



June 19, 2020

Senate Democrat Special Committee on the Climate Crisis
climate_input@schatz.senate.gov

Via Electronic Mail

Re: Request for Input on Climate Impacts, Policy Solutions

The Institute for Agriculture and Trade Policy (IATP) thanks the Committee for seeking input on the climate crisis, the most critical challenge of our time. IATP is a 34-year-old non-profit 501(c)3 organization based in Minneapolis, Minnesota. IATP works to ensure fair and sustainable food, farm and trade systems. For more than a decade we have advocated for policies at the intersection of climate, agriculture and trade policy that reduce greenhouse gas (GHG) emissions while supporting and empowering farmers and rural communities to both adapt to and mitigate climate change.

IATP has worked on-the-ground with Minnesota rural communities to develop local climate action plans. We have advocated at the national level to integrate climate goals within the Farm Bill and financial regulation. We have pushed for reforms in United States trade policy to enable climate action and reduce GHGs. IATP has been an advocate at United Nations agencies, including the Committee on World Food Security, to advance agroecology as a solution to food security and climate challenges. And IATP has actively attended most of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties over the last decade.

Major disruptions to our food system from the COVID-19 crisis and recent trade fights have made clear the fragility of our agriculture economy. These disruptions come on the heels of seven straight years of low prices, often below the cost of production, and rising debt and farm bankruptcies. A series of antitrust and competition investigations reveal a marketplace that is controlled by a handful of global companies to the detriment of farmers and consumers. Climate policies need to respond to these economic challenges and provide a path forward that reduces emissions, strengthens resilience and spurs a more equitable economy.

Farmers and rural residents are already on the front lines of the climate crisis. Extreme weather events have repeatedly damaged farms over the last 10 years — from the devastating drought of 2012, to a series of major hurricanes hitting coastal farmers in the southeast, to major flooding in the Midwest last year. The climate science tells us that these types of events will strike with more frequency and severity, creating enormous challenges for farmers and anyone working within a natural-resource based economy.

IATP.ORG

2105 FIRST AVENUE SOUTH
MINNEAPOLIS, MINNESOTA 55404
(612) 870-0453

110 MARYLAND AVE NE, SUITE 307
WASHINGTON, D.C. 20002
(202) 543-8602

While most of our comments are focused on the agriculture system, many of our policy recommendations extend beyond just farming. For that reason, we have responded to the more general call for comments, rather than the narrower call from Senator Baldwin focused on agriculture. In our comments to the Committee, IATP has responded to three of questions posed. Our comments identify a series of concrete policy recommendations in the following broad areas:

- The Farm Bill and other agriculture-related programs
- Regulating GHG emissions
- Strengthening financial regulations to address climate risk
- Reforming trade policy

As a whole, IATP believes these reforms would result in absolute GHG emission reductions and aid farmers and rural communities in making a transition toward more climate-resilient and economically just systems — both in the U.S. and around the world.

Q 1. How has climate change impacted you, your family, and your community?

Farmers work at the frontlines of climate change. In addition to the disproportionate impacts of climate change on rural communities, farmers are struggling in the face of increasing droughts, floods and severe storms, extreme temperatures, and shifting pest and disease pressures. Farmers need support to increase their resilience in the face of extreme weather events while also reducing emissions and sequestering carbon to combat the climate crisis.

In the Midwest, extreme flooding in 2019 led to saturated soil conditions that prevented or seriously delayed planting of corn, soybeans and other crops, resulting in major production losses. Farmers also lost many animals and grain reserves in the flooding. The unprecedented snowfall earlier in the year collapsed barns and other farm infrastructure, leading to further losses in a downturned farm economy.

Droughts, expected to become more severe, frequent and prolonged under climate change, currently are estimated to cost U.S. agriculture about \$10-14 billion annually.¹ The *Fourth National Climate Assessment* in 2018 reported that the 2012 drought affected two-thirds of U.S. counties and resulted in \$14.5 billion in production loss payments from the federal crop insurance program.² The *Assessment* stated, “In the late 1990s, U.S. agriculture started to develop significant capacities for adaptation to climate change, driven largely by public-sector investment in agricultural research and extension” but warned that “these approaches have limits under severe climate change impacts.”³ As public sector agricultural research budgets shrink, relative to private sector budgets,⁴ the private sector must assume a greater share of the burden of agricultural adaptation to severe climate change impacts for agribusiness and U.S. agriculture to sustainably provide national food, fiber and energy needs. Alternatively, agribusiness will have to accept increased taxes and fees as the price of federal programs, research and regulation for agricultural adaptation and reduction of GHGs on a science defined pathway compatible with a stable climate and readily habitable environment.

The current U.S. federal financial response to catastrophic and non-catastrophic climate events most often takes the form of taxpayer subsidized agricultural insurance for crops and livestock,⁵ and more recently, Prevented Planting Disaster Payments.⁶ A 2019 USDA Economic Research Service (ERS) econometric study projected a 37% annual increase from the \$12 billion average over the last decade in federal outlays for insurance and other risk mitigation programs under a high emissions scenario and assuming that U.S. agriculture does not make the investments required to adapt to climate change.⁷ (As part of Secretary Sonny Perdue's reorganization of ERS, the agency no longer has the capacity to undertake climate related economic research.⁸)

The ERS scenario, though dire, is at least manageable in budgetary terms if Congress is willing to support the frequent tax increases that will be required to fund the projected outlays. However, the ERS scenario is not the worst-case scenario. If the current momentum of climate change is unmitigated and U.S. agriculture continues to not adapt adequately to climate change impacts, agriculture will join the other economic sectors that the giant re-insurer Swiss Re has characterized as potentially "uninsurable."⁹ Assets and productive capacity become uninsurable once the scale, severity and unpredictability of climate volatility prevent actuaries from quantifying the risks that are required to calculate premiums that clients can afford to pay and to estimate losses than an insurance program's re-insurer can afford to absorb. Once a reinsurer refuses to write policies on a class of assets and/or geographic area, governments, funded by taxpayers, become the re-insurer of last resort.

Climate-related weather changes will affect all of those who work outdoors. The nation's three million farmworkers are highly vulnerable to the impacts of climate change as rising temperatures intensify heat stress and climate-related increases in pests lead to more pesticide use and farmworker exposure to pesticides. Currently California and Washington require water and shade facilities near workers to prevent heat stroke and other damage to health from prolonged heat stress exposure.¹⁰

To truly respond to the global climate crisis, we must also extend the definition of "our community" to go beyond national boundaries. Increasing droughts and flooding have devastated rural economies and peoples in many countries. In Central America, for example, the 2018 drought led to the loss of 70% of the first harvest of basic grains. Just a few months later, sudden heavy rains cut a second harvest by 50%.¹¹ Many of those drought-affected people were compelled to migrate to seek food and employment, some of them to the United States. Our communities are interlocked. As the House Select Committee on the Climate noted in its opening questions, "The climate crisis requires a global response. U.S. leadership is critical for successful global solutions."

We need a new agriculture system that not only supports farmers and farmworkers in adapting to climate change pressures and building resilient agricultural systems, but also provides the tools and resources to play a leading role in mitigating the effects of climate change through carbon sequestration and GHG emission reductions.

Q 3. What national policies do you currently support that will mitigate climate change and improve American lives?

IATP supports the full suite of findings and recommendations in the November 2019 policy position paper from the National Sustainable Agriculture Coalition (NSAC) (IATP is an NSAC member and co-chair of the climate change sub-committee), “Agriculture and Climate Change: Policy Imperatives and Opportunities to Help Producers Meet the Challenge.”¹² This paper provides a comprehensive literature review on the science of climate change and agriculture and includes a set of science-based federal policy recommendations. That paper informs some of the following recommendations, while IATP’s perspective on agriculture policy informs others:

Expand and Improve the Conservation Stewardship Program (CSP)

CSP is the largest conservation program in the U.S. It is a voluntary program that encourages producers to address natural resource concerns through conservation activities. These activities greatly boost soil health, which improves a farm’s ability to withstand droughts and floods, reduces the need for synthetic inputs and results in carbon sequestration. Practices supported by CSP include planting cover crops, diversifying crop rotations, decreasing tillage and implementing management-intensive rotational grazing. Whether through CSP or other vehicles, these practices must be incentivized to reduce agriculture’s climate footprint and to make producers more resilient in the face of climate disruptions.

The 2014 and 2018 Farm Bills cut CSP funding nearly in half, greatly restricting both farmer access and environmental improvement. Currently, farmer demand for the program far exceeds the supply of funds, and interest in conservation programs has been steadily growing. At a minimum, Congress must restore full funding to CSP and in the long-term should greatly expand CSP funds to ensure it is accessible to more farmers.

Support Whole Farm Conservation Planning

Climate change research, conservation programs, and federal commodity and crop insurance should focus on whole-farm systems, rather than on individual practices. While individual practices, such as cover cropping or no-till can sequester carbon, integrated systems of practices based on agroecological principles have the greatest potential to mitigate GHG emissions and attain a productive and resilient agriculture system.¹³

To this end, we support comprehensive, whole-farm conservation planning in all working lands and easement conservation programs. We also urge substantial reform of USDA commodity and crop insurance programs to reorient our farm safety net system from one that encourages overproduction, specialization and environmental harm to a new safety net that puts farmers and climate-resilient agriculture first. This includes, but is not limited to, support of the Whole Farm Revenue Protection crop insurance program.

Reform the Environmental Quality Incentives Program (EQIP) to Stop Subsidizing Concentrated Animal Feeding Operations (CAFOs)

We must transition away from investing public resources in the damaging CAFO system of animal production and instead invest in more climate-friendly livestock production systems. CAFOs rely on cheap feed produced on large-scale row crop operations that use highly emitting synthetic fertilizers and pesticides. CAFOs liquefy animal waste and store it in manure lagoons that generate large amounts of methane.¹⁴ They also produce more waste than the surrounding cropland can support as fertilizer. The excess manure is often overapplied to surrounding cropland, which can result in substantial nitrous oxide emissions.¹⁵ CAFOs are driving the overproduction of meat and dairy, which in turn is contributing to low prices and the loss of small and medium size independent producers.

Public resources, including dollars through EQIP, are currently supporting CAFOs. These dollars should instead support advanced grazing systems, particularly managed intensive rotational grazing. These systems reduce water pollution¹⁶, reduce the amount of methane produced by each animal¹⁷ and sequester significant amounts of carbon^{18 19}.

EQIP needs to be reformed to redirect subsidies that currently go to CAFOs. EQIP was designed to provide cost-share and incentive payments to farmers to address natural resource concerns on their farms. The program has been used by hundreds of thousands of farmers nationwide to make environmental improvements that benefit the land, family farm operations and their communities. Unfortunately, the 2002 Farm Bill revised EQIP to allow CAFOs to access the program. We must invest all EQIP funding as the program originally intended: to support small and mid-sized family farm operations as they implement conservation practices. EQIP should not subsidize the construction or expansion of CAFOs.

In addition, we urge the following reforms: EQIP should remove the 50% set-aside for livestock that has allowed CAFOs to capture EQIP funding at the expense of other types of farms. (See the “Strengthening Our Investment in Land Stewardship Act,”²⁰ introduced by Representative Tim Walz (D-MN) and the “Environmental Quality Incentive Program Improvement Act,”²¹ introduced by Senators Mike Lee (R-UT) and Cory Booker (D-NJ).) Additionally, the amount of EQIP funding available to an individual operation should be capped at \$150,000 in order to ensure that EQIP funds reach a greater number of applicants.

Reform FSA Loans to Stop Backing New and Expanding CAFOs

Another Farm Bill program that supports new and expanding CAFOs is the USDA Farm Service Agency (FSA) guaranteed loan program. Many CAFOs around the country would not exist without FSA loan support. Loans supporting CAFOs have come at the expense of support for independent farmers and ranchers who are protecting rural waterways, air and the climate. Credit needs are high in farm country right now and resources should be aimed at helping existing farmers weather these tough times.

Congress should prohibit issuance of any direct or guaranteed farm ownership or operating loans for the construction or expansion of a specialized hog or poultry production facility, as well as the issuance of direct or guaranteed loans to foreign-owned operations.

In addition, providing a full accounting of possible environmental risks, including potential climate impacts, should be a minimum standard before any public resources are invested in a project. In August 2016, FSA quietly announced it would no longer require an environmental review under the National Environmental Protection Act (NEPA) prior to the approval of loans for mid-sized CAFOs. Nor would neighboring farmers, rural residents or local government officials receive notice that such an operation was being built until construction began. The agency gave no reasoned justification for the decision despite the high stakes. USDA should require a full NEPA review, including implications for the climate, for any FSA loans for new or expanding mid-sized CAFOs.

Regulate Air Pollution for CAFOs

GHGs linked to CAFOs are tracked within the EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks agriculture sector data.²² While emissions in many sectors are declining, those from the agriculture sector have increased more than 10% since 1990. Within the agriculture sector, carbon dioxide emissions increased by 16.2%, methane emissions by 14.4% and nitrous oxide emissions by 7.3% since 1990.

The increase in methane emissions mirrors the rapid expansion of CAFOs over the last two decades, where thousands of animals are raised in confined spaces with massive manure lagoons. Emissions related to manure management rose 66% since 1990. The EPA reported, "The majority of this increase is due to swine and dairy cow manure, where emissions increased 29 and 134 percent, respectively." The EPA pointed out that "the shift toward larger dairy cattle and swine facilities since 1990 has translated into an increasing use of liquid manure management systems, which have higher potential CH₄ (methane) emissions than dry systems."

Manure management is also a source of nitrous oxide (N₂O) emissions, both directly and through the application of manure on fields as fertilizer. N₂O emissions related to manure increased 34% from 1990 to 2017 — once again mostly associated with the rise of large-scale animal feeding operations. While the EPA does not currently regulate GHG emissions from CAFOs, states are starting to recognize the need to regulate emissions from these operations. As the largest dairy producing state in the country, California has 1.8 million dairy cows. Of the state's total methane emissions, 60% come from agriculture. A study published in the journal *Nature* found that dairy CAFOs were the source of 26% of the state's methane emissions.²³ In 2016, California passed a rule (SB 1383) to reduce Short Lived Climate Pollutants, including methane.²⁴ The methane target is to achieve a 40% reduction below 2013 levels by 2030, a move that necessitates regulatory oversight for the mega-dairies. The EPA should follow California's lead and set similar targets for methane reduction from large-scale CAFOs at the national level.

Another important step would be to pass The Farm System Reform Act, introduced by Senator Booker, which would place an immediate moratorium on the construction of new large-scale CAFOs, defined as 1,000 animal units (1,000 cattle, 2,500 hogs, 30,000 hens or broilers) by the Environmental Protection Agency.²⁵ Existing large-scale CAFOs would be expected to phase out by 2040 and be eligible for a voluntary buy-out program, including debt forgiveness, that supports CAFO operators in transitioning toward other systems of production including pasture-based livestock, specialty crops or organic production. The bill, backed by more than 15 rural and farm-based organizations, also takes important steps to address excessive corporate control of the meat and poultry industry that is squeezing independent family farmers out of the industry. The bill cracks down on monopolistic practices, offers protections for contract growers, restores mandatory country-of-origin labeling requirements for beef and pork and expands these requirements to apply to dairy products.

Reject Methane Digestors as a Climate Solution

IATP opposes public investment in methane digesters and the biogas industry as a solution to the climate crisis. Emissions related to manure management have risen 66% since 1990 and the majority of this increase is due to the shift toward larger dairy cattle and swine CAFOs.²⁶ Methane digesters are increasingly touted as a way to reduce emissions on CAFOs; the USDA, EPA and U.S. Department of Energy have all endorsed biogas to reduce total methane emissions.²⁷ However, policy and budgetary support for methane digesters do not take into account the full lifecycle analysis of CAFOs or their other negative impacts including water pollution, air pollution and environmental justice implications for surrounding communities. Public resources should not prop up the highly polluting CAFO system; instead, that money should be invested in pasture-based and grazing systems.

The biogas produced from methane digesters should not count as clean energy. Burning biogas releases carbon dioxide and other pollutants including smog-forming nitrogen oxides, ammonia and hydrogen sulfide.²⁸ Large-scale biogas projects also require a buildout of natural gas infrastructure, including pipelines. This infrastructure should be phased out as we transition to a truly renewable energy system.

Public resources through EQIP and EPA's AgStar program are currently supporting investments in methane digesters. Those resources should be fully redirected to support advanced grazing practices that emit fewer GHG emissions, build soil health, improve water quality, reduce erosion and support vibrant rural communities by keeping more farmers on the land. Any clean energy policy should exclude biogas from the definition of "renewable energy."

Reject Carbon Emissions Markets as a Climate Solution

IATP opposes the use of carbon markets to reach GHG reduction goals. Our 2017 report, "Don't Believe the Carbon Market Hype: Why states should not pursue carbon markets and what they can do instead," outlines our full position.²⁹ Carbon markets worldwide and

in the U.S. have failed to directly reduce absolute GHG emissions^{30 31} and in some cases have also failed to bring in revenue.³²

Carbon markets also contribute to environmental injustices, particularly for communities of color.³³ Carbon markets, e.g., by trading credits claiming to offset power plant emissions, can result in geographically concentrated pollution. Power plants do not only emit GHGs; they also release co-pollutants such as sulfur dioxide, nitrogen oxides, mercury and fine particulate matter. These co-pollutants have enormous public health impacts ranging from cardiovascular and respiratory problems to premature death.³⁴ Because most power plants and polluting entities are situated in or near low-income communities and communities of color, the increased pollution in certain locations will harm those communities disproportionately.³⁵

As climate policy increasingly includes the agricultural sector, we oppose the use of soil carbon offsets. Soil carbon offsets allow carbon sequestered in the soil to count as mitigation for emissions elsewhere. Soil carbon storage is extremely impermanent; any carbon sequestered in the soil can be released with a change in land management practices. In addition, the science and measurement tools are not advanced enough to precisely quantify the amount of GHG emissions sequestered over time.³⁶ Most importantly, offsets allow the polluters buying the offsets to continue polluting.

Farmers are responsible for implementing the land management practices that generate offset credits. Farming is already a risky profession, reliant on good weather conditions and stable market prices. Tying agricultural land to a carbon market could leave farmers even more vulnerable to volatile prices than they are already. Furthermore, the price for the offset must be high enough to incentivize farmers to change their land management practices, which can require expensive new equipment, inputs and consultant knowledge. Yet, carbon credit prices have historically been far too low to fairly incentivize such large-scale land management changes.³⁷

We need predictable public programs to incentivize climate-friendly agricultural and land management practices, including payments to farmers who implement conservation practices that can sequester carbon, but are insulated from a volatile carbon market framework. These programs include investment in proven conservation programs, including CSP and EQIP.

Strengthen Farmworker Health Protections

It is not only farmers that need assistance in adapting to climate change, it is also farmworkers. Heat-related illness is the leading cause of weather-related deaths in the U.S., and heat-illness has a disproportionate impact on communities of color, low-income earners and those who work outdoors. Agricultural workers fall at the nexus of these vulnerabilities. The Occupational Safety and Health Administration (OSHA) currently has no federal regulations protecting workers in extreme heat. While the National Institute of Occupational Safety and Health (NIOSH), a division of the Center for Disease Control, has recommended such regulations since 1972, OSHA has rejected petitions from NIOSH and

other groups. While OSHA and its state counterparts provide advice on keeping workers safe in extreme heat, only four jurisdictions (California, Minnesota, Washington and the U.S. military) have statutory heat protections for workers. California's protections are the most rigorous. Title 8, Section 3395 in California's Code of Regulations covers heat illness prevention for outdoor workers. Rest breaks, training on heat-stress, and reasonable access to water and shade are among its provisions. It also requires monitoring of new hires during their acclimatization period and the establishment of emergency response protocols. Several organizations have petitioned OSHA, calling on the agency to consider strong new regulations.³⁸ Congress should require OSHA to promulgate new, stronger farmworker protections modeled on the California regulations.

Enact an Updated, Climate Resilient Supply Management Program

Farmers are facing an agriculture economy plagued by overproduction that is lowering farm incomes and pushing many farmers out. The worsening climate crisis is escalating risk for farmers. Climate-related events will increase market volatility, making it more difficult for farmers to transition toward climate-resilient systems.

A reformed and updated supply management system could achieve multiple goals. A supply management system includes a set of complementary programs: setting marginal farmland aside; storing grain in reserves at times of overproduction; implementing price floors and ceilings to protect farmers and consumers from market volatility; and controlling the volume of imports. A strong supply management system would ensure a fair price (called "parity") for farmers that covers their costs, both to farm and to live. An updated supply management system grounded in parity prices that integrates climate adaptation and mitigation goals could bring multiple benefits, including:

Keeping farmers on the land – Establishing predictable parity price levels is essential to keeping independent family farmers on the land and generating economic activity in their rural communities.

Significant taxpayer savings that can be reinvested – Supply management programs produce considerable taxpayer savings, since market prices are ensuring farmers a fair income. A recent analysis by University of Tennessee agriculture economists found that a supply management system would save \$234 billion over the next 10 years – money that could be reinvested to support carbon farming and rural development.³⁹

Accelerating the transition toward climate resilience – Stable and fair prices take farmers off the treadmill of trying to survive and allow them the space to transition toward climate-resilient practices grounded in improving soil health.

Sequestering carbon – A supply management system that includes acreage set asides would take marginal farmland out of production, which could be utilized as a carbon sink, if coupled with expanded conservation programs that support perennial grasses or agroforestry.

Reduced GHG emissions – In the race to increase yield and expand production, farmers routinely over-apply high GHG-emitting nitrogen fertilizer. A stable, fair price for crops used as animal feed would remove a key economic driver of CAFOs, which are the primary source of increasing agriculture-related emissions and water pollution in rural communities.

Boost new, more sustainable agriculture markets – By removing below-cost of production feed for CAFOs, climate-friendly managed grass-fed meat and dairy production will be more price competitive. Market trends clearly show growing consumer demand for grass-fed, organic and locally-produced foods – each of which pay a price premium to farmers. Deeper public investments in infrastructure to help these domestic markets grow would further help farmers transition to meet this demand.

A core part of the original New Deal farm programs, supply management is not new to U.S. farmers. While these supply management programs were weakened and undermined over time,⁴⁰ and finally eliminated in the 1996 Farm Bill, this approach continues to work for American sugar producers by providing them a fair income, while protecting them from tariff-related disruptions that are hurting other commodity producers.⁴¹

Strengthen Antitrust and Competition Policy

There is evidence that excessive corporate control over the U.S. food and agriculture system hurts our ability to adapt to climate change. University of Missouri Rural Sociologist Mary Hendrickson finds, “Our highly concentrated global food system has resulted from horizontal and vertical integration in food system sectors and globalization of agricultural and food markets. This system constrains farmers (and others) in making choices that can fend off likely ecological and social disruptions while limiting their ability to accommodate change. It has eliminated smaller farms and businesses that provided a redundancy of role and function, resulting in few fail-safe mechanisms for the food system. A focus on efficiency, standardization, and specialization has decreased the diversity of scale, form, and organization across the food system.”⁴²

The agriculture sector is among the most concentrated, with a handful of often global corporations controlling most aspects of the industry. Only a few firms control almost all the supplies farmers buy, such as seeds, fertilizer and farm equipment, raising prices and reducing farmers’ choices. Recent seed and fertilizer company mergers threaten to further raise operating costs for farmers. At the same time, farmers sell into very concentrated markets where four firms often control the market, pushing down prices that farmers receive for crops and livestock. For example, the top four firms control 86% of corn processing, 85% of cattle slaughter, 71% of pork packing and 79% of soybean crushing.⁴³

The limits of concentrated markets played out in the summer of 2019, when farmers experienced shortages in seeds for cover crops following the extreme Midwest flooding that limited the planting of conventional crops.⁴⁴ A recent analysis of 89 studies found that perennials and cover crops improve the ability of soils to soak up extreme rainfalls, which is critical to withstanding floods and droughts.⁴⁵ Small grain breeders and independent seed

companies are trying to fill this gap left by the three global seed companies that dominate the U.S. agriculture markets – Bayer/Monsanto, Dow/DuPont and Syngenta/ChemChina. In addition to limiting seed variety options, the lack of competition in the U.S. seed market has led to higher prices for farmers.⁴⁶

The Food and Agribusiness Merger Moratorium and Antitrust Review Act of 2019, introduced by Senator Booker and Representative Pocan, would initiate a much-needed strategic pause in food and agribusiness mergers, in order to assess the impact corporate consolidation has on farmers, workers, consumers, and communities and recommend improvements to antitrust enforcement.⁴⁷ IATP believes the climate implications of agribusiness consolidation should also be part of the assessment required under the bill.

Financial Policy Reforms to Respond to Climate Risk

The Senate has made important progress in developing legislation on climate-related financial risk reporting by publicly traded companies in the equities markets. Only if climate related financial risks are reported in clear, comprehensive and comparable terms, can investors and other interested parties make informed decisions about whether and how the reporting entities are managing climate related risks as material factors that affect the current and future financial performance and operational viability of companies. However, the Securities and Exchange Commission (SEC) has not used existing congressional authority to develop a uniform standard for reporting climate risk. Nor has the SEC enforced rules when those companies fail to disclose accurately and comprehensively the material risk that climate change impacts pose to their facilities, supply chains and balance sheets.⁴⁸

IATP supports the Climate Risk Disclosure Act of 2019.⁴⁹ The bill would require the SEC to issue a disclosure rule within two years (Section 6. Rulemaking would modify Section 13 of the Securities and Exchange Act) following the enactment of the bill. The rule should add climate risks to the list of “material factors” negatively affecting financial and operational performance. The factors must be reported annually in 10-K filings and corresponding 10-Q quarterly updates. Among the bill's findings that must be incorporated into a SEC rule is to “allow for intra- and cross-industry comparison, to the extent practicable, of climate-related risk exposure through the inclusion of standardized industry-specific and sector-specific disclosure metrics, as identified by the Commission, in consultation with the appropriate climate principals” (Section 4 D). Only by inclusion of such standardized metrics will it be possible for investors, lenders, credit rating agencies and insurers to compare comprehensively and accurately the financial and environmental performance of the publicly listed companies subject to the rule.

IATP suggests the following amendments to improve the Climate Risk Disclosure Act of 2019:

- In the “Definitions” section, amend “appropriate climate policy principals” by specifying that the “climate policy officer” is a senior officer reporting to the

Chief Compliance Officer (CCO), who can be removed only by a vote of the Board of Directors. This change in definition will strengthen the authority of the climate policy officer within the corporate structure. Furthermore, include a definition of “climate-related material risk” to ensure that in the event of perceived conflict of interest in fiduciary duty to shareholders and the public interest, climate-related risks cannot be externalized from financial risk reporting to the SEC, investors and the public.

- In the “Findings,” include a subsection on “Adaptation to Climate Change” and subsequently a separate section on “Reporting Actions and Investments to Adapt to Climate Change.” The current “Findings” section is only about GHG emissions reporting and mitigation measures. Voluntary climate disclosure reporting⁵⁰ largely consists of emissions mitigation-oriented reporting, save for reporting on corporate “water risk.” A more robust, comprehensive and effective disclosure reporting system would include a requirement to report corporate policy, implementation actions and investments to adapt to climate change impacts in company facilities, supply chains and balance sheets.
- To ensure that climate-related financial risk reporting is uniform, the SEC must adopt or develop a uniform reporting standard. The bill advocates “standardized, material risk climate risk and opportunity disclosure,” but does not require that the SEC develop or adopt a uniform reporting standard. Congress should require the SEC to propose or adopt a uniform reporting standard for material risk related to GHG emissions and another standard for adaptation to climate change. The bill could instruct the SEC to consult with the Sustainable Accounting Standards Board to develop a uniform reporting standard.
- To verify compliance with the requirements of the Climate Risk Disclosure Act, both (Section 9) reports to Congress and by the Government Accountability Office are stipulated. While such reports are desirable, determining compliance within the SEC to trigger investigations or enforcement actions should reside within the SEC office least subject to political pressure, that of the SEC Office of the Inspector General or within a SEC Office of Climate Risk Analysis.
- Given the SEC’s historically weak enforcement of its rules, the bill should include “carrot and stick” enforcement measures. The Climate Risk Disclosure Act of 2019 does not specify enforcement measures but apparently relies on existing SEC enforcement measures and practices. Because SEC fines are far too low, there is bipartisan support to increase the scale of the fines.⁵¹ Although an increased scale of fines may dissuade smaller and medium sized companies from recidivism, they are unlikely to dissuade the largest and likely most climate vulnerable companies. Because climate change has been characterized as a “civilizational threat,”⁵² the penalties for failure to comply should escalate according to the degree and frequency of non-compliance. If three escalating fines fail to secure compliance, non-compliant

firms should be designated as “bad actors,” resulting in greater SEC reporting and record keeping requirements, and loss of access to federal loans, tax breaks and contracts. If firms choose to suffer bad actor penalties rather than comply accurately and completely, more severe penalties should be added, such as a ban on share buybacks until compliance is secured.

- The legislative “carrots” for compliance could include SEC “good actor” designation, giving compliant firms preferential access and treatment for federal contracts, loans and task credits. “Good actor” designations, subject to annual compliance renewal, could also be used by credit rating agencies in their calculation of corporate bond ratings.
- Additionally, the bill should authorize the SEC to issue a rule or a guidance document with uniform standards for reporting climate related financial opportunities. Reporting entities are more likely to comply with the climate related financial risk rule if they can also report climate related financial opportunities.

The current dismal state of material risk disclosure has been enabled by dozens of SEC exemptions and exceptions. According to a financial disclosure advocates’ letter sent on May 26 to SEC Chairman Jay Clayton, “In fact by 2019, nearly 70 percent of capital was raised outside of the SEC’s public registration and disclosure regime.”⁵³ Bloomberg reports that there are twice as many private equity-controlled companies as publicly listed companies.⁵⁴ PE companies have no reporting obligations to the SEC. Part of the key to PE returns on investment is to externalize the climate change related costs that must be internalized if the U.S. economy is to be made sustainable.

A necessary step to restore well-regulated investment markets will be to abrogate or greatly reduce in a climate financial risk disclosure rule the current private equity disclosure (and registration) exemptions and exceptions. Furthermore, the disclosure rule should cover the quasi-private trading venues and the quasi-private securities issuances that have been constructed to evade SEC registration and disclosure requirements. Unless the massive private equity disclosure loopholes are closed, climate and Environmental Social and Governance (ESG) disclosure for public companies only will destroy the efficacy of climate risk disclosure.

IATP is a member of Americans for Financial Reform and as such, supports its position on the Stop Wall Street Looting Act of 2019.⁵⁵ An amendment to this act would require PE companies to report their climate-related financial risk under the uniform standard and subject to the enforcement regime that we have proposed for publicly listed companies. Because PE companies prosper by regulatory arbitrage and squeezing out costs, their return on investment reports should be subject to special scrutiny, particularly regarding climate change impacts on their facilities, supply chains, balance sheets and the securitized instruments they use, such as credit default swaps, to leverage their buyouts of publicly listed firms.

Progress in international climate negotiations is critical and will depend on a constructive environment of collaboration among nations. In the meantime, Congress already has the authority to reshape our trade policy and trade agreements to enable progress to mitigate climate change at the state and national levels in the U.S. and among our trading partners. Trade agreements constrain congressional power to regulate and raise labor, environmental and other standards that are important to achieving a just transition in responding to the climate crisis for agriculture, rural communities and the economy as a whole.

For example, the new NAFTA, known as the U.S.-Mexico-Canada Agreement (USMCA), remarkably does not even mention climate change or commitments made under the Paris Climate Agreement. This despite setting hard law rules that will apply to high GHG emitting sectors in all three countries, including energy, mining, transportation and agriculture. In fact, the locking in of trade rules under the USMCA will likely hinder policy efforts in all three countries to meet climate goals under the Paris Climate Agreement.⁵⁶

The Bipartisan Congressional Trade Priorities and Accountability Act of 2015 (PL 114-26) establishes negotiating objectives and an approval process that results in trade agreements that prioritize access to export markets and harmonization of public regulations to the lowest common level in order to facilitate trade and investment. That approach undermines policy to achieve climate goals and must be revamped. Trade Promotion Authority under that act expires on July 1, 2021 and presents a legislative opportunity to include climate change relevant negotiating objectives and a reformed approval process.

Rather than modifying specific negotiating objectives or procedures in TPA, Congress should debate a new approach to negotiating trade agreements, one that allows for input from Congress and the public over the course of negotiations and requires that environmental (including climate), human rights and public interest goals are prioritized over market opening.

The Trade Reform, Accountability, Development, and Employment Act of 2009 or the TRADE Act of 2009 provides a useful starting point for that debate.⁵⁷ The Citizens Trade Campaign, a broad coalition of labor, environment, family farm, faith and other community groups submitted testimony, based on the principles in the TRADE Act, urging USTR to publish all draft proposals, negotiating texts, reports and supporting documents about trade agreements under negotiation “in as close to real-time as possible on an ongoing basis, so that our members and the general public all have the opportunity to scrutinize them and participate meaningfully in influencing the formative stages of this agreement.”

No agreement should be brought for a vote in Congress unless analysis by the International Trade Commission (ITC) and EPA demonstrate that agreement makes a positive contribution to reducing GHGs resulting from trade and cross-border investment on a per sector basis at every point of the supply chain, from raw materials to manufacture, transport and retail. The ITC/EPA assessment of “likely impacts” of trade agreements should also include how the agreement will facilitate adaptation to climate change in all covered economic sectors and cross-border investments.

In addition, Congress should demand the elimination of the following provisions in existing and future trade agreements that undermine our efforts to respond to the climate crisis:

- 1) *Investor-State Dispute Settlement (ISDS)*. This provision, which the U.S. first included in the North American Free Trade Agreement (NAFTA), allows investors to sue governments over public interest laws or regulations that might impair their expected profits. Hundreds of ISDS cases have been brought around the world, most often challenging environmental, mining and related issues. For example, the TransCanada Corporation sued the U.S. government for \$15 billion over President Obama's decision to block the Keystone XL pipeline based on climate considerations. Even when President Trump indicated his support for going forward with the pipeline, TransCanada subsequently used the threat of the ISDS case to eliminate requirements for the use of U.S.-made steel, further undermining national sovereignty.

USMCA, despite its many flaws, makes important progress by eliminating ISDS between the U.S. and Canada and limiting its use in cases between Mexico and the U.S. Unfortunately, it still allows for cases to be brought involving contracts in the oil and gas, power generation, telecommunication, transportation and infrastructure sectors, all of which are closely related to a transition to renewable energy and reduction in emissions from fossil fuels. This unhelpful and unnecessary measure should be eliminated from all trade and investment agreements to which the U.S. is a party.

- 2) *Rules that restrict the policy tools needed to shift to fair and sustainable agricultural production and markets*. For example, the U.S. Trade Representative (USTR) lists as a key achievement of the new NAFTA that it prohibits the use of WTO agricultural safeguards. This prohibition would limit the use of tariffs by all three countries to defend against unfair and unstable markets. Article 3.6.1. of that agreement creates new pressure to ensure that domestic support to agriculture not "distort" trade, when the domestic support focus should be on agricultural programs that encourage a transition to fair and sustainable production. Restrictions on agricultural support programs to make them trade compliant would expose programs designed to strengthen local, sustainable production to potential trade dispute challenges.
- 3) *Provisions that undercut local innovation for renewable energy*. The U.S. and India have both filed successful cases at the World Trade Organization (WTO) challenging each other's subsidies and other local incentives for renewable energy production.⁵⁸ In early July, a WTO dispute settlement panel ruled that renewable energy policies that supported local green jobs in eight U.S. states violate international trade rules. These programs – in addition to building the renewable energy system we need to reduce GHGs – can help to create jobs and raise incomes in rural communities. There have already been proposals at the WTO for a "Peace Clause" to take a break from such challenges. Congress should support that

immediate action and then insist on the removal of trade policy commitments that make these disputes possible.

It is imperative to ensure that trade rules do not undercut a just transition to address the climate crisis, including policies to support agricultural production and markets that serve the needs of farmers, farmworkers and consumers. It will also be important to consider how to avoid simply “offshoring” our emissions by multinational companies hoping to sidestep domestic climate policy.⁵⁹ Recent research shows that tariff cuts associated with free trade deals involving the G-20 countries make it difficult to meet global climate targets when considering emissions embedded in imports. But developing countries are skeptical of how carbon tariffs might be used to restrict their exports, particularly when those same trade agreements impede clean energy technology transfer and other investments that could help them transition to producing lower emissions. This is a longer-term discussion that must be part of a process of building bridges with our trading partners, rather than the erratic trade wars that have characterized the current administration. Congress should support a process to find creative solutions that benefit producers in all countries, while reducing GHGs and building climate resilience.

Q 4. What types of federal investments do you see getting the biggest return in terms of mitigating climate impacts?

Investing in Comparative Technology Assessment

There are dozens of books about technologies to mitigate greenhouse gases.⁶⁰ Likewise, there are dozens of books about technologies and agricultural practices to adapt to climate change, which arguably is at least as important as mitigation, in the very rough financial metric of return on investment.⁶¹ Federal investments in technologies, even if developed by federal research agencies, such as USDA's Agricultural Research Service, also pay for patents, to say nothing of the research and development cost of the technology. IATP has researched and advocated for the scaling up of agroecology, a suite of sustainable agricultural practices and technologies, that usually do not require patents and their associated costs. Agroecological practices are cost effective and socially equitable way of achieving climate change adaptation,⁶² in which the "return" is the restoration of damaged ecosystems whose complexity defies pricing like a commodity.

Regardless of the technology or practice, however, the federal government has not had an Office of Technology Assessment since 1995 to assist agencies in deciding which of an array of technologies and practices will be most cost effective in achieving federal policy objectives. A history of technology assessment regarding drugs and health technology explained the demise of the OTA under heavy lobbying pressure from the health technology industry: As two former OTA officials noted “[t]o tolerate an internal independent voice that might, even diplomatically, contradict party policies or critique favored programs has always been asking a lot from the political leadership of Congress.”⁶³

Since climate change, under business as usual scenarios, will cause an existential threat to human existence, the Senate should, as an urgent priority, conduct hearings about the state of comparative technology assessment among federal agencies and consider whether to develop legislation to re-establish an Office of Technology Assessment or whether to establish similar, smaller offices within select federal agencies. In any event, it will be exceedingly difficult for Congress to make cost-effective climate change mitigation and adaptation investments without the guidance of the OTA. Alternatively, Congress will be left to allow the competing lobbying powers of the fossil fuel industry's claims about its nascent carbon sequestration and removal technologies fight it out with lobbyists for the different forms of renewable energy. IATP believes that Congress and the American people will be better served by a well-resourced OTA, rather than by a lobbying fight, to make federal investment decisions.

Investing to Research and Regulate Climate Related Financial and Market Risk

Regarding climate related financial risk, in addition to SEC climate risk disclosure legislation and rulemaking, one of the best policy investments Congress can make is to incorporate climate change risk into the research, rulemaking, market surveillance and enforcement activities of the Commodity Futures Trading Commission (CFTC). In June 2019, the CFTC voted to approve a Climate-related Market Risk Subcommittee to examine the risks climate change poses to our system of financial and physical commodities contract trading and markets.⁶⁴ The first step in understanding these financial risks should be improved climate-related financial risk reporting requirements.

The most immediate legislative vehicle for climate financial risk measures in the derivatives (futures, options and swaps contracts) market is the CFTC's reauthorization,⁶⁵ which was introduced in the House agriculture committee on October 29, 2019 and reported out, barely with any discussion, on October 30.⁶⁶ The bill currently has no climate-related content whatsoever, despite the CFTC initiative to create a subcommittee on climate-related financial risk that will report to the Market Risk Advisory Committee (MRAC) in July with recommendations and actionable materials for the CFTC to consider. According to Reuters, Robert Litterman, the chair of the subcommittee, said, "I think investors have been expecting the [CFTC's] response to climate change to be a relatively long, drawn-out affair as it has been so far . . . I would say 'No'."⁶⁷ We agree with Mr. Litterman that the answer should be "No," but believe that legislative action by the Senate can help the CFTC overcome any market participant or trading venue resistance to the actions from the report recommended by MRAC to the CFTC.

Because the CFTC oversees financial commodity contracts (e.g., foreign exchange rate contract trading) as well as physical commodity contracts (agricultural, energy, base and precious metals), the Senate Democratic Climate Crisis Committee should consider inviting Mr. Litterman to brief it on challenges the report outlines in assessing climate financial risk for market participants in all CFTC regulated contracts. Mr. Litterman's assessment of the return on investment for commodity derivatives markets of implementing the MRAC recommendations will surely be illuminating. The Committee should consult with the MRAC sponsor, Commissioner Rostin Behnam, about the CFTC outcomes of the

MRAC recommendations. The Climate Crisis Committee following that consultation, should propose to the Committee on Agriculture amendments to the CFTC reauthorization bill to include a climate financial risk reporting section, and other measures related to the MRAC recommendations.

In June 2019, IATP responded to the CFTC's Request for Information to advise the MRAC subcommittee. We wrote that because climate change will impact all asset classes under the CFTC's jurisdiction, the subcommittee should consider climate change as a systemic risk factor for markets and market participants under its authority.⁶⁸ Accordingly, some Commission rules and definitions may be modified to take into account these impacts, e.g., the exchange estimates of what is "deliverable supply" of a commodity or how the Commission delegates its authorities to exchanges and self-regulatory organizations. Swaps dealers (e.g., Goldman Sachs) and major swaps participants (e.g., Cargill) could be required to report the climate-related financial risk of their swaps trading activities.

In May, IATP wrote again to the CFTC to advise the 35 subcommittee authors.⁶⁹ Among our recommendations that could be incorporated into the CFTC reauthorization bill, and budgeted for accordingly, was this: "The Subcommittee should recommend that the CFTC establish a Climate Change Financial Regulatory Lab to include a portal for consensus science climate change information; an electronic library on climate change information affecting specific underlying assets of CFTC regulated contracts; and a platform for machine learning about climate change and for beta testing climate change related financial products. Alternatively, the Subcommittee could recommend that such a Lab be established in a self-financing agency, e.g., the Office for Financial Research, for use by all financial regulatory agencies."

If the Climate Change Financial Regulatory Lab were included in the CFTC, the Senate Special Democrat Committee on the Climate Crisis would need to consult with Commissioner Behnam about what administrative procedures would be required to set up this Lab, similar in staffing, computer infrastructure, and budget to the CFTC's FinTech Lab for new financial commodity derivatives products, such as Bitcoin trading. And, of course, the Committee would have to consult with the Senate agriculture committee about incorporating the Lab proposal into the CFTC reauthorization bill. If the Lab were incorporated into the Department of Treasury's Office of Financial Research, then the Committee would need to consult with the Senate banking and finance committee and Treasury about the Lab's charter and advisory committee.

At the conclusion of our May letter to the CFTC we wrote this: "At the 25th UNFCCC Conference of the Parties, market participant pledges to produce "net zero" emissions by 2050 were presented as signaling ambition and urgency. Frédéric Hache, a former investment banker, said of these pledges, "Everybody talks about ambition, but nobody questions the how. The how is at least as important, because that's where all the greenwashing takes place."⁷⁰ The CFTC must critically examine the "how" of derivatives product design and trading to reduce GHG emission absolutely, not financially engineer "net zero" emissions claims, and not become an enabler of greenwashing. Otherwise,

derivatives trading could exacerbate climate instability and financial instability." Likewise, the Senate Special Democrat Committee on the Climate Crisis should scrutinize those proposals to achieve "net zero" emissions at least cost to industries affected by climate change. At this very late date in the climate crisis, when climate scientists estimate we are perhaps 10-12 year away from irreversible and severe climate momentum,⁷¹ Americans cannot afford federal investments in climate change mitigation and adaptation that turn out to be just more 'greenwashing'.

IATP thanks the Senate Special Democrat Committee on the Climate Crisis for the opportunity to submit these comments and looks forward to continued engagement on identifying policy responses to the climate crisis. Please contact Ben Lilliston (blilliston@iatp.org) with any questions or additional information needed by the Committee.

¹ Yusuke Kuwayama, "The Economic Impacts of Drought on U.S. Agriculture," Resources for the Future, March 13, 2019.

² *Fourth National Climate Assessment*, Chapter 10: Agricultural and Rural Communities, Reduced Agricultural Productivity. 2018, at 399. <https://nca2018.globalchange.gov/chapter/10/>

³ Chapter 10: Agricultural and Rural Communities, State of the Agriculture and Rural Communities Sector, at 399.

⁴ Matthew Clancy, Keith Fuglie and Paul Hensie, "U.S. Agricultural R&D in an Era of Falling Public Funding," *Amber Waves*, Economic Research Service, U.S. Department of Agriculture, November 10, 2016.

⁵ "Crop and Livestock Insurance," U.S. Department of Agriculture, 2020.

⁶ "Prevented Planting Disaster Payments," Risk Management Administration, U.S. Department of Agriculture, October 17, 2019.

⁷ Andrew Crane-Droesch et al, "Climate Change and Agricultural Risk Management into the 21st Century," U.S. Department of Agriculture, Economic Research Service, July 2019, Summary. <https://www.ers.usda.gov/webdocs/publications/93547/err-266.pdf?v=2388.9>

⁸ Steve Suppan, "USDA reorganization 2.0: cut researchers, cut research," Institute for Agriculture and Trade Policy, September 17, 2018. <https://www.iatp.org/blog/usda-cut-researchers-cut-research>

⁹ L.S. Howard, "Failure to Act on Climate Change Could Make Risks Uninsurable," *Insurance Journal*, April 8, 2020. <https://www.insurancejournal.com/news/international/2020/04/08/563703.htm>

¹⁰ S.E. Smith, "Heat Is Now the Deadliest Threat to Farmworkers. Only Two States Protect Them From It." *Talk Poverty*, June 20, 2019.

¹¹ Ingrid Hausinger, Heinrich-Böll-Stiftung San Salvador, Webinar: Climate Change and Food Security in Central America, Alianza Americas, June 17, 2020.

¹² National Sustainable Agriculture Coalition. 2019. Agriculture and Climate Change: Policy Imperatives and Opportunities to Help Producers Meet the Challenge. Washington D.C.

¹³ Lal, R., Kimble, J.M., Follett, R.F., & Cole, C.V. 1998. The Potential of U.S. Cropland to Sequester Carbon and Mitigate the Greenhouse Effect. Ann Arbor Press, Chelsea MI.

¹⁴ Hribar, C. National Association of Local Boards of Health. 2010. Understanding Concentrated Animal Feeding Operations and Their Impact on Communities. https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf?fbclid=IwAR3DK7qlkmPsTg6D8CGoDnrLQfjOvvkekIP34AHQvD47ugqTR9RvwDOMqpU

-
- ¹⁵ U.S. EPA. 2019. Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017. Chapter 5 Agriculture, and Chapter 6 Land Use, Land Use Change, and Forestry. Full Report available at: <https://www.epa.gov/ghgemissions/draft-inventory-usgreenhouse-gas-emissions-and-sinks-1990-2017>
- ¹⁶ Beetz, A., and L. Rinehart. 2010. Rotational Grazing. National Center for Appropriate Technology, ATTRA bulletin, 12 pp. <https://attra.ncat.org>
- ¹⁷ Ominski, K. H., D.A. Boadi, K. M. Wittenberg, D.L. Fulawka & J.A. Basarab. 2001. Estimates of Enteric Methane Emissions from Cattle in Canada Using the IPCC Tier-2 Methodology. *Canadian Journal of Animal Science* 87, 459–467.
- ¹⁸ Machmuller, M. B., M. G. Kramer, T. K. Cyle, N. Hill, D. Hancock, and A. Thompson. 2015. Emerging land use practices rapidly increase soil organic matter. *Nature Communications*, 6, 6995. doi:10.1038/ncomms7995
- ¹⁹ Teague, W. R., S. Apfelbaum, R. Lal, U. P. Kreuter, J. Rowntree, C.A. Davies, R. Conser, M. Rasmussen, J. Hatfield, T. Wang, R Wang, and P. Byck. 2016. The role of ruminants in reducing agriculture’s carbon footprint in North America. *Journal of Soil and Water Conservation*, 71(2), 156-164.
- ²⁰ National Sustainable Agriculture Coalition. Soil Stewardship Act. Accessed: November 21, 2019. <https://sustainableagriculture.net/our-work/campaigns/fbcampaign/conservation/soil-stewardship-act/>
- ²¹ EQIP Improvement Act of 2018. Senator Cory Booker. March 22, 2018. <https://www.congress.gov/bill/115th-congress/senate-bill/2624?s=1&r=13>
- ²² U.S. EPA. Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017. 2019. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>
- ²³ Duren, R.M., Thorpe, A.K., Foster, K.T. *et al.* California’s methane super-emitters. *Nature* 575, 180–184 (2019) doi:10.1038/s41586-019-1720-3. <https://www.nature.com/articles/s41586-019-1720-3>
- ²⁴ SB 1383. Short-Lived Climate Pollutants: Methane emissions: Dairy and Livestock: Organic Waste: Landfills. 2015-2016. California Legislative Information. Accessed: November 21, 2009. https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383
- ²⁵ Senator Cory Booker. Booker Unveils Bill to Reform Farm System. December 16, 2019. <https://www.booker.senate.gov/news/press/booker-unveils-bill-to-reform-farm-system>
- ²⁶ U.S. EPA. 2019. Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017. Chapter 5 Agriculture, and Chapter 6 Land Use, Land Use Change, and Forestry. Full Report available at: <https://www.epa.gov/ghgemissions/draft-inventory-usgreenhouse-gas-emissions-and-sinks-1990-2017>
- ²⁷ U.S. Department of Agriculture, U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA). 2015. Biogas Opportunities Roadmap Progress Report.
- ²⁸ Kuo, Jeff. California State University, Fullerton. 2015. Air Quality Issues Related to Using Biogas from Anaerobic Digestion of Food Waste. Prepared for California Energy Commission. CEC-500-2015-037.
- ²⁹ Ritter, T. Institute for Agriculture and Trade Policy. 2017. Don’t Believe the Carbon Market Hype: Why states should not pursue carbon markets and what they can do instead. Minneapolis, MN. https://www.iatp.org/sites/default/files/2017-06/2017_06_28_CarbonMarkets_TR.pdf
- ³⁰ Legrand, Marc. “The Regional Greenhouse Gas Initiative: Winners and Losers.” *Columbia Journal of Environmental Law*, April 24, 2013. Accessed May 26, 2017. <http://www.columbiaenvironmentallaw.org/the-regional-greenhouse-gas-initiative-winners-and-losers-2/>
- ³¹ Andrew, Brian. “Market failure, government failure and externalities in climate change mitigation: The case for a carbon tax.” *Public Administration and Development* 28, no. 5 (December 2008): 393-401. doi:10.1002/pad.517.
- ³² Brown, Ross. “May 2016 Cap-and-Trade Auction Update.” *California Economy & Taxes*. May 26, 2016. Accessed May 26, 2017. <http://www.lao.ca.gov/LAOEconTax/Article/Detail/193>
- ³³ Gilbertson, T. Climate Justice Alliance. 2017. Carbon Pricing: A Critical Perspective for Community Resistance.

-
- ³⁴ Driscoll, Charles T., Jonathan J. Buonocore, Jonathan I. Levy, Kathleen F. Lambert, Dallas Burtraw, Stephen B. Reid, Habibollah Fakhraei, and Joel Schwartz. "US power plant carbon standards and clean air and health co-benefits." *Nature Climate Change* 5, no. 6 (2015): 535-40. doi:10.1038/nclimate2598
- ³⁵ Cushing, Lara, Madeline Wander, Rachel Morello-Frosch, Manuel Pastor, Allen Zhu, and James Sadd. 2016. A Preliminary Environmental Equity Assessment of California's Cap-and-Trade Program. Report. Program for Environmental and Regional Equity, University of Southern California Dornsife.
- ³⁶ Olson, Kenneth R., Mahdi M. Al-Kaisi, Rattan Lal, and Birl Lowery. "Experimental Consideration, Treatments, and Methods in Determining Soil Organic Carbon Sequestration Rates." *Soil Science Society of America Journal* 78, no. 2 (September 24, 2013): 348-60. doi:10.2136/sssaj2013.09.0412
- ³⁷ Sharma, Shefali, and Steve Suppan. Elusive Promises of the Kenya Agricultural Carbon Project. Report. Institute for Agriculture and Trade Policy, 2011.
- ³⁸ Public Citizen. Petition to the Occupational Safety and Health Administration on Heat Stress. July 17, 2018. https://www.citizen.org/wp-content/uploads/migration/180717_petition_to_osh_a_on_heat_stress-signed_final_0.pdf
- ³⁹ Schaffer, Harwood. Ray, Daryll. A Farm Program that Reduces Farmers Dependency on Government Subsidies. Agriculture Policy Analysis Center, University of Tennessee. V. 37. N. 136. September 22, 2017. <https://www.agpolicy.org/weekcol/2017/890.html>
- ⁴⁰ Ritchie, Mark. Ristau, Kevin. Crisis by Design: A Brief Review of U.S. Farm Policy. League of Rural Voters. 1987. <https://www.iatp.org/documents/crisis-design-brief-review-us-farm-policy>
- ⁴¹ American Sugar Alliance. U.S. Sugar Policy. Accessed: November 20, 2019. <https://sugaralliance.org/us-sugar-policy>
- ⁴² Hendrickson, Mary. Resilience in a Concentrated and Consolidated Food System." [Journal of Environmental Studies and Sciences](https://doi.org/10.1007/978-1-4939-9418-4_5), Springer; Association of Environmental Studies and Sciences, vol. 5(3), pages 418-431, September 2015. <https://ideas.repec.org/a/spr/jenvss/v5y2015i3p418-431.html>
- ⁴³ Hendrickson, Mary. Howard, Phillip. Constance, Douglas. Power, Food and Agriculture: Implications for Farmers, Consumers and Communities. Division of Applied Social Sciences Working Paper, University of Missouri College of Agriculture, Food & Natural Resource, The Bichler and Nitzan Archives, Toronto, Ontario. 2017. https://www.econstor.eu/bitstream/10419/171171/1/20171101_hendrickson_howard_constance_power_food_and_agriculture.pdf
- ⁴⁴ Queck-Matzie, Terri. Short Supply of Seed for Cover Crops. Successful Farming. October 28, 2019. <https://www.agriculture.com/crops/cover-crops/short-supply-of-seed-for-cover-crops>
- ⁴⁵ Basche AD, DeLonge MS (2019) Comparing infiltration rates in soils managed with conventional and alternative farming methods: A meta-analysis. *PLoS ONE* 14(9): e0215702. <https://doi.org/10.1371/journal.pone.0215702>
- ⁴⁶ Torshizi, Mohammad and Clapp, Jennifer, Price Effects of Common Ownership in the Seed Sector (April 22, 2019). Available at SSRN: <https://ssrn.com/abstract=3338485> or <http://dx.doi.org/10.2139/ssrn.3338485>
- ⁴⁷ H.R. 2933. Food and Agribusiness Merger Moratorium and Antitrust Review Act of 2019. <https://www.congress.gov/bill/116th-congress/house-bill/2933/text>
- ⁴⁸ Robyn Bishop, "Investing in the Future: Why the SEC Should Require a Uniform Climate Change Disclosure Framework to Protect Investors and Mitigate U.S. Financial Instability," *Environmental Law Review* Volume 48:3 (2018). <https://www.warren.senate.gov/imo/media/doc/Climate%20Risk%20Disclosure.pdf>
- ⁴⁹ CDP Project, Data, 2018. <https://www.cdp.net/en/data>
- ⁵¹ Todd Ehret, "U.S. Senate tries again for tougher enforcement penalties," Reuters, April 13, 2017. <https://www.reuters.com/article/bc-finreg-sec-penalties-idUSKBN17F2AC>

-
- ⁵² Brian Pascus, “Human civilization faces an “existential risk” in 2050 according to new Australian climate change report,” CBS News June 13, 2019. <https://www.cbsnews.com/news/new-climate-change-report-human-civilization-at-risk-extinction-by-2050-new-australian-climate/>
- ⁵³ <https://sites.duke.edu/thefinregblog/2020/05/26/letter-to-sec-on-corporate-transparency-and-accountability-and-the-coronavirus-pandemic/> at 4.
- ⁵⁴ “Everything is private equity now,” Bloomberg Business Week, October 8, 2019. <https://www.bloomberg.com/news/features/2019-10-03/how-private-equity-works-and-took-over-everything>
- ⁵⁵ “Stop Wall Street Looting Act Would Curb Worst Private Equity Abuses,” Americans for Financial Reform, July 18, 2019. <http://ourfinancialsecurity.org/2019/07/new-release-stop-wall-street-looting-act-curb-worst-private-equity-abuses/>
- ⁵⁶ Lilliston, Ben. New NAFTA Continues Damaging Climate Legacy. Institute for Agriculture and Trade Policy. October 17, 2018. <https://www.iatp.org/documents/new-nafta-continues-damaging-climate-legacy>
- ⁵⁷ HR 3012. Trade Act of 2009. Introduced June 24, 2009. <https://www.congress.gov/bill/111th-congress/house-bill/3012>
- ⁵⁸ Lilliston, Ben. Did Obama’s Trade Legacy Just Hammer the Green New Deal? Institute for Agriculture and Trade Policy. July 16, 2019. <https://www.iatp.org/blog/201907/did-obamas-trade-legacy-just-hammer-green-new-deal>
- ⁵⁹ Lilliston, Ben. When Climate Goals and Trade Rules Collide. Institute for Agriculture and Trade Policy. April 8, 2019. <https://www.iatp.org/blog/201904/when-climate-goals-and-trade-rules-collide>
- ⁶⁰ E.g., Wynn Chi-Nyugen Cam, *Technologies for Climate Change Mitigation: Building Sector*, UN Environmental Program/Global Environment Facility, August 2012. <https://www.uncclearn.org/sites/default/files/inventory/unep223.pdf>
- ⁶¹ E.g., Rebecca Clements et al, *Technologies for Climate Change Adaptation: Agriculture Sector*, UNEP Risø Centre on Energy, Climate and Sustainable Development and Practical Action, August 2011. <https://www.osti.gov/etdeweb/servlets/purl/1026421>
- ⁶² Shefali Sharma and Karen Hansen Kuhn, “Agroecology: Key to agricultural resilience and ecosystem recovery,” Institute for Agriculture and Trade Policy, June 16, 2019. <https://www.iatp.org/agroecology-key-agricultural-resilience-and-ecosystem-recovery>
- ⁶³ Jennifer Wong, “The History of Technology Assessment and Comparative Effectiveness for Drugs and Medical Devices and the Role of the Federal Government,” *Biotechnology Law Report*, December 1, 2016. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4270161/>
- ⁶⁴ Commodity Futures Trading Commission. CFTC Commissioner Benham Announces the Establishment of the Market Risk Advisory Committee’s Climate-Related Market Risk Subcommittee and Seeks Nominations for Membership. July 10, 2019. <https://www.cftc.gov/PressRoom/PressReleases/7963-19>
- ⁶⁵ <https://www.congress.gov/bill/116th-congress/house-bill/4895/text>
- ⁶⁶ “House Agriculture Committee Passes CFTC Reauthorization Bill,” Press release, October 30, 2019. <https://agriculture.house.gov/news/documentsingle.aspx?DocumentID=1355>
- ⁶⁷ Ann Saphir, “U.S. regulator to report to markets on climate risks in July,” Reuters, June 11, 2020. <https://www.iatp.org/sites/default/files/2019-06/Letter%20to%20the%20CFTC%20on%20Climate%20Financial%20Risk.pdf>
- ⁶⁸ <https://www.iatp.org/sites/default/files/2020-05/CFTC%20climate%20risk%20comment%205.14.20%20IATP%20Final.pdf>
- ⁶⁹ Cited in Lisa Song, “The Word Nobody Wanted to Say at the UN Climate Action Summit: Offsets,” ProPublica, October 1, 2019. <https://www.propublica.org/article/offsets-un-climate-action-summit-the-word-nobody-wanted-to-say>
- ⁷⁰ Henry Fountain, “Climate Change Is Accelerating, Bringing World ‘Dangerously Close’ to Irreversible Change,” *The New York Times*, December 4, 2019.