June 11, 2021

Chairman Gary Gensler
Commissioner Allison Herren Lee
Commissioner Hester M. Peirce
Commissioner Elad L. Roisman
Commissioner Caroline A. Crenshaw
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-1090

RE: Climate disclosure and ESG - the example of photovoltaic sector disclosure needs

Dear Chairman and Commissioners:

We are writing in response to the Commission's request for comments on climate and ESG related disclosures of March 15, 2021.

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. We view ourselves as an important element of the ESG investment ecosystem.

Among other things, we are the home of the Investor Environmental Health Network, 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.

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. 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.

Our efforts guide companies and their supply chains to adopt and implement four guiding principles for chemicals policy:

- **Know and disclose product chemistry**. Manufacturers identify the substances associated with and used in a product across its lifecycle and will increase as appropriate the transparency of the chemical constituents in their products, including the public disclosure of chemicals of high concern. Buyers request product chemistry data from their suppliers.
- **Assess and avoid hazards**. Manufacturers determine the hazard characteristics of chemical constituents and formulations in their products, use chemicals with inherently low hazard potential, prioritize chemicals of high concern[2] for elimination, minimize

exposure when hazards cannot be prevented, and redesign products and processes to avoid the use and/or generation of hazardous chemicals. Buyers work with their suppliers to achieve this principle.

- **Commit to continuous improvement.** Establish corporate governance structures, policies and practices that create a framework for the regular review of product and process chemistry, and that promote the use of chemicals, processes, and products with inherently lower hazard potential.
- **Support public policies and industry standards**. Advance the implementation of the above three principles, ensure that comprehensive hazard data are available for chemicals on the market, take action to eliminate or reduce known hazards and promote a greener economy, including support for green chemistry research and education.

These principles are key features of an effective strategy for promoting, developing and using chemicals that are environmentally preferable across their entire lifecycle. Because the investors who participate in our initiatives evaluate companies according to the above criteria, this effort has an important interplay with any proposed SEC disclosure rules. To the extent that this information is available as a legally required baseline, the work of investors participating in this endeavor will be more efficient, and allow greater focus on improving performance rather than on establishing a baseline of disclosure.

We are responding to certain of the questions in the March 15, 2021 request for comments.

15. How do climate-related disclosure issues relate to the broader spectrum of ESG disclosure issues?

The economic transformation associated with climate change will exacerbate the need for ESG related disclosures, not only from companies and sectors in retrenchment, but also from the sectors facing accelerated growth to meet the demands of the new, clean energy economy. As the race is on for investments to produce clean energy technologies, investors are moving ESG investments into renewables sectors.

The ESG investment strategy is multivariate. Even in the renewable energy sector, it does not only look to the performance and efficiency of companies as renewable energy enterprises, but also benchmarks and engages with portfolio companies on a range of social and environmental issues.

In the rush to innovate and bring to market powerful and efficient clean energy products, particular ESG challenges are facing the sector, such as the potential toxicity of materials utilized, and human rights or environmental impacts from accelerated mining of needed resources. Demand for toxic materials such as lead create a risk of workforce exposures in the supply chain; demands for mining of resources from regions known for forced labor or environmental disasters, raising human rights issues.

As the SEC looks to promote climate disclosure, special attention and priority should be given to ensuring sufficient ESG disclosure safeguards on sectors whose growth is likely to be driven by the demands of responding to climate change. Effective ESG disclosure will reinforce investor confidence; in contrast, failure to integrate sufficiently broad ESG disclosure may delay transparency of critical ESG issues and ultimately pose a disruptive threat. Toxicity or human rights vulnerabilities that are unattended during the sector's growth may ultimately disadvantage some companies and investors as externalities become visible liability, or regulatory lockout from particular markets, especially the European Union, may undercut the poorest performers.

The Commission can establish disclosure rules to allow renewable energy sector investors to access a baseline of comparable information among investee companies. In contrast, current disclosures pursuant to regulation S–K fail to provide the ESG information needed.

From public comments and debate, we anticipate that the Commission will likely establish some immediate climate disclosure rules, and further ESG disclosure requirements. We support the establishment of both, but believe that encouraging rapid growth of clean energy sectors merits assurances that sufficient ESG disclosure obligations are coupled with the growth in investment.

Our principal recommendation is for the Commission to encourage and require all issuers to disclose any and all ESG related codes and standards that they subscribe to or claim to comply with. Such disclosures can be required as a part of existing filings like the Management Discussion and Analysis, or in a separate filed or furnished document that the Commission requests.

In the following discussion, we will provide examples of the types of issues facing the solar manufacturing sector, some of the applicable standards, and recommendations regarding how the Commission can integrate these into an ESG disclosure requirement.

The example of perovskite solar cells

A critical issue in development of solar technologies is maximizing the amount of energy outputted per square foot of solar cells. To increase the efficiency of solar cells and thereby reduce the needed amount of surface area and land area needed to produce electricity, the photovoltaic sector is working on innovative materials. 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 current generation of solar cells.[1] Thus, this technology promises the generation of at least one third more energy per square foot of solar cell

[1] 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).

surface. As of 2021, there are initial partnerships and low-volume production lines, with partnerships among silicon and copper indium gallium selenide (CIGS) solar cell manufacturers and drawing the interest of investors and stakeholders.

Yet there are durability and toxicity concerns. So far, most perovskite solar cells use a hybrid organic-inorganic lead or tin halide based material as the light-harvesting active layer. Numerous chemicals and solvents are needed to manufacture perovskite solar cells. Thus the manufacture of new and better perovskite solar cells may use and produce as byproducts many hazardous solvents and other chemicals.

The deployment of these chemicals along with the new technology poses potential for worker exposure to toxic chemicals in the supply chain, end of life disposal questions as well as the possibility of chemical releases from installed solar arrays.

Private sector initiatives

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.

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.

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.

Restriction on Hazardous Substances Initiative (RoHS) is a European law that impacts electronics and electrical products. The original RoHS, also known as Directive 2002/95/EC, originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market since July 1, 2006 must pass RoHS compliance. 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.[2]

Each of the above standards includes list 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 under each of these standards 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. For example, medical devices were initially exempted from RoHS, but became subject to RoHS restrictions with RoHS II, effective July 2014. 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.

[2] 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

Cadmium based thin film solar technology is predominantly sold by First Solar – a company that many US socially responsible investors hold stock in. It is one of the few publicly traded solar companies to be competitive with the Chinese manufacturers. With a preference for US based renewable energy companies among some socially responsible investors, the toxicity of cadmium in solar technology is emerging as a possible issue of concern. For instance, a massive solar development project in Virginia that is in part serving customers like Apple and will likely be serviced by First Solar 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 standards and the ultimate acceptance of products by local communities.

Mining and human rights risks

Moreover, the solar and other clean energy sectors face significant supply chain risks associated with mining for materials necessary for production**.** A recent academic study has documented how *greater* mining activity is necessary to meet the resource demands of a clean energy future. The study documented that the current supply of various metals and minerals cannot support a global economy producing net zero carbon emissions. Extraction rates have to be raised, the scientists argue, if only in the short term.[3] Essential to these new demands for extracted minerals will be assessment of the environmental and human rights impacts.

The report noted, as an example, that for the United Kingdom to meet its goal of having all new cars go electric from 2030 would require a battery-electric fleet demanding an estimated 207,900 tons of cobalt, 264,600 tons of lithium carbonate, 7,200 tons of neodymium and dysprosium, and 2,362,500 tons of copper — twice the current annual world production of cobalt (used in battery electrodes), an entire year's worth of world production of neodymium (to make electric motor magnets) and three-quarters of the world production of lithium (battery electrolyte). So, as the renewable energy sector grows, so does the importance of supply chain ESG disclosures.

Both mining and manufacturing processes are likely to raise human rights issues. As one example, a report issued in 2021 by the Helena Kennedy Centre for International Justice at Sheffield Hallam University, "In Broad Daylight: Uyghur Forced Labour and Global Solar Supply Chains," 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 indigenous languages, religions, and cultures; forced detention in internment camps; and more. As a result, some companies in the solar sector face immense reputational, legal, and economic risks due to the use of forced labor at multiple points in the solar supply chain.

[3] Jonathan Amos, Move to net zero 'inevitably means more mining', BBC Science https://www-bbc-com.cdn.ampproject.org/c/s/www.bbc.com/news/science-environment-57234610.amp

3. What are the advantages and disadvantages of permitting investors, registrants, and other industry participants to develop disclosure standards mutually agreed by them?

5. What are the advantages and disadvantages of rules that incorporate or draw on existing frameworks, such as, for example, those developed by the Task Force on Climate-Related Financial Disclosures (TCFD), the Sustainability Accounting Standards Board (SASB), and the Climate Disclosure Standards Board (CDSB)?

The discussions above highlight potential material ESG issues for the sector. We have highlighted as well some examples of private sector standards, for which disclosure of compliance or a commitment to achieve compliance would provide materially important information for investors in the sector. Investors in this sector need such transparency as to the ESG related standards adopted by a company, and any verification methods, by the issuer.

Disclosure based on multiple company-identified standards may be necessary to ensure disclosure of the range of material information needed by investors.

We recognize that the Commission will receive significant correspondence arguing for the adoption of Sustainability Accounting Standards Board (SASB) standards in some form. The SASB has developed photovoltaic sector standards. Examination of the standards established by SASB demonstrates the limitations of adopting a single set of standards that, because they are fixed in a period of time, fail to keep up with the range of material standards of disclosure and action relevant to the sector.

In our opinion, the SASB photovoltaic sector standards do not adequately encompass necessary disclosures on materials toxicity or human rights concerns. For instance, rather than a separate focus on hazardous materials, the standard only includes hazardous waste management and quantitative data on percentage of products that contain arsenic, antimony or beryllium which pose end-of-life concerns.

The focus on waste rather than materials raises a concern that a company that deploys lead in its products, but which does not end up with a lot of lead waste, may not disclose this issue despite the significant supply chain, employee and end of life management exposure risks associated with lead.

The decision by SASB in setting its photovoltaic disclosure standards to narrow the focus from hazardous materials to hazardous wastes[4], and the lack of required disclosure of whether a company is compliant with EPEAT or NSF 457 photovoltaic standards, means that the SASB standard would not suffice to identify the range of material concerns for investors. While such issues may theoretically be addressed in a future SASB update, companies in the sector should

[4] SASB, Basis for Conclusions, Solar Technology & Product Developers, October 2018.

have clear principled disclosure requirements that would encourage the disclosure of material standards and issues beyond the SASB standard. For instance, the EPEAT and NSF photovoltaic standards and their chemical restrictions are of clear and material relevance to the sector, regardless of whether the SASB has targeted those issues, and therefore the SEC standards should be crafted broadly enough to ensure that such issues would be disclosed even if they are not included in the SASB standard.

Similarly, the disclosure of human rights related risks associated with critical materials under the SASB standard are likely to fall short of investor expectations for human rights disclosure. The focus of the materials sourcing section of the SASB standard mentions that the materials for solar technologies have "concentration in countries that may have relatively limited governance and regulatory structures or are subject to geopolitical tensions" exposing companies to the "risk of supply chain disruptions and input price increases or volatility." The standard requests disclosure of materials that present such risks, the types of risks and the strategies used to mitigate the risks. Examples of strategies may include "diversification of suppliers, stockpiling of materials, development or procurement of alternative and substitute materials and investments in recycling technology."

In contrast, the UN PRI conducted a series of engagements from 2015 to 2017 with companies in the mining sector and identified a range of effective company practices to manage human rights concerns, noting that while all companies articulate a commitment to respect human rights, their level of commitment varied from sophisticated to "early-stage." In the instance of a reporting solar manufacturer, the kinds of workable safeguards that would actually be relevant to these human rights concerns would include supply chain monitoring or standards on human rights sourcing. These are items that seem not to be required by the current SASB standard. Thus, the disclosure required by the guidelines of the SASB would not necessarily lead to disclosure of the issues an ESG investor would seek.

This raises significant issues for a scenario in which the Securities and Exchange Commission in some manner adopted the SASB standard. At a minimum, Commission encouragement of disclosure of other codes and practices relevant to the hazardous materials and human rights concerns of the sector would be appropriate to encourage sufficient disclosure to meet ESG investing concerns. The issues that are neglected in the SASB standard are material information for investors in investing decisions, engagement and voting. A critical concern is the recognition of the rights and interests of diversified and universal investors, for whom externalities, cross sectoral impacts and systemic impacts are of equal interest and materiality to the narrower company-specific financial materiality concerns that the SASB has adopted as their threshold for inclusion in standards.

15. Should climate-related requirements be one component of a broader ESG disclosure framework? How should the Commission craft climate-related disclosure requirements that would complement a broader ESG disclosure standard? How do climate-related disclosure issues relate to the broader spectrum of ESG disclosure issues?

The following are our recommendations for SEC disclosure requirements to bridge climate change and ESG disclosure matters:

1. **Disclose codes and value statements on ESG.** Companies should be encouraged to disclose in a filed or furnished document whether the company has adopted codes or value statements on ESG matters, and factors in governance and implementation that demonstrate the ESG issues that the company has prioritized. While investors can engage with companies on such issues, the presence of a baseline of disclosure will allow investors to engage with more companies, alleviating the inefficient and heavy lifting of seeking better disclosure on a company by company basis. A baseline of information will allow investors to build their investing and engagement strategies around the relative strengths of the issuers.

2. Disclosures in the face of uncertainty. Specific guidance or rules should require disclosure of significant scientific or social risks that the company is monitoring for potential impacts on the company or its investors, regardless of uncertainty. The registrant should disclose ESG trends or developments such as when there are significant peer-reviewed studies in scientific journals, or significant reports of regulatory bodies, multilateral institutions, universities, or other civil society organizations. The disclosure of these significant developments should be required, recognizing that there is almost never any issue that is *not* debated in the scientific community. The existence of debate, including debate that is contrived or sponsored by companies themselves, is not a reason to ignore scientific evidence or forecasting. This assessment should also be made in light of existing peer practices, including the firm's standing among its peers as between best practices and lagging performance, and in consideration of available market standards. It should be unnecessary to assess the likelihood of US adoption of European regulatory trends in order to assume that the extension of those trends is a significant risk.

3. Delineating extent of company exposure to the monitored issues. Even where qualification of financial impacts is difficult, disclosures should aid in understanding the extent of the company's potential exposure to the issues identified above, such as the degree to which employees in the supply chain or operational neighbors may be exposed to an identified risk. Disclosure should be conducted early and not limited to situations in which the company has quantified anticipated liabilities or operational disruptions.

4. **Discussion of mitigation measures** Disclose measures being taken to diminish or adapt

to adverse impacts or expand business opportunities associated with the issue. Most importantly, the issuer should disclose any third-party standards or certifications relative to ESG matters that the company has adopted, as well as any verification measures (such as independent auditing) that are utilized in relation to those standards or certifications. The issuer should also be encouraged to include a narrative discussion of other measures taken to mitigate the issue of concern including consumer education, research, materials modification or substitution, development of new products or services, exposure reduction, public policy efforts, fieldwork, insurance, employee training or other actions.

5. <u>Sustainability Discussion and Analysis disclosure.</u> Provide management's discussion and analysis of how the issuer's ESG performance relates to its long-term business plan, strategy and performance, Our experience in evaluating leaders and laggards in ESG implementation in regard to chemical hazards through a recent survey of the Chemical Footprint Project found that, among other things, companies engaging in a *leading* role in effectively addressing chemical hazards were more likely than other participants in the Survey to have senior management leadership and Board level engagement in chemicals management, to publicly disclose restricted substances lists, and to invest in safer alternatives to chemicals of high concern. Thus, we look to narrative and line item disclosures to indicate the role of management and board leadership, indications of lists of chemicals that are restricted, and investment in safer alternatives.

6. <u>Applicability of Anti-fraud Requirements</u>. Regardless of whether the ESG references on these issues are contained in materials filed with the SEC, the Commission should clarify that the disclosure of ESG related materials and references is considered, in light of current market interest in ESG data, to be communications to investors that are subject to the prohibition against materially false statements or omissions under rule 10b-5 which prohibits, in investor communications both "any untrue statement of a material fact" but also to "omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading."

Sincerely,

Mark S. Rossi, PhD, Executive Director
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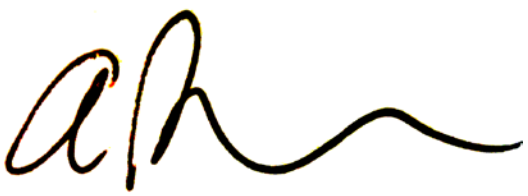

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