

## The American Physical Society

This document provides an extension to information gathered for the report, *Irresponsible Science?: How the fossil fuel and arms industries finance professional engineering and science organizations*, published by Scientists for Global Responsibility (SGR) in October 2019.<sup>1</sup> Information sourced from the American Physical Society's publicly available documents is provided first, followed by commentary by SGR.

The American Physical Society—or simply the APS – is a large professional organization with over 55,000 members.<sup>2</sup> Its creation dates to 1899, with its journal series, *Physical Review*, being taken over by APS in 1913.<sup>3</sup>

### *Statement of purpose and values*

The APS summarises its main goals on its website as follows:<sup>4</sup>

#### *Mission statement*

*“To advance and diffuse the knowledge of physics for the benefit of humanity, promote physics, and serve the broader physics community, we*

- *Provide a welcoming and supportive professional home for an active, engaged, and diverse membership*
- *Advance scientific discovery and research dissemination*
- *Advocate for physics and physicists, and amplify the voice for science*
- *Share the excitement of physics and communicate the essential role physics plays in the modern world*
- *Promote effective physics education for all”*

#### *Vision*

*“To excel as a leading physics society, we will*

- *Be the authoritative advocate for physics*
- *Publish world-leading journals in physics and related sciences*
- *Convene vital meetings, conferences, and workshops*
- *Engage and support the next generation of physicists*
- *Foster equity and inclusion, and increase diversity in all its dimensions*
- *Expand public appreciation of physics and its many contributions”*

In its 2019 Strategic Plan<sup>5</sup>, the APS four “goals” as follows:

1. *Serving Members, the Physics Community, and Society*

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<sup>1</sup> <https://www.sgr.org.uk/publications/irresponsible-science>

<sup>2</sup> <https://www.asce.org/about-asce>

<sup>3</sup> <https://infrastructurereportcard.org/about-asce/>

<sup>4</sup> <https://www.aps.org/about/mission.cfm>

<sup>5</sup> <https://www.aps.org/about/strategicplan/upload/APSStratPlan2019.pdf>

2. *Ensuring a Meaningful Role in Scientific Research Dissemination*
3. *Increasing Organizational Excellence*
4. *Securing Financial Sustainability*

## **Investments**

From 990 tax return information obtained via ProPublica, in December 2019 the APS held \$181.9m in publicly traded securities.<sup>6</sup>

## **Investment policy**

We were unable to find any evidence of an ethical investment policy but did discover a statement indicating that those in official leadership positions (such as the investment committee) are expected to “meet standards of professional conduct and integrity as described in the APS Ethics Guidelines”.<sup>7</sup> More on this below.

## **Transparency**

The APS does not publicly disclose where it holds any of its \$181.9m in investments, giving it zero transparency. In the organization’s 990 form, however, the APS does reveal that it holds a \$4.4m investment in the American Center for Physics along with \$15.1m in hedge funds.<sup>8</sup>

## **Corporate Patrons**

The APS does not appear to have any corporate patrons from the fossil fuel industry.<sup>9</sup> In the organization’s 2019 annual report, there were three firms listed as donors of between \$10,000 and \$99,999 from the arms trade: Air Force Office of Scientific Research-NE, Boeing, and Sandia National Laboratories.<sup>10</sup>

While this does not directly indicate that the APS holds direct or indirect investments in fossil fuels, it is concerning that the organization is willing to accept financial support from companies involved in industries, such as the arms trade, that many consider unethical.

## **Education programmes and grants**

The APS does not appear to be accepting corporate sponsorship for its education programmes and grants.

## **Events sponsorship**

The APS does not have any events sponsored by fossil fuel corporations.<sup>11</sup>

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<sup>6</sup> <https://projects.propublica.org/nonprofits/organizations/131635293>

<sup>7</sup> <https://www.aps.org/about/governance/committees/investcom/index.cfm>

<sup>8</sup> <https://projects.propublica.org/nonprofits/organizations/131656610/202003209349300405/full>, Schedule D, Part VII

<sup>9</sup> <https://www.aps.org/about/governance/annual-reports/upload/APSAnnualReport2019.pdf>

<sup>10</sup> <https://www.aps.org/about/governance/annual-reports/upload/APSAnnualReport2019.pdf>

<sup>11</sup> <https://www.aps.org/meetings/>

## Environmental policy

We were unable to find any evidence of an environmental policy.

## Other relevant information

“The APS reaffirms its 2015 call to support actions that will reduce the emissions, and ultimately the concentration, of greenhouse gases as well as increase the resilience of society to a changing climate, and to support research on technologies that could reduce the climate impact of human activities.

Because physics and its techniques are fundamental elements of climate science, the APS urges physicists to expedite collaborations with colleagues across all disciplines in climate research as well as contributions to the public dialogue”.<sup>12</sup>

The APS is launching a new open access journal, PRX Energy, that will publish “high impact research in energy science and applications”.<sup>13</sup>

The organization has also outlined how it is reducing its own carbon footprint. As part of this, the APS has calculated its Scope 1, 2 and 3 greenhouse gas emissions and taken steps to address these without purchasing carbon credits.<sup>14</sup>

In the weeks leading up to COP26, the APS signed a statement alongside other physics organizations, committing them to working alongside governments in tackling the climate crisis. Below are the APS’s commitments as an organization:

- *“Build on the achievements of physics in understanding, tracking, addressing, and alleviating the global climate crisis. We will continue to support international collaboration, work across scientific and other disciplines, and support trans-disciplinary projects.*
- *Improve global scientific literacy through physics education; advocate for greater investment in physics research and innovation; empower our physics communities to engage in policy development; and work with our governments to prioritise physics-based R&D.*
- *Commit to welcoming minoritised, excluded and marginalised peoples to build careers in physics and emphasise the importance of diversity and belonging in enhancing teamwork, maximising research and innovation, and facilitating international collaboration.”<sup>15</sup>*

## SGR comments

SGR acknowledges that the APS has made some effort to acknowledge its role as a leader in applying physics to the challenge of climate change, both now and in the future.

SGR has continuing concerns, however, on the following aspects:

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<sup>12</sup> [https://www.aps.org/policy/statements/15\\_3.cfm](https://www.aps.org/policy/statements/15_3.cfm)

<sup>13</sup> <https://www.aps.org/newsroom/pressreleases/prx-energy.cfm>

<sup>14</sup> <https://www.aps.org/policy/analysis/carbon.cfm>

<sup>15</sup> <https://www.iop.org/strategy/physics-climate-change-sustainability/global-green-economy>

## Transparency

The APS has very low transparency on its company investments, with there being no public information available on where the \$181.9m highlighted in the company's 990 form for 2019 is held. It is, therefore, impossible to ascertain the extent to which the APS is conducting its investments in a manner that complies with the spirit of its "Statement on Earth's Changing Climate" which emphasises the urgency of climate action: "The potential consequences of climate change are great and the actions taken over the next few decades will determine human influences on the climate for centuries".<sup>16</sup> Without further financial information, we are unable to verify whether the organization is acting on climate change in a manner that reflects the urgency echoed in the APS statement.

Beyond publicly available information, SGR has reached out to executive director of the APS, Jonathan Bagger who, after initially stating he would provide information, stopped responding.

Given that many members of the public are deeply concerned about climate change and that those with a background in physics have a current and future role in mitigating and adapting to the effects of climate change, any investment by the APS in fossil fuel companies would be concerning.

Without full transparency regarding the APS's investments or the public availability of an APS ethical investment policy, it is impossible to rule out that the APS is investing in fossil fuels, either directly or indirectly through alternative investment funds. As the APS makes clear in its 'Summary of APS Ethics Guidelines', "the acceptance of public funds comes with the expectation that these funds will be spent in a manner that upholds the public trust in science and in the physics community." With over two thirds of the US public concerned about how little is being done about climate change, it is clear that trust in organizations such as the APS would be damaged if it were to hold direct or indirect investments in fossil fuel organizations.<sup>17</sup> As the APS neither discloses publicly whether it holds investments in fossil fuels, nor commented when contacted directly, we cannot confirm with any certainty whether the organization is, in its financial actions, upholding its own ambition to strengthen rather than damage public trust in the science and physics community.

SGR has concerns about investments in and financial ties to fossil fuel companies by professional science and engineering organizations for these reasons:

- Professional science and engineering organizations have considerable influence with politicians and the public and it's crucial that they put in place robust science-based targets and plans that are compatible with the goals of the Paris Agreement - and end lobbying behaviour that could undermine it;
- As the UK Health Alliance on Climate Change puts it, "engaging with companies whose business model relies on fuel extraction is of limited use—only divestment will stop extraction".<sup>18</sup> Worldwide, according to the Alliance, over 1,000 organizations with £7 trillion assets have committed to divesting from fossil fuels and instead investing in climate solutions.<sup>19</sup> Research indicates that divestment reduces the price of fossil fuel shares.

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<sup>16</sup> <https://www.asce.org/advocacy/policy-statements/ps360---climate-change/>

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<https://www.pewresearch.org/fact-tank/2020/04/21/how-americans-see-climate-change-and-the-environment-in-7-charts/>

<sup>18</sup> <http://ukhealthalliance.org/divestment>

<sup>19</sup> <https://www.divestinvest.org/11-trillion-counting-divestinvest/>

According to a team at the University of Waterloo in Canada, "lower share prices increase the costs of capital for the fossil fuel industry, which in turn decreases their ability to explore new resources and exploit proven resources".<sup>20</sup> The greater the likelihood of these fossil fuel resources staying in the ground, the more likely we are to meet the international climate change targets agreed under the Paris Agreement in order to prevent potentially catastrophic climate change;

- In order to keep to the below 2°C target, only one-fifth of known fossil fuel reserves can be burned, putting these assets at risk of becoming stranded. The fraction is even smaller when considering how to meet the 1.5°C target. According to the UK Health Alliance on Climate Change, fossil fuels are an increasingly risky investment and fossil fuel free indexes equalled or outperformed unsustainable alternatives for 5-10 years. "Divestment announcements by prominent investors signal financial risks to the market, which in turn depress share prices," say the University of Waterloo researchers. "Therefore, divestment announcements can have a measurable impact on the fossil fuel industry." Shell said in 2018 that divestment had become a material risk to its business.<sup>21</sup> In 2020 fund manager CCLA, which invests on behalf of charities including Church of England dioceses, dropped its investments in oil giants Shell and Total for financial reasons.<sup>22</sup> On January 27<sup>th</sup> 2021, ratings agency S&P warned 13 oil and gas companies, including Royal Dutch Shell and Total, that it is considering downgrading their credit ratings. The agency has increased its risk rating for the oil and gas sector as a whole from "intermediate" to "moderately high" because of the move away from fossil fuels, poor profitability and volatile prices, according to news reports.<sup>23</sup> There are also signs that oil companies may struggle to recruit employees with the skills they need.<sup>24</sup>
- Many fossil fuel companies are relying on carbon capture technology and nature-based solutions being deployed at a huge scale to offset their planned emissions.<sup>25</sup> Heavy reliance on the global scale deployment of carbon capture and storage technologies is misplaced given the lack of progress in this area for the last 20 years. According to an international group of 41 scientists and academics, such technologies are "expensive, energy intensive, risky, and their deployment at scale is unproven."<sup>26</sup> It is irresponsible to base net zero targets on the assumption that uncertain future technologies will compensate for present day emissions"

For those keen to retain support for the energy sector, there are plenty of companies that are much more progressive than fossil fuel companies in which to invest. For example, Orsted (formerly DONG, Danish Oil and Natural Gas) has shifted from being a fossil fuel dominated company to one heavily focused on renewable energy. Similarly, some large German engineering companies, such as Siemens and E.ON, have also made major shifts away from fossil-fuel related work.<sup>27</sup>

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<sup>20</sup> <https://theconversation.com/how-divesting-of-fossil-fuels-could-help-save-the-planet-88147>

<sup>21</sup>

<https://www.theguardian.com/commentisfree/2019/oct/13/divestment-bank-european-investment-fossil-fuels>

<sup>22</sup> <https://www.divestinvest.org/church-of-england-fund-drops-remaining-fossil-fuel-investments/>

<sup>23</sup>

<https://www.theguardian.com/business/2021/jan/27/rating-agency-sp-warns-13-oil-and-gas-companies-they>

<sup>24</sup> <https://www.ft.com/content/3b53f1bd-4625-4733-afb9-af4301257506/>

<sup>25</sup> <https://insideclimatenews.org/news/16072020/oil-gas-climate-pledges-bp-shell-exxon/>

<sup>26</sup> <https://www.climatechangenews.com/2020/12/11/10-myths-net-zero-targets-carbon-offsetting-busted/>

<sup>27</sup> Siemens has committed to the 1.5°C target under the SBTi and E.ON's carbon emissions are aligned with the below 2°C pathway according to TPI.

There is, of course, a narrow window of opportunity to keep global temperature rise below 1.5°C that warrants a fast transition away from fossil fuel dependency. We think that investment in the renewable energy and energy storage sectors would meet demand for energy more cost-effectively and more sustainably whilst continuing to provide jobs for physicists, investment in green chemistry would promote the use of alternative renewable feedstocks, and investment in energy conservation measures would reduce the energy demand.