994), and because Catherine's individual claims must in any event be adjudicated.

<sup>21</sup> The Maffeis allege that, under the second article of the will of Waldo, who died in January, 2003, the residue of his estate is distributable to the trustees, being Catherine and her daughter, Maureen Maffei.

<sup>22</sup> Catherine Maffei has also brought suit in her individual capacity. She, like Hanafin, has standing in her individual capacity, having given up her rights of dower and homestead in the property in reliance, she alleges, on Reverend Lord's "assurance" that the property would always be used as a church in memory of her father-in-law. She specifically alleges that she would not have given up those rights, nor would she have executed the deed transferring the property to the RCAB, had that assurance not been given to her.

[16] [17] 4. *Constructive trust*. A constructive trust is a flexible tool of equity designed to prevent unjust enrichment resulting from fraud, a violation of a fiduciary duty or confidential relationship, mistake, or "other circumstances" in which a recipient's acquisition of legal title to property amounts to unjust enrichment.<sup>23</sup> *Fortin v. Roman Catholic Bishop of Worcester*, 416 Mass. 781, 789, 625 N.E.2d 1352, cert. denied, 511 U.S. 1142, 114 S.Ct. 2164, 128 L.Ed.2d 887

(1994). See *Nessralla v. Peck*, 403 Mass. 757, 762–763, 532 N.E.2d 685 (1989); *Kelly v. Kelly*, 358 Mass. 154, 156, 260 N.E.2d 659 **\*247** (1970) (listing circumstances giving rise to constructive trust). See generally 5 A.W. Scott & W.F. Fratcher, *Trusts* § 462 (4th ed. 1989). A constructive trust may arise even if the parties did not intend to convey the real estate in trust. *Yamins v. Zeitz*, 322 Mass. 268, 272, 76 N.E.2d 769 (1948). The Maffeis assert that they have established a prima facie claim to a constructive trust in their favor as to every theory under which a constructive trust may be imposed: fiduciary or confidential relationship, fraud, mutual mistake, and unconscionability and unjust enrichment. The judge rejected their claims, and for the reasons we explain below, his decision was sound. We begin first with the breach of duty claim.

<sup>23</sup> In cases where no express trust exists, a judge may employ the equitable remedies of constructive or resulting trust to avoid injustice to the grantee of an interest in real property. See generally J.R. Nolan & L.J. Sartorio, *Equitable Remedies* § 351 (2d ed. 1993).

[18] [19] [20] a. *Constructive trust: breach of fiduciary duty—confidential relationship*. The court may impose a constructive trust where one acquires an interest in property in breach of a legal duty to one who has granted that interest. See *Fortin* **\*\*313** v. *Roman Catholic Bishop of Worcester*, *supra* at 789, 625 N.E.2d 1352. The duty may be a fiduciary duty, but it need not be a fiduciary duty that is established as a matter of law, such as that of attorney to client or trustee and beneficiary. A fiduciary duty may arise from the circumstances. See, e.g., *Patsos v. First Albany Corp.*, 433 Mass. 323, 331–332, 741 N.E.2d 841 (2001) (plaintiff's affidavit raised sufficiently specific allegations that would permit jury to find that "a full relation of principal and broker" arose between plaintiff client and defendant broker, giving rise to broker's fiduciary duties to client); *Warsofsky v. Sherman*, 326 Mass. 290, 293–294, 93 N.E.2d 612 (1950) (where loan applicant supplied confidential information to defendant banker, who "impliedly at least" understood the terms on which applicant's information was given and undertook to comply with those terms, banker stood in relation toward applicant and could not use information for personal gain). A constructive trust may also be appropriate to remedy the breach of duty arising from a relationship of "trust and confidence" that is not a fiduciary relationship established as a matter of law, such as a relationship in

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which one party confides confidential information to one who then uses that information for his own benefit and to the declarant's harm. See, e.g., *Sullivan v. Rooney*, 404 Mass. 160, 163, 533 N.E.2d 1372 (1989) (fiduciary relationship between unmarried cohabitants where woman reasonably relied on defendant companion's promises to take care of her \*248 and defendant knew of and accepted plaintiff's trust in him); *Broomfield v. Kosow*, 349 Mass. 749, 757, 212 N.E.2d 556 (1965) (abuse of "influence springing from that trust and confidence to obtain personal advantage" at the expense of another warrants imposition of constructive trust). The confidential relationship, however, must comprise more than "[in]ter respect for the judgment of another or trust in his character...." *Meskeil v. Meskeil*, 355 Mass. 148, 151, 243 N.E.2d 804 (1969), quoting *Comstock v. Livingston*, 210 Mass. 581, 584, 97 N.E. 106 (1912). Moreover, a constructive trust "is not imposed where a recipient has given value or had no notice of the violation of duty." *Demoulas v. Demoulas Super Mkts., Inc.*, 424 Mass. 501, 544, 677 N.E.2d 159 (1997).

Here, the Maffeis assert that the RCAB, acting through its designated agent, Reverend Lord, owed them a fiduciary duty to apprise the family of the possibility of suppression and to draft a deed reflecting what they allege was the parties' understanding of their conditional transfer of interest in the property. Alternatively, the Maffeis argue that their relationship with Reverend Lord and the RCAB created a cognizable relationship of "trust and confidence" breached by these actions.

The fatal flaw in these arguments is evident in the Maffeis' contention that the RCAB's legal duties flow principally from the parties' shared religious affiliation. As they allege in their verified complaint, the Maffeis "reposed absolute trust and confidence in Reverend Lord, as he was the Pastor of a Catholic Church, and absolute trust in his promise that the land would forever be used as a Church.... Reverend Lord understood that the Maffeis trusted him, as he was a Priest and a Pastor of a Catholic Church." Or, as Catherine testified in her sworn statement when asked whether Reverend Lord's status as a priest had "any effect on your believing him" that the property would remain a church in honor of James: "Of course.... Everything the priests said, we trusted him very dearly. We really did. So what Father Lord said, he was a gentleman and a wonderful priest, and we believed everything he said." Or, as the Maffeis assert in their brief

on appeal: \*\*314 there "must" be a relationship of trust and confidence between a diocese and the members of the faith it purports to serve; "one's religion creates faith and trust that [the] Church is asking [for donations] in \*249 good faith." A ruling that a Roman Catholic priest, or a member of the clergy of any (or indeed every) religion, owes a fiduciary-confidential relationship to a parishioner that inheres in their shared faith and nothing more is impossible as a matter of law.<sup>24</sup> Such a conclusion would require a civil court to affirm questions \*250 of purely spiritual and doctrinal obligation. The ecclesiastical authority of the RCAB and Reverend Lord over the parishioners, the \*\*315 ecclesiastical authority of the RCAB over Reverend Lord, the state of canon law at the date of the property transfer, the knowledge of the canon law that might reasonably be attributed to the RCAB and Reverend Lord in 1946, the canonical obligation of Reverend Lord, if any, to inform parishioners of canonical law—all of these inquiries bearing on resolution of the Maffeis' fiduciary claims would take us far afield of "neutral principles of law."<sup>25</sup> See *Jones v. Wolf*, 443 U.S. 595, 602, 99 S.Ct. 3020, 61 L.Ed.2d 775 (1979). We decline to hold that, as a matter of civil law, the relationship of a member of the clergy to his or her congregants, without more, creates a fiduciary or confidential relationship grounded in their shared religious affiliation for which redress is available in our courts.

24 The Maffeis are correct that Massachusetts courts have "not directly addressed the question of whether a pastor-communicant relationship is per se a confidential one when undue influence is alleged." See *Dovydenas v. The Bible Speaks*, 869 F.2d 628, 641-642 (1st Cir.), cert. denied, 493 U.S. 816, 110 S.Ct. 67, 107 L.Ed.2d 34 (1989) (court need not decide whether under Massachusetts law confidential relationship between parishioner and communicant exists where other evidence of record establishes such relationship). They have not persuaded us to recognize such a relationship as a matter of law in all circumstances by citing decisions from other jurisdictions that they argue do so. One of these cases is not relevant to the circumstances of adult parishioners. See *Koenig v. Lambert*, 527 N.W.2d 903, 906 (S.D.1995), overruled on other grounds by *Stratmeyer v. Stratmeyer*, 567 N.W.2d 220 (S.D.1997) (relationship between altar boy and diocese and its members one of trust and confidence because defendant clerics "were not only acting as members of the church, they were also acting as agents

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or representatives of God,” and plaintiff altar boy was taught to “trust and respect” them). The other cases on which they rely concern circumstances of repeated, affirmative false statements by clergy to the plaintiff that would constitute fraud apart from any religious affinity between the parties. The cases cited provide scant support for the premise that a member of the clergy is obligated as a matter of law to inform a parishioner about a matter of canon law that may have some future operation on the estate granted. See *Farmer v. O’Carroll*, 162 Md. 431, 435, 160 A. 12 (1932) (plaintiff, who was extremely depressed and nervous, “became easily subject to the undue and dominating influence” of cleric who repeatedly and with fraudulent statements importuned her to turn over her property); *Corrigan v. Pironi*, 48 N.J.Eq. 607, 610, 23 A. 355 (1891) (transfer of land to priest by “ignorant, eccentric, and entirely illiterate” elderly woman); *Brown v. Divine*, 173 Misc. 1029, 1030, 18 N.Y.S.2d 544 (N.Y.Sup.Ct.), aff’d, 260 A.D. 443, 444, 23 N.Y.S.2d 116 (N.Y.1940) (spiritual advisor who falsely represented that he would deposit plaintiff’s money in his “Heavenly Treasure” and return it to her on demand holds funds as constructive trustee); *Nelson v. Dodge*, 76 R.I. 1, 12, 68 A.2d 51 (1949) (cult-like religious figure who exercised near-total dominance over congregants and effected “complete surrender” of plaintiff’s will abused confidential relationship with plaintiff-parishioner who turned over substantial property to cleric).

The Maffeis correctly state that these decisions contain statements that one who acts in the capacity of “spiritual ascendancy” over a donor has a confidential relationship to the donor that requires the spiritual advisor to justify any gift made to him or her by the donor. See, e.g., *Farmer v. O’Carroll*, *supra* at 444, 160 A. 12 (“relation of spiritual adviser and a member of his congregation is generally regarded as of a confidential nature”); *Corrigan v. Pironi*, *supra* at 609, 23 A. 355 (“spiritual ascendancy” of a Roman Catholic priest over a Roman Catholic layperson “in a legal point of view is deemed confidential”); *Brown v. Divine*, *supra* (proof that defendant religious leader was “spiritual adviser” to plaintiff places on defendant burden of justifying acceptance and use of plaintiff’s money and property); *Nelson v. Dodge*, *supra* at 12–14, 68 A.2d 51, citing *Corrigan v. Pironi*, *supra* at 609, 23 A. 355 (equity will come to aid of one who has parted with property while under such influence, even absent showing of fraud or “imposition”). However, these decisions predate

the Supreme Court’s First Amendment jurisprudence as reflected in, for example, *Serbian E. Orthodox Diocese for the U.S. & Can. v. Milivojevich*, 426 U.S. 696, 96 S.Ct. 2372, 49 L.Ed.2d 151 (1976), and *Fortin v. Roman Catholic Bishop of Worcester*, 416 Mass. 781, 625 N.E.2d 1352, cert. denied, 511 U.S. 1142, 114 S.Ct. 2164, 128 L.Ed.2d 887 (1994), and we do not consider them weighty authority.

25

In light of what we have said concerning the First Amendment, we decline the plaintiffs’ invitation to take “the opportunity to outline the responsibilities of religious organizations to their members concerning the necessary information to provide their worshippers before accepting their contributions.”

[21] Nor, apart from the constitutionally impermissible grounds urged on us by the Maffeis, is there other evidence of a fiduciary or confidential relationship between the parties in the transaction for sale of the property. This is not a case where the RCAB or Reverend Lord allegedly undertook to manage property solely for the Maffeis’ benefit or acted without their prior authorization, cf. *Patsos v. First Albany Corp.*, 433 Mass. 323, 336–337, 741 N.E.2d 841 (2001), or used confidential information of the Maffeis to effect the sale. Cf. *Broomfield v. Kosow*, 349 Mass. 749, 757, 212 N.E.2d 556 (1965). Nor can the clearly aspirational oral statement that the property would “forever” be a church in honor of James, without more, create an actionable duty breached by the church’s closure. See *Meskeil v. Meskeil*, 355 Mass. 148, 151, 243 N.E.2d 804 (1969). On the record before us, the breach of duty claim cannot be sustained.

\*251 b. *Constructive trust: fraud.* The Maffeis argue, in essence, that because Reverend Lord negotiated for the property from a position of superior knowledge of the canon law of suppression, his statement that the property would be used “forever” for a church honoring James Maffei was an actionable “misrepresentation of future facts” that should be remedied by a reversion of the property to the Maffeis. The Maffeis’ appeal to the authority of *Cellucci v. Sun Oil Co.*, 2 Mass.App.Ct. 722, 320 N.E.2d 919 (1974), *S.C.*, 368 Mass. 811, 331 N.E.2d 813 (1975), and *Gopen v. American Supply Co.*, 10 Mass.App.Ct. 342, 407 N.E.2d 1255 (1980), to support their argument is unavailing. In the *Cellucci* case, the court ordered specific performance of an agreement to sell real estate where the agent of the defendant-purchaser made representations of fact and law designed to induce the plaintiff to refrain from negotiation with the defendant’s competitor

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for sale of the property. Among the misstatements was that the purchase and sale agreement between the parties meant that the defendant had purchased the site. *Cellucci v. Sun Oil Co.*, *supra* at 730-731, 320 N.E.2d 919. In the *Gopen* case, the defendant parent company was found liable to a commercial lessor for misstating its subsidiary's financial condition, thereby inducing the lessor to enter into a lease with the subsidiary. *Gopen v. American Supply Co.*, *supra* at 345, 407 N.E.2d 1255. In both cases cited, the actionable misrepresentation was "made by one possessed of superior knowledge to take advantage of the relative ignorance of another." \*\*316 *Cellucci v. Sun Oil Co.*, *supra* at 731, 320 N.E.2d 919. See *Gopen v. American Supply Co.*, *supra*. In both cases cited, the fraud occurred at the time the property was transferred. See also *Pietrazak v. McDermott*, 341 Mass. 107, 109-110, 167 N.E.2d 166 (1960) (home builder's statement that "there would be no water in the cellar," although not made with intent to deceive, would support deceit action where statement was made as though with personal knowledge, was capable of being known by builder, and was material to plaintiffs' decision to buy house). In each case the statements were made with the clear knowledge that they were untrue or with the false implication that the speaker was speaking from personal knowledge.

[22] [23] [24] Here, considering the Maffeis' claims under neutral principles of law, the record is devoid of any evidence of Reverend Lord or the RCAB's intent to mislead or to deceive the Maffeis. \*252 There is no allegation that applicable canon law was confidential and not accessible to the plaintiffs. Moreover, the alleged oral promise of a church existing in perpetuity and in James's honor cannot fairly be characterized as a verifiable statement when made, and is thus materially different from, for example, a statement about corporate structure and signing authority, see, e.g., *Cellucci v. Sun Oil Co.*, *supra*, or a statement about the financial condition of one's subsidiary, see, e.g., *Gopen v. American Supply Co.*, *supra*. An action for deceit will not lie for statements that are "merely a matter of opinion, estimate, or judgment." *Powell v. Rasmussen*, 355 Mass. 117, 118, 243 N.E.2d 167 (1969), quoting *Chatham Furnace Co. v. Moffatt*, 147 Mass. 403, 404, 18 N.E. 168 (1888). Finally, a "subsequent refusal to carry out an oral promise, standing by itself, is not ... fraud" remediable by a constructive trust. J.R. Nolan & L.J. Sartorio, *Equitable Remedies* § 351, at 496 (2d ed.1993). Equity may not rest on such a slender reed. There was no error.

c. *Constructive trust: mutual mistake.* For the reasons advanced above, we agree with the judge in the Superior Court that the Maffeis have "no reasonable expectation" of proving that mutual mistake as to the parties' understanding of the legal status of the property sale.<sup>26</sup> They have advanced no evidence beyond speculation to support the claim that Reverend Lord did not intend an outright purchase of the property for use according to the RCAB's needs.<sup>27</sup> Cf. *Ide v. Bowden*, 342 Mass. 22, 172 N.E.2d 88 \*253 (1961) (mutual mistake as \*\*317 to intention to divide property at State line remediable by constructive trust).

26 The Maffeis argue that the judge erroneously shifted to them the burden on summary judgment of establishing Reverend Lord's knowledge or lack of knowledge of the canon law of suppression. We see no error, where the plaintiffs' allegations concerning Reverend Lord's knowledge and state of mind were couched in highly speculative and conditional terms ("It is likely" that Reverend Lord knew that the proposed church would be subject to suppression, and "[i]f Reverend Lord did not understand that the provisions of Canon law" authorized suppression, then parties transferred property based on mutual mistake). See *Fortin v. Roman Catholic Bishop of Worcester*, 416 Mass. 781, 790, 625 N.E.2d 1352, cert. denied, 511 U.S. 1142, 114 S.Ct. 2164, 128 L.Ed.2d 887 (1994).

27 A letter from Reverend Lord to his superiors in September, 1946, speaks only of a sale of the property to the RCAB, and makes no mention of any promise of naming the church for James or using the site as the locus of a church "forever." The reply letter from the chancellor of the archdiocese to Reverend Lord authorizing him to purchase the property also makes no reference to the alleged oral promise.

d. *Constructive trust: unconscionability and unjust enrichment.* It is unsupportable for the Maffeis to contend that the RCAB purchased the property for an unconscionably low price of \$1,500 per acre where they do not allege that the RCAB would have refused to pay them \$3,000 each for their interest, as was paid to the other Maffei children. Had Waldo and his sister sold their interests, as their siblings did, rather than gifting them, the RCAB may have had to pay more than the \$2,000-\$2,200 per acre alleged to be the going price for comparable land.<sup>28</sup> Where the record



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establishes that two of the Maffei siblings were willing to transfer voluntarily and that, partly as a result of their donated interests, the RCAB paid a low, but not unconscionable, price for the property; the deed unambiguously granted the RCAB full legal and equitable interest in the property; and where the Maffeis have not shown a triable issue on their claims of fraud, breach of duty, or mutual mistake, they are not entitled to a constructive trust on generalized allegations of unconscionability or unjust enrichment. Cf. *White v. White*, 346 Mass. 76, 79–80, 190 N.E.2d 102 (1963) (unjust enrichment found and constructive trust imposed by court where “the words used in the instrument of transfer resulted in a situation which was materially at variance with [the parties’] common intention”). The judge properly granted summary judgment on this claim.

28 At a total purchase price of \$18,000, representing a payment of \$3,000 to each sibling, the price for each acre of the eight-acre property would be in excess of \$2,200.

[25] [26] [27] [28] 5. *Resulting trust*. The judge also correctly found that the Maffeis failed to demonstrate a triable issue on their cause of action for a resulting trust. A resulting trust may be imposed to enforce a conditional gift. It typically occurs where “a transfer of property is made to one person and the purchase price is paid by another; in such a case a trust results in favor of the person who furnished the consideration.” *Meskeil v. Meskeil*, 355 Mass. 148, 150, 243 N.E.2d 804 (1969). Unlike a constructive trust, a resulting trust pivots on the key element of intention. The party who furnishes consideration must not intend to do so as “a gift or advancement” \*254 to the one who takes legal title to the property. See *Fortin v. Roman Catholic Bishop of Worcester*, *supra* at 789, 625 N.E.2d 1352; *Lewis v. Mills*, 32 Mass.App.Ct. 660, 663, 593 N.E.2d 1312 (1992). See also 5 A.W. Scott & W.F. Fratcher, *Trusts* § 462.1 (4th ed.1989). Moreover, a “resulting trust must arise, if at all, at the time of the execution of the deed.” *Fortin v. Roman Catholic Bishop of Worcester*, *supra*, quoting *Dwyer v. Dwyer*, 275 Mass. 490, 494, 176 N.E. 619 (1931).

[29] The Maffeis’ case for a resulting trust is infirm in several respects. First, their contention that the property was given as a “conditional gift” is belied by the clear and unambiguous words of the deed, which the Maffeis do not claim they had no opportunity to read prior to signing before a notary. See *Fortin v. Roman Catholic Bishop of Worcester*,

*supra*. Second, they have not advanced any evidence that, at the time the deed was executed “for consideration paid,” the parties intended anything \*\*318 other than a complete transfer of all legal and beneficial interest in the property from the Maffeis to the RCAB. Neither the verified complaint nor Catherine’s sworn statement alleges that anyone told Reverend Lord that the family required, or even expected, the property to be deeded back to them if it were no longer used as a church. The judge did not err in granting summary judgment to the RCAB on this claim.

[30] 6. *Breach of contract*. Summary judgment was appropriate on the Maffeis’ breach of contract claim. We have noted the deed’s completeness and lack of ambiguity. Moreover, the terms of the alleged oral contract were never reduced to writing and the Maffeis are thus barred from seeking to enforce the oral agreement by the Statute of Frauds. See *Michelson v. Sherman*, 310 Mass. 774, 775, 39 N.E.2d 633 (1942) (oral contract for purchase of real estate cannot be enforced against party thereto unless party or party’s agent has signed written memorandum reciting essential terms with reasonable certainty); G.L. c. 259, § 1.<sup>29</sup>

29 General Laws c. 259, § 1, provides, in relevant part: “No action shall be brought ... [u]pon a contract for the sale of land, tenements or hereditaments or of any interest in or concerning them ... [u]nless the promise, contract or agreement upon which such action is brought, or some memorandum or note thereof, is in writing and signed by the party to be charged therewith or by some person thereunto by him lawfully authorized.”

[31] \*255 The Maffeis nevertheless argue that the RCAB is estopped from asserting the Statute of Frauds based on “facts ... similar” to those of *Cellucci v. Sun Oil Co.*, 2 Mass.App.Ct. 722, 320 N.E.2d 919 (1974), S.C., 368 Mass. 811, 331 N.E.2d 813 (1975).<sup>30</sup> We disagree. It is sufficient to note that the RCAB is shown to have paid a fairly negotiated price for the property and that the record is devoid of any evidence that the parties agreed that the property would revert to the Maffeis if it were no longer the site of a church. Estoppel is not warranted. The RCAB was entitled to summary judgment on the contract claim.

30 Estoppel may prevail against a Statute of Frauds defense where the litigant claiming estoppel proves: “(1.) A representation or conduct amounting to a representation



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intended to induce a course of conduct on the part of the person to whom the representation is made. (2.) An act or omission resulting from the representation, whether actual or by conduct.... (3.) Detriment to such person as a consequence of the act or omission." *Cellucci v. Sun Oil Co.*, 2 Mass.App.Ct. 722, 728, 320 N.E.2d 919 (1974), S.C., 368 Mass. 811, 331 N.E.2d 813 (1975), quoting *Industrial Bankers of Mass., Inc. v. Reid, Murdoch & Co.*, 297 Mass. 119, 124, 8 N.E.2d 19 (1937).

[32] 7. *The Maffeis' negligent misrepresentation claim.* A defendant is liable for negligent misrepresentation if "in the course of his business ... [he] supplies false information for the guidance of others in their business transactions" on which the others justifiably rely, "if he fails to exercise reasonable care or competence in obtaining or communicating the information." *Fox v. F & J Gattozzi Corp.*, 41 Mass.App.Ct. 581, 587, 672 N.E.2d 547 (1996), quoting Restatement (Second) of Torts § 552(1) (1977). The Maffeis' action for negligent misrepresentation rests on allegations that the RCAB failed to exercise reasonable care by not informing the Maffeis about the possibility of suppression, and that the RCAB was negligent in preparing a deed that did not reflect the actual terms of the parties' agreement that the property would revert to the Maffeis if it no longer held a church. The First Amendment, as we have discussed, prohibits us from addressing the first averment; the lack of any evidentiary \*\*319 support in the record, as we have also discussed, dooms the second allegation. The judge did not err in granting summary judgment on this claim.

8. *Hanafin's negligent misrepresentation claim.* Hanafin claims that the RCAB acted negligently in failing to inform Reverend Vartzelis of its plans to close St. James when it knew \*256 he would be soliciting funds in 2002 to sustain the church "now and for the future." The claim cannot be sustained. First, as the judge noted, there is no evidence that Reverend Vartzelis used Hanafin's donation for anything other than his stated purpose: to refurbish St. James. Second, Hanafin has not shown that Reverend Vartzelis failed to exercise reasonable care or competence in using the phrase "for the future" in soliciting funds. See *Fox v. F & J Gattozzi Corp.*, *supra*. Indeed, Reverend Vartzelis solicited funds to refurbish St. James in 2002. As to the RCAB, it was not until January, 2004, that the Wellesley-Weston "eluster" recommended closing St. James, and not until October, 2004, that St. James was suppressed. There is, in short, no evidence that, in June, 2002, Reverend Vartzelis knew that the St. James would be suppressed two years later after a lengthy review process, although he and, presumably, Hanafin, were aware of rumors about St. James's closure as early as 1999. Hanafin's negligence action was properly dismissed on summary judgment.

*Judgment affirmed.*

**Parallel Citations**

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# Exhibit V

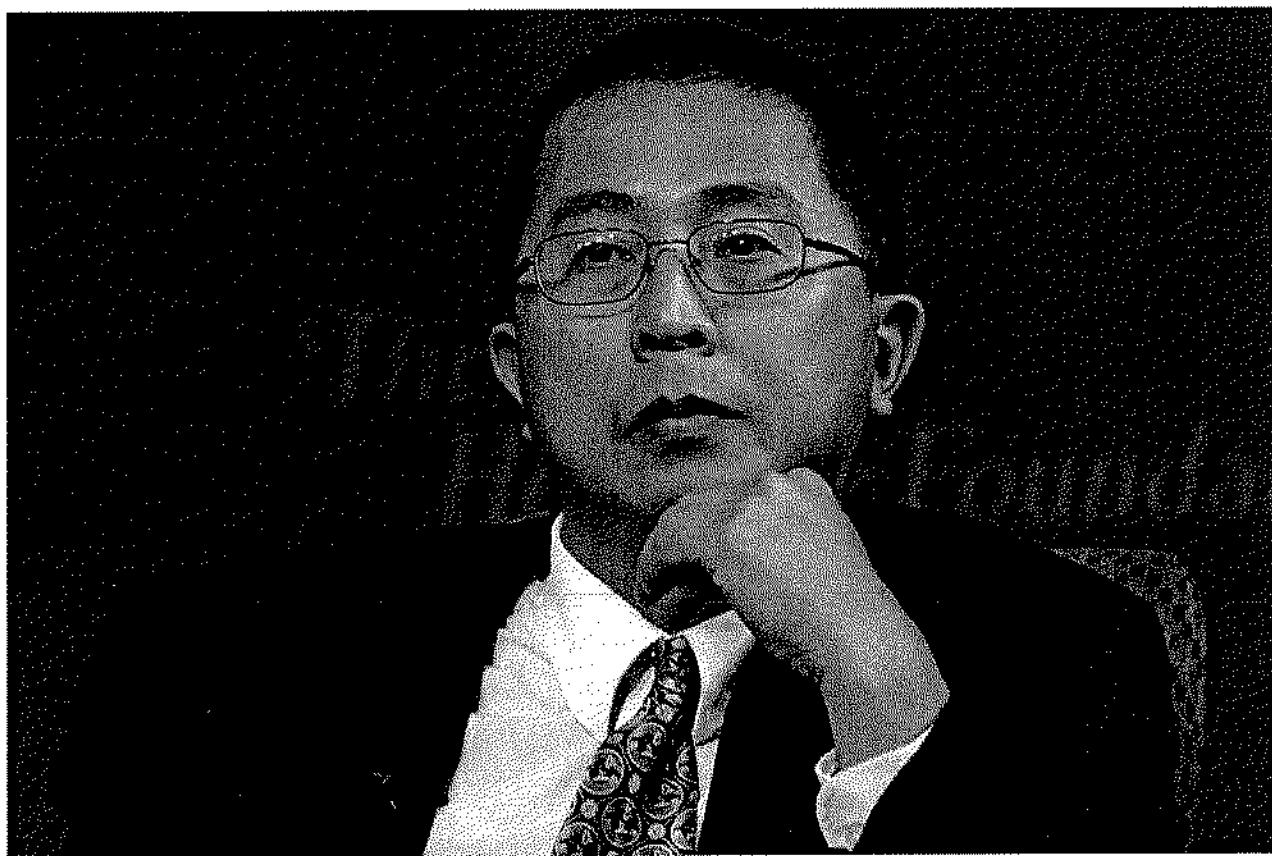
NOV. 5

# Researcher helps sow climate-change doubt

Industry-funded Cambridge astrophysicist adds to partisan divide

By Christopher Rowland

| GLOBE STAFF | NOVEMBER 05, 2013



PETE MAROVICH FOR BOSTON GLOBE

**Willie Soon's work is funded by energy industry grants.**

WASHINGTON — The setting was not unusual for a scholarly conference: a bland ballroom in a Houston hotel. But Willie Soon's presentation was anything but ordinary. As PowerPoint slides flashed on a screen, his remarks crescendoed into a full-throated denunciation.

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Never mind that Soon, an astrophysicist, is no specialist on global sea levels, and his most notable writing on the subject was an op-ed article in the conservative Washington Times last year.

He has, nonetheless, established himself as a front-line combatant in the partisan crossfire over rising oceans, melting ice, and other climate issues beyond his primary expertise. Coveted for his Harvard-Smithsonian affiliation, and strident policy views, he has been bankrolled by hundreds of thousands of dollars in energy industry grants.

Working in close coordination with conservative groups in Washington, he passionately seeks to debunk the growing consensus on global warming before audiences of policymakers, at academic seminars and conferences, and in the media.

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Polar bears? Not threatened. Sea level? Exaggerated danger. Carbon dioxide? Great for trees. Warming planet? Caused by natural fluctuation in the sun's energy.

Soon's views are considered way outside the scientific mainstream, which makes him a prophet or a pariah, depending on which side you ask. Some say his work simply doesn't hold up to scrutiny, that his data are cherry-picked to fit his thesis.

But in Washington, where facts generally lose the race with opinion, he is a force. His writings

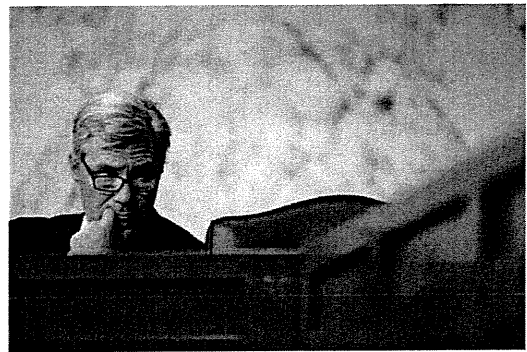
Harvard-Smithsonian global warming study has been filed in a lawsuit. <https://www.washingtonpost.com/news/energy-environment/wp/2013/11/05/harvard-smithsonian-global-warming-study-has-been-filed-in-a-lawsuit/> and lectures are frequently cited by industry backed groups and think tanks, as they attempt to sow doubt about global warming.

And the strategy is working.

Outside the Beltway, the science is largely settled. Yet in the capital, government response to one of the major environmental and economic challenges facing the planet is mired in an endless cycle of conflicting claims and partisan finger-pointing.

The work of Soon, and a handful of like-minded scientists, is seen by critics in Congress and elsewhere as a case study in how this deadlock has been engineered by energy companies and antiregulation conservatives.

“They are merchants of doubt, not factual information,” said Senator Sheldon Whitehouse, a Rhode Island Democrat who delivers a Senate speech every week demanding stronger air-quality standards. “Their strategy isn’t to convince people that the scientists are wrong. Their strategy is simply to raise the specter that there is enough doubt that . . . you should just move onto the next issue until this gets sorted out,” he said. “It gives credibility to a crank point of view.”



DREW ANGERER/GETTY IMAGES

**Senator Sheldon Whitehouse, a Democrat from Rhode Island.**

## **Divided US Congress, public**

No fewer than 13 US agencies spend more than \$2.6 billion a year gathering and analyzing evidence on climate shifts — in land, at sea, at the poles, in space.

The conclusion? Global warming is real, and human activities are almost certainly a major cause.

The United Nations Intergovernmental Panel on Climate Change, a body that was awarded the Nobel Peace Prize in 2007, has likewise prepared a series of reports documenting the dangers. The latest, released in September, said there is a 95 percent certainty that human activity is the primary cause of the planet’s warming. The report predicts oceans will rise by nearly 3 feet by the end of the century.

And here is the official view of the American Association for the Advancement of Science, the world’s largest general scientific society: “The scientific evidence is clear: Global climate change caused by human activities is occurring now, and it is a growing threat to society.”

US representatives and 30 senators believe that global warming is not happening or, if it is, that human activity is not the cause, according to a tally by the Center for American Progress Action Fund, a liberal advocacy group.

Voter surveys also show a divided public. Gallup, the polling firm, said this year that 57 percent of Americans surveyed believe global warming is a man-made phenomenon, while 39 percent say it is due to natural causes.

This muddled picture has made congressional action all but impossible.

The Senate killed comprehensive climate-change legislation in 2010 after the House passed the bill, which was co-authored by then-representative Edward Markey of Massachusetts. Markey said the bill failed because “polluters manufactured a blizzard of industry-funded doubt. If not for that, the climate bill would have passed.”

Frustrated, President Obama has opted to bypass Congress and is pursuing stronger regulations through the Environmental Protection Agency. The capital is girding for yet another round of lobbying and legal battles over those new rules.

There are shrill and over-the-top voices on the left as well, more focused on pillorying climate-change skeptics than in promoting reasoned debate. But conservatives and energy interests have the lengthiest record of funding and promoting reports that attempt to debunk prevailing theories of climate change.

Soon’s work falls into that category.

As is common among the Harvard-Smithsonian scientists, Soon receives no taxpayer-funded salary; his compensation is dependent on outside grant money, according to the Smithsonian Institution.

He has proved adept at winning grants. Over the last dozen years, he has received research funding of more than a \$1.2 million from sources such as ExxonMobil; Southern Company, a foundation run by the Koch brothers, conservative energy moguls; and industry trade group American Petroleum Institute, according to public documents obtained under the Freedom of Information Act by Greenpeace, the environmental advocacy group.

Some of Soon’s papers disclose the sources of his funding, others do not. Industry and conservative sources have been the sole source of his funding since 2006, according to the records.

Most of Soon’s industry backers either declined to comment or did not respond directly to

quality of his academic credentials.

“You have a guy that is aligned and associated with Harvard University, one of the top universities in the United States, and the Smithsonian, also very reputable,” said institute spokesman Eric Wohlschlegel.

Soon declined multiple requests for a formal interview but responded to some questions in brief conversations after public appearances in Chicago and Washington. The fact that all of his grant money since 2006 has been from energy companies or antiregulatory interests has no bearing on his work or findings, Soon said.

“No amount of money can influence what I have to say and write,” Soon told the Globe, “especially on my scientific quest to understand how climate works, all by itself.”

He said he is seeking only to spread the truth about science as he sees it. Scientists who say carbon-dioxide-induced warming is a virtual certainty, he added, have allowed political fashion to compromise their integrity.

He lays claim to higher standards.

“They have lost sight of the fundamental quest,” he said. “We follow the evidence.”

## **Furor over published results**

Soon, 48, began his journey to prominence in the world of global-warming doubters in Cambridge, where he arrived in the early 1990s.

A native of Malaysia, Soon had earned his PhD at the University of Southern California. He then won a coveted appointment at the Harvard-Smithsonian Center for Astrophysics as a post-doctoral researcher, assisting another prominent climate-change doubter, Sallie Baliunas, who was studying variations in solar radiation. He won a full-time appointment as an astrophysicist in 1997.

Soon and Baliunas both served as senior scientists at the George C. Marshall Institute, a conservative think-tank in Washington. Based on their analysis of energy fluctuations from the sun, they raised questions about the role of carbon emissions in global warming.

Soon’s overarching argument is that temperature change on Earth is not caused by burning fossil fuels but by what he calls the “King Kong of the climate system,” the sun — which is his primary area of expertise.

In 2003, Soon and Baliunas published a research paper that caused an international controversy and won Soon favor among climate conservatives in Congress.

"20th Century Climate Not So Hot," the Harvard-Smithsonian press release declared at the time of the paper's release.

The "meta-analysis," which is a broad review of previously published scientific papers, asserted that 240 studies of climate-related data such as tree rings and ice borings, when taken together, revealed that the last century was neither the warmest nor the most extreme on record. The claim bucked the growing body of evidence that showed a marked increase in temperature in the second half of the 20th century.

Controversy over the paper's publication included allegations of methodological flaws and the failure of outside peer reviewers to appropriately scrutinize its claims. At one journal that published it, *Climate Research*, a handful of editors resigned to protest the decision to accept it.

Soon and Baliunas had plucked weather data from various regions in various centuries throughout history, said their detractors, then incorrectly used that information to make broad conclusions about the temperature of the planet during the so-called Medieval Warm Period, about 1,000 years ago.

Published in two separate peer-reviewed journals, the paper contained an acknowledgment: part of the research funding came from the American Petroleum Institute, the oil industry's lobbying arm in Washington.

Michael Mann, a prominent climate researcher who performed crucial temperature studies at the University of Massachusetts Amherst during the 1990s and is now a professor at Pennsylvania State University, said he was surprised when he read the paper.

"Every self-respecting climate scientist that I knew that read it agreed, this was appalling," Mann said. "It wasn't legitimate. It was simply a politically motivated attack on a body of work masquerading as science."

Despite doubts about its validity and questions about the authors' ties to industry, the paper gained immediate traction in Washington.

Industry-funded and conservative skeptics inside and out of the Bush administration seized on it to attack Mann's own findings from a few years earlier, which showed centuries of relatively level temperatures followed by a sharp uptick after humans began pumping more carbon-dioxide into the atmosphere.



Mann said in an interview.

“You attack the science, you create confusion, you divide the public,” he said, “and that’s enough to make sure there will be no policy progress in this country.”

In the last decade, Soon has given private briefings to congressional staff and traveled throughout the United States and the world on speaking appearances.

This year, Soon has been critical of Mayor Michael Bloomberg’s \$20 billion infrastructure plan to protect New York City from rising waters. He has urged residents of Delaware to disregard dramatic warnings about higher ocean tides.

His work has been cited in floor speeches by members of the US House and Senate, who say evidence of human-induced climate change is lacking and does not justify the economic costs of cutting greenhouse emissions. Among his admirers: Oklahoma Republican James Inhofe, who has cited Soon’s research in the Senate and famously denounced global warming as “the greatest hoax every perpetrated on the American people.”

Soon also has fans among scientists who tend to share his views.

Freeman Dyson, a respected figure at the Institute for Advanced Study, in Princeton, whose turn in recent years toward climate skepticism stunned many of his peers, defended Soon’s work.

“The whole point of science is to question accepted dogmas,” Dyson said in an e-mail to the Globe. “For that reason, I respect Willie Soon as a good scientist and a courageous citizen.”



**Freeman Dyson, a theoretical physicist at the Institute for Advanced Study in Princeton.**

## **A ‘hero’ among skeptics**

Soon’s work has made for an awkward relationship with his employer, the Harvard-Smithsonian Center for Astrophysics, where most of the scientists train their attention on galaxies, black holes, and other mysteries of the cosmos.

As the name suggests, the center is a hybrid, made up of scientists from both Harvard College Observatory and the Smithsonian Astrophysical Observatory, a division of the Smithsonian Institution.

Soon is employed by the Smithsonian side of the house and has an indefinite appointment.

Although Soon initially agreed to an interview, the observatory declined to permit it to take place on its campus.

“Willie’s opinions regarding climate change are his personal views not shared within our research organization,” spokesman David Aguilar said in an e-mail.

Soon said he is required by the center to recite a disclaimer – saying his views are his own, and not that of Harvard-Smithsonian – each time he speaks or writes on anything outside his expertise in solar radiation. But the complexities of his relationship with Harvard-Smithsonian are often ignored by his sponsors and conference hosts eager to showcase his impressive credentials.

The Harvard-Smithsonian Center’s former director, Harvard astronomy professor Irwin Shapiro, said there was never any attempt to censor Soon’s views. Nor, he said, was Soon the subject of complaints or concern among the 300 scientists at the center.

“As far as I can tell,” said Shapiro, “no one pays any attention to him.”

While that may be true in the academic environs of Cambridge, it is definitely not the case in Washington.

Soon maintains affiliations with several industry-supported conservative groups that package and aggressively promote his scientific reviews, videos, blogs, and op-eds in an effort to shape the climate-change debate. In addition to the Heartland Institute, a conservative think-tank based in Chicago, they include two nonprofits in Washington where Soon serves as a scientific advisor, the Committee for a Constructive Tomorrow and the Science and Public Policy Institute.

All three organizations — which have received energy industry funding — vigorously oppose greenhouse gas regulations and operate websites that provide endless debating fodder for climate-change skeptics in the United States and abroad.

Among the leaders of the Center for a Constructive Tomorrow is its communications director Marc Morano, a former advisor and speechwriter for Oklahoma’s Senator Inhofe and other Republicans on the Senate Environment and Public Works Committee. Morano also was a producer for conservative commentator Rush Limbaugh’s television show in the 1990s.

“Willie Soon is a hero of the skeptical movement,” said Morano. “When you are an early pioneer, you are going to face the scrutiny and attacks.”

Washington's partisan climate wars.

The administrator of the Environmental Protection Agency, Massachusetts native Gina McCarthy, met with reporters at a hotel breakfast near the White House to defend new greenhouse-gas restrictions the agency had proposed the week before.

"EPA is an agency that, after all, is based on science and moving forward with what peer-reviewed science tells us," she said. "In the issue of climate, it tells us that climate change is real, and that human activities are fueling that change."

Two hours later, just a few blocks from the Capitol, Willie Soon appeared on stage at the conservative Heritage Foundation to spread the word about a 1,000-page rebuttal, distributed by the Heartland Institute, of a report from the Intergovernmental Panel on Climate Change.

The rebuttal, featuring analysis by 47 authors of recent published reports, is intended to provide lawmakers with a competing viewpoint on the science.

Except for a Fox News report that prominently featured Soon, Heartland officials have complained the report has been ignored by the mainstream media.

Before the Heritage Foundation audience of 100 people, Soon won appreciative applause before launching into a fresh set of attacks: "IPCC is a pure bully," he said, accusing the body of "blatant manipulations of fact" and engaging in a "charade."

"Stop politicizing science!" he said. "Just stop!"

*Christopher Rowland can be reached at [crowland@boston.com](mailto:crowland@boston.com).*

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# Exhibit W



# POLLUTING OUR DEMOCRACY AND OUR ENVIRONMENT: Dirty Fuels Money in Politics

For at least the last decade, it has been abundantly clear that the people responsible for polluting our air, our water, and our climate with toxic contamination are many of the same ones responsible for polluting our democracy with hundreds of millions of dollars in toxic money.

It is true that big polluters have been spending big in politics for decades, but the research collected here shows that this bad situation has only become worse over time. With millions in corrupting money pouring into the political system, the 113th Congress has pumped out legislation and votes so toxic that it has earned the title of "most anti-environmental" in history. The returns big polluters are getting on these political investments -- in the form of billions in corporate tax handouts -- exceed 5000 percent, demonstrating that Congress remains the best "investment" possible for the coal, oil, and gas industries.

The Supreme Court opened the floodgates for a tidal wave of corrupting political cash in 2010, when the disastrous ruling in *Citizens United v. FEC* let a handful of big money campaign donors spend unlimited amounts of outside dollars to influence elections. Since then, the political system has become a polluter playground. Take the 2012 election, for example -- easily the most expensive election in history. The estimated \$6 billion spent during the election cycle included massive contributions from some of the nation's biggest polluters, including the Koch Brothers, a pair of Kansas billionaires deeply entrenched in the oil refining, pipeline, coal, chemical, and gas sectors.

Data through March 10, 2014 compiled by the Center for Responsive Politics indicates Koch Industries has already spent nearly \$2.4 million in candidate and PAC

contributions for the current electoral cycle. It's likely this number is even higher, but further detail on spending by the Kochs and their affiliates is unavailable because of a lack of legal disclosure requirements for outside political spending.

What does that mean for those fighting for clean air, clean water, healthy communities, and a stable climate? A lot. Big spenders like the Kochs are also big polluters. Research by the University of Massachusetts-Amherst lists Koch Industries among the nation's top 30 companies responsible for the most toxic air, water, and greenhouse gas pollution.

The high-profile Kochs are only one example. Research by the Center for American Progress indicates that in the last two months of the 2012 election cycle alone, dirty fuel companies and allied groups spent upward of \$270 million on television ads.

The total amounts from big polluting industries have been staggering. \$17 million in campaign cash from oil companies has already poured into candidate coffers for the 2014 cycle on the heels of more than \$73 million in contributions during the 2012 cycle. Mining interests kicked in more than \$22 million in direct candidate contributions in 2012 and have already spent \$4 million in 2014. Electric utilities contributed \$22 million in 2012 and have already approached the \$10 million mark in direct contributions for 2014.

This report illustrates a daunting new reality for all Americans that care about protecting the health of our environment and our communities by showing that the nation's biggest polluters are increasing their political spending and seeing even better returns on their "investment" than ever before. This research from the Sierra Club and Oil Change International shows the payoff for big polluters is very real, in the form of the maintenance of billions in tax subsidies, anti-regulatory policies, and distorted priorities that give the wealthiest corporations in the nation a bullhorn that can drown out the voices of everyone else.

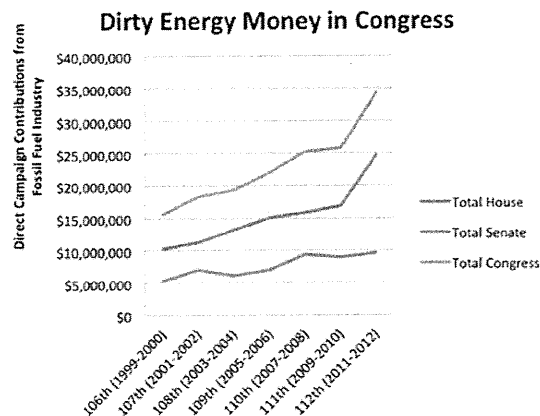
## Paying to Play: An Analysis of Recent Fossil Fuel Industry Campaign Finance

The Center for Responsive Politics compiles overall data on giving trends by the oil and gas industry and they're quite revealing. Below is a table showing all contributions, direct and indirect, from the oil and gas industry to Congress since 1999. Note that because of a lack of transparency, this reflects only a fraction of the true outside spending.

Election Cycle	Rank	Total Contributions	Contributions from Individuals	Contributions from PACs	Contributions Self/Outside Money	Donations to Democrats	Donations to Republicans	% to Dems	% to Repubs
2014	9	\$17,343,643	\$9,398,432	\$6,922,588	\$1,022,623	\$2,202,266	\$14,232,919	13%	87%
2012	8	\$73,096,970	\$40,659,163	\$15,904,379	\$16,533,428	\$5,911,330	\$50,679,132	10%	89%
2010	11	\$33,413,637	\$19,349,158	\$11,512,143	\$2,552,336	\$6,811,388	\$23,758,279	22%	77%
2008	14	\$39,047,130	\$28,956,509	\$9,951,229	\$139,392	\$8,766,021	\$30,280,478	22%	77%
2006	13	\$22,289,376	\$13,839,717	\$8,372,659	\$77,000	\$3,999,569	\$18,182,103	18%	82%
2004	17	\$26,985,116	\$19,784,089	\$7,170,777	\$30,250	\$5,137,914	\$21,811,767	19%	81%
2002	13	\$25,696,995	\$9,063,273	\$6,500,156	\$10,133,566	\$5,134,840	\$20,542,160	20%	80%
2000	10	\$34,648,961	\$12,076,308	\$6,539,203	\$16,033,450	\$7,008,761	\$27,128,581	20%	78%

The impact of the Citizens United decision can clearly be seen in the 11,761-percent increase in outside spending from 2008-2012. Additionally, the total amount of money spent in the 2012 electoral cycle was 87 percent higher than the pre-Citizens United 2008 election — both Presidential years.

Oil Change International's Dirty Energy Money database tracks direct donations to elected Representatives from oil, gas, and coal interests. One key difference with The Center for Responsive Politics' Oil & Gas sector category is that the Dirty Energy Money database includes coal related companies. It also uses a more robust screening process to both add and remove companies that appear to have slipped through CRP's filter, particularly electric utilities that do not normally land within the CRP's industry categorization. As can be seen in the graph below, this measure also tracks an upward curve, with a surge after Citizens United.



## Congress: A Cash Machine for Coal, Oil, and Gas

What if an investment advisor told you that he could get you \$59 back for every \$1 you gave him? That's a 5800 percent rate of return. Even Bernie Madoff only promised 10.5 percent in his ponzi scheme.

Clearly that was a scam, but if you're the oil, gas, and coal industry, it's legal and business as usual in Washington. According to an Oil Change International analysis of the 111th (2009-2010) Congress, for every \$1 the industry spends on campaign contributions and lobbying in D.C., it gets back \$59 in subsidies.

### HERE'S HOW IT WORKS:

Amount the fossil fuel industry spent during the 111th Congress (2009 & 2010) on contributions to Congress' campaigns: **\$25,794,747**

Oil and Gas lobbying total 2009: **\$175,454,820**

Oil and Gas lobbying total 2010: **\$146,032,543**

- TOTAL amount spent by Big Fossil Fuels in 111th Congress: **\$347,282,110**

2009 amount given to fossils in federal subsidies: **\$8,910,440,000**

2010 amount given to fossils in federal subsidies: **\$11,578,900,000**

- TOTAL amount given to fossils during 111th Congress: **\$20,489,340,000**

(Original OECD source for subsidies [here](#) and broken out by U.S. Federal totals [here](#))

Divide total subsidies by total money spent by the industry and you get **59**.

**\$1 in. \$59 out.** That's a 5800 percent return on political investment. Impressive.

## A Distortion of Public Priorities

The arguments against campaign finance reform don't hold up when contrasted with the clearly skewed policy priorities of a Congress that has been flooded with big polluter cash. While the majority of Americans stand strongly in support of clean energy, climate action, and an end to taxpayer handouts to fossil fuel companies, Congress has instead launched an unprecedented assault on each of these key components that are needed to safeguard American families from dangerous and toxic pollution.

To put it plainly, the priorities of Congress have been distorted and scarcely resemble those of the vast majority of the American people. Consider any number of public opinion polls as a baseline:

### **CLEAN ENERGY:**

- By nearly a 2-to-1 margin, voters think the country should be investing more in clean energy sources and energy efficiency rather than in fossil fuels like coal, oil, and gas. ([Greenberg, Quinlan, and Rosner Research, January 2014](#))
- 72% of Western voters say they would be more likely to vote for a candidate who wants to "promote more use of renewable energy - like wind and solar," including 44% who say they would be "much more likely" to vote for such a candidate. ([Colorado College, January 2014](#))
- 67% of Americans want the government to invest more on "developing wind and solar power." ([Gallup, March 2014](#))
- 72% of small business owners support a national renewable energy standard that would require 20% of all our electricity from clean energy sources by 2020. ([ASBC, June 2013](#))

### **ACTION ON CLIMATE:**

- Two-in-three U.S. voters say the issue of climate disruption is a serious problem. ([Greenberg, Quinlan, and Rosner Research, January 2014](#))
- Seven-in-ten Americans favor the Environmental Protection Agency (EPA) putting limits on the amount of carbon pollution that power plants can release. ([Greenberg, Quinlan, and Rosner Research, January 2014](#))
- More than four-in-five Americans (83%) believe the U.S. should make an effort to combat climate disruption even if it has at least "small-scale" economic costs. ([Yale/GMU, Nov. 2013](#))
- Seven-in-ten Americans (71%) say that "global warming" should be a priority for President Obama and Congress. ([Yale/GMU, Nov. 2013](#))

- About nine-in-ten Latino voters want the government to take action against the dangers of climate disruption. ([Latino Decisions, Dec. 2013](#))

### **TAX GIVEAWAYS TO BIG OIL:**

- Nearly three-in-five (59%) Americans support eliminating all subsidies for the fossil-fuel industry, including majority support from Republicans (52%), Independents (64%), and Democrats (67%) alike. ([Yale/GMU, Nov. 2013](#))
- More than three-in-five small business owners (62%), including 58% Republicans and 67% Independents, want the government to stop extending tax subsidies to big industry, specifically oil. ([American Sustainable Business Council, June 2013](#))

## Attacking Healthy Communities

Instead of acting in accord with these common-sense priorities backed by huge majorities of the public, Congress seems to be more focused on the priorities of big polluters - the same polluters who have pumped our political system full of money.

For its part, since 2010, the U.S. House of Representatives has earned recognition as the "Most Anti-Environmental House in History." More than 300 anti-environmental votes were taken by the House in 2011 and 2012 during the 112th Congress, according to the Democratic Staff of the House Energy and Commerce Committee. Already in the 113th Congress, 164 attacks on clean air, clean water, clean energy, and climate action have been launched. Those totals include:

### **112TH CONGRESS:**

- 95 attempts to weaken the Clean Air Act
- 145 attacks on the Environmental Protection Agency
- 47 votes to promote dangerous offshore drilling
- 53 votes to block action on the climate crisis
- 57 attempts to defund or repeal clean energy initiatives

### **113TH CONGRESS (THROUGH APRIL 17, 2014):**

- 44 votes to block action on the climate crisis
- 88 votes attacking public lands and wilderness
- 44 attempts to weaken the Clean Air Act
- 68 attacks on the Clean Water Act

The most recent tallies include votes to gut clean energy funding by upward of \$1 billion and 20 votes in 2013 alone to attack safeguards from carbon pollution that's fuelling the climate crisis.

Other low points include the House's approval of the Energy and Water Development and Related Agencies Appropriations Act of 2014, which continues subsidizing the largest oil companies in the world while cutting funding for clean energy, energy efficiency, and the Advanced Research Projects Agency-Energy (ARPA-E), which actively invests in developing new clean energy technologies.

industry pollution — and it passed with a vote of 248-163.

These are just a handful of the numerous attacks. In total, the number of polluter-backed attacks reaches well into the hundreds. Comprehensive collections of these votes are available both from the House Energy and Commerce Democratic Staff as well as on Annual Scorecards from the League of Conservation Voters.



## McCutcheon: Making a Terrible Situation Even Worse

As bad as the current state of affairs is, the Supreme Court recently made a terrible situation much worse with their ruling in McCutcheon v. FEC. While the Court opened the floodgates to outside money in politics with the Citizens United decision, the McCutcheon ruling does the same thing for inside money, dramatically increasing the total amount of money individual donors can give directly to candidates by scrapping the so-called "aggregate limit." Previously, donors could give up to \$123,200 to

The House also passed an amendment to the Energy Consumers Relief Act of 2013 that would prevent the government from addressing the economic costs of climate disruption. This means that despite the astronomical costs that extreme weather fueled by climate disruption have each year, the government would be unable to weigh those costs against savings from government action to increase energy efficiency and reduce carbon pollution.

The Commerce, Justice, Science, and Related Agencies Appropriations Act for 2013 also saw multiple toxic riders added by the House. Rep. Chip Cravaack (R-MN) attempted to eliminate funding for the National Science Foundation's Climate Change Education Program, which was passed by a vote of 238-188.

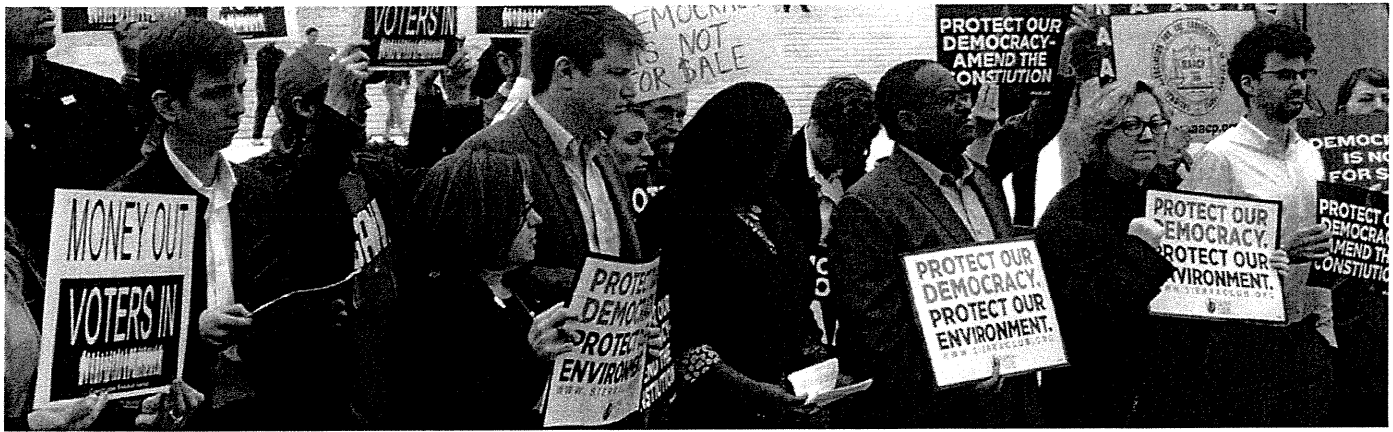
Rep. Cory Gardner (R-CO) sponsored the so-called Domestic Energy and Jobs Act which attempted to overturn the Clean Air Act's requirement for national air quality standards to be based on the best science alone. This would've prioritized the oil and gas industry's interests in an effort to delay clean air standards that would reduce

candidates and political parties combined -- already a huge amount for most Americans. The McCutcheon decision will increase the total amount an individual can give to approximately \$3.6 million — an amount roughly 70 times the median American household income of about \$51,000 per year.

In practice, McCutcheon will further solidify the influence of wealthy donors in our political system. It should be noted that the plaintiff in the case, Shaun McCutcheon, is an Alabama climate denier who made his fortune in the coal industry.

The Supreme Court decision comes just in time for McCutcheon and his industry allies to blunt the impact of the new EPA power plant standards with a flood of private money in Washington. With the movement to transition to a clean energy economy well under way, the price of influence in Washington is going up, and Shaun McCutcheon and the fossil fuel industry as a whole are preparing to pay it. They're now able to tap into even more of their vast financial resources, spread misinformation, and line our elected officials' pockets.





## Seeking Solutions: The Government By The People Act

Fortunately, big money campaign donors are not getting away with this corruption of our democracy without the American people putting up a fight. In a recent poll by Greenberg Quinlan Rosner, results showed 91 percent of respondents want elected officials to “reduce the influence of money in political elections.” At the same time, a broad-based grassroots coalition has emerged to call for reforms to lift up the voices of small donors. Working alongside reform minded members of Congress, the coalition is standing up to champion reform and advance bipartisan legislative solutions to make Congress more responsive to the interests of average Americans – not just the wealthy and business interests

The Government By the People Act (H.R. 20), authored by Maryland Democrat John Sarbanes and cosponsored by more than 140 of his colleagues, is the central legislative solution to combat the influence of big money in politics, raise civic engagement, and amplify the voice of average Americans in our politics.

The legislation has three main components to make our government of, by, and for the people. First, the legislation offers every American a \$25 refundable tax credit on contributions to candidates for federal office, thereby making it easier for more Americans to participate in the funding side of our elections. Second, the legislation amplifies the voice of small donors, matching any contribution from \$1 to \$150 on a six-to-one basis from the “Freedom from Influence Fund.” In this way, candidates for federal offices will be able to run a campaign focused on small-dollar contributions without having to rely on the deep pockets of the wealthy and special interests. Finally, the legislation provides those small-dollar-backed candidates facing heavy spending by super PACs and

other “dark money” organizations with the resources necessary to fight back.

Taken together, the Government By the People Act offers average Americans – and the candidates they support – an alternative to our big-money-dominated campaign finance system. That way, when it comes time to make critical decisions on public policy, Congress will be better able to process the will of the public.

Environmental groups like the Sierra Club and Oil Change International are joining our labor, civil rights, and good government allies in support of the important efforts of Congressman Sarbanes. Already, more than 50 national organizations have endorsed the legislation, with more than 400,000 citizen cosponsors signing on to support the effort. At a time when the story of our political system is about who has the most money, the Government By the People Act would help refocus the debate on who has the most support from everyday Americans.

For more information on the Government By the People Act and the coalition supporting the effort, please visit [ofby.us](http://ofby.us).

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# Exhibit X



**FOR IMMEDIATE RELEASE**

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**HARVARD MANAGEMENT COMPANY NAMES JAMEELA PEDICINI  
AS FIRST VP FOR SUSTAINABLE INVESTING**

Harvard Management Company (HMC) today announced that Jameela Pedicini will become its first Vice President for Sustainable Investing, responsible for researching and understanding environmental, social, and governance (ESG) issues related to Harvard's endowment portfolio.

Pedicini, who has significant sustainable investment experience and a proven track record of evaluating ESG risks and opportunities, will work closely with HMC CEO Jane Mendillo and report to HMC's Chief Compliance Officer. Pedicini most recently served as Investment Officer for Global Governance with the California Public Employees' Retirement System.

"We are very pleased to have found someone with Jameela's depth of knowledge in sustainable investing and ESG issues to fill this new role at HMC," Mendillo said. "As long-term investors we are acutely focused on factors that may impact the long-term sustainability of Harvard's endowment portfolio. Jameela will help strengthen our understanding of these risks and opportunities and will sharpen our due diligence process to ultimately allow us to enhance the long-term returns we deliver for the University."

Kathryn Murtagh, Managing Director and Chief Compliance Officer at HMC, said Pedicini will work with HMC investment professionals across asset classes to analyze how ESG issues are currently integrated into the investment process and suggest enhancements where appropriate. "We will be looking to Jameela as our subject-matter expert on current industry practices, possible partnerships related to ESG investing, and on issues of interest emerging on Harvard's campus," said Murtagh.

Pedicini will also provide substantive staff support to Harvard University's Corporation Committee on Shareholder Responsibility (CCSR) and serve as a primary liaison to other University offices, committees, and constituents on ESG/investor responsibility issues.

At CalPERS, Pedicini led the implementation of ESG integration initiatives, and she conducted ESG risk analyses of portfolio companies, creating sustainability evaluation frameworks, supervising their application by analysts, and developing corporate engagement strategies. She led CalPERS' Sustainable Investment Cross-Asset Class Team and she managed its Global Peer Exchange, comprised of 12 global institutional investors with collective assets of \$1.5 trillion, to develop sustainable investment best practices.

Before joining CalPERS, Pedicini was a Manager of Investor Engagements at the UN's Principles for Responsible Investment office in London, where she managed collaborative



engagements with investors around issues of human rights, labor standards, community relations, and gender diversity across a wide spectrum of sectors. Previously, she was a Global Risk Analyst with Maplecroft in London.

Pedicini received her Bachelor of Arts degree in psychology from Antioch University, a Master of Science in sociology, social theory, and public affairs from the University of Amsterdam, and a Master of Philosophy in comparative social policy from the University of Oxford. Pedicini is a member of the standards council for the Sustainability Accounting Standards Board (SASB) and holds an Investment Management Certificate from the CFA Society of the UK.

# Exhibit Y

# HARVARDgazette

News Releases

## Harvard to sign on to United Nations-supported Principles For Responsible Investment

April 7, 2014

BOSTON – Harvard today announced its decision to sign on to the United Nations-supported Principles for Responsible Investment (PRI), becoming the first university endowment in the United States to join the organization. The PRI is recognized as the leading global network for investors who are committed to integrating environmental, social and governance (ESG) considerations into their investment practices and ownership policies. Harvard Management Company (HMC) will implement the principles in its management of the University's endowment and related financial assets.

"As long-term investors, we are by nature focused on material ESG factors and the responsible stewardship of our investments," said Jane Mendillo, President and Chief Executive Officer of HMC. "After careful review of the PRI, we decided that implementing the principles put forth by this pioneering organization is a natural step for us in the evolution of our sustainable investment practices. At the same time, it is consistent with our paramount focus on maximizing returns to support the mission of Harvard University."

The decision to join the PRI follows a yearlong review process and Harvard President Drew Faust's commitment, expressed in a letter to the Harvard community in October 2013, to strengthen Harvard's approach to sustainable investment. This commitment was endorsed last month by the University's Corporation Committee on Shareholder Responsibility, the committee that addresses questions about investment policy at Harvard.

The PRI's network of international investors work together to implement a set of voluntary principles that provide a framework for integrating ESG factors into investment analysis and ownership practices aligned with investors' fiduciary duties.

"Harvard University is the first U.S. endowment to publicly commit to investing its funds in a more responsible and sustainable manner using the PRI's voluntary framework, and we are thrilled to welcome them to the organization," said Fiona Reynolds, Managing Director of the PRI. "Sustainable investment is one of the world's fastest-growing investment trends, and Harvard's leadership provides a model for other U.S. universities."

In addition to subscribing to the PRI's principles, HMC also announced that it will become a signatory to the Carbon Disclosure Project's (CDP) climate change program. The CDP is an international nonprofit organization that works with governments, public companies and over 700 investors to drive environmental disclosure and performance of publicly listed companies.

Harvard will review and assess involvement in both organizations from time to time.

### About Harvard Management Company

Harvard Management Company is a subsidiary of Harvard University. Founded in 1974, HMC provides professional investment management of the University's \$32 billion endowment and related financial assets, using a unique hybrid structure integrating internal and external management. HMC's strong investment results over four decades have enabled the world-class teaching, groundbreaking research and extensive financial aid programs of Harvard University.