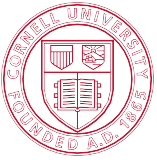


# Cornell University University Assembly

## **Cornell University Assembly** Agenda of the Jan. 21, 2020 Meeting 4:30 PM – 6:00 PM 401 Physical Sciences Bldg.

- I. Call to order - 4:30pm
- II. Call for Late Additions to the Agenda – 4:32pm to 4:35pm
- III. Business of the Day
  - a. Provost Michael Kotlikoff – 4:35 to 5:15pm
  - b. Approval of the minutes – meeting 12/3/19  
5:15pm to 5:20pm
  - c. Resolution 5:20pm to 5:45pm
    - i. Divestment – Adam Howell
  - d. Committees – 5:45pm to 5:55pm
    - i. Codes Judicial Committee
      1. Update – Logan Kenney
- IV. Adjournment at 6pm



# Cornell University University Assembly

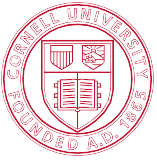
## Cornell University Assembly

Minutes of the December 3, 2019 Meeting

4:30 PM – 6:00 PM

401 Physical Sciences Building

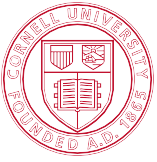
- I. Call to Order
  - a. Call to Order
    - i. R. Howarth called the meeting to order at 4:33pm
  - b. Roll Call
    - i. *Present:* J. Anderson, A. Barrientos-Gomez, K. Barth, R. Bense, J. Bogdanowicz, D. Hiner, R. Howarth, A. Howell, J. Pea, P. Thompson, C. Van Loan
    - ii. *Members not Present at Roll Call:* I. Allen, S. Chin, M. Haddad, L. Kenney, T. Reuning, E. Loew, G. Martin, R. Mensah
- II. Call for Late Additions to the Agenda
  - a. There were no late additions to the agenda
- III. Business of the Day
  - a. Approval of the minutes
    - i. P. Thompson stated that the written minutes would be a more general and broader document taken from the recording. The detailed interactions and statements of the meeting would be in the audio for individuals seeking it. All three minutes (September 3, October 1, and November 5) of the previous meetings were now set for approval.
    - ii. R. Howarth indicated that the University Assembly Bylaws contain no direction on the content of the minutes but Robert's Rules of Order states that the minutes need only to contain motions passed and not passed as well as the votes. There was no requirement to capture discussion for the minutes.
    - iii. 9/3/19, 10/1/19, 11/5/19
      1. J. Pea moved to approve the minutes.
        - a. The motion was seconded with no objections. The motion was **passed** with no negatives and three abstentions.
  - b. Resolution X: Support of the development and implementation of a Cornell Campus Circulator System
    - i. K. Barth stated that the circulator was never started and only looked at conceptually. The circulator was a "short-distance, circular, fixed-route, transit mode that would take riders around a specific area with major destinations" (Texas A&M TI, 2019). The circulator would affect student,



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staff, faculty, alumni, and university guests. The development of the campus circulator was one of Cornell University's Department of Transportation's primary initiatives for the year. The circulator was proposed as a way to reduce the university's carbon footprint and increase sustainability. The purpose of the resolution was to make a recommendation and collectively convey to the university administration that the University Assembly discussed the subject of starting a circulator and determined that it was a priority for the university. The text of the resolution does not contain design decisions but was rather a means of conveying the conceptual idea of the circulator, the groups involved (the GPSA, UA, and CIC) that would be making design decisions, and the sustainability benefits of the circulator. K. Barth presented a PowerPoint going more in-depth on the topic of the circulator.

- ii. A. Barrientos-Gomez stated that there should be no issue in getting the resolution passed in the GPSA and inquired if K. Barth had looked to peer institutions to see if there was presence of a circulator and its logistics. A. Barrientos-Gomez stated that Princeton University had a shuttle service free-of-charge for students. Looking to other institutions and having those details would strengthen the resolution.
  1. K. Barth stated that he had not looked at peer institutions but doing so would help support the case of Cornell University implementing a circulator transit-mode.
- iii. D. Hiner stated that when he had first started working at Cornell University in 2008, there was a circulator and inquired on what the difference would be between the proposed circulator and that of 2008? D. Hiner stated that the 2008 circulator was never on time and horribly managed.
  1. K. Barth declared that he did not know what the structural and planning difference would be.
- iv. R. Bensele inquired about the transfer points between routes for the circulator and the duration of which the circulator would run, whether it would run late into the night similar to the TCAT or not?
  1. K. Barth stated that transfer points, the duration of which the circulator would run, and the use of the circulator during snow days would all need to be addressed through the design process. K. Barth stated that he was not looking to vote on the resolution at the moment but rather to introduce it and have it be discussed before a vote would take place presumably within the next year. The CIC



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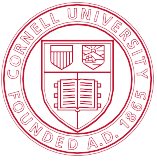
would continue to discuss the resolution as well as the circulator and input of UA members would be welcomed.

### c. Committees Report

#### i. Campus Infrastructure Committee – K. Barth

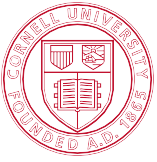
##### 1. C. Levine (CIC member)

- a. K. Barth noted that another major topic of interest was divestment specifically divestment of fossil fuels from the portfolio of the university and its endowment. In 2015-2016, all of the university assemblies (UA, GPSA, EA, and SA) passed a divestment resolution that went to the Board of Trustees. The Board of Trustees conveyed that in order for the assemblies to propose a divestment resolution, their would need to be evidence of injurious harm and moral reprehensibility by the actors of the company in the portfolio. K. Barth said that major advocates of divestment included students and faculty members and not all trustees were opposed to divestment. C. Levine, as an English professor and member of the CIC, offered to draft a memo addressing the criteria's set out by the Board of Trustees with information on the current status of information pertaining to the matter from the past three years. The memo would also inform on what actions peer institutions were taking on the topic of divestment from fossil fuels in an effort to support the case of divestment.
- b. C. Levine stated that because the Board of Trustees did not convey that they were unwilling to divest but rather needed evidence and a reason to do so, the CIC thought it best to provide the arguments for divestment from the information being unearthed over the past several years. C. Levine stated that she was currently drafting the memo with substantiating evidence supporting the case of divestment. The goal would be to have the CIC put forth a resolution and then all five assemblies would vote on a resolution similar in nature. The resolution would then be conveyed to the Board of Trustees in the current year (2019-2020). C. Levine noted that with the latest news of the “tipping points” being reached faster than previously stated by scientists, climate change and the issue of divesting now had more urgency.



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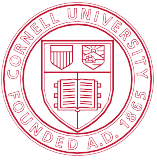
- i. R. Howarth stated that he supported the current draft of the CIC's resolution and hoped that the draft, after being reviewed by the CIC, would return to the UA body in the January meeting (01.21.20) for debate and discussion. The resolution would then be voted on at the February meeting (02.18.20). That timeline would run nearly parallel with that of the Faculty Senate if they decided to discuss the topic of divestment as well as that of the Student Assembly. Regardless, in order for the resolution to have power, it would need to move through all five assemblies in comparable form.
- ii. R. Bensel inquired about including an end date in the resolution since divestment would have to occur gradually. Secondly, would divestment also pertain to the subsidiaries of the larger companies and how would the decision of determining which companies would be divested be made?
  1. C. Levine noted that approximately 70% of carbon emissions come from fossil fuels and 80% of those emissions were from 20 companies solely. Those 20 companies included Exxon, Chevron, Shell, and BP and despite their mentions of solar usage, none of those companies had invested in renewable energy to full allowance. The companies being targeted would be the 20 main companies in an effort to eliminate mining and digging.
    - a. R. Bensel inquired if the companies would thus be named in the resolution.
      - i. C. Levine affirmed that the companies would be named in the resolution.
- iii. A. Barrientos-Gomez stated that the SA and GPSA were collaborating in an effort to complete the divestment report and inquired if it would be okay to



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share the information in the CIC's report and the resolution with that body as well as place them in contact with C. Levine.

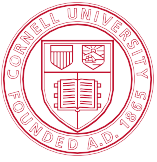
1. C. Levine stated that she was okay with that. She stated that she would be willing to share it for feedback as well as a resource for the other assemblies.
2. R. Howarth inquired if there was any points against not placing it on the University Assembly website.
  - a. K. Barth stated that the resolution was still in the draft form and that he would work with the Office of Assemblies to send it to all the University Assembly members. He stated that eight energy companies accounted for 20% of the world's carbon emissions. The standards that would need to be met to support divestment would include the companies inactions or actions being morally reprehensible, divestment having a meaningful impact on correcting a specified harm and not resulting in disproportionate offsetting of societal consequences, and the company exhibiting a harm that would be inconsistent with the goals and principles of the university.
- iv. C. Levine stated that the CIC felt that the trustees felt that they strongly knew the investments and the goal of CIC was not to lecture the trustees on the financials. The CIC report focused on the goals and principles of the university and the disjunction with that of not divesting.
- v. R. Howarth stated that in addition to addressing the criteria's (moral reprehensibility, etc.) set forth by the trustees, it would be reasonable for the assembly to



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consider that there are other factors that the trustees should be considering including being the last university to divest given the divestment status of other universities (ex. University of California system has divested). Being one of the last universities to divest would tarnish Cornell Universities image as a green, environmentally leading university. It would make sense to set a trajectory and deadline for divesting.

- vi. A. Howell declared his interest in using the memo as a resource for the Employee Assembly in writing a resolution supporting divestment.
- vii. C. Van Loan asked when the final resolution would be ready, and would the memo be used to inform the Faculty Senate about a proceeding divestment resolution.
  - 1. C. Levine stated that the resolution could be extremely brief supporting Cornell University's divestment from fossil fuels followed by the memo stating the rationale for divestment rather than a longer resolution following the memo.
  - 2. K. Barth stated that the manner in which the memo and the resolution would be conveyed had not been decided yet. The CIC was waiting for the SA to complete their resolution. The questions pertaining to which body would move first, language, and timing were still up for discussion. The CIC would be in favor of a resolution that supports the one being drafted by the SA and believes passing similar resolutions after the SA would make the most sense.
- viii. C. Van Loan stated that individuals would like to see what the rules are in terms of deciding which companies to divest from. There would need to be specific examples supporting divesting from

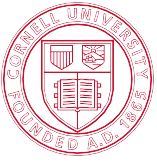


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particular companies rather than a general core value being cited.

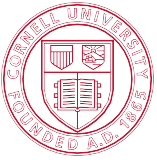
1. C. Levine said that commitments to divestment take several years. The goal would be to have the university decide to divest from coal, oil, and fossil fuel companies within the next 10 years. This timeframe would grant the opportunity to decide on details and logistics. C. Levine asked if it was important for the CIC to coordinate with the GPSA and SA language?
  2. C. Van Loan stated that he would be in favor of informing the GPSA and SA that a divestment resolution was in-progress and they could address the trustees on their own terms. The resolution would not need to be completed by the CIC yet.
- ix. R. Bensel stated that there would need to be mentions of morally irresponsible and morally responsible companies. An issue that could occur would be that the university would divest from one company and invest in another under the argument that it was not named in the resolution/memo.
1. C. Levine stated that the resolution would be to divest fully from coal, oil, and gas over a certain period of time. The moral reprehensibility aspect would be attached to the major 8 companies with proven research and evidence supporting divestment. The resolution would focus less on those major companies being the ones to divest from and more on the presence of reprehensibility.
- x. D. Hiner stated that with scientists emphasizing the issue of climate, would a 10 year divestment trajectory be too long? Additionally, how would the resolution handle future companies releasing IPOs (initial public offering) in the oil and gas industry?





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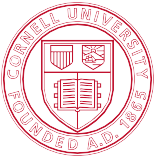
1. C. Levine stated that despite the timeline of committing to divest being far out, an immediate message would be sent. The commitment to divest sends the message that reputable institutions are no longer supporting fossil fuels. The message would have a major impact rather than the action of divestment itself. Additionally, IPOs are not the sole problem and thus the resolution would address divestment from all coal, oil, and gas.
- xi. D. Hiner conveyed concern with the potential of multiple resolutions being produced with varying language and varying supporting documents. This would give the Board of Trustees the ability to say the message is disjointed between the assemblies. D. Hiner asked if it would be feasible to have representatives of the different assemblies together in drafting a unified resolution? Having differing resolutions and documents being produced from different assemblies at varying times could work to undercut the major goal of divestment.
  1. R. Howarth declared his support for the assemblies drafting a concerted resolution and stated that it had not been done in such a manner as far as he was aware. The situation for divestment was unusual in that the trustees had setup a rule in which all five assemblies need to pass the same resolution before proceeding to the Board of Trustees with the resolution.
  2. J. Anderson conveyed hesitance towards having a congress made up of representatives of the assemblies to draft the resolution due to the fact that the Student Assembly would propose the most immediate and pressing divestment plan. As a body composed of the youngest individuals on campus, the issue of



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divestment was not a 10 year issue but one in need of immediate action. J. Anderson stated that the protocol from the trustees does not specifically dictate a singular resolution but a resolution with a generalized sentiment of divesting from coal, oil, and gas being passed in all the assemblies. The Board of Trustees would consider the University Assembly's 10 year divestment timeline and the Student Assembly's immediate divestment timeline in their own respective playing fields. A conference would only serve to undermine a rapid divestment decision from the Board of Trustees.

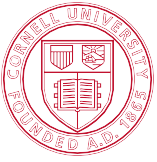
3. C. Levine stated that she would like to coordinate the language of the CIC's resolution to that of the SA to give the CIC resolution greater power and asked J. Anderson if that would be possible.
    - a. J. Anderson said yes.
  4. C. Van Loan dictated that the idea would be to limit the ability to have the argument of any assembly undercut.
  5. K. Barth stated that arguably, the UA serves as the conference for writing the unified resolution and consequentially, the UA resolution would be the strongest. The goal of the resolutions would be to be consistent and clear about the message of divestment.
- ii. Campus Welfare Committee
1. Tobacco Survey – D. Hiner
    - a. D. Hiner stated that the nicotine use survey had been concluded and presented on the break-up of responses. Students were the largest responders followed by staff and then faculty. However, in terms of response rate by population, faculty were the largest group. The university has a low smoking population, but the perception is that individuals smoke on a regular basis. The results depicted



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that all groups would be in favor of moving to a tobacco-free campus.

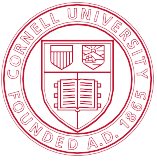
- i. R. Howarth noted the similar distributions across the communities in terms of favoring moving towards a tobacco-free campus.
- b. D. Hiner noted that a majority of the open-ended responses mentioned a nicotine-free campus. In terms of the online discussions, a popular theme was that of enforcing the current 25ft rule from buildings. D. Hiner stated that due to the lack of a functioning committee, the overall UA would need to step in and provide a sense of direction.
- c. K. Barth noted that the results show that most individuals are not smoking while thinking a lot of people are smoking, a result attributable to media (TV, movies, etc.). K. Barth stated that smoking is an addiction and that a smoke ban should be worked towards but not to a degree in which a ticket is issued. The individuals that would be penalized would be the ones with the largest challenge and the ultimate goal would be to support a change in behavior. At SUNY Albany, before a smoking ban was placed, there were discussions on aid to help individuals. There should be an emphasis on highlighting support in the health care plan and other university resources.
- d. R. Howarth stated that the results from the survey should be shared with the community as fast as possible rather than holding onto them. Additionally, the UA would need to decide on whether or not a ban be recommended and what form such a ban would have.
- e. C. Van Loan stated that every comment of the survey would need to be read and distilled.
- f. R. Howarth asked if there was any reason why the discussion and survey would not be able to be made public.
- g. C. Van Loan and A. Howell said no, and the online discussion was already public.
- h. R. Bensel noted the discrepancies between impressions and reality. Secondly, the online comments were strongly based on either side of the issue and a decision pleasing all parties would not be possible. Lastly, more than 80% of the



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community did not respond, thus, R. Bensel conveyed his reluctance on moving towards a ban due to the presence of intense opposition.

- i. R. Howarth stated that the data would be released now, the UA would work with the CWC to continue the discussion, and a decision would not be made soon.
- iii. Codes Judicial Committee
  1. Update – R. Bensel
    - a. R. Bensel stated that the CJC was arranging to meet on Monday for a 3 hour meeting in which to finish the last section of the draft for the Campus Code. The CJC was in the process of determining the relationship between outdoor posters and flyers and Freedom of Speech but the issue is that there is no policy pertaining to it. The draft would be circulated for public comment once completed. R. Bensel noted that an issue decided on putting forth to the community for public comment in the previous week was whether or not to bring the sororities and fraternities under the code. The addition, if supported, would be in the procedure section of the code and would be drafted in the following semester.
    - b. R. Howarth stated that M. Pollack had emailed him and L. Kenney asking when she would be able to receive the draft of the code to give to the trustees. L. Kenney had responded that the first section of the code would be available to M. Pollack by Monday (12.09.19) as well as the procedures possibly. R. Howarth noted that what L. Kenney had responded and R. Bensel had said were disjointed.
      - i. R. Bensel said that when M. Pollack was at the UA meeting, she had said that the first portion of the code (the Values and Prohibitions) would need to be completed by the end of the current semester. The completion of the procedures could then take place in the following semester. The Procedures section would be an equally arduous process. A majority of the editing has revolved around straightening the language of the code.



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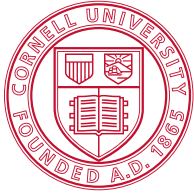
- a. R. Howarth asked when the UA would receive the draft of the first section of the code to have time to discuss and vote on it as well.
  - i. R. Bensel responded by stating that the hope would be to complete the draft by Monday (12.09.19) and post it for public comment. Additionally, it would also be given to the UA for comment. The end goal would be for the CJC to receive comments from all directions at once to make the revisions as efficient as possible and sending out for public comment would need to happen before the break.
  - ii. R. Howarth conveyed his opinion of having any documents available as soon as possible for public viewing. In the end, the comments and revisions however would need to return to the UA for discussion and approval from the CJC.
  - iii. R. Bensel noted that the code could not be submitted to the university without going through the UA. The CJC would like to get opinions from all sides before bringing it to the UA.
- b. K. Barth asked R. Bensel if there is a positive sentiment towards the state of the code and the completion progress.
  - i. R. Bensel stated that he did feel good about the state of the drafted code. He also noted that some of the issues related to the code will not go away.

IV. Adjournment

The meeting was adjourned at 6:00pm.

Respectfully Submitted,

Auriole C. R. Fassinou  
Clerk of the Assembly



# Resolution X: Support of the Divestment from Fossil Fuels

**Abstract:** Given the global climate emergency and our desire for Cornell to remain a leader in promoting a sustainable future, we request that Cornell divest from all investments in coal, oil, and natural gas in an orderly fashion.

**Sponsored by:**

*Caroline Levine* – University Assembly Campus Infrastructure Committee Member

*Adam Howell* - University Assembly Member

**Reviewed by:** Campus Infrastructure Committee, 12/04/2019

**Whereas,** 195 nations reached a global agreement in Paris in December of 2015 that we must keep planetary warming under 2° C above pre-industrial levels in order to avoid catastrophic and irreversible damage to society and the environment; since then, warming trends and their devastating consequences are happening more quickly than many predicted, leading to the likelihood of runaway feedback loops and prompting over 11,000 scientists to declare a “climate emergency” in November 2019;

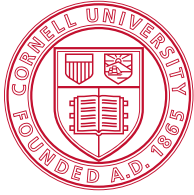
**Whereas,** the climate emergency is unlike all other cases for divestment in that fossil fuel use is threatening human civilization as we know it, with millions if not billions of people soon to suffer its impacts, including massive displacements of populations, hunger, disease, droughts, and floods around the world, the collapse of ecosystems, and violent unrest sparked by the struggle for scarce resources;

**Whereas,** Cornell is world famous as a leader in teaching and research on sustainability, with an important responsibility to maintain this reputation;

**Whereas,** On January 29, 2016, the Cornell Board of Trustees laid out clear and stringent criteria for the review of divestment requests;

That divestment should “be considered only when a company’s actions or inactions are ‘morally reprehensible’ (i.e., deserving of condemnation because of the injurious impact that the actions or inactions of a company are found to have on consumers, employees, or other persons, or which perpetuate social harms to individuals by the deprivation of health, safety, basic freedom, or human rights. Morally reprehensible activities include apartheid, genocide, human trafficking, slavery, and systemic cruelty to children, including violations of child labor laws).

That divestment “will likely have a meaningful impact toward correcting the specified harm, and will not result in disproportionate offsetting negative societal consequences”; or



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42  
43 That the companies in question contribute to “harm so grave that it would be inconsistent  
44 with the goals and principles of the University.”  
45

46 **Whereas**, the University Assembly Campus Infrastructure Committee has prepared a White Paper,  
47 attached to this Resolution, that documents in detail how fossil fuel companies meet all of these  
48 criteria,  
49

50 **Be it resolved**, that Cornell divest from all investments in coal, oil, and natural gas in an orderly  
51 manner and as rapidly as possible.  
52

53 **Adopted by Vote of the Assembly (x-x-x), MM/DD/YYYY.**  
54

55 **Respectfully Submitted,**  
56

57 Caroline Levine, UA CIC Member  
58 Adam Howell – UA Member  
59

60  
61  
62  
63 References:

64  
65 **Core Values:** <https://president.cornell.edu/initiatives/university-core-values/>

## **Faculty Senate Resolution:**

Be it resolved that Cornell University commit to full divestment from fossil fuel companies.

## **Argument for Divestment:**

We are deeply grateful for the care that generations of Trustees have taken to steward Cornell's resources for the long term. This is a grave and precious responsibility. We are submitting a new request to reconsider the 2016 decision on divestment from fossil fuels precisely because we know how seriously the Trustees take the work of stewardship. We believe that this responsibility cannot only be financial. If Cornell's budget comes at the expense of young lives and does grievous injury to the world in which future generations take shape, then the University is taking care of its funds in violation of human welfare here and everywhere. This was not Ezra Cornell's vision. "My greatest care," he said, is how "to do the most good."<sup>1</sup>

We make this request now because we know more about global warming than we did when faculty, staff, and students last asked the Trustees to divest from fossil fuels in 2015:

- 1. There is now global agreement that we must keep planetary warming under 2° C above pre-industrial levels in order to avoid catastrophic and irreversible damage to society and the environment.** In December of 2015, a historic environmental accord in Paris brought together virtually all of the nations in the world.<sup>2</sup> These 195 nations reached a consensus that we must work quickly and seriously to reduce emissions. At the current rate of global warming, the Earth will warm to devastating levels within the next 20 to 30 years.<sup>3</sup>
- 2. We know that some of the most dire expert predictions are already coming true, and many of these much faster than expected.**<sup>4</sup> Every region on the planet is now feeling the effects of climate change: the last three years have seen unprecedented storms and droughts, floods and fires, tick- and water-borne illnesses.<sup>5</sup> We have learned from military leaders that global warming represents a major national security threat,<sup>6</sup> and from major medical groups that climate change is the "greatest public health challenge of the 21st century."<sup>7</sup> We know that sea levels continue to rise, just as scientific models predicted, and will make many coastal cities, from Miami to Mumbai, uninhabitable in just a few decades.<sup>8</sup> We know that climbing temperatures are creating conditions for increasingly devastating droughts across the Middle East and Africa, which will displace millions of people, potentially provoking mass hunger, migration, and a high likelihood of violent conflict.<sup>9</sup> We know that a million species are now threatened with extinction, and experts predict the extinction rate to rise to a level ten thousand times more rapid than the norm.<sup>10</sup>

We have felt all of these effects already in the Finger Lakes region, with our own community members affected by the drought across the area in 2016, flooding in



Broome County in 2011 and in Seneca County in 2017, the emergence of toxic algal blooms in Cayuga Lake for the first time in 2017, and a rise in tick-borne illnesses. As the atmosphere continues to warm, all of these conditions will worsen.<sup>11</sup>

3. **We know, with more certainty than ever, that the cause of these catastrophic events is the steep rise in greenhouse gas emissions—carbon dioxide, methane, and nitrous oxide—caused by human activity.** 97% of peer-reviewed publications and nearly 200 scientific organizations worldwide are in agreement on this point, including NASA, the US National Academy of Sciences, the European Science Foundation, and the 1300 independent experts who have contributed to the UN Intergovernmental Panel on Climate Change.<sup>12</sup>
4. **We also know that it is not too late to make a difference.**<sup>13</sup> The single most important driver of global warming is greenhouse gas emissions from fossil fuels: coal, gas, and oil. These generate approximately 70% of worldwide carbon dioxide-equivalent emissions.<sup>14</sup> In other words, the energy supply sector contributes more than any other to global warming. There are many ways to reduce these emissions, including efficiency technologies and renewable energy sources. In order to stop the worst effects of global warming, we need to make a rapid shift away from our dependence on coal, oil, and gas.<sup>15</sup> And yet, the world's major energy companies have instead continued to mine, drill, and build new pipelines for fossil fuels.<sup>16</sup> Carbon emissions rose to an all-time high in 2018, rather than dramatically decreasing, as they should have done decades ago.<sup>17</sup>

Given the urgent pressure to act wisely now, we urge Cornell to act as a moral leader and divest from oil, coal, and gas. We believe that the fossil fuel industry meets the criteria for divestment outlined by the Trustees in 2016,<sup>18</sup> and we make this case below.

#### I. **The case for moral reprehensibility**

What persuades us that the actions of fossil fuel companies meet the criterion set forth by the Trustees for **morally reprehensible action** is that these companies have long had knowledge of the consequences of global warming and yet have engaged in a deliberate campaign of climate deception.

Historians of science and investigative journalists have now shown, for example, that Exxon Mobil's own scientists reported in the late 1970s that carbon dioxide emissions were affecting the earth's climate and warned that unless the world shifted to other energy sources "some potentially catastrophic events" would follow, and the process "might not be reversible." Their experts reported "unanimous agreement" about the devastating consequences of petroleum use. An internal memo read: "man has a time window of five to ten years before the need for hard decisions regarding changes in energy strategies might become critical."<sup>19</sup> At first, the company put substantial resources into understanding the climatic effects of fossil fuels. But then Exxon Mobil made an abrupt about-face. Instead of investing resources in a shift to renewable energy, the company hired the very strategists

who had deliberately sowed public doubt about the connection between tobacco and cancer. What followed was a well-funded effort to spread uncertainty about the science of climate change.<sup>20</sup>

Exxon Mobil is not the only guilty party. Koch industries were major sponsors of the campaign to sow doubt and stall government action on climate change.<sup>21</sup> Until recently, British Petroleum misrepresented climate science on its website, and remains associated with groups that deliberately spread misinformation about the environmental impacts of climate change, including the American Petroleum Institute and National Association of Manufacturers.<sup>22</sup> ExxonMobil, Royal Dutch Shell, Chevron, BP, and Total have spent over \$1 billion since the Paris Agreement on misleading publicity and lobbying against climate regulation.<sup>23</sup> Chevron is still publicly stating that our knowledge about the impacts of fossil fuel use on the environment is uncertain.<sup>24</sup> Shell spends nearly \$50 million every year lobbying against government policies to address climate change.<sup>25</sup> Coal companies, including Peabody Energy, also knew about the dangers of fossil fuels and deliberately funded campaigns of denial and misinformation to hide this knowledge.<sup>26</sup>

With media reporting doubt about the science, the public have not been appropriately alarmed, and politicians have not only failed to take major action to reduce emissions, but have allowed both mining and drilling to expand.<sup>27</sup> The case for moral reprehensibility rests on the fact that the major energy companies knew that fossil fuel emissions had potentially catastrophic effects and deliberately proceeded to misinform the public and to press for political support based on false and misleading claims.

## II. The question of injurious impact

The Trustees are right to ask for evidence of the **injurious impact** of these actions. The exact number of injured people is unknown because it is difficult to isolate the role of fossil fuel use from other factors in any single event, and it is impossible to predict the future with perfect precision. But even cautious estimates are striking. We know that fossil fuels are a major contributor to species extinction, heat waves, storms, floods, fires, desertification, rising sea levels, ocean acidification, pollution, and droughts. Here we focus on four of the worst and most massive injuries: rising rates of hunger, damage and disease from flooding, large-scale displacements of human populations, and a mass extinction of the world's species.

- a. Among the most damaging effects of global warming is rising **hunger**. The number of climate-related disasters has doubled since the early 1990s, often laying waste to crops and driving up food prices.<sup>28</sup> Droughts have triggered severe famines across southern Africa.<sup>29</sup> In 2019, heat waves destroyed rice fields in Thailand and Indonesia, delayed corn and soybean planting in the United States, ruined sugar cane plantations and oilseed crops in India, and brought record-breaking heat to Europe.<sup>30</sup> After rates of world hunger had started to fall, extreme weather triggered by the warming of the oceans and the upper atmosphere has increased the number of chronically hungry people by 15 million people since 2016.<sup>31</sup> This

number is expected to rise rapidly over the next few decades as large areas of arable land turn to desert and as agricultural crop yields falter from heat stress, depleted soils, and crop disease.<sup>32</sup>

- b. **Floods** are equally devastating. At least 600 million people live within a few feet of sea level. If we do not lower emissions, Boston, Miami, Houston, New Orleans, Hong Kong, Rio de Janeiro, Osaka, Alexandria, and Mumbai will find themselves mostly or completely under water in this century.<sup>33</sup> As sea levels rise, all coastal residents are at risk of water-borne disease and damage to homes, farms, power plants, navy bases, and fisheries. The World Health Organization estimates that flooding will cause high rates of malnutrition, malaria, cholera, diarrhea. Overall, they say, climate change will cause an additional 250,000 health-related deaths per year between 2030 and 2050,<sup>34</sup> which the *New England Journal of Medicine* calls “a conservative estimate.”<sup>35</sup>
- c. Fossil fuel emissions are already driving a massive **displacement of human populations**—that is, homelessness on a new scale. In 2009, the United Nations High Commissioner for Refugees predicted that climate change would cause an unprecedented rise in the number of refugees worldwide.<sup>36</sup> It is estimated that there will be between 25 million and 1.2 billion environmental migrants in the world by the year 2050, driven from their homes by extreme weather events, floods and droughts, soil erosion, food and water shortages, and uninhabitably high temperatures.<sup>37</sup> Many warn that global instability will follow, as millions of people struggle to cross borders at the same time and fight over increasingly scarce food and water.<sup>38</sup> Researchers argue that climate change has already been a factor in the Syrian civil war,<sup>39</sup> and that severe hurricanes have forced people to flee from Guatemala, which has contributed to the border crisis here in the United States.<sup>40</sup> The U.S. intelligence community considers climate change to be a major threat to national security, “likely to fuel competition for resources, economic distress, and social discontent through 2019 and beyond.”<sup>41</sup>
- d. Global warming is contributing to **rapid decreases in biodiversity** worldwide. Approximately one million species of plants and animals are now facing extinction, including more than 40% of insect and amphibian species, and more than a third of all marine mammals—more than at any other point in human history.<sup>42</sup> Without major changes, the world is heading toward a major extinction event, with accelerating species loss in an unstoppable feedback loop.<sup>43</sup> While fossil fuel emissions are only partly responsible for the rates of extinction, scientists cite the warming of the planet as a major factor.<sup>44</sup> For example, higher temperatures and ocean acidification are causing declines in marine biodiversity, including the bleaching of the Great Barrier Reef, the habitat of 9000 species.<sup>45</sup> Warming also has a multiplier effect: it can wipe out one heat-sensitive species that others depend on for survival, or benefit invasive species that wreak havoc on others. Often, it creates mismatches in the timing of species interaction: a bird that migrates may now travel too soon to feed on the insects that mature later.<sup>46</sup> Biodiversity is crucial not only for animals and plants but

for human food security and health, including the pollination of crops, the health of fish and soil, and the flora and fauna needed for life-saving medicines.

What is perhaps most disturbing is the possibility of **runaway feedback loops** that may greatly accelerate global warming and climate destruction. Currently, 25% of the carbon dioxide emitted from burning fossil fuels is taken up by the oceans, lessening the impact on warming. But as warming continues, the melting of ice in the Arctic Oceans and glaciers of Greenland are changing the circulation patterns of the ocean, which may lead to much less uptake of carbon dioxide in the future.<sup>47</sup> Another possible runaway feedback may come from the melting of the Arctic permafrost. Thanks to global warming, the permafrost is melting much faster than scientists predicted. It contains vast amounts of carbon dioxide, which are released as it melts, accelerating warming trends.<sup>48</sup> Scientists concluded in November 2019 that we are much closer to several **tipping points** than we had thought before, and that the world is now in a state of “climate emergency.”<sup>49</sup> Because warming processes are irreversible on time scales of less than several thousand years, it is urgent to take action quickly—before they become unstoppable.

Taken together, the scale of suffering caused by climate change could quickly dwarf that of all past wars, epidemics, and genocides because of its accelerating feedback loops and multiplier effects. In 2018, the Intergovernmental Panel on Climate Change report recommended that if we are going to prevent the worst injuries to human communities worldwide, we must make dramatic cuts in carbon emissions. To achieve a habitable planetary temperature and forestall massive suffering, humans will need to stop all digging and drilling for new sources of fossil fuels.<sup>50</sup>

### III. **The responsibility of coal, oil, and gas companies**

Given that the climate crisis is global in scope, and there is a rising demand for energy worldwide, why focus attention on energy companies—why not spread it to all of us, including politicians and consumers? The answer lies in the fact that energy companies are continuing to push for fossil fuel production, even as the evidence mounts for the destructive effects of this path. Although they often advertise their commitments to green energy, the world’s major extractors of fossil fuels have not actually put substantial resources into developing renewables. Exxon Mobil and Chevron have been particularly resistant to the move toward renewable energy.<sup>51</sup> The companies responsible for most of the world’s fossil fuel emissions are in fact doubling down on plans to increase oil and natural gas production now. Shell and Exxon Mobil are leading the way with plans to produce 35% more oil by 2030, exactly the reverse of the reduction scientists are urging.<sup>52</sup> And they are spending millions of dollars each year lobbying governments to roll back environmental regulations, spreading misinformation about the link between fossil fuels and global warming, and continuing to push for new rights to mine and drill, including in nature preserves and national parks.<sup>53</sup>

It is a comparatively small number of companies that are taking the world down this catastrophic path. Currently, 90 corporations are responsible for two-thirds of all greenhouse gas emissions caused by human activity. Among these, just eight energy companies account for 20 percent of world carbon emissions. British Petroleum, Exxon Mobil, Royal Dutch Shell, and Chevron are on this list.<sup>54</sup>

Given the increasingly dangerous increases that fossil fuel companies are planning, it seems urgent to put pressure on them to stop as soon as possible. So far, ordinary actions have not succeeded in pushing these companies to change course. It is in this context that we respectfully request that Cornell University phase out all of its investments in oil, gas, and coal.

#### IV. **The case for divestment**

To be sure, it is not enough to show a strong link between global warming and fossil fuel emissions, or to show that fossil fuel companies have known of the harms they are causing and yet have hid this from the public through a campaign of purposeful misinformation. It is important, as the Trustees argue, to make the case that divesting the Cornell endowment from fossil fuel companies is a meaningful action.

We offer three arguments in favor of divestment here.

- a. The first argument is **moral**. If we seek to protect ourselves and future generations from unnecessary harm, to promote human flourishing, and to steward precious resources, then we cannot also knowingly support companies that are intentionally speeding unprecedented suffering and the irreversible destruction of civilizations and ecosystems.

Organizations that care for human health have made this case explicitly, including the American Medical Association and the British Medical Association. As the *British Medical Journal* put it: “Those who profess to care for the health of people perhaps have the greatest responsibility to act.”<sup>55</sup>

Faith-based institutions have also been strong in their case for divestment from fossil fuels. The Catholic Church has called for divestment, and numerous Protestant churches have divested from coal, oil, and gas, including US Episcopal Church, the Methodist Church, the Uniting Church of Australia, the Church of Sweden, and the Church of England.<sup>56</sup> The United Church of Christ puts it this way: “As people of faith, we are called to be good stewards of creation, to care for it and heal it, and to live in harmony with it. While we can admit our role in using fossil fuels and work to reduce our carbon footprints as individuals, we must also work collectively to change the system.”<sup>57</sup> Other faith traditions make comparable arguments. “According to Islam’s most basic and fundamental teachings, human beings have been uniquely charged with the great responsibility of being Guardians of the Earth,” said Azha Razee, President of the Islamic Society of North America. “It goes

against the mission of the ISNA to invest in fossil fuel companies whose operations and products cause such great harm to humanity and creation.”<sup>58</sup> Nobel Prize-winner Archbishop Desmond Tutu likened the moral urgency of divestment from fossil fuels to the divestment from South Africa that helped to end the Apartheid system in the 1980s. Tutu urges us to take moral responsibility. “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.”<sup>59</sup>

Colleges and universities have now begun to join health and religious organizations in substantial numbers, citing our moral responsibility to young people now and future generations as essential to our core mission. The President of University College London described the decision to divest this way: “Universities have a responsibility to lead change for environmental and social sustainability... By doing so, we will play our part in catalysing the broad changes we need to create a sustainable future for people and planet.”<sup>60</sup> Other colleges and universities now pledged to full divestment include the University of California System, Middlebury College, Smith College, University of Copenhagen, University of Edinburgh, University of Gottingen, University of Essex, University of Hawaii, Trinity College, Dublin, Syracuse University, Seattle University, and the University of Maryland.<sup>61</sup> The University of California system, with an endowment larger than that of Cornell, has announced that they have already completed divestment from fossil fuels.

- b. The second argument concerns the more specific arena of **business ethics**. Companies that purposefully mislead the public about the harmful effects of their products should be held accountable, in part to show other companies that as a society we condemn such deceit. The scale and impact of the fossil fuel companies’ ongoing deception is especially grievous. Their lies not only carry with them tragic consequences—in the many millions of human lives—but they are also deeply dishonorable in themselves, discrediting the hard work of scientists for profit, deliberately deluding governments, and violating the most basic norms of professional conduct. It is important to send the message that other social institutions do not tolerate this reckless level of intentional deception.<sup>62</sup>
- c. The third argument is **financial**. While the details of investing are complex, general trends suggest that returns on investment from fossil fuels have been “abysmal” for a decade.<sup>63</sup> In October 2019, the University of California’s chief investment officer explained that it made sense for the system to divest from fossil fuels because they are not financially sound. “Clean energy” is where there is “money to be made.”<sup>64</sup> The Institute for Energy Economics and Financial Analysis has found that BlackRock, the world’s largest fund manager, lost investors over \$90 billion by investing too heavily in fossil fuels. Investments in ExxonMobil, Chevron, Royal Dutch Shell and BP made up a full 75% of BlackRock’s loss, underperforming compared to the market as a whole.<sup>65</sup> Oil and gas took last place in the S&P 500 in 2018.<sup>66</sup> Cornell’s investment record is strong, but it is far from the strongest in the Ivy League.<sup>67</sup> Divestment, in this context, may make good financial sense.

There is every indication that fossil fuel companies will continue to experience financial hardship. In July 2019 the State of New York enacted new legislation that mandates a reduction in greenhouse gas emissions from fossil fuel use, including transportation, residential, commercial, and industrial use, as well as electricity generation. The target is a 40% reduction within the next 10 years and 85% by 2050.<sup>68</sup> This mandate will require a massive decrease in the use of fossil fuels.<sup>69</sup> Moody's downgraded the credit rating of Exxon Mobil in November 2019 from "stable" to "negative."<sup>70</sup> As entire states now move aggressively away from fossil fuels, oil and gas investments seem increasingly unwise.

#### V. **The difference divestment makes**

All of these arguments might be persuasive, and yet one might still argue that divestment makes no material difference. Perhaps it merely makes stocks in fossil fuels cheaper, which is an invitation to other investors to snap up the opportunity to buy.

But the story is more complex than the stock price alone. There is evidence that divestment can make a **material difference**. As major investors like Norway's Sovereign Wealth Fund, the University of California, and the nation of Ireland divest, they send a message to the market as a whole that trusted institutions are moving away from fossil fuels,<sup>71</sup> no longer accepting the misleading claims of energy companies. One of the key supports for businesses to succeed is social acceptability.<sup>72</sup> As long as fossil fuel companies seem like respectable businesses, they can draw consumers, government favor and support, and the benefits of high reputations. Divestment sends the message that these are disreputable companies, no longer acceptable to the mainstream investor.<sup>73</sup> And this matters. As Shell stated in 2018, the movement to divest "could have a material adverse effect on the price of our securities and our ability to access equity capital markets."<sup>74</sup>

With over \$6 trillion of funds worldwide committed to divestment, and fossil-free portfolios now outperforming the stock market by almost 2% each year for five years, divesting from oil, gas, and coal has the potential to be triply effective: it sends a clear moral message to businesses pursuing a destructive course, strengthens the global movement for constructive change through this perilous climate crisis, and makes smart financial sense.<sup>75</sup>

#### VI. **The companies in question contribute to harm so grave that it is inconsistent with the goals and principles of the University.**

The denial of scientific knowledge and the destruction of present and future human flourishing strike at the very heart of Cornell's great mission. Two goals guide every aspect of our work here at Cornell: first, "to educate the next generation of global citizens"; and

second, “to discover, preserve and disseminate knowledge.”<sup>76</sup> Investments in oil, coal, and gas companies powerfully undercut these cherished goals and principles.

**a. Educating the next generation of global citizens**

Every day, as classrooms hum with activity, and young brains buzz with new ideas, Cornell commits itself to developing the skills and knowledge that current and future generations will need to lead full, meaningful, and productive lives. Since its founding, Cornell has been especially committed to training a wide range of talented students to become wise and knowledgeable leaders. For over a century, we have succeeded admirably in this effort. Cornell graduates figure among the world’s best judges, entrepreneurs, CEOs, diplomats, teachers, philanthropists, philosophers, politicians, writers, and architects. Today, this work is more urgent than ever. As Martha Pollack put it in her 2019 State of the University Address, the challenges the world faces now “require the kind of education and knowledge that we strive for at Cornell—one that will do the greatest good not just for each individual student, but for the communities and societies they will live in, lead, and serve.”<sup>77</sup>

Our support for fossil fuel companies directly contravenes this mission. We are investing our most passionate energies in the generations to come, and yet at the same time we are investing our endowment in companies that are knowingly and recklessly profiting off those same generations. With one hand, we educate young people to the highest standards in the world so that they will fulfill their dreams; with the other, we wrest their dreams from them, supporting a path of destruction that researchers know leads to widespread conditions of food shortages, catastrophic flooding, devastating species loss, and global violence. As the President of Unity College argues, “It is ethically indefensible that an institution dedicated to the proposition of the renewal of civilization would simultaneously invest in its destruction.”<sup>78</sup>

**b. Discovering, preserving and disseminating knowledge**

The second of our most precious missions is the discovery of new knowledge. Cornell is renowned worldwide for our rigorous and cutting-edge research, which includes Nobel-Prize winning science, energy innovations, knowledge of social impacts, and works of creative art.

Fossil fuel companies have actively worked against this mission, undermining the passionate pursuit of truth we hold precious here. Organizations funded by fossil fuel interests have circulated knowing deceptions and unsubstantiated attacks on science and even on individual scientists, which have led to threats to their lives, families, and careers. The American Natural Gas Alliance, for example, paid for a campaign that smeared Cornell Professor Robert Warren Howarth with misleading Google ads after he published a study of the damaging effects of natural gas.<sup>79</sup>



The misinformation campaign about climate hits Cornell especially hard. This university is a world leader in research on the environment, with no fewer than 569 researchers from 90 departments and programs at Cornell currently affiliated with the Atkinson Center for Sustainability.<sup>80</sup> Cornell researchers are developing new knowledge about climate and exciting solutions for the climate crisis that range from energy storage to sustainable architecture to economic development.

Cornell is frequently featured in national and international news for the knowledge of climate pioneered here. It is the Cornell Lab of Ornithology that discovered that billions of birds have disappeared from North America since 1970.<sup>81</sup> It is the Cornell Institute for Climate Smart Solutions that developed 'Climate Change in your County,' a tool that can help farmers and community leaders plan for the future.<sup>82</sup> Cornell Earth and Atmospheric Sciences Professor Natalie Mahowald testified about the scientific consensus on climate change before the House Science, Space and Technology Committee in 2019<sup>83</sup>; Robert Howarth was one of 50 people in the running for *Time's* Person of the Year in 2011 for his research on methane and climate change; and chemist Geoffrey Coates has developed new polymers that more sustainable than conventional plastics.<sup>84</sup>

As long as we invest in fossil fuels, it is as if one side of Cornell is working against the other. At the same time that Cornellians have spent thousands of hours in research labs and classrooms developing our understanding of the climate crisis, energy interests have put their money into discrediting this hard-won academic knowledge. The more our research is discredited, the harder we need to work to counter the attacks, and the more difficult the solutions we will need to develop to save lives, protect crops, and nurture biodiversity. In this sense, fossil fuel interests weigh down Cornell's world-class research program.

Nor should we ignore the financial benefits brought to the University by our cutting-edge research on climate change. In the latest report of the research office, Cornell expended a total of over one billion dollars in organized research.<sup>85</sup> The Atkinson Center awards seed grants to scholars here who then leverage that funding to attract larger grants, with a return on investment of more than \$7 for every \$1 that the Atkinson Center funds.<sup>86</sup> To give a small sense of the vast array of externally funded projects on climate at Cornell under way now: an international research network expanding the boundaries of the field of computational sustainability recently won funding from the National Science Foundation for \$7.4 million,<sup>87</sup> and the U.S. Department of Agriculture and the NSF have awarded a \$2.4 million grant to an interdisciplinary team of Cornell researchers studying the impacts of converting farmland to renewable energy production.<sup>88</sup>

To be sure, one could argue that Cornell should not use its investment portfolio in ways that might disturb current and potential funders to the University. Money from fossil fuels may themselves further our mission. In 2016, Cornell Earth and Atmospheric Science Professor Larry Brown warned that divestment would damage “the many research and academic programs at Cornell that are funded by the oil, gas and petrochemical industry, and the career prospects of Cornell students that are interested in working in those industries.”<sup>89</sup> His conclusion was that divestment “undermines the most precious asset a university has in addressing any controversial issue: its reputation as an unbiased source of scientific knowledge.”<sup>90</sup> But the opposite argument is compelling: as long as researchers depend on money from oil and gas interests, they are not free to produce unbiased science. And since fossil fuel companies have been engaged in campaigns to intimidate and discredit our colleagues, they endanger scientific neutrality more than divestment ever could.

In short, since we invest so much world-class talent and energy in building a sustainable world, we should not at the same time invest our funds in companies that knowingly contradict that goal.

### **c. Core values: public engagement and care for the natural environment**

President Pollack launched an initiative this past year to meet with members of the community to identify our shared values. Beyond our “bedrock” academic mission, the Cornell community sets store by two values—public engagement and care for the natural environment—that are profoundly compromised by continued investments in fossil fuels.<sup>91</sup>

#### **i. Changing Lives through Public Engagement**

From the beginning of this great university, Cornell has valued “engagement in our community, our state, and the broader world, learning about their needs and strengths, and applying the knowledge we create for the benefit of society.”<sup>92</sup> Cornellians work every day to improve human health and well-being, to strengthen communities, to preserve civilizations, species, and languages, and to reduce violence. Major energy companies today are undermining all of these goals.

#### **ii. Respect for the Natural Environment**

A value that was repeatedly articulated to President Pollack during her conversations with students, staff, faculty, and alumni was our shared respect for the environment. “We value our role in advancing solutions for a sustainable future and we recognize the close relationship between people and the Earth, acting in ways to live and work sustainably.”<sup>93</sup> It would be difficult to identify a greater threat to

this core value than a continued legitimization of companies that are responsible for the imminent extinction of a million species, the dramatic drop in numbers of mammals and birds, severe droughts and floods, and the destruction of large numbers of habitats, including the acidification of the oceans.

## VII. **Stewardship for the future**

Cornell University's reputation rests on our ongoing academic excellence and our public service mission. Both of these prompt scholars and students across the university to dedicate our energies to understanding climate change and to developing wise solutions. In every college in this magnificent institution, we see a far-reaching commitment to sustainability. We rank first in the Ivy League for sustainability overall; we are the number one Ivy League Institution for overall carbon reduction; and we have some of the most aggressive carbon reduction goals among research universities.<sup>94</sup> From the Atkinson Center for Sustainability and the Cornell Institute for Climate Smart Solutions to Cornell Cooperative Extension and Climate Change AI, Cornell researchers lead the world when it comes to climate change and sustainability. Our students are passionate about understanding and responding to the dangers of global warming. In its first year, 400 undergraduates signed up to major in the new cross-college Environment and Sustainability major.

In this context, it is surprising that Cornell is lagging behind other colleges and universities as these begin to divest from fossil fuels in significant numbers. Our peers are sending the message that the catastrophic disregard for scientific knowledge and human welfare is not acceptable to institutions entrusted with the sacred task of advancing knowledge for the public good. Cornell could make history as the first Ivy League university to divest. We certainly do not want to be the last.

## Notes

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<sup>6</sup> <https://www.documentcloud.org/documents/5689153-DoD-Final-Climate-Report.html>; <https://www.propublica.org/article/trumps-defense-secretary-cites-climate-change-national-security-challenge>

<sup>7</sup> [https://climatehealthaction.org/media/cta\\_docs/US\\_Call\\_to\\_Action.pdf](https://climatehealthaction.org/media/cta_docs/US_Call_to_Action.pdf)

<sup>8</sup> <https://link.springer.com/article/10.1007/s11852-018-0636-7>

<sup>9</sup> <https://www.nationalgeographic.com/environment/2019/01/drought-climate-change-turn-iran-sistan-and-baluchestan-into-dust-bowl/>; <https://weather.com/forecast-change/news/2019-06-04-how-the-middle-east-drought-and-flood-cycle-will-probably-lead-to>; <https://advances.sciencemag.org/content/3/8/e1700581.full>; [http://web.worldbank.org/archive/website01418/WEB/0\\_C-152.HTM](http://web.worldbank.org/archive/website01418/WEB/0_C-152.HTM); <http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1199706&dswid=actioniq>

<sup>10</sup> <https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services>; <https://www.nationalgeographic.com/environment/2019/05/ipbes-un-biodiversity-report-warns-one-million-species-at-risk/>; see also Figure 1 from *Ecosystems and Human Well Being: Biodiversity Synthesis, Millenium Ecosystem Assessment* (2005), available at <http://www.millenniumassessment.org/en/Synthesis.aspx>

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