June 15, 2022

Vanessa A. Countryman
Secretary
Securities and Exchange Commission
100 F Street NE Washington, DC 20549-1090

Via rule-comments@sec.gov **File Number S7-10-22**

Re: Clean energy sector reporting under the proposed Climate-Related Disclosures for Investors rule

Dear Ms. Countryman,

We are writing in response to the Commission's proposed rule on the Enhancement and Standardization of Climate-Related Disclosures for Investors. Clean Production Action is a nonprofit organization that collaborates with investors, businesses and NGOs to advance chemicals, materials, products, and systems that are healthy for people and the planet. Clean Production Action is the home of the Investor Environmental Health Network (IEHN), a collaborative network of investors who are attentive to issues of chemical hazards at their portfolio companies and who seek to engage with companies on improved materials management as part of overall ESG strategies. As ESG and socially responsible investors in clean technologies, including solar as well as other renewable energy sources, our members are investing in renewable energy but also making investment decisions based on a broad range of ESG considerations.[1]

We commend the Commission for the proposed climate disclosure rules, which are a crucial step toward addressing the array of transition and physical risks associated with climate change.

Our comments are directed toward encouraging the Commission to integrate clearer disclosure requirements relevant to the climate transition strategies of accelerated clean energy development. The proposed rule makes a distinction between disclosures of climate risks and opportunities, and treats the disclosure of climate related opportunities as discretionary to disclose. But consider the disclosures needed from clean energy companies (such as renewable energy, battery production, electric vehicles, and distributed electricity products) whose operations are essentially built around *seizing the opportunities associated with the global climate transition*. We believe that the rule should apply to these companies, but that the

[1] Clean Production Action is also the organizer of **The Chemical Footprint Project,** an initiative to elevate "chemical footprinting" to the equivalent of carbon and water footprinting through which companies can chart and report on their progress in reducing their use of chemicals of high concern (CoHCs). Signatories to the Chemical Footprint Project include investors with over $2 trillion in assets under management and purchasers with over $800 billion in procurement power (https://www.chemicalfootprint.org/).

disclosure of climate transition risks should include issues that investors need to know that could stand in the way of effective and accelerated business strategy of these companies. Some of the principal needed disclosures relate to known categories of supply chain vulnerabilities that may thwart the companies' accelerated participation in burgeoning clean energy markets. We recommend clarifying disclosure requirements to ensure that the sector's human rights and environmental health challenges, which may pose impediments to accelerated clean energy development, are made more transparent for investors.

> 9. … Are there any aspects of the definitions of climate-related risks, physical risks, acute risks, chronic risks, and transition risks that we should revise? Are there other distinctions among types of climate-related risks that we should use in our definitions? Are there any risks that we should add to the definition of transition risk?

While the proposed rule appropriately addresses a wide range of transition risks and physical risks of concern to registrants and investors, certain transition risks are inadequately addressed in the proposed rule. In the rush to innovate and bring to market powerful and efficient clean energy products, the clean energy sector is faced with particular ESG risks and challenges, including the potential toxicity of materials utilized, and the human rights and environmental impacts from accelerated resource extraction needs. **These issues pose climate transition risks and potential for misleading marketing and promotion of registrants in the clean energy sectors.**

Because clean energy sectors are on an accelerated growth path to meet the global needs for low carbon energy sources, transition risk for these sectors differs significantly from other affected sectors for which transition risks are principally related to challenges of decarbonization. Instead, some of the major climate transition risks for clean energy sectors such as solar and battery technologies concern potential supply chain impediments to the deployment of technologies at the pace and scale demanded by the urgent global climate transition.

The pace of development needed for the climate transition of the clean energy sector is driving extraordinary acceleration, but with it, extraordinary risks associated with materials and resource extraction. As an example, a Bank of America report suggests battery manufacturing capacity for 2050 will need to be 88 times the installed capacity in 2020.[2] Along with the scaling of these technologies come the risks associated with the materials utilized. Companies in the clean energy sectors that fail to manage and disclose the vulnerability of their supply chains and related investment risks compromise investor interests.

[2] *Thematic Investing "Transwarming" World: Net Zero Primer,* Bank of America Securities, at 5, November 4, 2021, https://business.bofa.com/content/dam/boamlimages/documents/articles/ID21_1543/Net_Zero_Redacted_Note_Updated_Final.pdf

Human and Indigenous Rights in the Climate Transition: Xinjiang

Approximately 12 million Uyghur people live in Xinjiang,[3] where roughly 45% of the world's supply of polysilicone is produced.[4] While there is some debate as to whether the Uyghurs should be considered indigenous to the Xinjiang area,[5] human rights abuses are clear. China has been accused of mass sterilization of Uyghur women, as well as physical, sexual, and mental torture of the Uyghur people.[6]

Most important for the clean energy sector's transition risks, a report issued in 2021 by the Helena Kennedy Centre for International Justice at Sheffield Hallam University documented the connection between Uyghur forced labor and the solar sector. The report documents forced labor in polysilicon refinement facilities; re-education programs that are wiping out Uyghur languages, religions, and cultures; forced detention in internment camps; and more.[7]

The global concentration of polysilicate production in the Xinjiang region has rendered the solar industry vulnerable to supply chain disruption. The US has a ban on direct import of solar products from the region, but a more complex source of disruption has been posed by the import of the China-originating solar chips into fabrication operations in Southeast Asia, which are then, in turn sold to US solar companies. A February 2022 petition to the Commerce Department by a U.S. solar manufacturer, Auxin Solar seeks to impose new import tariffs on imports of solar panels from the region, asserting that inexpensive Chinese polysilicate refined in China is effectively undercutting American solar companies.[8]

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[3] *Who are the Uyghurs and why is China being accused of genocide?*, BBC News, May 24, 2022, https://www.bbc.com/news/world-asia-china-22278037

[4] *China uses Uyghur forced labour to make solar panels, says report*, BBC News, May 14, 2021, https://www.bbc.com/news/world-asia-china-57124636

[5] Mahesh Ranjan Debata, *Indigenous or not: the Uyghurs and their claim to Xinjiang*, Down to Earth, October, 30, 2018, https://www.downtoearth.org.in/blog/governance/one-time-parking-charge-a-vision-or-a-nightmare-for-delhi--61638

[6] *Who are the Uyghurs and why is China being accused of genocide?*, BBC News, May 24, 2022, https://www.bbc.com/news/world-asia-china-22278037

[7] Murphy, L. and Elimä, N., In Broad Daylight: Uyghur Forced Labour and Global Solar Supply Chains, Sheffield Hallam University Helena Kennedy Centre for International Justice, (2021).

[8] David Iaconangelo, *Solar industry: We're in 'most serious crisis' in history,* Energy Wire, April 6, 2022, https://www.eenews.net/articles/solar-industry-were-in-most-serious-crisis-in-history/ The petition states:

> Ten years ago, the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") found that dumped and subsidized imports of Chinese crystalline silicon photovoltaic ("CSPV") cells and modules caused material injury to the U.S. CSPV industry. Antidumping ("AD") and countervailing duty ("CVD") Orders were imposed to remedy these unfair trade practices. But instead of fairly pricing their CSPV cells and modules for export to the United States, Chinese CSPV producers continued their assault on domestic producers — this time from third country export platforms. Their relentless predatory pricing has been fueled by China's non-market subsidization of the upstream solar supply chain, intellectual property theft conducted by China's People's Liberation Army ("PLA"), and inhumane forced labor practices. China's "Going out Policy" and "Belt and Road Initiative" greased the skids for Chinese companies to easily complete production in Malaysia, Vietnam, Thailand, and Cambodia to circumvent the existing AD and CVD Orders on Chinese CSPV cells

The Commerce Department's investigation of the petition threw the solar sector into crisis. The Solar Energy Industries Association (SEIA) president Abigail Ross Hopper said that the probe had produced "the most serious crisis [SEIA has] faced in [its] collective history,"[9] An SEIA conducted survey noted that due to the probe, two-thirds of respondents reported that at least half of their solar and storage workforce was at risk of being laid off, while another third of those surveyed said their "entire workforce" is at risk for the same reason.[10] Additionally, at least 80% of respondents said they expected either a "devastating" or "severe" negative impact stemming from Commerce's probe.[11]

As a result of this crisis of the solar sector triggered by the Auxin petition, President Joseph Biden intervened on June 6, 2022 to declare an emergency in an Executive Order, "Declaration of Emergency and Authorization for Temporary Extensions of Time and Duty-Free Importation of Solar Cells and Modules from Southeast Asia." The Executive Order addresses an array of issues relevant to national defense in the time of the Ukraine war and the climate emergency's urgent transitions and noted:

> Utilities and grid operators are increasingly relying on new solar installations to ensure that there are sufficient resources on the grid to maintain reliable service. Additions of solar capacity and batteries were expected to account for over half of new electric sector capacity in 2022 and 2023. The unavailability of solar cells and modules jeopardizes those planned additions, which in turn threatens the availability of sufficient electricity generation capacity to serve expected customer demand. Electricity produced through solar energy is also critical to reducing our dependence on electricity produced by the burning of fossil fuels, which drives climate change.[12]

While the Executive Order provided a two-year reprieve to the sector the underlying issue of human rights in the supply chain remains a long-term vulnerability.

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and modules.

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Publicly available evidence that is reasonably available to Auxin Solar establishes that CSPV cell and module assemblers in Malaysia, Thailand, Vietnam, and Cambodia are circumventing the AD and CVD Orders on CSPV cells and modules from China. Pursuant to 19 C.F.R. § 351.226, this petition sets forth the required regulatory information to establish that circumvention is occurring and for Commerce to initiate these inquiries within 30 days after the filing of the request.

[9] https://www.eenews.net/articles/solar-industry-were-in-most-serious-crisis-in-history

[10] David Iaconangelo, *Solar industry: We're in 'most serious crisis' in history*, Energy Wire, April 6, 2022, https://www.eenews.net/articles/solar-industry-were-in-most-serious-crisis-in-history/

[11] David Iaconangelo, *Solar industry: We're in 'most serious crisis' in history*, Energy Wire, April 6, 2022, https://www.eenews.net/articles/solar-industry-were-in-most-serious-crisis-in-history/

[12] https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/06/declaration-of-emergency-and-authorization-for-temporary-extensions-of-time-and-duty-free-importation-of-solar-cells-and-modules-from-southeast-asia/

Current sectoral disclosure of human rights risk in materials sourcing is inconsistent

Although the sector must comply with the Dodd-Frank Wall Street Reform and Consumer Protection Act conflict mineral disclosure requirements regarding minerals sourced from the Republic of Congo and surrounding countries, this currently stands in dramatic contrast to other regions of supply chain vulnerability due to human rights concerns, such as the Xinjiang region of China. Thus, the Commission has an important opportunity in this rulemaking to encourage more consistency in reporting on supply chain risk, bringing disclosures regarding other high risk regions into line with the disclosures provided on conflict minerals.

Solar sector toxicity risks

A similar vulnerability of the clean energy sector relates to the presence of toxic materials and the risks related to workplace and environmental health concerns as well as end of life disposal or recycling. As an example, the next generation of solar cells is expected to be based on a class of materials called perovskites - a family of compounds that promises a substantial increase in efficiency of energy generation (as much as 30% efficiency compared with a maximum of 20% efficiency in the prior generation of solar cells).[13] While these cells show promising efficiency results, they are coupled with toxicity concerns. Numerous chemicals and solvents are needed to manufacture the cells, and most perovskite cells use a hybrid organic-inorganic lead or tin halide-based material as the light-harvesting active layer.

This poses workplace exposure and toxicity concerns, but also environmental toxicity risks, because as these perovskite cells degrade, they could either leach toxic chemicals at the site of installation of solar panels, and even more so in the ultimate disposal of the solar panels. Studies have shown that factors such as humidity and moisture cause degradation of the lead compounds in these cells.[14] This influx of lead in the environment could have major financial and human health implications. A 2017 report suggests that the estimated costs of cognitive impairment associated with known *childhood lead exposure* represented about 1.83% of the global GDP in 2010.[15] Additional disclosure of the risks associated with these toxicity issues is needed.

In addition, disclosure of management strategies should be required or at least encouraged. Many companies utilize voluntary safety standards. Disclosure of the use of such standards can

[13] In 2009, PVs based on halide perovskite were introduced that showed efficiency (lab-scale cells) at 23.3% and devices using these materials now show an efficiency of 25.5% in 2020 (by comparison, high-end commercial silicon PVs are ~20% efficient).

[14] Kehinde O. Ogunniran and Nlebemuo T. Martins, Humidity and Moisture Degradation of Perovskite Material in Solar Cells: Effects on Efficiency, IOP Conf. Ser.: Earth Environ. Sci. 655 012049, (2021).

[15] Granjean and Bellanger, *Calculation of the disease burden associated with environmental chemical exposures: application of toxicological information in health economic estimation*, Environmental Health (2017).

assist and inform investors regarding a registrant's management of potential toxicity risks. Numerous corporate and NGO efforts running in parallel with the development of the sector are taking aim at reducing the utilization of toxic chemicals before production even reaches scale.

For example, NSF International, an independent, not-for-profit, nongovernmental organization, provides a public health and safety-based risk management standard for photovoltaics, NSF/ANSI 457 Sustainability Leadership Standard for Photovoltaic Modules and Photovoltaic Inverters. The standard is intended to improve the sustainability performance profile of photovoltaic modules and inverters using established and advanced scientific principles, practices, materials, and standards.

> *The Standard provides a framework and standardized set of performance objectives for manufacturers and the supply chain in the design and manufacture of PV module and PV inverters components. For purchasers, this Standard provides a consensus-based definition of key sustainability attributes and performance metrics, alleviating individual purchasers from the arduous and complex task of defining sustainability performance for PV modules and PV inverters. This Standard can be used within an established system for the identification of sustainability / environmentally preferable products by purchasers, and to provide market recognition for conforming products and brand manufacturers.*
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> *This Standard will be continually maintained and periodically reviewed to ensure that the definition of sustainability leadership, as reflected in the performance criteria, progresses with the evolution of technology and services and sustainability/ environmental improvements in the product sector.*

The Global Electronics Council (GEC) has established the EPEAT eco-label for the electronics sector. Many purchasing entities require or prefer the presence of the EPEAT eco-label, thus demand is significantly higher for products that contain such a label. Qualifying equipment for the label includes computers and displays, imaging equipment, mobile phones, servers, televisions and photovoltaic modules and inverters.

Restriction on Hazardous Substances Initiative (RoHS)

RoHS is a European law which impacts the electronics and electrical products. The European Union enacted RoHS, also known as Directive 2002/95/EC, in 2002 and restricted the use of six hazardous materials found in electrical and electronic products. An additional four chemicals were added in 2019. All applicable products in the EU market since July 1, 2006 must be compliant with RoHS. Any business that sells applicable electrical or electronic products, equipment, sub-assemblies, cables, components, or spare parts directly to RoHS-directed countries, or sells to resellers, distributors or integrators that in turn sell products to these

countries, is impacted if they utilize any of the restricted 10 substances.[16]

RoHS and the NSF/ANSI 457 Sustainability Leadership Standard for Photovoltaic Modules and Photovoltaic Inverters both include lists of substances that should be restricted in photovoltaic manufacture. The criteria overlap but are distinct in each instance. Disclosure of whether a company is compliant with the lists of chemicals of high concern to human health and the environment in RoHS and NSF/ANSI 457 would help to inform investment analysts regarding the efficacy of the company's chemicals management program.

Applying the standards, the example of cadmium

Notably, certain photovoltaic products have received at least temporary exemptions from RoHS restrictions such as lead and cadmium content, but our understanding is that these exemptions may be lifted at some future time. Thus, production may include substances which would otherwise be restricted for sale in the European Union. The existence of these waivers may pose a particular long-term ESG challenge for the sector, due to inclusion of materials that would otherwise be considered too hazardous for inclusion in electronics products.

For example, cadmium is currently being utilized in many photovoltaic panels in part because solar manufacturers have advocated for, and obtained, exemptions from RoHS. Having won such an exemption does not end the concerns about the toxicity of materials used, which clearly will still affect the risks and cost equation, including social license and costs associated with end-of-life implications. For instance, a massive solar development project in Virginia was met by a complex array of local voices in opposition. The county planning commission put together a set of recommendations after reviewing a robust set of stakeholder comments and recommended that no cadmium-telluride (CdTe) panels be used and that the installer fund a $36 million bond to cover the cost of cleanup/ decommissioning at the end of the solar farm's life. Although the recommendations of the County planning commission were ultimately reduced, this example shows the sometimes precarious interplay between the waiver of RoHS standards and the ultimate acceptance of products by local communities.

Disclosure of whether a company's production is compliant with the European RoHS and voluntary toxicity standards such as NSF/ANSI 457 would help to inform investors of the efficacy of a company's approach to toxicity risks.

[16] EU RoHS specifies maximum levels for the following 10 restricted substances. The first six applied to the original RoHS while the last four were added under RoHS 3, which took effect July 22, 2019.

- **Cadmium (Cd)**: < 100 ppm
- **Lead (Pb)**: < 1000 ppm
- **Mercury (Hg)**: < 1000 ppm
- **Hexavalent Chromium: (Cr VI)** < 1000 ppm
- **Polybrominated Biphenyls (PBB):** < 1000 ppm
- **Polybrominated Diphenyl Ethers (PBDE)**: < 1000 ppm
- **Bis(2-Ethylhexyl) phthalate (DEHP)**: < 1000 ppm
- **Benzyl butyl phthalate (BBP)**: < 1000 ppm
- **Dibutyl phthalate (DBP)**: < 1000 ppm
- **Diisobutyl phthalate (DIBP)**: < 1000 ppm

Related Concerns in the Battery Supply Chain

Alongside solar, batteries are a major driver towards decarbonization and reaching the 2°C Paris Agreement target. One study by the World Economic Forum suggests that batteries could enable 30% of the required reductions in carbon emissions in the transport and power sectors.[17] To meet renewable energy demands, global lead-acid battery demand is expected to grow by a factor of ~1.1 to reach ~490 GWh in 2030. However, many of the toxicity and supply chain issues concerning the solar industry are also reflected in the battery value chain. While lead has been phased out in many industries, it remains a critical material in automotive and energy storage applications. For example, nearly every vehicle on the road requires a lead-acid battery for starter, light, and ignition functions. This reliance on lead-acid batteries is particularly an issue for economies in transition, where safe and environmentally conscious collection and recycling systems are often lacking. In these countries, "up to 50% of end-of-life lead batteries are recycled in informal, or below standard, facilities, leading to substantial releases of lead into the environment and high levels of lead exposure." Additionally, the battery supply chain faces both human rights and environmental issues with increasing renewables demand.

Many of the metals used in batteries (e.g., lithium, cobalt, nickel, and manganese) are sourced from foreign countries. For example, 70% of the world's mined cobalt comes from the Democratic Republic of Congo. Mining from this country and other developing nations raises several ESG and human rights risks. "Severe social risks have been well documented in the DRC's artisanal mining industry. They include hazardous working conditions; deaths due to poorly secured tunnels; potentially various forms of forced labour; the worst forms of child labour; and exposure to fine dusts and particulates and DNA-damaging toxicity." An estimated 1 million children are affected by the DRC's mining industry. Additionally, environmental risks arise from mining, such as intensive land use, deep seabed mining, soil and water pollution.

As noted above, disclosure requirements related to disclosure of conflict minerals from the DRC are required under existing law. In contrast, China is expected to play a strong role in the battery industry, capturing 41% of the revenues from operations inside China.[18] Thus, it is possible that similar human rights issues to those evidenced in Xinjiang within the solar industry may also arise in the battery sub-sector.

[17] *A Vision for a Sustainable Battery Value Chain in 2030 Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation*, World Economic Forum, at 16, September 2019, https://www3.weforum.org/docs/WEF_A_Vision_for_a_Sustainable_Battery_Value_Chain_in_2030_Report.pdf

[18] *A Vision for a Sustainable Battery Value Chain in 2030 Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation*, World Economic Forum, at 16, September 2019, https://www3.weforum.org/docs/WEF_A_Vision_for_a_Sustainable_Battery_Value_Chain_in_2030_Report.pdf

Recommendations

> 48. Are there any other transition risks that we should specifically identify for disclosure, if applicable, in the transition plan description?

Clean energy sector companies should be subject to the disclosure requirements of the proposed climate disclosure rule. For these companies, however, the risk profile is significantly different from companies for which reducing a GHG footprint is the principal challenge. In these sectors, the urgent challenges related to seizing opportunities for rapid growth to meet demands for clean energy are accompanied by risks embedded in the supply chain and related materials. Disclosure of risks related to materials and to human rights should be clearly articulated in the rule.

> **Encourage the disclosure of risks and transition strategies relevant to human rights and environmental health risks in the supply chain and relevant to materials usage.** Human rights and environmental health are implicated in numerous examples of mining and manufacturing processes in the solar, battery and other aspects of the clean energy sector. Impacts on human rights including on Indigenous Peoples and host communities as well as exposure to and use of toxic chemicals in the value chain should be included in the rule as example of an identified transition risk.
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> **Encourage the disclosure of applicable voluntary standards or nondomestic regulations that address human rights or environmental health concerns in supply chains.** We recommend that the Commission encourage registrants to disclose what voluntary standards (e.g., NSF/ANSI 457) or foreign regulations (EU RoHS) are applied to their supply chains to manage toxicity or human rights issues.
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> **Require the disclosure of vulnerabilities in the supply chain due to reliance on foreign labor/materials.** We recommend that the Commission require clean energy companies to disclose the risks to their supply chain due to reliance on forced labor and foreign materials, on par with the requirements for conflict minerals disclosures.

Inclusion of these recommendations is critical for investors to address the materiality concerns of human rights and toxic chemicals in supply chains.

Sincerely,

Mark S. Rossi, PhD, Executive Director, Clean Production Action

Alexandra McPherson, Consulting Program Manager, Investor Environmental Health Network