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SUPPLY CHAIN RESILIENCY: ALLEVIATING BACKLOGS AND STRENGTHENING LONG-TERM SECURITY

HEARING

BEFORE THE

SUBCOMMITTEE ON INTERNATIONAL TRADE, CUSTOMS, AND GLOBAL COMPETITIVENESS

OF THE

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SUPPLY CHAIN RESILIENCY: ALLEVIATING BACKLOGS AND STRENGTHENING LONG-TERM SECURITY

WEDNESDAY, JUNE 15, 2022

U.S. SENATE,
SUBCOMMITTEE ON INTERNATIONAL TRADE,
CUSTOMS, AND GLOBAL COMPETITIVENESS,
COMMITTEE ON FINANCE,
Washington, DC.

The hearing was convened, pursuant to notice, at 3 p.m., in Room SD–215, Dirksen Senate Office Building, Hon. Thomas R. Carper (chairman of the subcommittee) presiding.

Present: Senators Wyden, Menendez, Brown, Casey, Whitehouse, Cortez Masto, Grassley, Cornyn, Thune, and Young.

Also present: Democratic staff: Evan Giesemann, Tax and Trade Policy Advisor for Senator Carper; and Naomi Zeigler, Legislative Aide for Senator Carper. Republican staff: Andrew Cooper, Legislative Assistant for Senator Cornyn; and Bailey McCue, Legislative Aide for Senator Cornyn.

OPENING STATEMENT OF HON. THOMAS R. CARPER, A U.S. SENATOR FROM DELAWARE, CHAIRMAN, SUBCOMMITTEE ON INTERNATIONAL TRADE, CUSTOMS, AND GLOBAL COMPETITIVENESS, COMMITTEE ON FINANCE

Senator CARPER. Good afternoon, everybody. It is my pleasure to call this hearing before the Senate Finance Subcommittee on International Trade, Customs, and Global Competitiveness to order.

I want to give a special "thank you" to our witnesses for joining us to testify today from across the country, and a special "thank you" to Ranking Member Cornyn and his team for working with our staff and with me to plan this hearing, which is focused on supply chain challenges, an issue that continues to frustrate me, and it frustrates the folks across our country and around the globe.

Today's hearing will offer a chance for us to examine why supply chain bottlenecks have developed since the onset of the pandemic, and to look at what kind of policies might improve the long-term resiliency and the security of our supply chains to prevent these types of shortages in the future.

Many folks have probably heard about supply chain problems and know that supply chains have something to do with keeping our economy moving. But I am sure that a lot of folks are still wondering what we mean exactly when we say "supply chains."

Here is what we are talking about. Supply chains include every step of the process to manufacture and process a product and move it from point A to point B. Sometimes that is halfway across town; sometimes it is halfway across the world in order to move goods from a person's wish list to their doorstep.

One of the reasons why we are eager to address these issues at today's hearing is because *Americans* are eager to address these issues. In 2022, the effects of supply chain challenges are not some distant policy issue to folks at home. Americans are seeing it play out in empty shelves at their local grocery stores that once held baby formula, and gifts delayed and delivered weeks after a birthday has passed, or new cars and technology that they have saved up for years to buy but cannot find on the market.

With Father's Day coming up this weekend—any fathers in the room? Happy Father's Day a couple of days early. But I am reminded that about a month or so ago, Mother's Day was approaching. Going shopping for a Mother's Day card, I went to our local Rite Aid pharmacy to pick one up for my wife of 36 years, mother of our two sons, at a store where we have shopped for years, with a huge selection of anniversary cards, birthday cards, holiday cards, you name it. I walked up and down an entire Mother's Day card section—empty. I found an employee and asked what was going on. And she said, "This year's Mother's Day cards never made it to the store." I said, "Not even one?" She said, "Not even one."

That was when I knew we had a problem. That is just one example of the supply challenges happening all across our country, and Americans and this committee want to know how we can get back on track.

So today we are going to explore how we got to this point and what we can do to ensure that we are better prepared in the future. I have long believed that one of the jobs of policymakers is to create a nurturing environment for job creation and job preservation so that we may enjoy economic growth.

And one key to maintaining that nurturing environment is improving the dependability of our supply chains. And while we know these tremendous supply chain backlogs that we are seeing today come largely from the economic shock of the pandemic, many systemic vulnerabilities existed long before COVID. Fundamental weaknesses in our global logistic systems are the result of a decades-long focus on supply chains' efficiencies, just-in-time manufacturing, and reliance on foreign adversaries for a wide array of goods.

The result—we have been joined by Senator Cornyn. John, thank you for being a big part of this, and thank you and your team for working with us preparing for this day. He has been busy on some other fronts, and we are very grateful for his leadership there. We postponed this hearing for a couple of weeks because of his need to return to Texas for the terrible tragedy there.

But the result is, the systems have cracked under the pressure of the worst pandemic we have endured in over 100 years. As Albert Einstein used to say—along with other things—Einstein used to say the definition of insanity is to do the same thing over and over again and expect a different result. That is not my favorite

Einstein quote. My favorite Einstein quote is "in adversity lies opportunity." That has guided me my whole life—in adversity lies opportunity—and it should guide us in this case as well.

These challenges have introduced great adversity but some real opportunity for us to rethink how we move goods across the globe and create a system that better serves the American people. And that starts with investing in our own critical infrastructure. I am proud to say that every member of this committee, especially the guy here on my left—we have already taken some historic steps through the passage of a bipartisan infrastructure law to, among other things, improve the efficiency of our ports and make our roads and bridges safer, while expediting the movement of goods and people across America.

However, it is clear that infrastructure investments are only one piece of the puzzle. Another piece is expanding domestic investments in the technologies we rely upon for semiconductors, for renewable energy products, so that we don't find ourselves overrelying on a foreign adversary, or jeopardizing our national security for the sake of the supply chains.

Through these investments, we can create jobs and support American manufacturing. That is a real win-win where I come from. A good place to start is the China Competition legislation currently being reconciled between the two chambers of Congress. And I again commend our friend and Ranking Member Cornyn for his leadership in supporting CHIPS funding, among other things, through that process.

And while domestic investment is a key part of shoring up our supply chains for years to come, we have also come to focus on a fundamental principle central to the supply chain discussion, and that is working together with our global partners.

As leaders of the subcommittee, Senator Cornyn and I have repeatedly called for greater U.S. engagement in leadership across the globe, especially—especially—in the Asia-Pacific region. By reaching out to our allies across the globe and bringing more nations into a shared economic framework, we can improve the security and resiliency of our supply chains, leading to a wider range of products and lower costs for American consumers.

That is part of the reason why I was happy to see President Biden announce the start of an Indo-Pacific Economic Framework to bring more trading partners into a stronger, fairer global economy and create even more diverse, resilient supply chains. Ultimately, building secure and flexible supply chains requires both economic cooperation with our allies across the globe and more strategic investment in critical industries and workers here at home.

So, we look forward to hearing from our witnesses with respect to their insight on solutions to these challenges so that the next generation of American families will not have to worry about the empty shelves. They will not have to worry so much about higher prices, because we will be ready for what is to come.

Once more, my thanks to our ranking member, our respective staffs, and especially to our witnesses who are appearing before us today.

And with that, I will turn it over to Senator Cornyn for any comments he would like to make.

[The prepared statement of Senator Carper appears in the appendix.]

Senator CARPER. Senator Cornyn?

OPENING STATEMENT OF HON. JOHN CORNYN, A U.S. SENATOR FROM TEXAS

Senator CORNYN. Mr. Chairman, thank you for calling this hearing. It was a pleasure to work with you and your staff in organizing it. It is a timely and important topic. Thank you to all of our witnesses for being here, virtually and otherwise.

This subcommittee continues its work in exploring the geopolitical benefits and consequences of America's trade policy with the world, and in particular our foreign adversaries like China and Russia. The topic of resiliency and critical supply chains is an important one. And as the COVID–19 pandemic revealed, it awakened many of us to our dependence on foreign adversaries for critical goods—or from friends, but in a way that our foreign adversaries could disrupt.

We need to reinforce the rules-based international trading system for those nations that at least attempt to abide by free trade agreements like the Comprehensive and Progressive Trans-Pacific Partnership.

I think I mentioned to you, Mr. Chairman, in my trip to Japan recently with Senator Cardin and Senator Hagerty, every single government official we met with talked about the Trans-Pacific Partnership. And we told them, at least for ourselves, that we regretted—I regretted that we did not engage when we had a chance on that. But sometimes you learn lessons the hard way.

The administration's Indo-Pacific Economic Framework is a positive step in the right direction, but we cannot play games with our Nation's survival by outsourcing the crown jewels of our economy to nations like China, which have used our free market system against us while not playing by the rules themselves.

Nearly 20 years ago, our government opened the door to do business in China, and industry did what it does best: found a market, captured it, and achieved efficiency and innovation. What we have learned since is that the Chinese Communist Party, not its people, perverted that good will through theft and control to achieve a strategic advantage. Our own people and home-town industries suffered as a result.

Now we need to come together—labor, business, and government—as one Nation and put aside past disagreements to find the right balance in preserving our critical supply chains while maintaining strong trade relations. This includes providing incentives in some cases, like the CHIPS for America Act I authored with Senator Warner—and Senator Wyden is part of it as well—to bring our semiconductor production back home to America. It means reducing the regulatory burdens on American businesses that want to thrive in our domestic and foreign markets and abide by our rules-based international trading system. And it means having an honest look and conversation about the challenges we face.

For example, a few weeks ago the Senate Intelligence Committee had a hearing where a former Trump administration official highlighted that U.S. financial investments in China-domiciled companies totaled $2.3 trillion in market value. It is pretty clear that U.S. companies have fueled China's economic rise. Former National Security Advisor H.R. McMaster recently said that last year venture capital firms invested $114 billion in Chinese companies that are developing dual-use and sensitive technologies that are going to be weaponized against us, or are already aiding and abetting Russians.

I believe it is time to have a conversation, an honest conversation, about the role that American investment has played in building the Chinese economy, especially in the areas of critical supply chains and our over-reliance on those supply chains in areas such as semiconductors.

The first step that Senator Casey and I have proposed is by granting the U.S. Government the authority to have visibility into those investments in the supply chains of our foreign adversaries through the establishment of an interagency committee led by the President that provides for a whole-of-government approach in responding to Chinese economic coercion.

That means, at minimum, a mandatory notification and circulation of investments by recipients of taxpayer funds designed to compete with China, such as those envisioned in the Bipartisan Innovation Act and the CHIPS for America Act, which will serve as the basic guard rails for protecting those investments.

This week, Senator Casey and I, along with many of our colleagues, have introduced a revised version of our National Critical Capabilities Defense Act, demonstrating our good faith in trying to come up with a solution that actually works, and that can gain the necessary support.

This bill incorporates input from industry and represents a positive step in the push to safeguard our critical capabilities. I look forward to hearing from more stakeholders in the coming days, and I am eager to discuss that topic with today's witnesses as well.

We have before us Mr. Louie, who comes from the intelligence community, to provide us a national security perspective. Mr. Potvin, I believe your intimate knowledge of the supply chain and logistic backlogs will be of great importance. Dr. Frenkel, your experience in government will help us understand the rules-based international trading system and what our agreements will mean and what they do not mean going forward. And, Mr. Paul, you bring in valuable insight from a coalition of both the labor and manufacturing industries.

So I look forward to hearing your testimony and answers to questions that follow.

Thank you, Mr. Chairman.

[The prepared statement of Senator Cornyn appears in the appendix.]

Senator CARPER. Thank you, Senator Cornyn.

We are joined by Senator Bob Casey, to my right, Senator Casey from Pennsylvania. I had the pleasure of serving as Governor with his father, and I have the pleasure of serving in the U.S. Senate with his son. How lucky can one guy be? It is great to see you, Bob.

Our first witness today is Mr. Scott Paul, who is the president of the Alliance for American Manufacturing. The Alliance for American Manufacturing—it is a partnership, isn't it? It is a partnership between the U.S. Steelworkers union and some of America's leading manufacturers. I just find that very refreshing. It is kind of like sort of the partnership that the three of us have on a lot of issues as well. As president, Paul works to support domestic manufacturing initiatives so that American workers and businesses can thrive.

Mr. Paul is the past chair of the National Skills Coalition and sits on the board of the visitors of the political science department at Pennsylvania State University, the home of the Nittany Lions. This Buckeye welcomes the Nittany Lion to this hearing.

Mr. Paul, you have the floor. Please proceed.

STATEMENT OF SCOTT N. PAUL, PRESIDENT, ALLIANCE FOR AMERICAN MANUFACTURING, WASHINGTON, DC

Mr. PAUL. Thank you, Chairman Carper, Ranking Member Cornyn, and Senator Casey. We will punt on the football opportunities here and get to the testimony.

On behalf of the Alliance for American Manufacturing—which you indicated is a partnership of the Steelworkers and domestic manufacturers—thanks for this opportunity to testify today on an issue of vital importance to our economic and national security.

Now, the last several years have made all Americans painfully aware of the tragic inadequacy of our deteriorated industrial capabilities and broken supply chains. The pandemic and its economic shock waves also exposed the dangerous reliance on global suppliers for many consumer and commercial products, revealing that the United States is ill-equipped to produce enough semiconductors and other products for everyday life, let alone the quantities needed to address a future emergency.

The frailty of on-demand global supply chains and our utter reliance on them has left us dangerously exposed for the past 2 years, and unprepared for future shocks. These disruptions should be viewed through the lens of public policy decisions that both facilitated, and in some cases actively encouraged, the offshoring of domestic production and critical supply chains.

Ninety thousand American manufacturing facilities have closed their doors since the 1990s. China surpassed the United States as the world's largest manufacturing nation in 2010. Imports have outstripped GDP and domestic production growth over the past 2 decades.

This replacement has led to the loss of 5 million good middle-class jobs and devastated communities across our Nation, and it has left us increasingly dependent on imports—often from adversarial countries like China and Russia—for everything from consumer goods and advanced technology products to lifesaving personal protective equipment.

In America, we consume 20 percent of the world's goods, but we make far less than that: ten percent of the world's electric vehicles, 7 percent of lithium ion batteries, 12 percent of semiconductors, and 4 percent of printed circuit boards, for example. There is only one major domestic manufacturer of electrical steel needed to build out our energy grid, and there are many other examples of greatly diminished capacity in critical industries.

To address current supply chain disruptions as well as anticipate and prepare for future crises, we must acknowledge how we got here and what went wrong. The pandemic has exposed in rather dramatic fashion the years of flawed tax, trade, procurement, and other economic policies that put the United States in a perilous position of over-dependence on imports.

We recognize that the United States has important security and trade relationships with our allies, and we can and should utilize those where it makes sense. But our vulnerabilities reflect an outdated notion of the benefits of hyper-globalization where our consumers, workers, domestic businesses, and national security suffer.

We must break the vicious cycle of implementing policies that reward imports over domestic production. I cite two reports by former Homeland Security Secretary Tom Ridge and retired Brigadier General John Adams in my written testimony, and I would encourage the subcommittee to study these. The concerns they highlighted about our supply chains a decade ago have only grown; for instance, cancer patients facing scarcity of contrasting materials for essential medical imaging revealed last month, or the Chinese Communist Party threatening to weaponize rare earths. And these examples go on and on.

Rebuilding supply chains will chart a course for a stronger future and create millions of new well-paid jobs along the way. We must acknowledge that supply chain resiliency is not a challenge that the private sector alone can fix. There is an appropriate role for government to provide leadership, coordination, a supportive policy framework, and funding directed to domestic production expansion where the vulnerabilities are most critical.

That is why we support swift and successful conclusion of conference committee work on the competitiveness legislation that Senator Carper mentioned. Merging the most attractive provisions from each of the House and Senate bills offers the opportunity to create a long-overdue policy framework for supply chain security, resiliency, and revitalization.

AAM has outlined our conference priorities in a letter to House and Senate leaders, including the CHIPS Act; expanding manufacturing research, development, and deployment efforts; a supply chain resiliency fund; strengthening trade enforcement tools, including the Leveling the Playing Field Act 2.0; as well as screening outbound investments in critical sectors, as Senator Cornyn mentioned.

We have offered additional detailed policy recommendations in my written submission. And I would just close with this thought: I think we can have a brighter future for supply chains and manufacturing. We see examples of where public policies have invited new investments over the past several years, and I cite many of these examples in my written testimony.

Just a generation ago, some economists predicted none of this—large new factories, or surges in manufacturing jobs—would ever be possible again due to automation and import competition. But we should not pretend that a brief focus on supply chains alone will build on this momentum. It must be a sustained effort. Public policy support for American manufacturing is crucial to tackling supply chain challenges, and we look forward to working with you to ensure a better future.

Thanks for the opportunity to testify at today's hearing.

[The prepared statement of Mr. Paul appears in the appendix.]

Senator CARPER. We thank you, Mr. Paul. Well done. Thank you so much.

Our next witness is Doug Potvin, the chief financial officer of a company called Trinity Logistics. Trinity Logistics is a third-party logistics provider that is headquartered in Seaford, DE, and is a company that operates nationwide.

People say, where is Seaford, DE? What is it famous for? Seaford, DE was the home of the world's first nylon plant. It was established by the DuPont Company. Not that many years ago, 4,000 people worked there forever. I think I shook every one of those hands many times. And we are grateful for what DuPont has done for our State and Nation, really, and especially in the Seaford area.

For the past 40 years, Trinity Logistics has offered freight management, they have offered transportation, and they have offered innovative supply chain solutions. And as CFO, Mr. Potvin is responsible for overseeing financial reporting and payment management, as well as risk management. He also oversaw the implementation of Trinity's information technology infrastructure.

And before I say, Mr. Potvin, that you have the floor, I understand you are joined today by a couple of extraordinary women whose first name is Sarah, one of whom happens to be your wife, and the other of whom happens to be the president of the company. And I am just going to be watching carefully to see if any lips move when you speak. [Laughter.]

So, we will see how that works out. We welcome both Sarahs, and we especially welcome you as the front man. I am anxious to hear what you have to say. Welcome, and great to see you, Doug. Thanks. Please proceed.

STATEMENT OF DOUGLAS L. POTVIN, CHIEF FINANCIAL OFFICER, TRINITY LOGISTICS, SEAFORD, DE

Mr. POTVIN. Let me introduce myself as the CFO, chief fun officer, of Trinity Logistics, because we like to have fun while we are working hard.

Chairman Carper, Ranking Member Cornyn, Senator Casey, thank you for the opportunity to speak with you today regarding how policymakers and business leaders are addressing the existing backlogs in the supply chains in the short term to bring more resilient supply chains in the long term.

My name is Doug Potvin, and I am the chief financial officer of Trinity Logistics, a third-party logistics company headquartered in Seaford. I am privileged, honored, and humbled here today representing Trinity Logistics; our association, the Transportation Intermediary Association; and the entire third-party logistics industry that we serve.

We serve as an intermediary, solving the logistical needs of our shipper customers by sourcing capacity from motor carriers and vendor partners. We are proud to report today that this past year we have generated over a billion dollars in revenue, have arranged over half a million shipments, and offered 350 full- and part-time jobs. We truly are a proud Delaware company.

From Charles Dickens's novel *A Tale of Two Cities,* "It was the best of times and it was the worst of times. A season of light and a season of darkness. A spring of hope and a winter of despair."

Over the last 2 years, the same can be said of the international supply chain and, from our perspective closer to home, the domestic transportation industry. In March of 2020, as both domestic and international companies shuttered businesses, including the shuttering of the port cities and operations in China, and the fact that most consumers were at home facing an uncertain future, freight volumes plummeted. Motor carrier capacity increased dramatically due to the steep drop in goods moving, and the transportation market saw prices to motor carriers fall.

In fact, Trinity Logistics was mentioned on a Facebook post that stated we were earning an average gross margin of 60 percent, which was simply wrong. In addition, a small number of motor carriers came to Washington, DC and demanded rate transparency. Interestingly, after the businesses, ports, and countries opened up, freight volumes began to skyrocket, available market capacity tightened up, and rates paid to motor carriers increased to reflect the change in the market conditions. Demand for rate transparency went silent.

The pricing in our industry is driven by market conditions—supply and demand—and no large-scale entity on either side of the equation has enough market share to drive rates. In addition, each shipment has its own variable considerations to take into account, including everything from available capacity in the various regional markets, lead time for products, dwell time of shippers and consignees, commodities being moved, and the type of equipment needed. All this happens in real time to ensure goods get to market, keeping the economy moving forward.

Now more than ever, the role of the third-party logistics professionals is more valuable. Companies like Trinity and the other 28,000 licensed property brokers are working overtime to ensure that essential goods continue to be delivered in an efficient manner to meet their customers' and consumers' needs.

Our industry, along with the motor carriers, is a main component of why, during the crisis and disruption, the supply chain bent but never broke.

Turning to the U.S. Senate's and House of Representatives' bipartisan passage of the Infrastructure Investment and Jobs Act, a historic investment in transportation and infrastructure, we were very pleased to see how quickly the Federal Motor Carrier Safety Administration established the Safe Driver Apprenticeship Pilot Program. Trinity hopes this 3-year pilot program will be successful and made permanent so that individuals ages 18 to 20 will explore interstate transport careers.

Trinity also believes that if the spending under the investment act ramps up in the near future, it will provide enough support in the economy to keep the motor carriers employed as we are starting to see freight volumes begin to pull back over the last 30 to 60 days. Trinity would also like to thank Chairman Carper, Ranking Member Cornyn, Senator Menendez, and Senator Tim Scott for their support in offering legislation and getting the Senate to act unanimously in passing the Customs Trade Partnership Against Terrorism Pilot Program Act. We appreciate it very much. Thank you.

Currently, the vaccine mandate for truck drivers coming into the country to deliver freight from Mexico and Canada continues. These professional drivers spend most of their professional time in their truck cab, presenting a zero-percent risk of spreading COVID–19. This should be lifted immediately to open up capacity and shorten the amount of time it takes for goods to move across borders.

Another issue that greatly impacts not only the efficient movement of goods, but also highway safety is lack of a Federal motor carrier safety selection standard. Currently, because of broken safety rating systems from the Federal FMCSA, almost 90 percent of trucking companies are considered unrated. That there are no requirements in place before selecting your trucking company drastically impacts the overall safety on our Nation's highways.

The latest report from the National Highway Traffic Safety Administration noted that the number of accidents involving commercial motor vehicles increased 13 percent in 2021. The status quo is not working, and highway safety needs to be improved.

Trinity Logistics and our trade association, TIA, fully support legislation to create a motor carrier safety selection and to amend the safety rating process.

The U.S. trucking spot-market indications have inflected toward weaker and more normal conditions, but we will see what the future holds and how that trend continues. Hopefully, as a result of this meeting and coordinated action taken by the United States, our trading partners, manufacturers, and supply chain vendors, our Nation has become resilient and will continue to be when facing similar conditions of uncertainty.

And again, thank you for your time today, and I look forward to answering any questions you may have.

[The prepared statement of Mr. Potvin appears in the appendix.]

Senator CARPER. Thank you. Thanks for that testimony and for joining us today.

Our third witness is Dr. Orit Frenkel. Orit; I have never met an Orit before. Where did that name come from?

Dr. FRENKEL. It actually is Israeli.

Senator CARPER. Israeli? Okay; well, good. Welcome.

She is cofounder of the American Leadership Initiative, an organization founded to advocate for American leadership in both trade and foreign policy. Orit began her career with the Office of the U.S. Trade Representative—who was the Trade Rep when you started working there?

Dr. FRANKEL. Clayton Yeutter.

Senator CARPER. She was a Director for Trade in High-Technology Products and Deputy Director for Trade with Japan. Prior to cofounding ALI, she served as the senior manager for General Electric's global affairs and was responsible for advising GE on trade and investment policy in Asia.

Dr. Frankel, we are glad you are here. Please proceed. You have the floor.

STATEMENT OF ORIT FRENKEL, Ph.D., FOUNDER AND CEO, AMERICAN LEADERSHIP INITIATIVE, WASHINGTON, DC

Dr. FRENKEL. Thank you so much to the committee. American Leadership Initiative really appreciates the opportunity to testify. Our mission is to put our country and citizens on the right trajectory for the 21st century, to renew approaches to trade and foreign policy by strengthening global alliances and institutions, doubling down on values, and emphasizing inclusive and sustainable growth at home and abroad.

Current supply shortages have raised awareness of the need to diversify supply chains and reduce U.S. dependency on adversarial and unreliable regimes. They have spurred bipartisan momentum to shore up American competitiveness and manufacturing, which we see in the bipartisan innovation act, and we urge the conference to reach agreement and pass this important legislation.

We should look for ways to streamline supply chains—including encouraging full implementation of the WTO Trade Facilitation Agreement signed in 2017—and assist countries to digitize Customs documentation. Finally, we should explore eliminating some of our own China 301 tariffs, especially on consumer goods where they do not compete with American suppliers.

The supply chain crisis offers the U.S. the unique opportunity to find the right balance between on-shoring and right-shoring, and creating sourcing patterns which support our economic and foreign policy goals.

Friend-shoring is important, especially when moving key technologies out of China. The effort to coordinate semiconductor supply chains under the U.S.-EU Trade and Technology Council, as well as with Japan and Korea, shows how allies can work together to ensure that sourcing of key technologies stays in countries that are reliable and share our values.

Concerns about timely access to certain goods is an argument for near-shoring. Last week the U.S. launched an initiative to encourage private-sector investment in the Northern Triangle countries to encourage economic development and reduce the incentive for migration.

To expand sourcing in that region, the U.S. must invest in capacity building to upgrade infrastructure, and expand trade facilitation. This initiative can be a model for U.S. sourcing in Africa and the rest of Latin America to counter China's heavy investment in those regions.

U.S. supply chain policy should be used to advance U.S. standards. The newly launched Indo-Pacific Economic Framework, IPEF, has a pillar focused on supply chain resiliency and seeks to advance labor, environmental, and digital standards in Asia, giving those countries an alternative to China's regressive standards.

To expand those sourcing partnerships, the U.S. will need to, again, invest in capacity building to train workers, raise standards, and partner with the U.S. private sector. We have suggested offering IPEF countries that meet key standards a preferred supplier status, allowing their goods to be expedited for U.S. Customs.

The Uyghur Forced Labor Prevention Act, going into effect next week I believe, seeks to ensure that imports into the U.S. from Xinjiang are not produced with forced labor. This restriction is leading U.S. companies to find new sourcing destinations, and is an example of how the U.S. can advance labor rights and human rights in the supply chain.

Supply chains can also encourage green sourcing. And in a recent path-breaking agreement on steel and aluminum, the U.S. and EU agreed to address carbon intensity and overcapacity of high-carbon steel and aluminum. This arrangement can also be a model to achieve low-carbon production in other sectors.

China's Digital Silk Road has brought authoritarian digital standards of surveillance, monitoring, and censorship. The U.S. must be a standard-setter in the digital space by negotiating agreements and offering countries its model of transparency, openness, and democracy.

The U.S. should continue to strengthen relationships with allies and expand its network of plurilateral arrangements to create new opportunities for friend-shoring, near-shoring, and supplier resiliency. Rethinking supply chains offers the opportunity to build new sourcing paradigms that protect key technologies, pursue American standards, benefit American consumers and workers, and advance U.S. values.

Thank you.

[The prepared statement of Dr. Frenkel appears in the appendix.]

Senator CARPER. Thank you, Dr. Frenkel. Thanks for your presence today. Thanks very much for your testimony.

Finally, Gilman Louie, chief executive officer and co-founder of America's Frontier Fund—I believe a public-private partnership created to ensure that America remains the next wave of technology innovation. Mr. Louie previously cofounded and served as CEO of In-Q-Tel, a venture capital fund created to invest in new technologies critical to national security.

Mr. Louie currently serves as a member of the President's Intelligence Advisory Board, among many other distinctions.

Mr. Louie, it is great to meet you today, and you have the floor. Welcome.

STATEMENT OF GILMAN LOUIE, CHIEF EXECUTIVE OFFICER, AMERICA'S FRONTIER FUND, ARLINGTON, VA

Mr. LOUIE. Thank you, Chairman Carper, Ranking Member Cornyn, and members of the committee, for inviting me here today. It is an honor to serve as a witness and to share my perspectives on supply chain resiliency, national security, and emerging technologies.

I am the CEO of America's Frontier Fund, a new nonprofit public-private investment fund focused on deep technologies and platforms critical to the security and prosperity of the United States and its allies. I am here in my personal capacity, not on behalf of the U.S. Government or any of my other affiliations.

After serving on the National Security Commission on Artificial Intelligence, I am convinced that the United States faces a new full-spectrum great-power competition against nation-states committed to out-investing and out-innovating the United States.

Our supply chains are vulnerable. We are losing our lead in technologies, and our future is at risk. We need all of America engaged in this competition. We need the technologists, the philanthropists, the investors, the hardworking Americans from Wall Street to Silicon Valley, and the entire heartland in between—everyone.

This is the U.S. Government's moment to do what Americans do best: that is, to lead. The time to act is now. But first we should ask how we got here in the first place.

The challenges we face today arose from decades of just-in-time lean manufacturing approaches to incrementally improve profits while moving our key manufacturing capabilities and risks offshore. We now have a highly efficient but increasingly brittle global supply chain. These well-intentioned decisions by individual corporations created challenges to our economic security through three market failures.

First, underinvestment in foundational technologies has stifled innovation and deterred talent in key areas. Second, countries in East Asia have created artificially attractive offshoring investment environments. And third, the U.S. has high barriers to entry for domestic advanced manufacturing. Take microelectronics as an example. There are only two leading-edge microelectronic firms globally, and no leading-edge fabrication facilities domestically, while overseas fabs are at real risk.

Samsung's fabs in South Korea are within North Korea's artillery and missile range, and TSMC is producing the vast majority of cutting-edge chips. Ninety percent of the cutting-edge chips are produced at TSMC, and it is only 110 miles off of China's missile batteries.

Today the U.S. risks losing access to critical technology components that we have used every day. Russia's invasion of Ukraine highlights the perils of a fragile supply chain. And we do not want to become Russia if we find ourselves in a future conflict. Over the long term, we face an even greater risk of being surpassed technologically by China.

Imagine you are driving along in the Texas hill country and your GPS suddenly stops working. It is a minor inconvenience. Unfriendly foreign nations, on the other hand, could shut down our weapons systems, prevent our planes from flying, cut off our communications, and inspect our information and our data. We invite trouble by falling behind our adversaries. The situation is unacceptable.

Fortunately, there are still reasons for optimism. Threats create opportunities for revitalization, and now I will propose a framework with four pillars to move forward.

First, we must reimagine U.S. manufacturing capabilities. Public funding should be a signal to unlock necessary private capital, that $45 trillion of American capital sitting could be invested here in the United States. We need to also expand our talent pools at all levels of education, not just STEM. We need the scientists and engineers, but we need the trades, the skilled labor, the technicians, the plumbers, the electricians, to rebuild our manufacturing capabilities here in the United States.

Second, we must invest in promising technology hubs across America. Five coastal cities have generated 90 percent of the innovation jobs in the United States over the past decade. But the next wave of innovation must include more technology hubs beyond those coasts. There are 35 great technology centers between the coasts. We need to invest in those centers. Samsung's new facility in Texas is a step in the right direction, but there is more to do to unlock the potential of the American heartland.

Third, we must disclose the risk of investing in authoritarian nations. It is important that companies and funds should report to their stakeholders and investors any partnerships that they have with adversarial nations. I believe we should add "d" for democracy to Wall Street's environmental, social, and governance criteria to help identify the material business risks created by investing in an autocratic nation. Whether a nation commits to democracy and a rules-based international trading order should shape American investments for the future.

Finally, we need to deepen our technology engagement with allies and partners. This means prioritizing friend-shoring and creating new pathways through the cloud and other coalitions that are investing jointly in emerging technologies. Just as we have TSA Precheck for trusted fliers, we need similar systems for fast-tracking allies and investors to do business here in the United States.

In conclusion, we need to solve key market failures by reimagining U.S. manufacturing, investing in deep technologies, investing in promising technology hubs across the United States, redirecting capital to democracies, and deepening allied engagement.

As this committee considers options for supply chain resilience and long-term technology leadership, you have an important role to play. With your leadership, this can be America's moment. Let's get everyone in this room and across our great country involved to seize this initiative.

I look forward to your questions. Thank you.

[The prepared statement of Mr. Louie appears in the appendix.]

Senator CARPER. Thank you so much, Mr. Louie. It is great to meet you, and we appreciate your presence and your testimony.

One of the things that Senator Cornyn and I—and Senator Casey, and Senator Cortez Masto, and Senator Young, and Senator Whitehouse, who was here and is probably coming back—the thing we focus on is finding consensus on difficult issues, and we are pretty good at it.

The Committee on Environment and Public Works that Senator Whitehouse serves on with me, we reported unanimously out of our committee infrastructure legislation on roads, highways, bridges, and climate change, unanimously. And we are doing the same thing on the Rural Water Resource Development Act.

I do not know at the end of the day if we will be able to find consensus on some of the issues, all the issues that we are talking about here today, but I wanted to start off by asking each of you the same question.

When we have a panel this good, this smart, this well-versed on the issues—what do you think are a couple of areas where there is just really strong consensus and agreement? In the Navy, we used to, when we were in training, getting our training for whatever, doing Naval aviation in a classroom, the instructor going through stuff that we needed to know, he would stomp his foot on the issues that we were going to be tested on and had to really know how to conquer and take care of.

But anyway, what are one or two of the issues where you think there is a real consensus here from the witnesses that you would say, "We agree on this, and you ought to take that to heart?" Do you want to lead us off, Mr. Paul?

Mr. PAUL. Absolutely, Senator Carper, and thank you for the question. I think there are a number of things, but let me highlight two or three.

I think one that you have mentioned specifically—and I will state it more broadly—is investments in the competitiveness of our economy. Infrastructure, I think, was a first step, some of the provisions in the bipartisan innovation act that look at supporting research and development efforts and other supply chain resiliency efforts for manufacturing.

Research and development, and not only that but deployment, which has been the missing part here. If you are just investing in R&D but you are not investing in producing that in America, that is leaking tax dollars. I think that is also important. And I think that we can find consensus on reducing dependence on adversaries for key goods that have commercial, military, and other applications that are essential to our future.

I will just give a quick example here: lithium ion batteries. There is an issue where China has dominated the market. The government and State-related firms are behind. It will take a public investment to catch up to that. It is an energy storage feature of the future, and something that is going to be in demand. And I think if we focus on some efforts like that, we can make progress as we move ahead.

Senator CARPER. That's good. Thanks.

Mr. Potvin, the same question: consensus. What do you see?

Mr. POTVIN. What I am hearing is simply, we cannot be relying on just a couple of sources providing us goods and services. The simple fact of the matter is it's based on a free market, and therefore we need to be able to source goods and raw materials from other places and not be worrying about whether there are semiconductor chip plants shut down in a foreign country, or the simple fact that we are relying on this company, or that company to provide them.

One thing we like in the third-party logistics industry is the fact that no one player controls more than 4 percent of the entire market that we play in. The people have choices. They can go places. If something should happen, they can go to someone else and look for it.

So we agree that there is consensus that the near-shoring, bringing domestic manufacturing back to the U.S., is very strong. It needs to happen so, again, we are not relying on single-sourcing, or even double-sourcing a monopoly out there. So, we do believe that the free market needs to grow and prosper in that nature.

We also believe in the support of small industries to drive those types of businesses as well. So again, it is not just the large companies but again, we are sourcing items from different sectors of the economy, from different sizes of the economy as well. The owner-operators, people owning one truck, they answered the call very strongly and very powerfully when COVID first came. They were the ones primarily willing to go pick up the goods during the time of COVID. The larger companies' HR departments said, "Hey, wait a second. Let's see where this is all going." So everything we see associated across the spectrum of the economic providers should also be consensus. We don't care where it comes from, as long as it comes from a great place working hard to support the consumers.

Senator CARPER. Thank you.

Dr. Frenkel?

Dr. FRENKEL. Yes, I am going to agree with Mr. Paul on a number of things. I think here we need to really increase our investment in R&D. I think China is really outpacing us in that investment area, which is scary.

We need to invest in key technologies like semiconductors, as we see in the CHIPS Act. We need to think strategically about what we want to friend-shore, near-shore, and on-shore.

We need to think about what key technologies we want to decouple from China. We need to work with our allies, because we need to make sure the key technologies, in addition to being on-shore, are manufactured in countries that are reliable, and safe, and share our values.

Lastly, we need to give other countries in Latin America or Asia an alternative to China, and reach agreements with them that can allow them to be preferred suppliers.

Senator CARPER. Thank you.

Mr. Louie?

Mr. LOUIE. I think we can all agree on what the list should be of the deep technologies the U.S. cannot afford to lose leadership position in. We have to continue to lead in microelectronics. We have to lead in AI and quantum sciences and advanced manufacturing. We cannot afford to have 5G happen again to us on the next 6G innovations of important communications capability. And we need to lead in the biosciences.

I would also say we can also agree that a dollar invested in the U.S. is not the same as a dollar invested overseas in adversarial nations. Those other dollars have significant risks attached to them. And not only national security risks, but economic risks. Disclosure should be foundational for where we need to go to go forward, not just in public companies, but any public funds that are being used to fund technologies in adversarial nations.

And finally, I think we all can agree that we need to actually extend the promise of the innovation economy to all of America. It cannot just be on the edges of our coasts. It really does need to involve every American at every level of education, to move forward not only our ability economically, but to maintain our national security.

Senator CARPER. That's good. Thank you. There is a lot of consensus here, and that was very helpful, so, thank you.

Senator Cornyn?

Senator CORNYN. Mr. Louie, I wanted to ask you about the proper balance between outbound investment for the United States, in terms of its investments in places like China.

You heard me say that in the Intelligence Committee a few weeks ago we had an expert witness who pointed out that the market value of U.S. companies' investments in China is roughly $2.3 trillion. But as we know, China does not play by the rules. And when it comes to protecting our crown jewels—that is the balance we are trying to achieve, not to prevent investment in China or any other place. But we do not want to give them something we cannot afford to lose.

What is the right balance, in your view?

Mr. LOUIE. I think your points are well-taken. U.S. companies invest 100 times more in Chinese companies than China invests in American companies, to give you a sense of what that ratio is. I think the right balance here is—we have seen what took place in the days after the Ukrainian invasion. But American companies, for the most part, acted responsibly. They pulled back. They understood the dangers—not just to their brand, but to democracy—of having continued activity over in Russia.

I think you need to give American companies the opportunity to make the right decision. But this is not the U.S. choosing to decouple from China. China has a date. They have a policy called Made in China 2025. They set the date. They are going to decouple. And our investment over there will be at risk.

Now, we are not saying that it is not appropriate in certain industries for American capital to go to China to build great products for the rest of the world. Those companies have to make those decisions for themselves.

But in areas of national security, where the technologies are political, in determining whether or not our systems are going to prevail against a competitor, or an adversarial system, we need to have sharp tools. We need to be decisive. And an industry needs to be able to get the signal quickly from government, with precision. We cannot use tools that are blunt. We cannot have our U.S. industries held back. But at the same time, U.S. industries have to be responsible not only to their stakeholders, but to democracy and the American public.

Senator CORNYN. Again for Mr. Louie: we hear nearly every day about the need for ESG: environmental, social, and government analysis. Wall Street uses that term, and so do various companies. But you make an intriguing suggestion that we need to add a "d" to that for "democracy."

How would that actually work? I mean, does the U.S. Government have a role in that? Or are we looking for good corporate citizens to include that? Or are we looking for Wall Street to try to do that for us?

It just strikes me as a fascinating idea, but I do not know how you would implement it.

Mr. LOUIE. I think a combination of things. So the first one is disclosure, right? If you are investing capital overseas in places that are at risk, where a country can simply make a decision to have a crackdown, and investors could lose 60 percent of their market cap values overnight—American investors, by the way, American pension funds, American endowments that are at real risk. So how do you implement an ESG+D?

The first one is disclosure.

Number two, to educate investors of the risk. Investors will make good decisions. That is the whole principle of ESG. It is not about

Chinese-style authoritarianism of telling companies what to do, but trusting our companies to do the right thing as long as stakeholders have visibility and the information they need to have good decisions be made.

And finally, having corporate America and Wall Street set standards. I am a big believer in standard setting, and I think industry has something to say about that. The "d" part, how much of your capital is at risk? How much manufacturing is dependent upon another nation that can make your supply chain brittle? Every investor needs to understand what that risk factor is.

Senator CORNYN. Thank you very much.

Senator CARPER. Thank you, Senator Cornyn.

I will just run through the lineup here. Senator Menendez was here earlier, so he will be next in line. Senator Grassley was here earlier. He may be coming back. Senator Casey would be next after Senator Menendez, followed by Senator Cortez Masto, Senator Whitehouse, and Senator Young.

So, Senator Menendez?

Senator MENENDEZ. Thank you, Mr. Chairman. Thank you for hosting this important hearing.

Dr. Frenkel, thank you for hosting me at the American Leadership Initiative to introduce my Economic Statecraft for the 21st Century Act. It is a new whole-of-government approach to confront and compete with China's predatory international economic policy. Included in my legislation are provisions to prohibit the export of semiconductor manufacturing equipment to China, and to direct the State Department to coordinate with like-minded partners in securing global supply chains vis-à-vis China.

Last month the President announced the Indo-Pacific Economic Framework, known as IPEF, one of its four pillars generally focusing on supply chain resiliency and coordination.

So I see my Economic Statecraft bill and the President's IPEF as two sides of the same coin, dual efforts to revitalize the United States' leadership in the global economy.

So, what else do you believe needs to be done to secure our supply chains around the world?

Dr. FRENKEL. Thank you, Senator. It was our pleasure to host you.

So, I think IPEF is an excellent first start in terms of U.S. leadership in Asia, setting American standards and focusing on supply chain resiliency in that region. As I mentioned earlier, last week the administration launched an initiative with Latin America to look at standards, et cetera. And I think it would be great if that would be upgraded to be more like IPEF, and if we had a stronger initiative with those countries in our backyard.

As you probably know, China is investing very heavily in Latin America at this point, buying ports and mines and key strategic infrastructure. So I think U.S. engagement and trade agreements with Latin America would be really important.

I think the U.S.-EU Trade and Tech Council is an excellent initiative, and I think strengthening and doubling down on key technologies that we want to friend-shore and make sure stay in countries where we have strong alliances and shared values is very important.

And that picks up on your point of looking at what technologies we want to on-shore. Some of those also need to be friend-shored. So I think that is important.

So to my mind, I think the U.S. engaging in more plurilateral initiatives like IPEF is going to be very important. I also mentioned full implementation of the Trade Facilitation Agreement, which is a WTO agreement that was signed in 2017. Its implementation was paused for a couple of years because of the pandemic, and I think fully implementing that would be very helpful. It is an initiative to help, primarily, developing countries digitize their Customs processes and learn how to provide capacity building to them to really upgrade their supply chain initiatives and Customs processes.

Senator MENENDEZ. Thank you.

Let me ask one other question further on IPEF. I applauded the President's leadership on economic engagement in the Indo-Pacific. I was out there about a month ago, and I heard time and time again that our presence is important but our engagement economically is critically important.

It is a good first step towards working with like-minded allies and partners to set global standards, improve competitiveness, and strengthen supply chains. However, I, along with 51 other Senators, sent a letter to President Biden urging him to include Taiwan in IPEF. Taiwan is a key trading partner of the United States, one with whom we have a strategic relationship that is intimately intertwined with our economic security, particularly as it relates to trade in semiconductors.

Now, Taiwan was not included in the initial IPEF rollout, but I am hopeful that the recently announced U.S.-Taiwan Initiative on 21st Century Trade can result in a bilateral IPEF-like agreement.

How beneficial would it be for our supply chain security if Taiwan were extended the same benefits and the same standards as other IPEF countries?

Dr. FRENKEL. I think it would be enormously successful. I mean, I understand—I mean, Taiwan, as you pointed out, is a very important trade partner, particularly in semiconductors. And I think we really should have quite a robust agreement with them.

I understand the political sensitivity around maybe not including them in IPEF at this point, and I know that the administration has to do a delicate dance between supporting Taiwan, wanting a robust economic relationship with them, and maybe not alienating, not risking a strong military encounter with China. But I definitely support strong engagement with Taiwan and applaud the agreement that was negotiated. And you know, hopefully maybe one day that would progress into full inclusion into IPEF.

Senator MENENDEZ. Thank you. I agree. I see Mr. Louie was shaking his head "yes," I think. I also concur.

Thank you, Mr. Chairman.

Senator CARPER. Thank you, Senator Menendez. As the chairman of the Foreign Relations Committee, he certainly knows of what he speaks.

Senator Casey, who also knows of what he speaks, is next. Senator Casey?

Senator CASEY. Mr. Chairman, thanks for calling this hearing. We appreciate your leadership on these issues, and it is great to be working with you and Senator Cornyn in particular on the legislation about investment review. I appreciate the testimony and the presence of all of our witnesses.

Mr. Paul, a question for you. I was noting the sobering data in your statement of 90,000 American manufacturing facilities closing since the late 1990s; as of 2019, China having 29 percent of global factory output and the U.S. only 17; the loss of 5 million good-paying middle-class jobs; and on and on. The data is almost incomprehensible.

And we have to ask ourselves some difficult questions, especially after the pandemic. I mean, all these questions were relevant before the pandemic, and even more so in the aftermath, or what we hope will soon be the aftermath.

The U.S. has ceded manufacturing capacity to other countries, especially China, and a number of these countries do not play by any rules. Whether it is PPE shortages, or whether it is car or smartphone shortages we are facing today, it is affecting every facet of our economy, and that is resulting in higher prices, among other causes.

One of my biggest concerns is, we do not even know the quantum of American capital or innovation and know-how that is being transferred overseas. That is why we have our critical capabilities legislation that Senator Cornyn and I spoke of.

We have to find out how much we are relying upon these foreign adversaries, with regard to the design and manufacture of goods that are critical to both economic and national security, and the good news is, we have consensus. We have both Democrats and Republicans here in the House and the Senate who are ready to come together on a proposal.

So I would ask you this question about outbound investment. How does that outbound capital flow, and also the transfer of the know-how and intellectual property to places like China, undermine our supply chain resiliency?

Mr. PAUL. Senator Casey, thank you for the question. I want to commend the leadership that you, Senator Cornyn, and others have provided on this issue. I think it is important, and we hope it gets across the finish line.

I would say the impact of that investment has an outsized effect on our abilities in the United States to produce and to innovate. And it is important for these reasons.

First of all, shareholder interests and national security interests are rarely ever aligned. In fact, they are often misaligned. There is just not that "d" component, as Mr. Louie said, that goes into that factor.

Second, when these investments are being made, there is not a level playing field for them. There is an attraction of state capital and other incentives in China, many of which are not supposed to be there because of obligations to the World Trade Organization. And the compound effect of it is this. We know from good research that when production moves, innovation moves as well. And you lose that ecosystem for innovation in the United States, which is a pressing concern for the industries of the future.

We also know that, in China in particular, it is subject to theft and replication, and of building up of national champions, and then it is used against us in another way as well. So our companies that have invested there are being replaced by firms that are national champions, that are either state-controlled or state-related. And this goes well beyond what I would call traditional kind of national security applications, because there is so much civil-military fusion in China it is almost impossible to disaggregate those.

And so, this type of investment certainly deserves far more scrutiny than it has. And I hope that a strong provision can be included in the final bipartisan innovation act.

Senator CASEY. Thanks very much, Mr. Chairman. I will give back 11 seconds.

Senator CARPER. All right. Thank you, Senator Casey, very much.

Senator Cortez Masto, please?

Senator CORTEZ MASTO. Mr. Chairman, thank you to you and Ranking Member Cornyn for holding this hearing.

It is clear the best way to source and actually secure a stable supply of resources and goods that not just Nevadans but Americans need is to make investments domestically. We have been talking about that.

One of the areas I am curious about your thoughts on—and, Mr. Paul, let me start with you—is I believe we have to grow the mining and production of critical minerals and rare earth materials domestically to secure our supply chains, to lower prices, and actually create good-paying jobs right here in the United States. That is one of the reasons why I was proud to support the Senate version of the U.S. Innovation and Competition Act, because it did include dedicated funding for research and development of new technologies for extraction and processing of minerals.

I am also planning to introduce the Rare Earth Magnet Manufacturing Production Tax Credit Act, which would create a new credit for the production of rare earth magnets right here in the U.S. to help us grow this critical component of our domestic supply chain and create new jobs.

Investing in rare earth mineral production here at home is also a matter of national security. And so, Mr. Paul, can you discuss the importance of investing and growing our domestic production of critical and rare earth minerals for our national security?

Mr. PAUL. Senator, thank you so much for raising up that question. I think it is important, and thank you for your leadership on it.

We have seen over the last couple of decades how vulnerable we are because of our lack of domestic capacity with respect to these critical rare earth minerals, from lithium to names that are hard for anybody to pronounce. But at any rate, the problem is twofold.

We do not make enough here, and for too much of that, we are dependent on the supply from China, which obviously can be weaponized or withdrawn at any time. And an additional concern is that the way in which some of these rare earth minerals are extracted around the world is ethically troubling as well.

And so, the more control we have over production and supply chain, I think the more that aligns with not only our national security interests, but our values as well. It will take investment, because we are essentially starting from scratch again, as you pointed out.

I remember, because I was raised in Indiana, not far from one of the last rare earth magnet manufacturing facilities in the United States—and it is hard to incubate new industry. That requires intent. That requires investments, because there are lots of capital barriers. And it probably does require some trade protections as well. In order to do that, there needs to be, perhaps, a transition period. But we need to ensure that the utilizers of these rare earths are going to be comfortable and supportive of building up that domestic supply as well.

So I applaud your efforts, and I think that this is an essential thing, not only for our national security, but for the industries we want to build in the future. A lot of these renewable energies and EVs are going to depend heavily, heavily on these rare earth minerals.

Senator CORTEZ MASTO. Thank you.

I noticed, Dr. Frenkel, you are also shaking your head. Anything else to add?

Dr. FRENKEL. No. I also applaud your effort. And as you know, many of these minerals are also critical for our clean climate initiatives. So if we want to really be able to go green, it is also essential that we develop domestic capabilities.

Senator CORTEZ MASTO. Thank you. And, Dr. Frenkel, let me ask you this: how can we use preferential supply arrangements to diversify sourcing away from China and Russia?

Dr. FRENKEL. So IPEF, for instance, sets out certain standards. It is looking to raise labor, digital, and environmental standards. And it gives those countries opportunities to move away from some of the regressive Chinese standards. I would like to see some of those countries get preferential supplier status so their products can be expedited to the U.S., number one.

Number two, they should be preferred sourcing destinations for the U.S. When we have countries that meet our standards, we should really provide incentives for U.S. companies to locate in countries that meet our standards.

Senator CORTEZ MASTO. Mr. Louie, do you have any comments on that as well? Thank you.

Mr. LOUIE. Yes, I agree. As I said earlier in my testimony, we need to have these fast paths to make sure that we have the advantage, not just here in the U.S., but with our allies.

I would particularly point out the importance of using next-generation technologies for processing of these rare earth minerals. Many of the rare earths that we actually source here in the U.S., we actually shifted to China to do the processing. So this is more than just a theory of what the Chinese could do.

Ask Japan what happens to rare earth supplies if Japan runs afoul to the Chinese will. They shut them off. That could be us. So this investment that we are talking about is an investment that will have long-term benefits. Those rare earths are critical for many of the emerging technologies that the U.S. has to lead in. If we lead in the technologies but we do not have access to the raw materials, we cannot maintain our leadership, much less complete our supply chains.

Senator CORTEZ MASTO. Thank you.

Thank you, Mr. Chairman.

Senator CARPER. You're welcome. Thank you so much.

Next is Senator Whitehouse. Thanks for coming back.

Senator WHITEHOUSE. Thank you, Mr. Chairman. And thank you for your kind words about our work on the infrastructure bill. You were a terrific leader in that, and it is much appreciated.

Rhode Island is facing really significant supply chain problems. Much of them are in the manufacturing sector. And some of the things that have been more resilient have been protected by pretty old-school stuff. So, Rhode Island used to be the textile center of the universe, and we still have a vibrant textile industry. And the Berry Amendment requires that certain defense materials be made here in the United States, that being various textiles and like that. But it has really helped us quite well.

So I guess my first point is, the solutions do not have to be enormously complicated. You can take a Berry Amendment and do a lot of good with it. And it is really quite easy and straightforward.

It has also been a launching pad for innovation. We have something called 401 Tech Bridge, which is an innovative and smart textile design and innovation function that we work with the Office of Naval Research on. They will have a lot of very complex textile needs in the future. And that is supported by the Rhode Island Textile Innovation Network, which is supported by the Rhode Island textile community, which is there because of the Berry Amendment.

So, as we look at exotic ways to improve supply chains, let's not forget the extremely simple ways to protect supply chains which work.

Dr. Frenkel, I just wanted to check in with you on—you have been talking in wonderful ways about our climate responsibilities—the use of the Defense Production Act to defend our solar installation industry and to protect battery materials.

Has that been a good idea? And should we do more?

Dr. FRENKEL. I think it is a good idea. I think we need to, however, use it very selectively. I would not at all advise widespread use, but only for certain critical technology. And I do think those technologies are critical for us. I would support using it.

I just wanted to mention, as you know, we have a government procurement code for the United States, and our regulations do specify in general that selling to the U.S. Government, companies that sell must have a certain percent of U.S. content in their product. I think it was increased from 50 percent to 75 percent by the administration. I just mention that in response to your comment about the the Berry Amendment.

Senator WHITEHOUSE. Yes, exactly.

Mr. Paul, should there be an Office of Supply Chain Resiliency, given that this is a perennial problem? And would national security effects and choke point concerns be two of the telltales that the Office of Supply Chain Resiliency should focus on, look out for?

Mr. PAUL. Absolutely, Senator Whitehouse. Thank you for the question. There should be such an office, and I appreciate your leadership on that, and I know that there is a version of this in the House bill of the COMPETES Act as well. I think it is important for a couple of reasons.

First of all, the Commerce Department does have expertise in this area and is accustomed to supplier scouting.

And second, I think it is very difficult, given the private sector in the United States, to provide that kind of transparency outside of a trusted actor. And so I think that is important for both early warning signaling and to flag vulnerabilities, and to also look for market opportunities for firms that are looking to enter into such things as well. They may not know that there is an opportunity in a second or third tier for small and mid-sized manufacturers.

So I think the office would be very, very helpful.

Senator WHITEHOUSE. I will close out with one observation, which is that an important part of a lot of companies' supply chains is produce: grain, things that are grown, things that are caught. And what we have right now is a very significant hazard to our agricultural production because of climate change, drought, wildfires, flooding. Cargill has made really dark estimates of how the Midwestern grain belt will be less productive, and what that will mean. And that has an inflationary effect, obviously, because it does not reduce demand when there is less supply. But it also is a supply chain problem. Again, I will close by just observing that it connects to the comments that Dr. Frenkel has made about the need for energy transition. If we want to ignore the energy transition, good luck with your agricultural supply chain and good luck with inflation.

Senator CARPER. Senator Whitehouse, thank you very much. Let me say to our witnesses, Senator Whitehouse and I are passionate about climate change. We focus on it every day.

Senator Brown and I are passionate about baseball, and our favorite teams are both American League teams. They are both American League Central Division teams, and we have a great time playing—we do not play baseball anymore. We have a great time talking about it. Among the other things that we are passionate about is the subject of today's hearing. We are delighted that you are here.

Senator BROWN. Thank you, Mr. Chairman. Thanks for your flattery of the substance of Senator Whitehouse and the shallowness of my interests. [Laughter.]

It is always an honor to be in this subcommittee, so thank you. And thank you, my friend, Sheldon.

Mr. Paul, I want to focus my questions on you and to you, if I could. Your testimony covers a lot of what we need to do to undo decades of harm to our economy. We have had these conversations before. They are crystallizing in so many ways what we have seen happening, beginning in the 1970s and 1980s. I used to walk the halls at Johnny Appleseed Junior High School in Mansfield with the sons and daughters of literally hundreds of steelworkers from Empire Detroit, autoworkers from GM, machinists from Ohio Brass, and the children of laborers and operating engineers and pipefitters and plumbers and sheet metal workers.

During that period, starting in the 1970s and 1980s, large corporations lobbied Congress for trade deals and tax policies, always with their eye on cheaper labor. First, they shut down production in Mansfield, OH and around, particularly the Midwest, to go to Alabama, or Mississippi. Labor was not cheap enough there, so then it was Mexico, passing NAFTA. Then it was PNTR, going to China.

Ohioans, individually in Mansfield, OH and other places, paid the price in the form of lost jobs. Communities paid the price in the form of devastation of their public education systems and their neighborhoods. And now the whole country pays the price. Much of the inflation right now is caused, or made worse, by supply chains that are too spread-out, too long, and too fragile.

We ask American companies to compete against nonmarket economies like China that use unfair trade practices. I blame China for sure, but I blame U.S. companies that betrayed this country more so, that lobbied this Congress, and the politicians who went along.

Bank of America has said—and this is pretty amazing—that stock prices on Wall Street are more likely to go up when we invest in China's economy than if we invest in America's economy. That is not some progressive from northern Ohio talking; that is Bank of America talking.

You mentioned the importance of trade enforcement tools—to include Leveling the Playing Field 2.0 that Senator Portman and I had worked on—in the Bipartisan Innovation Act. Expand on your testimony and tell us why trade enforcement is an investment in American workers and American innovation.

Mr. PAUL. Senator, thank you for the question. It is an important one. I know it is important to Ohio and to the workers and the businesses around the country.

Trade enforcement is important because it prevents leakage. And it provides—one of the principal roles of government is also to ensure that private-sector firms in the United States have the opportunity for that level playing field when competing abroad. They are the advocate for our private-sector firms abroad.

And so too often, as you indicated, we have seen that either through trade policy, or through other measures, that we have lost good jobs. We have lost capacity. This has impacted our national security. It has impacted the communities, measurably, in terms of social and economic decline. And the reason for trade enforcement is that we have to have a rules-based system that we know our private businesses can count on. That also sends a market signal to them that if they invest in the United States, we will stand up to unfair trade practices that may affect them in our market, in a third market, or with respect to China or other countries.

The problem has been that a lot of the importers have figured a way around these laws over the years. They are very crafty. It is like Whac-A-Mole at the carnival. You know, if you put one trade enforcement measure up, they will figure out another way around it through circumvention, or a slight alteration of the product, as I know you well know. And so, the Leveling the Playing Field Act 2.0 builds on a bipartisan effort from 2015 that you and Senator Portman and many others were engaged in that would provide our government with new tools to be able to modernize our trade laws to keep up with this Whac-A-Mole strategy that a lot of the importers who engage in unfair trade practices have.

I think it is an essential part of competitive legislation, because we can invest all we want in our domestic industries, but if we do not have a level playing field for them, those efforts will be for naught, or the impact of them will be dramatically diminished.

Senator BROWN. Thank you, Mr. Chairman. Thank you.

Senator CARPER. Senator Brown, thank you very much.

We have been joined by the chairman of the full committee, Senator Wyden, who knows a lot about these issues, and whose State in these issues is incredibly important. So, Senator Wyden, thank you, Mr. Chair, for joining us.

Senator WYDEN. Thank you very much, Chairman Carper. I think this is an enormously important hearing, and I so appreciate your taking the lead on the supply chain efforts.

Let me start with you, Mr. Paul. Your testimony highlights the critical nexus between strengthening American manufacturing and creating more resilient supply chains. That is just enormously important.

It is especially true when it comes to clean energy. Our country needs to put points on the board right now against the climate crisis. That means investing in clean energy, like solar power, and bringing manufacturing back to the country so we are not swapping dependence on Russian and Saudi oil for dependence on Chinese solar panels.

Now we know the Chinese Government is pulling out all the stops to run the U.S. solar manufacturers out of business. For years the Chinese Government and its state-owned enterprises have cheated and bullied and stolen from our U.S. solar manufacturers, decimating our domestic industry.

Here is my question to you. You may be familiar with a bill that we wrote here in this room and the room next door, the Clean Energy for America bill. This is a bill where we essentially took the 45 provisions in the Federal tax code and we threw them in the trash can, and we said, for the future we would have a technology-neutral private market, and we would say for the first time that the more you reduce carbon emissions, the bigger your tax savings. And for 100 years—and by the way, Chairman Carper was enormously important to this. Basically everywhere he has gone for over a year, he said this can be the future: technology-neutral, private-market, and using incentives to drive down carbon emissions.

We also have a special focus in the bill on solar manufacturing. And I especially want to credit our colleagues from Georgia who were really talking about a different energy future: Senator Warnock, Senator Ossoff. They would like to have a different energy future because the South, for reasons like lacking transmission capacity and others, has not been able to tap the future.

So we are very serious about promoting solar manufacturing in this committee, in the United States, in Georgia and Oregon, and all over the country.

So, tell us what other steps besides Clean Energy for America—which, by the way, will hit more than 50 percent of the President's carbon emission reduction target in one fell swoop. And when you add Senator Carper's methane reductions, we are more in the ballpark of 70 percent of the President's target. So this is a high-stakes area.

What else would you do in terms of promoting solar manufacturing—manufacturing, not just buying panels from overseas—here in the United States?

Mr. PAUL. Senator Wyden, thank you for the question. Thank you for your leadership on this. I know that you have solar manufacturing in Oregon. And I want to state the fundamental problem so that folks are aware of this, that we have seen solar installations escalate dramatically over the last decade.

We have seen solar manufacturing jobs in the United States decline slightly over that same period. And so the market share is dominated by China or pass-through countries where these Chinese solar panels are coming into the United States.

I think that the fundamental principle—and I think you get this right—is that the incentives for both installation and production must be aligned. And so there must be tax credits for production in the United States, along with the incentives to install for utilities or residential or commercial. So I think that is very important.

I think the second important aspect of this is, obviously, the trade enforcement. And so I do think that we have to take steps to ensure that Chinese solar panels are not being circumvented and entering the United States improperly that way.

And I think the third is this utilization of the Defense Production Act, which I think is important. It could also spur procurement. And from a procurement perspective—I know Senator Whitehouse mentioned this, the Berry Amendment as well—I think, because of Buy American requirements, that the government can set an example by purchasing these Made in America solar panels throughout the Federal Government. And that is a sizeable public market. And they could also ensure that grants or loans made to States or some Federal entities have that linkage as well.

I think those are some concrete steps that could build up solar manufacturing.

Senator WYDEN. My time has expired, and I do not want my comments directed to Mr. Paul to in any way suggest that our other three panelists are not making important contributions. You are doing it. Continue to do it. This issue that Senator Carper is taking the lead on for the full committee is absolutely crucial.

So I am going to review your comments, and I thank all of you.

Senator CARPER. Thank you, Mr. Chairman. Senator Wyden chairs the full committee, and there are more times than the Senator and I can recall when we have used all of our time, and he has generously extended additional time to us, so I would never cut you off, my friend. So, thank you. Thanks for your kind words and for your leadership of this committee.

Senator Thune, thanks for joining us.

Senator THUNE. Thank you, Mr. Chairman, and thanks for having the hearing. The supply chain challenge is a very real issue, and thank you all for being here to talk about it.

In early February, Senator Klobuchar and I introduced the Ocean Shipping Reform Act, which passed the Senate in March, passed the House on Monday, and is headed to the President's desk this week. It is a bipartisan bill that provides the Federal Maritime Commission with new tools to curb unreasonable or anticompetitive behavior, which we believe will improve fluidity at our Nation's ports and across the entire supply chain.

Beyond reforms at the Commission, our Nation's ports are desperately in need of two things: modernization and transparency. Failure to invest in terminal automation and port efficiency initiatives such as data sharing, compounds the problems that we are facing today and puts the United States below the global average in vessel wait times, which is why my legislation also includes provisions to improve the movement of freight across the supply chains.

Mr. Potvin, do you believe that increased data sharing and better utilization of technology would help to mitigate inefficiencies in our Nation's ports?

Mr. POTVIN. I believe data analytics and data generation to be very helpful across the board, especially in dwell times when you have ships there and it is taking longer and longer to unload. We notice from the report, we are looking at close to 7 days, when it used to be 5 days dwell time turnaround on a ship, at times going on for weeks.

Sharing data across the ports would allow for the movement of vessels into different ports to utilize capacity for the dray carriers to make sure they are ready to move the products quicker from the ports to the consumers in the United States. So, sharing of data analytics, sharing of visibility, of transparency, of where your cargo is, can be very helpful to get the goods moving sooner and quicker in the process.

Senator THUNE. Thank you.

Mr. Paul, outside of ports, where are you seeing the most significant strain on the manufacturing supply chains?

Mr. PAUL. Senator Thune, thank you for asking that question. A lot of this is related to inventory misalignment. And we have seen that in particular with respect to semiconductors. And the challenge essentially is that our domestic capacity on semiconductors is quite limited.

Our domestic consumption of semiconductors is quite high. Asian customers, where many of these semiconductors are produced, obviously are first in line for this, and also, you know, it is an ocean away. And so, I think efforts to invest in additional domestic capacity in critical commodities like that that are involved in so many aspects of our daily life are going to be essential.

So I am hopeful that the Bipartisan Innovation Act can include some provisions that would be of value there, because I think essentially, the more control we have over our supply chains, I think the better off we are going to be in terms of that type of inventory management. Because we have seen it, from cars to semiconductors to smart appliances; it is a real vulnerability. And so, taking steps to identify where we can and should be producing more in the United States is something that I think is a valuable use of the Senate's time.

Senator THUNE. The baby formula shortage has shown a need to look at supply chain failures and how to prevent this kind of a public health crisis from happening again. Obviously there are a number of factors at play, but one of the largest is the FDA's inability to anticipate the shortage and to ensure sufficient production was up and running, which is sort of incomprehensible to determine how we got to this point in the first place.

But it has been a major crisis, I think as everybody knows, for American families. And I think the administration has been far too slow to respond. The administration finally encouraged overseas manufacturers to ship formula to the United States, easing regulations that had effectively prevented shipments from many of those companies.

Now there is a lot of talk about re-shoring and supply chain resiliency. This crisis has shown that the importance of having strong economic relationships with other countries is just absolutely critical.

So let's ask Mr. Potvin how important it is for America's supply chain to maintain and strengthen the free flow of goods and services with trusted nations? And are there particular tariffs or regulatory barriers that Congress should consider to better streamline baby formula imports, to better protect food security?

Mr. POTVIN. Senator, thank you for the question. I am not a real expert on the subject matter of the nature you are talking about, but I do know the free flow of goods is a requirement—you know, the near-shoring, bringing it back to the United States. One thing I do know, we have got to take into consideration one of the most essential workers in this space: the American truck driver.

The American truck driver needs to be protected to make sure there are enough of them. So we appreciate the infrastructure, the 3-year pilot program for the 18- to 20-year-olds to go across interstate lines as opposed to intrastate. We also believe that there needs to be some type of safety mechanism to take the bad actors off the road so we can drop the insurance costs the motor carriers are paying to help them also to continue to operate in this type of economy with the fuel prices going up.

Again, it is about the American truck driver. We can do all this bringing manufacturing back, but the fact of the matter is, we need trucks on the road and drivers in those seats to make sure the goods get moved. You may be able to bring them to the port, you may bring them in to manufacturing, wherever you may be, but without that American truck driver and the third-party logistics industry being able to move those goods across the country, it is not going to matter.

We need to take a serious look at the fuel prices, look at insurance, look at driver wages, making sure that we are competitive in nature so that we can supply the goods that the consumers need.

I apologize that I can't answer the question you had, Senator, but I just wanted to share that with you.

Senator THUNE. Yes; thank you.

Very quickly, as the chairman is trying to wrap up here, Dr. Frenkel, this has to do with the Indo-Pacific Economic Framework. It is nonbinding, and it may have potential, but it just seems that enforceable market access commitments in particular would help lower costs for consumers, increase pay for workers, and build more reliable supply chains.

So, could you talk for a moment about how enforceable market access commitments benefit supply chain resilience for producers and consumers?

Dr. FRENKEL. Yes; thank you for the question. I think the administration was hesitant, or did not want to launch a market access agreement in the classical sense because I think there was a lot of concern about the reaction and the lack of support in the public, and in certain sectors of Congress, about that.

So I think what they have launched is a positive first step forward. I do hope, in the fullness of time, that this could evolve into a market access agreement. And I do think that in offering market access to countries, we're looking to them to make very significant concessions in certain areas, and it is important that we be able to offer incentives for them to do that.

It is also equally important that we be able to get better access into their markets. So I think what the administration is doing with IPEF is important. And as I said, I do hope, over the fullness of time, that it can evolve into a more traditional market access agreement.

Senator THUNE. I would just offer, Mr. Chairman, in wrapping up, that if the United States does not have a meaningful market access presence in the Indo-Pacific, I think that China very definitely can threaten our supply chain priorities in that area. I think that is a concern. And as we think about that region and particularly what I think is a very weak agreement, a lot more needs to be done in terms of tangible solutions that actually do offer market access for our exporters and hopefully give them an incentive to join us in some of these deals.

Thank you, Mr. Chairman.

Senator CARPER. Thank you, Senator, so much for joining us, and I would have extended even more time to you. So, thanks for coming.

I think Mr. Potvin talked a little bit about truck drivers, and I could not agree with you more. I would also note, Delaware actually happens to be a State where there are more Amtrak employees who live in Delaware than any State in the country. So trains are important to us.

I was reminded of this statistic: you can move a ton of freight by rail from Washington, DC to Boston, MA with 1 gallon of fuel. It is pretty impressive—1 gallon of fuel.

Okay. We have about 2 dozen more questions and we will wrap it up. It will not last that long, but are you guys okay for a couple of more questions? Thanks. You are doing a great job, by the way, so thank you.

My first question would be for Mr. Potvin, if I could. In your testimony you noted over the last couple years that supply chains, and this is a quote: "bent but never broke." And that is thanks to the resilience and flexibility of companies like Trinity Logistics in the face of systemic supply chain weaknesses both here and across the globe.

We need to find out what works and do more of that. I always say that. I say it probably once or twice a day; find out what works and do more of that. Over the last couple of years, how has the private sector innovated in response to the supply chain crisis? And how can policymakers like us in this body work with logistics operators and other private-sector stakeholders to strengthen our supply chains moving forward, Mr. Potvin?

Mr. POTVIN. Senator Carper, I appreciate the question. We have seen over the last 2 years a lot of movement on the domestic manufacturing side. We saw companies such as Costco, Home Depot, Walmart, Ikea, actually charter or buy their own ships to make sure they could get their goods moved.

We have seen manufacturers change packaging and adopt better ways to transport their goods at lower costs for them; innovation and greater visibility in supply chains through technology so that people can see where their goods are moving, or tracking on these trucks so that they could see every 15 minutes where that carrier was, what they needed to do, if the carrier got stopped, immediately to think about shipping another order out to make the needs met.

Better technology through the matching of our carrier capacity with the shippers in the various locations—so again, better visibility so we could move that motor carrier, send that motor carrier to get that load, less dead-head miles for you, less fuel being consumed as well.

We saw a lot of manufacturers move from a business-to-business model to a business-to-consumer model; changing their technology, getting more into the e-commerce to meet the needs of the individual consumer who is staying home and not being able to make it out to the store.

They altered their manufacturing production location to be closer to the raw material they could get their hands on, to make sure, again, they are supplying their product. They took a lot of risk, but they wanted to make sure their consumers' demands were met that way.

We have seen a lot of innovation around data analytics and data generation, transparency, and efficiencies that led to increased productivity and additional savings of that nature. If we were to take the technology and share data, as Senator Thune was indicating, among the ports, among the shipping lines so that goods could be rerouted, moved from where congestion was happening, or ports were shut down or something, a natural disaster—real-time visibility, real-time communication to move and react in a situation, to share data across the board in a safe and secure way.

We talked about the innovation of smaller fleets and the owner-operators. The simple fact is, they were the first ones to return when production started to pick up. They were hungry for money, hungry for loads. And the simple fact of the matter is, they moved quickly to make sure that the goods kept moving.

We need to make sure that the goods continue to flow across interstate lines, and certainly we want to just look at a way of making sure that the government promotes interstate shipping and not get hung up in the intrastate government issues to make sure the goods flow across this country and do not get stuck in State laws.

Senator CARPER. Mr. Potvin, thank you. Thank you for all of that.

I would ask Mr. Paul another question, if I could. It is a question dealing with government coordination of supply chains. One challenge in addressing supply chain issues is that the U.S. Government does not effectively track supply chain vulnerabilities before they become a full-blown crisis.

A provision under consideration in the so-called China competition bill led by our friend, Delaware Congresswoman Lisa Blunt Rochester, would authorize a new office in the Department of Commerce to monitor and also to respond to supply chain gaps.

My question would be for you, Mr. Paul. How can greater government oversight and attention to supply chain challenges improve economic resilience and support domestic manufacturing in critical industries?

Mr. PAUL. Senator Carper, thank you for the question. And I have had the opportunity to tell the Representative herself that we strongly support this provision. We do hope it becomes part of the final Bipartisan Innovation Act, and we appreciate your support for it.

I think that it is important to have an office in the Commerce Department tracking this because, again, this is not something where the—it is going to take a public-private partnership.

Businesses are reluctant to share supply chain information. Many times they view it as proprietary information. I think having a trusted actor, at least to be able to understand what some of the vulnerabilities are, is going to be critically important. And I would add, in my experience in working with the Manufacturing Extension Partnership as part of the Department of Commerce, I know that there are many State affiliates of this—including one that serves Delaware—and that suppliers' scouting and the ability to identify manufacturers are important. And so it is important not only to understand what the vulnerabilities are, but also what the opportunities are.

If there are supply chain weaknesses, or large OEMs who say, "I can't find a third-tier supplier, I can't find a second-tier supplier," this type of supplier scouting can be valuable in seeking out new market opportunities for small and mid-sized firms that don't have massive marketing or sales staffs that can seek this out.

And so I think that can be helpful as well. And so I am hopeful that as part of this innovation package, this becomes a piece of it. Because this is one of the most helpful things for the small and mid-sized firms in particular: to be part of opportunities in the future and to help contribute to supply chain resiliency.

Senator CARPER. All right. Well, I am hopeful and will pass on your kind words to our Congresswoman.

Dr. Frenkel, if I might, on medical product supply chains, COVID–19, as we know, has laid bare serious concerns about our medical product supply chains. We need to work with partners around the world as we attempt to put this pandemic behind us and to ensure that we are better prepared for the next one that we know is coming somewhere down the line.

Senator Cornyn and I sent a letter to the President, about a year ago, in which we urged the administration to reduce barriers in order to help shore up these supply chains.

So my question is, Dr. Frenkel, what measures would you recommend that Congress and the administration consider to strengthen medical product supply chains?

Dr. FRENKEL. Thank you. I think—and I have to say, I am not an expert on medical supply chain issues, but I think, just in general, there are things that we can do, as you mentioned, to reduce barriers.

Number two, obviously we need to decide which products we want to either on-shore or near-shore. I know that many of those products are now coming from China and elsewhere, where they are, again, more subject to the shutdowns in Shanghai and political issues and things like that.

I think we need to offer, for things that are really critical—we need to offer incentives to manufacture here. I read, for instance, that at the height of the pandemic the U.S. offered incentives—since all our PPE tends to be imported, we offered incentives to manufacture masks in the United States, and a number of companies invested based on that and started producing masks. But then, after those incentives went away, hospitals started buying cheaper masks from China again, so a number of those facilities actually had to close down, even though they had made significant investments.

So I think we need to think long-term. You know, we cannot just be thinking short-term, like you give an incentive but then you need to sustain it if you want to have that capacity the next time that a pandemic rolls around.

I think also in terms of near-shoring, again some of the textile companies in Central America are interested in potentially producing PPE, but again, they need support to do that.

So I think we need to look critically at the supply chain, decide what things are really important to manufacture in the U.S., manufacture close by, and for those things that we are still importing, we need to reduce trade barriers and facilitate trade.

Senator CARPER. For somebody who did not know much about medical product supply chains, that was pretty good. [Laughter.]

I have another one. I want to ask you one more question, if I could. This one deals with environmental standards and supply chains.

I serve as the chairman of the Committee on Environment and Public Works, and serve with a couple of people who have been here with us today, including Senator Whitehouse. But we have a heightened interest on that committee in the intersection of trade and the environment, as you might imagine.

Dr. Frenkel, in your testimony you noted that rethinking our supply chains can encourage green sourcing, or procuring goods and services in a more sustainable way. I am heartened by the recent agreement between the U.S. and the EU to decarbonize steel and aluminum production. And my question would be this: moving forward, what other opportunities exist to make our global supply chains more environmentally sustainable?

Dr. FRENKEL. Well, one thing that I would strongly support is the reopening of the environmental goods negotiations. During my time at GE, I spent a lot of time—the company had many green products, from wind, solar, other batteries, and I was very involved in those negotiations, which actually got quite far. But they stopped, came to an abrupt stop in 2016 when the administration did not support trade or environmental issues.

But I think it is time to really reopen that. I would advise expanding it beyond environmental goods to include environmental services, which I think are very important. You know, one of the main stumbling blocks to completing the negotiation during the first time around was the inclusion of China. I think it probably makes sense this time around not to include China. And you know, that would probably necessitate it not being a WTO agreement, which I think would really facilitate completing it. And I think we should do a plurilateral agreement with as many countries as possible to lower tariffs on as many——

Senator CARPER. Did you say “plurilateral”?

Dr. FRENKEL. Correct.

Senator CARPER. I have been a Senator a long time. I do not think I have ever heard a witness use that word.

Dr. FRENKEL. Okay; sorry.

Senator CARPER. There is a first for everything.

Dr. FRENKEL. Sorry about the jargon. Multilateral, you know, is like everybody. Plurilateral is maybe more like IPEF. IPEF is a plurilateral agreement.

So I think we need to do an agreement with as many countries as we can get onboard for environmental goods and services to really promote and facilitate cheaper and easier trade in those products and services.

Senator CARPER. Okay; thank you. I have one last question I am going to ask each of you. The first question I will ask each of you is, where did you find there was consensus amongst the four of you?

And the last question that I am going to ask is, what is a question you wish you had been asked but were not asked? So think about that.

And while you are thinking about that, Mr. Louie—I like saying your name. Mr. Louie knows that one of my favorite songs as a kid growing up had his name in it two times, “Louie, Louie.” And so, I am grateful for that great memory. And also for your responses. Here is one more opportunity for you to respond, and that would be on cybersecurity and the supply chain, something you know a little bit about, I am told. As a senior member—actually as the former chairman of the Senate Committee on Homeland Security and Governmental Affairs, I know the nexus between trade and national security is a policy area that requires our attention.

Over the past several years, we have seen a rise in state-sponsored cyberattacks, including those on our supply chains. My question is this, Mr. Louie: what steps should the Federal Government take proactively to reduce cybersecurity vulnerabilities in supply chains? And how can information sharing between the private sector and the Federal Government help identify potential weaknesses in our critical supply chains?

Mr. LOUIE. That is a great question. One of the critical tools we have is, we have some great agencies that do a great job in protecting the U.S. Government. CISA is a great organization. But you need to think about that umbrella of protection to extend to our commercial companies and our critical infrastructure beyond those that are government-related.

And when we think about supply chains—particularly helping companies understand their third-party risks that could be exposed because the third-party suppliers do not have the tools necessary, typically smaller companies—we need to do the kind of cyber-protection necessary to protect those chains. It puts at great risk not just our smaller companies, but some of our most important systems. So that umbrella of protection needs to be broader. We need to have better information sharing. I think the Solarium report had some terrific recommendations. But we have to move beyond the recommendations and into implementation.

We need a public-private solution that has larger companies being willing to help the smaller companies and the industry partners to make sure that they are secure. The Chinese and the Russians have particularly attacked the supply chain. I do not need to attack the U.S. Government if I can attack the companies that the government depends on. And we need to, again, extend that umbrella of protection.

Senator CARPER. Around here we have the opportunity to change leadership of subcommittees and committees, depending on who is in the majority and who is not, who stays, who retires and leaves and goes on to do other things. And about 7, 8, 9 years ago, it was announced that I was going to be—a new Congress was about to start, and I was going to be the chairman of the Homeland Security and Governmental Affairs Committee. There was a wonderful article in, I think, *The Wall Street Journal* that talked about the changes in leadership in the different committees. It mentioned the Homeland Security Committee and said I was going to be the chair for the next 2 years at least of Homeland Security. And the article went on to say that I was the Senate's expert on cybersecurity.

I cut the article out, and I brought it home, and I showed it to my wife. I said, "Honey, look at this. It says I am the Senate's expert on cybersecurity now." I will never forget what she said. She said, "In the land of the blind, the one-eyed man is king." [Laughter.]

So we all need somebody to keep us in our place, I suppose. I am not an expert, by any stretch of the imagination, on supply chains, but thanks to all of you, I am a good deal smarter than I might have been a couple of hours ago, and we will hopefully continue to build on that going forward.

Now the question that I want each of you to answer for me. I will start with you, Mr. Louie. Can you think of a question that you would like to have been asked but were not asked?

Mr. LOUIE. The question I would have loved to be asked is, how does a reimagined U.S. advanced manufacturing infrastructure change the way we think about supply chains?

Senator CARPER. That's great. Thank you.

Dr. Frenkel, is there a question you might like to have been asked?

Dr. FRENKEL. Sure. Two quick things. One is, you know we talked a lot about investing in manufacturing and R&D. I think we really need to invest in our people, and I wish that we had been asked about that.

Secondly, I think we really need to invest in and reform the WTO. We should not forget that, and I think we should have been asked about that.

Thank you.

Senator CARPER. Very good. Thanks.

Mr. Potvin?

Mr. POTVIN. Well, I had hoped I would be asked, "Are you glad to be here today?" [Laughter.]

And the answer would be "yes." This is my first time here, and it is an absolutely humbling experience and a pleasure to be here.

Senator CARPER. It is humbling to do this kind of stuff, a couple of guys from Delaware.

Mr. POTVIN. It is. It is. Honestly, I think for me—and again, my colleagues here are much more learned in the space of the wider scope of the supply chain. I think for me is the question simply, how do we ensure that the goods, wherever they come from, wherever they are manufactured, can be delivered the best way with efficient operations? How do we pull those resources together to make sure that happens? That would have been the question.

Senator CARPER. Thank you so much.

Mr. Paul?

Mr. PAUL. Senator, thank you. I think the question that I would have liked to have been asked is, is there hope? Because my testimony laid out a number of dire, I think, data points that should be very concerning. And I will answer it briefly, if you don't mind, with your indulgence.

I do think there is hope. And I will just give an example. I remember seeing you just a couple of months ago at the Department of Transportation as they unveiled the electric vehicle charging network grants through the infrastructure bill, which I know you led on. And I think that is the perfect example of how public policy can drive investment in the United States towards secure, important supply chains, and it is just having that intent. So, yes, I do think that there is hope.

Senator CARPER. That is great. There is a reason and a method to my madness. One of the things that we do is, after this hearing we will send you questions for the record, as you may or may not know. And somewhere in my notes it says—let me just get this straight—for Senators who wish to submit questions for the record, those questions are due 7 days from today. We will assemble those questions.

Our witnesses will have 45 days—that is a long time—to respond to any questions for the record. And we are going to use those questions, among others, to follow up with you. So you will have a chance to respond to those questions.

I think most people who do not have the opportunity to sit in a room like this, or watch a hearing on television or over the Internet, they think all we do here is fight among ourselves—we don't work together, we never get anything done, we never take on difficult and challenging issues.

And I hope today would be an antidote to those perceptions. We like each other, for the most part, and we like working together, and that includes across party lines. The stakes are pretty high on the issues we are discussing here today. Lincoln used to say that the role of government is to do for the people what they cannot do for themselves.

Another one of my favorite witnesses was a fellow who, not long ago—he's from Wyoming, a good friend, Senator John Barrasso. And he had been nominated for a post in the last administration at the Department of the Interior, and he said, "Bipartisan solutions are lasting solutions"—bipartisan solutions are lasting solutions. And that is what we work toward. We do not always succeed, but that is what we work for.

So, you have given us a lot to work with. And for that, we are deeply, deeply grateful.

We have a member of our team who is sitting right behind me. Her name is Noami Zeigler. She will not be sitting back there next week. She has accepted a position to go to work for, I want to say OMB? Is that right?

Ms. ZEIGLER. Yes, sir.

Senator CARPER. OMB. And she will not have my back like she has for the last several years. We are going to miss her, and we wish her Godspeed as she leaves from this place.

Thank you all. It was great to be with all of you—and especially those whose name is Sarah. I look forward to seeing you back in Delaware. And you can bring your husband with you and your other colleague.

And with that, it is a wrap. We are concluded. Thank you.

[Whereupon, at 5:02 p.m., the hearing was concluded.]

APPENDIX

Additional Material Submitted for the Record

Prepared Statement of Hon. Thomas R. Carper,
a U.S. Senator From Delaware

Good afternoon. It's my pleasure to call today's hearing before the Senate Finance Subcommittee on International Trade, Customs, and Global Competitiveness to order.

Thank you to our witnesses for joining us to testify today, and a special "thank you" to our ranking member, Senator Cornyn, and his team for working with our staff and with me to plan this hearing focused on supply chain challenges, an issue that continues to frustrate folks across our country and around the globe.

Today's hearing will be a chance to examine why supply chain bottlenecks have developed since the onset of the pandemic, and to look at what kind of policies might improve the long-term resiliency and security of our supply chains to prevent these types of shortages in the future.

Now, there may be some folks out there who've heard about supply chain problems, who might know they have something to do with how we keep our economy moving—but who don't know just what we mean when we say "supply chains."

Here's what we're talking about: supply chains include every step of the process to manufacture a product and move it from point A to point B—sometimes halfway across the globe—to get goods from your wish list to your doorstep.

One of the reasons why I'm eager to address these issues at today's hearing is because Americans are eager to address these issues. In 2022, the effects of supply chain challenges aren't some distant policy issue to folks at home. Americans are seeing it play out in empty shelves at their local grocery store that once held baby formula, in gifts delayed and delivered weeks after a birthday has passed, or in new cars and technology they've saved up for years to buy but can't find on the market.

About a month ago, the week before Mother's Day, I went to my local Rite Aid pharmacy to pick up a card for my wife Martha. And at a store where we've shopped for years—with a huge selection of anniversary cards, birthday cards, holiday cards, you name it—I walked up and found an entire Mother's Day card section empty. I found an employee and asked what was going on, and she said this year Mother's Day cards never even made it to the store. This is just one example of the supply challenges happening all across our country. And Americans want to know how we can get back on track.

So today, we will explore how we got to this point, and what we can do to ensure that we're better prepared in the future. I've long believed that one of the jobs of policymakers is to create a nurturing environment for job creation and economic growth—and one key to maintaining that nurturing environment is improving the dependability of our supply chains. And while we know that the tremendous supply chain backlogs we are seeing today come largely from the economic shock of the pandemic, many systemic vulnerabilities existed long before COVID.

Fundamental weaknesses in our global logistics systems are the result of a decades-long focus on supply chain efficiencies, just-in-time manufacturing, and a reliance on foreign adversaries for a wide array of goods. The result is a system so brittle and fragile that it cracked under the pressure of the worst pandemic we've endured in over 100 years.

But in adversity lies opportunity, and these challenges present a great opportunity for us to rethink how we move goods across the globe and create a system that better serves the American people. That starts with investing in our own critical infrastructure. And I'm proud—as I'm sure every member of this committee is—that we have already taken steps through the Bipartisan Infrastructure Law to improve the efficiency of our ports and make our roads and bridges safer. However, it's clear that infrastructure investments are only one piece of the puzzle.

Another piece is expanding domestic investment in the technologies we rely on—from semiconductors to renewable energy products—so that we don't find ourselves relying on a foreign adversary or jeopardizing our national security for the sake of a supply chain. At the same time, we can create jobs and support American manufacturing—a win-win. A good place to start is the "China competition" legislation currently being reconciled between the two chambers of Congress. And I commend our friend, Senator Cornyn, for his leadership in supporting chips funding in that bill.

And while domestic investment is a key part of shoring up our supply chains for years to come, we also have to focus on a fundamental principle central to the supply chain discussion: working together with our global partners. And as leaders of this subcommittee, Senator Cornyn and I have repeatedly called for greater U.S. economic engagement and leadership across the globe, especially in the Asia-Pacific region.

By reaching out to our allies, bringing more nations into a shared economic framework, we can improve the security and resiliency of our supply chains—leading to a wider range of products and lower costs for American consumers. That's part of the reason why I was happy to see President Biden announce the start of an Indo-Pacific Economic Framework—to bring more good-faith trading partners into a stronger, fairer global economy and create even more diverse, resilient supply chains.

Ultimately, building secure and flexible supply chains will require both economic cooperation with our allies across the globe, and more strategic investments in critical industries and workers here at home.

So today, we look forward to hearing from our witnesses with respect to their insight on solutions to these challenges—so that the next generation of American families won't have to worry about empty shelves and higher prices. We'll be ready for what's to come.

Once more, let me thank our ranking member and the witnesses appearing before us today. And with that, I'd like to turn it over to Senator Cornyn for his opening statement.

PREPARED STATEMENT OF HON. JOHN CORNYN,
A U.S. SENATOR FROM TEXAS

Thank you, Chairman Carper, for working with me to organize this hearing on such an important and timely topic. And thank you to our witnesses for joining us—both virtually and in-person.

This subcommittee continues its work in exploring the geopolitical benefits and consequences of America's trade policy with the world and, in particular, our foreign adversaries such as China and Russia.

The topic of resiliency in critical supply chains is an important one, as the COVID–19 pandemic awakened us to our dependence on the concentration in foreign adversaries of the goods we need in a time of crisis. We must reinforce the rules-based, international trading system for those nations that at least attempt to abide by it through free trade agreements like the Comprehensive and Progressive Trans-Pacific Partnership.

The administration's Indo-Pacific Economic Framework is a positive first step in that direction. But we cannot play games with our Nation's survival by outsourcing the crown jewels to nations like China that have weaponized our free market system against us.

Nearly 20 years ago, our government opened the door to do business in China, and our industries did what they do best—found a market, captured it, and achieved efficiency and innovation. What we have learned since is that the Chinese Communist Party, not its people, perverted that goodwill through theft and control to achieve a strategic advantage. Our own people in homegrown industries suffered as a result.

Now we must all come together—labor, business, and government—as one Nation and put past disputes, jurisdictions, and political contests aside to find the right balance in preserving our critical supply chains while continuing to trade with the people of China. That includes providing incentives, like the CHIPS for America Act I authored with Senator Warner, to bring semiconductor production back home.

It means reducing the regulatory burdens on American businesses that want to thrive in our domestic and foreign markets that abide by the rules-based international trading system. And it means having an honest look and conversation about the problems at hand.

For example, a few weeks ago at the Senate Intelligence Committee, I heard from a former Trump administration official who highlighted that U.S. financial investments in Chinese-domiciled companies totaled over $2.3 trillion in 2020.

Former National Security Advisor H.R. McMaster recently stated: "Last year, venture capital firms invested $114 billion in Chinese companies that are developing dual-use and sensitive technologies that are going to be weaponized against us or already are aiding and abetting the Russians."

I believe that it is time we had an honest conversation about the role that American investment has played in building the Chinese economy, especially in the area of critical supply chains and our over-reliance on those supply chains, in areas such as semiconductors.

The first step in doing that is granting the U.S. Government the authority to have visibility into U.S. investments in the supply chains of foreign adversaries through the establishment of an interagency committee, led by the President, that provides a whole-of-government approach in responding to Chinese economic coercion. That means, at a minimum, mandatory notification and circulation of investments by recipients of taxpayer funds designed to compete with China, such as those envisioned in the Bipartisan Innovation Act and the CHIPS for America act. This will serve as the basic guard rail to protecting those taxpayer funds.

Yesterday, I released a revised version of the National Critical Capabilities Defense Act I co-authored with Senator Casey and my House colleagues that responded to industry feedback and does just that. I look forward to hearing more from industry in the coming days on that legislation and this topic from today's witnesses.

We have before us Mr. Louie, who comes from the intelligence community, to provide us with a national security perspective.

Mr. Potvin, I believe your intimate knowledge of the supply chain and logistics backlogs will be of great importance.

Dr. Frenkel, your experience in government will help us to understand the rules-based international trading system and what our agreements will mean moving forward.

And, Mr. Paul, you bring valuable insight from a coalition of both the labor and manufacturing industry.

I look forward to hearing your testimony and questions to follow.

Prepared Statement of Orit Frenkel, Ph.D., Founder and CEO, American Leadership Initiative

The American Leadership Initiative (ALI) appreciates the opportunity to testify before the Senate Finance Committee's Subcommittee on International Trade, Customs, and Global Competitiveness on the important topic of supply chain resiliency.

ALI's mission is to put our country and citizens on the right trajectory for 21st-century realities. We champion a holistic vision that: embraces a long-term alternative to populist isolationism that undermines American interests; strengthens and reforms our global alliances and institutions; doubles-down on our shared American values; addresses climate change collaboratively; and demands inclusive and sustainable growth—at home and abroad.

This hearing's topic is extremely important and timely, as we have witnessed waves of shortages over the past few years, from toilet paper to bicycles, from semiconductors to baby formula. These supply chain shortages, spurred by a variety of factors, including the pandemic, Russia's invasion of Ukraine, and lockdowns in China, have led to a bipartisan momentum to shore up American competitiveness and encourage U.S. manufacturing. national security concerns about China, combined with Russia's invasion of Ukraine, have raised awareness of the need to reduce U.S. supply chain dependency on these autocratic regimes.

In late February, the White House released a plan [1] to revitalize American manufacturing and secure critical supply chains. This policy shift towards restoring American competitiveness and manufacturing, providing important funding to expand U.S. semiconductor production, and constructively working with allies to address the China challenge. is also seen in the United States Innovation and Competition Act (USICA) [2] and the House-passed America COMPETES Act [3] of 2022. ALI applauds both these initiatives and urges the conference to reach agreement and pass this critical legislation. The U.S. should also look for ways to streamline its import processes where possible, including exploring whether to eliminate some China 301 tariffs on consumer goods where they don't compete with domestic suppliers.

Fully implementing the Trade Facilitation Agreement is an important step to streamline import and export processes globally. This agreement, which entered into force in 2017, specifies that technical and financial support should be provided to developing countries to help them implement the provisions to streamline their customs procedures. Implementation has been delayed over the past couple of years due to the pandemic and should now be expedited.

USICA includes several important provisions to facilitate the diversification of supply chains and facilitate the onshoring of critical manufacturing, and the Congress should consider funding to support these initiatives.

Having stable and secure access to critical products like semiconductors or medical equipment is essential to both the U.S. economy and national security. This crisis offers the U.S. an opportunity to think strategically about our economic and foreign policy goals and recreate our supply chains to support those goals. Current trade tensions with China provide an ideal time to begin reevaluating our trade policies with partner countries to strengthen those relationships and build more resilient supply chains.

Not everything can be produced in domestically, and the U.S. should strive to find the right balance between onshoring and right-shoring global supply chains to achieve a range of foreign policy goals. Different solutions will work for different sectors, so it is important to consider the particular needs of each one when looking at supplier diversification.

As Treasury Secretary Janet Yellen said recently in her comments to the Atlantic Council, "friend-shoring" of supply chains to trusted countries allows us to securely extend market access and lower the risks to our economy, as well as to our trusted trade partners.[4] Friend-shoring is an important part of supplier resilience, especially when moving sourcing for key technologies out of China. The effort to coordinate semiconductor supply chains under the U.S.-EU Tech and Trade Council, as well as efforts to coordinate with Japan and Korea, are important examples of how allies can coordinate moving sourcing of key technologies out of China and keep these technologies within countries that share U.S. values.

Concern about the ability to access certain goods quickly is an argument for turning to countries closer to the U.S., such as Canada and Mexico, to allow for ground shipment and eliminate port delays. This near shoring can also be used to encourage growth in developing countries that have strategic importance. The Biden administration has initiated a program [5] to encourage private sector investment in the Northern Triangle—El Salvador, Guatemala, and Honduras—with the goal of spurring economic development to reduce the incentive for migration from those coun-

[1] *https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/24/the-biden-harris-plan-to-revitalize-american-manufacturing-and-secure-critical-supply-chains-in-2022/.*

[2] *https://www.congress.gov/bill/117th-congress/senate-bill/1260.*

[3] *https://www.congress.gov/bill/117th-congress/house-bill/4521.*

[4] *https://www.atlanticcouncil.org/news/transcripts/transcript-us-treasury-secretary-janet-yellen-on-the-next-steps-for-russia-sanctions-and-friend-shoring-supply-chains/.*

[5] *https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/27/fact-sheet-vice-president-harris-launches-a-call-to-action-to-the-private-sector-to-deepen-investment-in-the-northern-triangle/.*

tries to the United States. This program engages the State Department, USAID and other agencies to support U.S. companies looking to invest or source there.

For companies wanting to relocate textile manufacturing from Xinjiang, the Northern Triangle countries are an option to explore. To make the Caribbean and Central America an sourcing attractive destination for near shoring, the USG must invest in additional capacity building to upgrade infrastructure, facilitate investment financing and invest in expanded trade facilitation programs.

Supporting sourcing in countries of strategic interest is an important tool to counter China growing global footprint. The administration's Northern Triangle initiative can be a model for supporting other developing countries, notably in Africa and Latin America, to counter China's heavy investment in those regions. Such sourcing investments not only strengthen our economic relationships, but also our national security by bring jobs and investment and creating stronger relationships in those regions.

The Indo-Pacific Economic Framework (IPEF), launched earlier this week, is also a key tool in the U.S. supply chain strategy. In addition to strengthening U.S. leadership in Asia, it has a pillar focused on supply chain resiliency that will help the U.S. work with regional allies to ensure that key supply chains are reliable and secure.

U.S. supply chain policy should be used to advance U.S. standards, especially labor, environmental and digital standards. The IPEF framework seeks to advance those standards in Asia and provide countries a vital alternative to China's regressive standards.

To fully develop new sourcing partnerships, the U.S. will need to invest in capacity building to train workers, provide assistance in raising standards, and partner with the U.S. private sector to facilitate these countries becoming new sourcing destinations. ALI has suggested offering IPEF countries who meet key standards in the framework, a "preferred supplier" status, allowing their goods to be expedited through U.S. customs.

Investing in digital trade facilitation as part of IPEF and in other countries the U.S. sourcing destinations, is an important tool to reduce Customs bottlenecks. The U.S. should assist these countries to transition to e-invoicing, as well as to implement digital rules of origin, sanitary phytosanitary certificates, and other digital customs documentation to expedite the customs process, as well as reduce opportunities for corruption.

In December, President Biden signed the Uyghur Forced Labor Prevention Act,[6] which bans imports from Xinjiang and seeks to ensure that goods produced wholly or in part with forced labor in other areas of China do not enter the U.S. The law also calls on the United States to lead international efforts to end forced labor practices around the globe and to coordinate with Mexico and Canada to implement the USMCA prohibition on importing goods produced by forced labor into the three countries.[7] This prohibition on imports produced with forced labor creates a necessity for U.S. companies to find new sourcing destinations with higher labor standards and is an important example of how the U.S. can advance labor rights and human rights through supply chain regulations.

A rethinking of supply chains can encourage green sourcing as well. In a recent path-breaking agreement on steel and aluminum, the United States and the European Union agreed to address carbon intensity and overcapacity of high-carbon steel and aluminum. This arrangement is meant to discourage the production of high-carbon steel and aluminum and ensure domestic policies to lower the carbon intensity of these industries, and it could be a model for the U.S. to achieve lower-carbon production in other sectors.

U.S. leadership on digital standards is of critical importance. As China's Digital Silk Road[8] has expanded, it has brought authoritarian standards of surveillance, monitoring and censorship with the Internet and telecommunication equipment it sells. The U.S. must be a standards setter in the digital space and offer countries its digital model of transparency, openness and democracy or risk ceding this critical space to China.

[6] *https://www.congress.gov/bill/117th-congress/house-bill/6256/text.*

[7] *https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement.*

[8] *https://www.cfr.org/china-digital-silk-road/.*

The U.S. should continue to strengthen constructive relationships with allies as well as expand its network of plurilateral arrangements to create new opportunities for friend shoring and supplier resiliency. Rethinking supply chains also offers the opportunity to emphasize trade facilitation, align standards, and strengthen near shoring in the Western Hemisphere to create economic opportunity and build new resilient sourcing paradigms that benefit American consumers and workers, as well as advance American values.

QUESTIONS SUBMITTED FOR THE RECORD TO ORIT FRENKEL, PH.D.

QUESTIONS SUBMITTED BY HON. THOMAS R. CARPER

Question. We talked a lot about investing in manufacturing, but our economic strength also depends on investments in our workers and families.

What investments should we make in our people, as part of our effort to build resilient supply chains and a fair and well-functioning economy?

Answer. The most important step that the U.S. can take is to invest more in educating its children and workforce. As the American Leadership Initiative discusses in its report, *A Global Digital Strategy for America,*[1] increasing automation and digitization across the economy means that more jobs are require digital skills, a trend that will continue to accelerate. A deep digital divide that drives economic inequality is undermining American economic competitiveness. This divide is especially profound in rural America, among communities of color, and other disadvantaged communities. As of 2021, Pew Research Center reported that roughly a quarter of adults with household incomes below $30,000 a year do not own a smartphone. And more than 4 in 10 don't have home broadband services or a computer. This reality increases U.S. economic inequality, leaving the U.S. unable to harness the full potential of its human capital, and weakening U.S. global competitiveness.

The Bipartisan Infrastructure Law allocated money for universal broadband, which is an important first step, however this needs to be matched with comprehensive digital skills training, starting with K–12 schools, community colleges, and company training programs. It is especially important that these trainings be available to underserved communities in the U.S.

The U.S. ranks near the bottom among OECD countries on public spending on labor market programs as a share of GDP; and the trendline is headed in the wrong direction. During the past 15 years, the Department of Labor's (DOL) budget for grants to States to support job training programs has fallen by more than half after counting for inflation. Worse, the past several decades has seen steady declines in private-sector investment in workforce training—with a falling share of workers receiving on-the-job or employer-sponsored training. The U.S. should provide incentives for companies to expand their training programs, especially for underserved communities. We should also significantly increase federally sponsored apprenticeship programs, which have been shown to be effective training for all levels of workers.

Question. What reforms should we make at the WTO to strengthen supply chain resiliency and improve global economic cooperation?

Answer. The United States should work with the EU, Canada, Japan, and other allies to reform the WTO to be more relevant to today's economy, including negotiating tougher rules on subsidies and state-owned enterprises, and reforming the dispute resolution system so that it can function. The WTO plays an important role in the international trading system, setting basic standards of trade and promoting global economic cooperation. However, it is unlikely, given the size and diversity of economies of its members, that parties will successfully conclude significant multilateral agreements in the near term. The WTO, should use and is using its convening power to draw attention to the underlying causes of supply chain disruptions. In 2022, the WTO held a Global Supply Chains Forum to discuss the role it can play in strengthening global supply chains. In addition to its monitoring function, the Director-General noted that the WTO can contribute by enhancing trade facilitation, supporting the quick clearance of goods at borders and promoting fur-

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[1] *https://static1.squarespace.com/static/5c9904eaebfc7f03f980b72a/t/60341bbf7245f02766f5c99b/1614027711334/ALI++GDSA++Full+Report++Rev+02.22.21.pdf.*

ther liberalization of trade in transport and logistics services to bolster supply chain infrastructure.

At the same time, the U.S. should continue to seek to negotiate agreements with countries that are like-minded and willing to uphold agreed upon standards and values, in order to strengthen supply chain resiliency, particularly for key technologies.

The WTO Trade Facilitation Agreement was completed in 2017 and is focused on upgrading and digitizing customs processes for signatories, especially in the developing world. Full implementation will go a long way to streamlining supply chains.

PREPARED STATEMENT OF GILMAN LOUIE, CHIEF EXECUTIVE OFFICER, AMERICA'S FRONTIER FUND

Chairman Carper, Ranking Member Cornyn, and members of the Subcommittee on International Trade, Customs, and Global Competitiveness, thank you for inviting me to testify on the important topics of supply chain resiliency, national security, and emerging technologies.

My name is Gilman Louie, and I am the CEO of America's Frontier Fund, a new nonprofit public-private investment fund focused on deep technologies and platforms critical to the security and prosperity of the United States and its allies. Before I begin, I should note that I am offering these remarks in my personal capacity. I am not speaking on behalf of the U.S. Government, the President's Intelligence Advisory Board, or any other organizations with which I am affiliated.

The United States is in a new full spectrum great-power competition against peer nation-state competitors committed to out-investing and out-innovating the United States. We can no longer take our supply chains for granted, nor can we assume continued U.S. technology leadership. We need a whole-of-nation approach to aligning public- and private-sector incentives that address the root causes of our eroding global leadership, secure our critical supply chains, and catalyze the next generation of innovation.

Before looking for solutions, we must first ask how we reached this point. The truth is, the challenges we face today arose from decades of supply chain optimization, just-in-time manufacturing, and fractional improvements in cost savings and profitability. The result has been a highly efficient but increasingly brittle global supply chain. These well-intentioned decisions by individuals and corporations have created a systemic challenge to our economic security centered on three market failures:

1. Decades of **underinvestment in foundational technology** startups have stifled innovation and deterred talent in key sectors.
2. Other countries, especially in East Asia, have created an **artificially attractive offshore investment environment.**
3. The U.S. has **high barriers to entry and challenging economies of scale** for domestic leading-edge manufacturing.

Microelectronics offers a case in point for understanding these three market failures.

Underinvestment in hardware: For the past 3 decades, U.S. venture capital investment has heavily skewed towards software development rather than hardware advancements, leading to a lack of access to capital for domestic chip startups. In 2021, U.S. venture capital investment in hardware startups was just $9 billion. By comparison nearly 14 times the investment went to software, or $124 billion.[1] Chinese venture investment in microelectronics tripled from 2019 to 2020.[2] And last year, microelectronics startups in China received six times the amount invested in

[1] "National Venture Capital Association 2022 Yearbook." National Venture Capital Association, March 2022, *nvca.org/wp-content/uploads/2022/03/NVCA-2022-Yearbook-Final.pdf,* pg. 28.

[2] Lu, Shen. "Chinese Chip Companies Raised a Record $11 Billion in 2021." Protocol, 2 March 2022, *www.protocol.com/bulletins/china-chip-funding-11-billion;* as a comparison, entrepreneurs in China launched 22,800 new semiconductor companies, in 2020 up 195 percent from 2019. *See* Ravi, Sarah. "Taking Stock of China's Semiconductor Industry." Semiconductor Industry Association, 13 July 2021, *www.semiconductors.org/taking-stock-of-chinas-semiconductor-industry.*

comparable U.S. firms.[3] This makes investing in a U.S. hardware company less attractive, which partially explains the skewed investment in software.

Artificially attractive overseas investment environment: U.S. firms recognized it is cheaper and faster to establish microelectronics manufacturing centers offshore, especially in East Asia. Without the funding proposed in the U.S. Innovation and Competition Act (USICA), the 10-year total cost of ownership of a fabrication facility (fab) in the United States is 30–50 percent higher than in East Asia.[4] And during the same period, U.S. industry invested $14 billion in electronics manufacturing projects in China. For comparison, China invested only $141 million in similar projects in the United States.[5] The Chinese government has also translated its position as a low-cost manufacturing hub into strategic advantage. China often requires that joint ventures with foreign manufacturing firms must establish operations in China. This in turn grants local Chinese firms access to foreign IP.[6] China has also flooded the market with capital for strategic technology sectors and manufacturing. In exchange for access to China's market and low-cost manufacturing, firms from the U.S. and our allies have deferred investing in manufacturing at home in favor of the cheaper and readily accessible market in China. This shifts the cost burden for manufacturing and other high capital expenditure projects from U.S. and allied shareholders onto the Chinese Government.

High barriers to entry and challenging economies of scale: In recent years there has been a drastic increase in the cost, complexity, and time to introduce, develop, and scale new semiconductor technologies.[7] This is in addition to the rising capital expenditures and R&D intensity required to remain competitive. Only two firms in the world—Taiwan Semiconductor Manufacturing Corporation (TSMC) and South Korea's Samsung—can currently fabricate leading-edge logic chips. Of significant concern is the location of Samsung's semiconductor fabrication facilities in South Korea within North Korean artillery and missile range.[8] Similarly, TSMC produces the vast majority of cutting-edge chips, a mere 110 miles from China, our principal strategic competitor.[9] Proposed Federal incentives in USICA would help mitigate the cost of locating a fab in the United States.[10] But additional measures are necessary to make the United States an enduring home for advanced manufacturing. The lack of coordination between Federal, State, and local regulations are making it difficult to on-shore advance manufacturing capabilities such as fabs. For example, it takes approximately 5 months longer on average to build a fab in the United States compared to Japan, in large part due to permitting.[11]

Today the U.S. is at risk of losing access to the critical technology components that we rely upon every day. This impacts everything from our personal communications devices to our Nation's defense systems. Russia's invasion of Ukraine highlights the peril of depending upon supply chains that can be severed by an adver-

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[3] Liu, Coco. "China Venture Funding Hits Record $131 Billion Despite Crackdown." *Bloomberg,* January 9, 2022, *www.bloomberg.com/news/articles/2022-01-09/china-venture-funding-hits-record-131-billion-despite-crackdown.*

[4] Varas, Antonio, et al. "Government Incentives and US Competitiveness in Semiconductor Manufacturing." Boston Consulting Group and Semiconductor Industry Association, September 2020, *https://web-assets.bcg.com/27/cf/9fa28eeb43649ef8674fe764726d/bcg-government-incentives-and-us-competitiveness-in-semiconductor-manufacturing-sep-2020.pdf,* pg. 1.

[5] U.S. Department of Commerce and U.S. Department of Homeland Security. "Assessment of the Critical Supply Chains Supporting the U.S. Information and Communications Technology Industry." U.S. Department of Commerce, February 24, 2022, *https://www.commerce.gov/sites/default/files/2022-02/Assessment-Critical-Supply-Chains-Supporting-US-ICT-Industry.pdf,* pg. 72.

[6] Bradsher, Keith. "How China Obtains American Trade Secrets." *The New York Times,* January 15, 2020, *https://www.nytimes.com/2020/01/15/business/china-technology-transfer.html.*

[7] As an example, complexity—as measured by number of process steps—is roughly double for a 5 nm chip compared to a 10 nm chip. "CMC Materials Investor Presentation." CMC Materials, December 2020, *s23.q4cdn.com/881970339/files/doc_presentations/2020/12/CMC_Investor Presentation_Dec_2020_FINAL.pdf,* slide 11 .

[8] Mazarr, Michael, et al. "The Korean Peninsula: Three Dangerous Scenarios." The RAND Corporation, 2018, *https://www.rand.org/content/dam/rand/pubs/perspectives/PE200/PE262/RAND_PE262.pdf,* pg. 9.

[9] National Security Commission on Artificial Intelligence, Final Report, March 2021, *https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf,* pg. 3.

[10] Varas, Antonio, et al. "Government Incentives and US Competitiveness in Semiconductor Manufacturing." Boston Consulting Group and Semiconductor Industry Association, September 2020, pg. 1.

[11] VerWey, John. "No Permits, No Fabs." Center for Security and Emerging Technology, April 1, 2022, *https://cset.georgetown.edu/publication/no-permits-no-fabs,* pg. 5.

sary.[12] The United States has rightly responded to Russian aggression by imposing sanctions designed to eliminate Russia's access to the technological goods that are critical to a diversified economy as well as Vladimir Putin's ability to project power. By blocking key technology imports—including semiconductors—in coordination with the European Union, South Korea, Japan, Taiwan, and others, the United States is bringing Russia's technological development to a screeching halt. The cautionary tale here is that we must continue to innovate and protect our supply chains, otherwise another nation may one day do the same thing to us. We must do whatever it takes to avoid a future scenario in which the United States can be cut off from key technologies by an authoritarian regime such as Russia or China.

Over the long term, we face an even greater risk of being surpassed technologically by China. This situation is unacceptable. We face a renewed era of great-power competition in which the primary battleground is "winner-take-all" technologies. We have never failed as a Nation to answer such a challenge, whether in war or in peace. I am encouraged this committee is taking a leadership role to address these urgent issues.

Fortunately, there are still good reasons for optimism. The threats to our national security and economic competitiveness that I have described are also creating opportunities for revitalization in the United States and allied nations. Addressing underlying market failures and securing supply chains over the long-term can be the catalyst to grow our domestic manufacturing industry, create high-paying jobs, and deepen our security and economic partnerships with allies around the world. I'll now offer a framework with four pillars for tackling these problems.

First, we must **redesign and reimagine U.S. manufacturing capabilities.** Bringing advanced and agile manufacturing home means producing goods closer to consumers. This transition would lower transportation costs while accelerating the product design and manufacturing cycle. What we need is public funding to act as a signal to investors, along with credits for trade and investment. These are important tools to unlock the necessary private capital. We also need to expand our talent pool at all levels of educational attainment, from knowledge workers to trade skills. Plumbers, electricians, and construction workers are all critical enablers for our R&D and capacity investments.

Second, we must invest across America to **promote promising tech hubs.** Currently, five coastal cities have generated 90 percent of the innovation sector's growth over the last decade.[13] But the next wave of innovation must be broader than Silicon Valley and include more technology hubs across the country. Samsung's announcement of a $17-billion semiconductor fabrication facility in Taylor, TX is an excellent example of what is possible.[14] The FinTech Innovation Hub under construction at the University of Delaware is another example of a promising center of excellence.[15] These are steps in the right direction toward creating new hubs but there is more work to do to unlock the potential of places like Delaware, Texas, and the American heartland.

Third, we must **disclose and internalize the risk of investing in authoritarian nations.** As the sanctions on Russia have shown, U.S. firms investing and operating in nondemocratic nations face material business risks. Wall Street is increasingly applying Environmental, Social, and Governance (ESG) assessments to guide investment decisions, identify growth opportunities, and identify material risks. Building on the ESG framework, I believe it is important to add "D" for "Democracy," or ESGD. Whether a nation is committed to democracy and a rules-based international trading order should shape firms' investment decisions. Firms should also report on resiliency as a measure of supply chain effectiveness for risk commit-

[12] Inboden, William, and Adam Klein. "A Lesson from the Ukraine War: Secure Our Semiconductor Supply Chains." *The Hill,* May 22, 2022, *https://thehill.com/opinion/technology/3494860-a-lesson-from-the-ukraine-war-secure-our-semiconductor-supply-chains/*.

[13] Atkinson, Robert, and Mark D. Muro. "The Case for Growth Centers: How to Spread Tech Innovation across America." Brookings, March 9, 2022, *https://www.brookings.edu/wp-content/uploads/2019/12/Full-Report-Growth-Centers_PDF_BrookingsMetro-BassCenter-ITIF.pdf,* pg. 23.

[14] Sayers, Justin. "Taylor Has Annexed 1,200-plus Acres for Samsung Site." *Austin Business Journal,* January 26, 2022, *https://www.kxan.com/news/texas/taylor-has-annexed-1200-plus-acres-for-samsung-site/;* "Samsung Electronics Announces New Advanced Semiconductor Fab Site in Taylor, Texas." Samsung, January 24, 2022, *news.samsung.com/global/samsung-electronics-announces-new-advanced-semiconductor-fab-site-in-taylor-texas.*

[15] Weir, Polly, et al. "UD Requests $6.5M from State for FinTech Fit-Out." *Delaware Business Times,* April 1, 2022, *https://delawarebusinesstimes.com/colleges-and-universities/ud-requests-6-5-mfrom-state-for-fintech-fit-out.*

tees. Ultimately, additional transparency would raise the cost of capital for investing in authoritarian nations and make investing in democratic nations more attractive.

Finally, we need to **deepen our engagement with our allies and partners** on emerging technologies and supply chains. We cannot become resilient on our own. Reshoring the entire supply chain for microelectronics—just one of several critical industries—would cost $1 trillion. We need to prioritize "near-shoring" and "friend-shoring" with our allies. As we work together with our allies on supply chains, we should also create new pathways for investing jointly in emerging technologies. Coalitions will be vital forums for pooling capital and creating new networks of democratic investors. The U.S.-EU Trade and Technology Council, the Quad Security Dialogue, and AUKUS will play a key role. In addition to increasing disclosure and vetting requirements for our competitors, we must also make it easier for trusted partners to invest in the United States. Just as we have developed TSA Pre-Check for prescreening fliers, we need a similar system to make it easier for allied investors to do business in the United States. Such a program would allow us to fast-track joint ventures, technology partnerships, and transactions with allies and like-minded democracies. These types of programs will make more capital available for re-shoring and near-shoring, while also building support for restricting truly sensitive technologies from being transferred to our competitors. In my role as a Commissioner on the National Security Commission on Artificial Intelligence, we submitted several recommendations to Congress and the President aligned with these goals.[16]

In conclusion, we must target solutions against three market failures: underinvestment in foundational technologies, an artificially attractive offshore investment environment, and high barriers to entry. We must reimagine U.S. manufacturing, invest in promising tech hubs across America, redirect capital from autocracies to democracies, and deepen allied engagement. As the subcommittee considers policy tools for improving supply chain resiliency and long-term technology leadership, you have an important role to play in improving our national security while generating economic growth, creating good jobs, and reinforcing the rules-based international system. The time to act is now.

QUESTIONS SUBMITTED FOR THE RECORD TO GILMAN LOUIE

QUESTION SUBMITTED BY HON. THOMAS R. CARPER

Question. How does a reimagined advanced manufacturing infrastructure in the United States change the way we think about supply chains?

Answer. The return of advanced manufacturing infrastructure back to the United States will generate immense economic and national security benefits. Manufacturing closer to the point of consumption reduces our reliance on long supply chains across thousands of miles that include competitors and risks of disruption. By bringing manufacturing back to the United States, we can also develop new digital tools and advanced clusters of infrastructure that will enable agile, tailorable, and scalable manufacturing.

This return will ultimately create a virtuous cycle of innovation and improve supply chain resilience. Economically, clusters of advanced manufacturing in regions across the country will expedite the product design cycle and accelerate the pace of innovation. In addition, shortening the distance between producers and consumers reduces both transportation costs and emissions.

To realize this vision requires public funding coupled with tax and trade credits. These actions are critical because investors will perceive them as positive signals that will unlock private capital. Simultaneously, steps must be taken to expand workforce skills at all levels. Opportunities from construction to operation and maintenance of facilities will require an increase in our talent pool across every region of the country and every educational attainment level. Building and operating advanced manufacturing facilities across the country will create good, high-paying jobs in growing industries.

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[16] National Security Commission on Artificial Intelligence, Final Report, March 2021, *https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf,* pg. 495.

Finally, the United States still requires cooperation with U.S. allies and our partners, even under a new paradigm for advanced domestic manufacturing. Cooperation and trade among allies and partners will lower costs and further increase resilience across all inputs to the supply chain.

QUESTIONS SUBMITTED BY HON. SHERROD BROWN

Question. In your opening testimony, you said that "five coastal cities have generated 90 percent of the innovation sector's growth over the past decade." You also acknowledged that there are "35 great technology centers between the coasts" that we should be investing in. Ohio is an example of the potential for growth-driving innovation in the American heartland. In January, for example, Intel announced a $20-billion investment to build a semiconductor plant in New Albany. This will leverage Ohio's expertise in manufacturing and the skilled workforce graduating from the State's colleges and universities.

Could you please explain and elaborate on the importance of investing in innovation between the coasts, in States like Ohio?

Answer. Competition and diversity are critical to U.S. economic competitiveness. The U.S. Government should foster an environment in which innovative startups in all parts of the country are empowered to develop new products, create new categories, and grow into global industry leaders. A thoughtful combination of policies and incentives can reduce the barriers to entry for startups, especially companies at the cutting edge of deep tech sectors. Such an approach would accelerate and expand innovation in industries critical to U.S. leadership.

As the National Security Commission on AI (NSCAI) highlighted in its final report, the current practice of clustering technology firms in regions like Silicon Valley has created dynamic and globally competitive industries. However, this trend has benefited some regions and demographics more than others. For example, there are untapped reservoirs of highly capable talent across the country in emerging centers of technological excellence. We have a massive opportunity to harness the best and brightest across America to lead the next generation of deep tech innovation. Existing regional clusters, outside of the coastal cities in places like Ohio, are on the cusp of becoming world-class innovation hubs. They are supported by public and private capital, incubators, university and lab networks, and shared tools and services. The creation of new jobs in a wider swath of the country will also help these hubs reach their potential and bolster U.S. economic competitiveness.

As a specific example, there is a tremendous opportunity in Ohio to capitalize on Intel's recent announcement, the expertise of the Air Force Research Laboratory, and the Ohio State University's world-class faculty in radiation-hardened microelectronics. Combining these key ingredients with government support, industry partners, and private capital is an ideal ecosystem to develop and scale the next generation of trusted radiation-hardened microelectronics for advanced defense systems.

Question. The House-passed America COMPETES Act, currently being conferenced, includes the CHIPS for America Act that I co-sponsored with Senator Portman. This bill will make a once-in-a-generation investment in American science, technology, and innovation.

How does the CHIPS for America Act help the U.S. preserve its competitive edge? Getting the CHIPS for America Act signed into law is critical to both addressing the current chip shortage and supporting American competitiveness in the future, and it's essential that we get this legislation to the President's desk for his signature as quickly as possible. Can you please share what a delay in passage of the CHIPS Act could mean for domestic semiconductor chip manufacturers and those industries that rely on its products?

Answer. Fully funding the CHIPS for America Act is a critical step toward bolstering our U.S. economic competitiveness and national security. Computational power is the foundation of the technology stack which underpins all emerging technologies. Therefore, microelectronics are at the heart of the competition to design, prototype, and scale advanced technologies, including AI, 5G, biotechnology, and advanced energy systems. The CHIPS Act provides an opportunity to increase domestic innovation by accelerating the pace of hardware development, lowering barriers to entry for hardware startups, and creating new talent clusters throughout the country. Implemented effectively, it will create a lab-to-fab pathway for new capabilities in microelectronics and related technologies while also increasing the resilience of the domestic semiconductor supply chain.

As Senator Cornyn has pointed out, we should act quickly to mitigate the risks we face today. If the U.S. were to lose access to the advanced semiconductors we import from East Asia in a single year, our GDP could shrink by 3.2 percent and we could lose 2.4 million jobs. In a scenario where the United States is cut off from advanced microelectronics, the estimated GDP loss would be $718 billion. Compared to the chip shortage last year, this could be roughly three times larger than the estimated $240 billion in lost U.S. GDP. In the event we no longer had access to advanced chips for 3 years, we would lose more than $2 trillion of U.S. GDP and over 5 million jobs. In total, this would mean a GDP loss of over 9 percent and an employment loss of 3.5 percent.

Even if the U.S. is not cut off from importing advanced semiconductors, our lack of domestic capabilities for prototyping and scaling microelectronics presents a risk to our long-term economic competitiveness. Innovation is the key to future capabilities and the United States faces a lab-to-fab capabilities gap. While I am pleased to see Congress pass CHIPS Act funding, passing this legislation is just the beginning. We must ensure the money is spent swiftly and wisely. We must utilize this funding to target the most strategically important sectors of the microelectronics industry and unlock private capital to further leverage U.S. capital markets.

QUESTIONS SUBMITTED BY HON. TODD YOUNG

Question. Over the years, China has dominated the market for rare earth elements, creating a global over-reliance on one country for refined products. As you can imagine, this creates major pitfalls as it relates to our national security.

In your opinion, what strategies should the U.S. be focused on to reinvigorate our supply chain for critical minerals in order to prevent a single point of failure should China economically weaponize its share of the market?

Answer. Rare earths and related supply chain inputs such as noble gasses are the building blocks for developing advanced technologies. Without resilient access to these key supply chain inputs, the United States is allowing the future of its technological development to be controlled by other nations. The United States needs a multi-pronged strategy to reinvigorate our supply chain for critical minerals focused on friend-shoring, reshoring, innovation, and domestic stockpiling.

In the short term, we must work with our allies and partners to ensure more resilient supply chains for rare earth mining, processing, and magnet production in nations outside of China. Allied nations such as Australia is home to mining industry leaders and we should deepen our cooperation in strategically important areas. Over the longer term, we should also prioritize onshoring rare earth mining and processing. However, onshoring will take time, which highlights the need for friendshoring in the near term.

China's substantial market share in rare earth minerals extraction and processing is partly due to its willingness to pay the high environmental costs associated with this industry. With greater Federal support for innovation and R&D in this sector, the U.S. and its allies can work towards cleaner approaches to mining and processing that would make domestic mining more attractive and environmentally sustainable. R&D at all stages of the mining value chain could also enable smart mining and processing for rare-earth deposits in the United States, including Alaska, Nevada, and Arizona. For example, innovative new techniques for surgical mining and multiple extractions could enable every molecule to be used rather than extracting and processing a single target with the rest lost as waste.

Finally, as an immediate response while we develop new techniques, we should launch an urgent domestic stockpiling effort to hedge against the risk of conflict or a decision by China to deploy its economic leverage in rare earth minerals. The United States government should move out now to establish a stockpile of rare earth minerals for each Department of Defense major defense acquisition program by 2025.

Question. Currently, there is no certification scheme, or unified global standards, for rare earth minerals. As a result, producers have to navigate a patchwork of requirements.

With this in mind, do you believe there's a use for advanced technology—such as blockchain—to track rare earths from mining to end-of-life?

Answer. The lack of standards and data for rare earth minerals makes it difficult for firms and the U.S. Government to match supply and demand while also identifying and mitigating supply chain risks. Advanced technologies, such as the blockchain, could help with tracking rare earth minerals. But advanced technologies are only as good as the data they have available to process. With this in mind, the U.S. Government should begin with additional disclosure requirements for rare earth minerals. For example, contractors delivering systems to the U.S. military should be required to disclose the origins of their rare earth magnets.

Armed with better data sources and standards, tools such as the blockchain could enable rare-earth minerals to be "fingerprinted" at the point of origin. This would allow them to be tracked throughout their lifecycle and confirm they have not been altered or contaminated.

In addition, the U.S. Government should work closely with allies and partners to develop and coordinate global standards for rare earth minerals that allow greater visibility into the supply chain. A clearer system of global standards will also help to root out unfair trade and labor practices around the world.

Question. The Fourth Industrial Revolution—or Industry 4.0—refers to a new phase that focuses heavily on machine learning, automation, interconnectivity, and real-time data.

Given your experience with deep technologies and AI, what are the most influential technologies of Industry 4.0 for creating more responsive and resilient supply chains?

Answer. The National Security Commission on AI highlighted the risk the United States faces from losing our edge in microelectronics, AI, 5G, biotechnology, advanced materials, and quantum. We cannot take this risk as our nation's technological advantage is a strategic advantage. We are also on the cusp of a new wave of innovation that will create new industries and categories of good jobs. Companies are reinventing supply chains, governments are increasing frontier tech funding, and disruptive technologies are emerging from labs across the country. Each critical emerging technology sector—microelectronics, AI, 5G, biotechnology, advanced materials, and quantum—has overlapping but unique supply chains. In formulating a comprehensive approach to responsive and resilient supply chains for Industry 4.0 technologies, we should consider the lessons of the U.S. microelectronics industry. Fortunately, we are preparing to revitalize the domestic microelectronics industry with the support of CHIPS Act funding. A thoughtful, coordinated approach to each emerging sector now would allow us to put in place incentives for U.S. and allied industries to maintain strategic supply chain nodes domestically. Acting now will help prevent a situation where we are forced to reshore strategic sectors in the future after they have already shifted offshore when the risks and costs are higher.

Question. Do you believe the passage of the U.S. Innovation and Competition Act would encourage the adoption of Industry 4.0 technologies?

Answer. The U.S. Innovation and Competition Act is a critical piece of legislation for the United States and our allies to achieve a leadership position in Industry 4.0 technologies. Many Industry 4.0 technologies feature winner-take-all dynamics that require us to move quickly or risk losing out to committed competitors such as China.

Achieving the promise of Industry 4.0 technologies also depends on more closely linking the physical and the digital worlds using advanced technologies, specifically the Internet of things (IoT), AI, robotics, drones, autonomous vehicles, 3D printing, cloud computing, nanotechnology, and more. Combined, these capabilities enable us to communicate, analyze, and execute decisions faster, more flexibly, and more intelligently.

With the support of CHIPS Act funding, reshoring domestic microelectronics innovation will enable the United States to develop and scale Industry 4.0 technologies far more rapidly. Combining advanced manufacturing with digital engineering and digital twin capabilities generated by AI and high-performance computing will also unlock a new wave of innovation across Industry 4.0 technologies. To encourage the widest adoption of Industry 4.0 technologies, we should focus on democratizing the process for designing, manufacturing, and scaling new products. AI has the power to dramatically simplify product design, empowering humans without deep engineering expertise to focus on the creative elements of the process while algorithms tackle the technical aspects. Broadening access to the tools of innovation will also ensure all Americans enjoy the benefits and jobs generated by Industry 4.0 technologies.

Question. For months, agencies have focused on a top-down review of our supply chains, but I believe we need something more permanent, more comprehensive, and more accessible.

As I have said before, I believe this can be achieved through aggregated demand mapping for industries critical to our economic health and national security.

Included in the trade title of the U.S. Innovation and Competition Act, I've authored a provision to establish a voluntary database and online toolkit to support the identification of suppliers of certain inputs and/or finished products in the U.S. and abroad.

From a national security perspective, can you explain the merits of implementing a voluntary database for supply chain mapping?

Answer. A voluntary database with shared standards for supply chain mapping is a critical first step toward identifying and mitigating risks, especially in critical sectors such as technology, health care, and defense. A voluntary database would also help the U.S. Government expand the data available for supply chain analyses using machine learning and other advanced analytic techniques. It is also important that the U.S. Government develop broad standards and shared interfaces for supply chain reporting, thereby allowing easier access among government and industry stakeholders who can identify potential issues. Working with the private sector, the U.S. Government has an opportunity to develop and deploy new tools and analytic techniques to identify high-risk nodes in its complex and rapidly evolving supply chains. This is already an area of promising investment in the commercial sector, especially in light of the business challenges and supply chain disruptions created by COVID–19.

Even with the most advanced analytic tools, our understanding of the supply chain is only as good as the data available. Today supply chain data is not easily accessible, in part because it is not transparently reported and lacks standard interfaces. The U.S. Government would benefit from greater awareness of the vendors and sub-vendors supplying critical goods in a range of product categories. Without visibility into the supply chain, the government and Nation as a whole will be unable to adapt to disruptions of all types, from natural disasters to interference by other nations.

Moving beyond voluntary reporting, the National Security Commission on AI recommended that the U.S. Government consider revising the Defense Federal Acquisition Regulation Supplement to require additional disclosure and reporting requirements on the location of manufacturing centers for firms supplying critical systems and subsystems for the U.S. military. Additional disclosures would enable the U.S. Government to better identify vendors and sub-vendors in nations that pose risks to the United States. Combined with broader voluntary reporting, this increase in transparency would empower officials to weigh the risks and respond more effectively before unexpected supply chain disruptions occur.

Prepared Statement of Scott N. Paul, President, Alliance for American Manufacturing

Chairman Carper, Ranking Member Cornyn, and members of the subcommittee, on behalf of the Alliance for American Manufacturing, thank you for the opportunity to testify today on an issue of vital importance to our economic and national security: strengthening the resiliency of our supply chains to respond to new realities and the chaotic events of the past several years.

AAM is a non-profit, non-partisan partnership formed in 2007 by some of America's leading manufacturers and the United Steelworkers. Our mission is to strengthen American manufacturing and support new private-sector jobs through smart public policies. We believe that an innovative and growing manufacturing base is vital to America's economic and national security, as well as to providing good jobs for future generations. AAM achieves its mission through research, public education, advocacy, strategic communications, and coalition building around the issues that matter most to America's manufacturers and workers.

DOMESTIC SUPPLY CHAIN RESILIENCY IS AN ECONOMIC AND NATIONAL SECURITY PRIORITY

The last several years have made all Americans painfully aware of the tragic inadequacy of our deteriorated industrial capabilities and broken supply chains for respirators, ventilators, medicines, and other products essential for pandemic response. The pandemic and its economic shock waves also exposed a dangerous reliance on global suppliers for many other consumer and commercial products—revealing that the United States is ill-equipped to produce enough semiconductors, automobiles and parts, building materials, and consumer goods for everyday life, let alone the quantities needed to address a future emergency.

The frailty of on-demand global supply chains and our utter reliance on them has left us dangerously exposed during an international health emergency and unprepared for future shocks. These disruptions should be viewed through the lens of years of public policy decisions that both facilitated, and in some cases actively encouraged, the offshoring of domestic production and critical supply chains.

As a result, over 90,000 American manufacturing facilities have closed their doors since the late 1990s. China surpassed the United States as the world's largest manufacturing nation in 2010, and in 2019 held nearly 29 percent of global factory output while the U.S. share had shrunk to 17 percent.[1] With our high domestic consumption rates, this means imports have replaced domestic production throughout our supply chains at an alarming rate. We imported $1.2 trillion in goods in 2000. By last year, that total surged to $2.8 trillion, a 133-percent increase, while our GDP grew over the same period at a slower (115 percent) rate. Not only has this replacement led to the loss of 5 million good, middle-class jobs and devastated communities across our Nation, it has left us increasingly dependent on imports, often from adversarial countries like China and Russia, for everything from consumer goods and advanced technology products to lifesaving personal protective equipment.

For example, even though the United States generally accounts for 20 percent of the world's consumption, our global market share for making things falls woefully short of that. We manufacture about 10 percent of electric vehicles, 7 percent of lithium-ion batteries, 12 percent of semiconductors (down from 37 percent in less than a generation), and 4 percent of printed circuit boards. There is only one major domestic manufacturer of electrical steel needed to build out our energy grid, and there are many other examples of greatly diminished capacity in critical industries such as machine tools.

To address these supply chain disruptions, as well as anticipate and prepare for future crises, we must acknowledge how we got here and what went wrong. The pandemic has exposed in rather dramatic fashion that years of flawed tax, trade, procurement, and other economic policies have put the United States in a perilous position of over dependence on imports. As the United States looks to address supply chain challenges, we must move away from the status quo approach that fosters continued and growing over reliance on imports, and instead focus on efforts that increase our own production capabilities. While we recognize that the United States has important security and trade relationships with our allies, and we can and should utilize those where it makes sense, the primary solution should not be to double down on imports or more globally integrated supply chains. Our vulnerabilities reflect an outdated notion of the benefits of hyper-globalization, where our consumers, workers, domestic businesses, and our national security suffer. We must break the vicious cycle of implementing policies that reward imports over domestic production.

Experts Have Been Warning That Offshoring and Reliance on Imports is a National Security Risk

The unfortunate, yet entirely predictable, reality we now face is that decades of offshoring have contributed to ongoing supply chain shortages and risks that continue to hinder growth and have forced some factories to go idle. This is an alarming economic and national security issue that experts have predicted for years.

[1] "China Is the World's Manufacturing Superpower," Felix Richter. Statista. May 4, 2021. Accessed via weblink: *https://www.statista.com/chart/20858/top-10-countries-by-share-of-global-manufacturing-output/*.

- In a 2012 report, entitled "Preparing for 21st Century Risks,"[2] former Department of Homeland Security Secretary Tom Ridge warned that the United States was at risk of being unprepared to recover from disaster—whether it was terrorism, natural disaster, cyber disruption, or pandemic influenza—due to its dependence on other countries for critical manufacturing. Governor Ridge argued that at the root of the problem was an increasing reliance on foreign suppliers for products needed in the wake of catastrophic events. His report highlighted case studies on the domestic steel industry, our water infrastructure, and the commercial power grid which, because of its dependence on foreign sources, has reduced the number of domestic producers of electrical steel used in transformers to one. Governor Ridge warned that hostile trading partners may make a deliberate choice to not supply needed products, materials or technologies during a time of domestic crisis—citing U.S. reliance on imports as a national security risk.
- In a 2013 report, entitled "ReMaking American Security,"[3] Brigadier General John Adams, U.S. Army (Ret.) found that U.S. national security is at-risk due to our military's reliance on foreign nations for the raw materials, parts, and products used to defend the American people. He examined the risks and vulnerabilities associated with 14 defense-critical natural resources, inputs, and components—including semiconductors and rare-earth minerals—and presented recommendations to help mitigate the risks to our national security posed by the pervasive outsourcing of our defense industrial base.

Regrettably, these reports proved prescient, and the authors' warnings and recommendations were largely ignored. It took the COVID–19 pandemic to bring these concerns to the national spotlight, as the one-two punch of our gutted domestic supply chains and over reliance on foreign sources are impacting Americans in countless ways. We must be better prepared for the next crisis, and that requires taking bold action, starting right away. Moreover, the United States has a once-in-a-generation opportunity to take concrete steps to strengthen domestic manufacturing and rebuild critical supply chains, from semiconductors to face masks to batteries to solar panels.

We must also prioritize the expansion of all stages of manufacturing in the United States, including upstream inputs that are critical for the completion of a final product assembly or manufacture. Too often our policies overlook the components, parts, and upstream raw materials fundamentally necessary to produce a given product. In a future emergency, relying only on end products that are assembled or manufactured in the United States from all or mostly imported products is not a solution to the problems that have plagued our economy over the past several years. In fact, such approaches will only set us up to repeat this failure.

We have seen repeated failures affecting Americans in countless ways. Just this month, press reports highlighted that cancer patients and others needing imaging for their care and survival were dependent on contrast materials coming from China that are now in short supply.[4] We have learned in the past that a large number of components of the pandemic drug Remdesivir are produced in China. We have seen China threatening to weaponize supplies of rare earths to advance the CCP's political aims. These are but a few examples of the dangerous dependence that we now face.

Rebuilding supply chains will chart a course for a stronger future and create millions of new, well-paid jobs along the way. It's time to put an industrial policy in place to supercharge domestic manufacturing and grow supply chains.

AAM SUPPORTS A POLICY FRAMEWORK FOR MORE SECURE, RESILIENT, AND REVITALIZED SUPPLY CHAINS

We must acknowledge that supply chain resiliency is not a challenge that the private sector alone can fix. There is an appropriate role for government to provide leadership, coordination, a supportive policy framework, and funding directed to *domestic* production expansion where the vulnerabilities are most critical. This is not

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[2] *https://www.americanmanufacturing.org/wp-content/uploads/2017/02/Homeland-Security-Report.July23.2012.pdf.*

[3] *https://docs.house.gov/meetings/FA/FA14/20130725/101216/HHRG-113-FA14-Wstate-AdamsB-20130725.pdf.*

[4] "Hospitals ration CT scans, other procedures over shortage of contrast dye," Elizabeth Chuck. NBC News. May 18, 2022. Weblink: *https://www.nbcnews.com/news/us-news/shortage-contrast-dye-hospitals-ration-ct-scans-procedures-rcna29379.*

an easy task, but it is one that the American people demand because it is critical to our future security and prosperity.

Enactment of the Bipartisan Innovation Act (USICA/COMPETES Act)

We support a swift and successful conclusion of conference committee work on competitiveness and innovation legislation that has separately worked its way through the House and Senate. Merging the most attractive provisions from each of these bills offers the opportunity to create a long-overdue policy framework for supply chain security, resiliency, and revitalization.

AAM has outlined our conference priorities in a letter to House and Senate leaders,[5] but please allow me to outline several topics that are particularly important to today's hearing.

- *Strengthening U.S. investments in critical industries.* Conferees should prioritize CHIPS Act funding to strengthen domestic semiconductor manufacturing and other Federal assistance to sustain and expand manufacturing research, development, and deployment efforts through the network of institutes and State-level extension partnerships that are crucial to inventing, scaling, and making the next generation of products here in America.
- *Supply chain resiliency fund.* Similarly, the supply chain resiliency fund in the House bill will act to fill gaps in our Nation's critical industrial capabilities. I would caution, however, that critical supply chains strengthened by Federal dollars should be those here in America, not offshore. Loans, loan guarantees, grants, and other forms of assistance awarded as part of a supply chain resiliency fund should be predicated on investments being made in the United States with construction activities giving preference to goods produced by American workers. American taxpayers want their hard-earned tax payments used to promote American jobs.
- *Trade enforcement.* AAM supports strengthening trade enforcement tools to ensure that our efforts to secure critical supply chains are not undermined by unfair trade practices from China, Russia, and other countries. Specifically, we urge inclusion of the Leveling the Playing Field Act 2.0[6] in the final conference report. Several members of this subcommittee—including Senators Brown, Portman, Casey, and Young—are sponsors of this timely legislation.

  Within the trade title, AAM also supports efforts to reform the current *de minimis* policy and opposes language that would circumvent and undermine USTR's section 301 exclusion process.
- *Screening outbound investments in critical sectors.* AAM supports the National Critical Capabilities Defense Act—sponsored by Senator Casey and Ranking Member Cornyn—to establish an outbound investment review process designed to avert the offshoring of production capacity to foreign adversaries in critical U.S. sectors. This legislation—backed up by a 2021 recommendation of the bipartisan, independent U.S.-China Economic and Security Review Commission—merits enactment.

Additional Policy Initiatives

More broadly, there are some guiding principles that we believe Congress and the administration would be wise to follow as a new policy framework for supply chain resiliency is developed.

Federal dollars and other forms of assistance should not be available to entities that are owned by or affiliated with the foreign government or militaries of countries that that are uncooperative or pose risks to our economic and national security interests. We must confront the reality that China's government has used and will continue to use global disruptions, including the pandemic, to advance its own economic and geopolitical interests. In 2020, an official in China remarked that "it is possible to turn the crisis into an opportunity—to increase the trust and the dependence of all countries around the world of 'Made in China.'"[7]

Unfortunately, Congress neglected to implement sufficient guardrails as part of previous COVID relief packages. As a result, *The New York Times* reported that

[5] March 23, 2022, AAM letter regarding UCISA/COMPETES priorities. Weblink: *https://www.americanmanufacturing.org/wp-content/uploads/2022/04/AAM-letter_USICA-_COMPETES-Conference.pdf.*

[6] S. 1187—Eliminating Global Market Distortions To Protect American Jobs Act of 2021.

[7] "Opinion: How China is planning to use the coronavirus crisis to its advantage," Josh Rogin. *Washington Post,* March 16, 2020.

more than 125 China-owned or -invested companies received hundreds of millions of dollars in loans from the Paycheck Protection Program (PPP)—many of them state-owned with concerning links to China's military.[8] The PPP program was created at the start of the COVID–19 shutdowns to keep America's small businesses afloat and keep workers employed during this unprecedented crisis—not to support the CCP's ambitions.

The reporting was based on research by Horizon Advisory,[9] which noted:

> These PRC entities span state-owned enterprises (SOEs); companies with ties to China's military and military-civil fusion programs; companies that the U.S. Government has identified as national security threats; companies complicit in China's genocide against the Uighur minority in Xinjiang; and media outlets owned by, or that take direction from, the CCP.
>
> The identified recipients linked to PRC-based ownership span critical and strategic industries including aerospace and defense; pharmaceuticals and medical technology; legacy and emerging automotive manufacturing; advanced manufacturing and manufacturing components (*e.g.,* semiconductors, robotics); telecommunications; financial technology; entertainment; and media.

Congress should prioritize domestic content in our infrastructure, procurement, and supply chain rebuilding efforts. Federal financial assistance should be conditioned on the use of iron, steel, manufactured products, and construction materials that are produced in the United States by America's workers.

Reinvesting tax dollars here at home creates American jobs, invests in goods produced under strong environmental and workplace safety standards, and protects our economic and national security. Without these policies in place, predatory foreign governments would be free to undercut domestic production with dumped and subsidized, environmentally-unfriendly, and substandard products—bypassing American workers and sending U.S. tax dollars offshore rather than reinvesting in the United States.

We applaud Senators Brown and Portman for their leadership in enacting the Build America, Buy America legislation as part of the recent Bipartisan Infrastructure Law. Congress now has an important role to play in seeing that Federal departments and agencies effectively implement this policy.

It is critically important that our trade policies be closely aligned and coordinated with supply chain resiliency efforts. To create the market conditions that allow for the incubation of new technologies into domestic production, manufacturers should have the confidence that they will not be wiped out by a surge of subsidized imports from foreign state-owned enterprises seeking to capture our markets. U.S. companies and American workers are among the most efficient, hardworking, and capable in the world, but even they cannot compete against predatory foreign governments determined to dominate supply chains and use them as a weapon of foreign coercion. We need to enforce our trade laws to ensure a level playing field for American workers and manufacturers.

Congress and the administration must not return to flawed trade policies. AAM supports smart global engagement in the Indo-Pacific to advance the rights, interests, and futures of American manufacturing and its workers. Yet, as the United States commences Indo-Pacific Economic Framework (IPEF) discussions to deepen economic engagement within the context of the overall Indo-Pacific Strategy, we cannot return to the flawed trade and other policies that created our dangerous reliance on global suppliers or that will exacerbate the existing imbalanced trade relationships with many of the Indo-Pacific countries. The United States must learn from its mistakes, not double down on them. The United States is long overdue for a new and innovative approach to trade and economic cooperation. It is both possible and desirable to create a trade and economic policy framework to support a resurgent, domestic manufacturing base.

It should be noted that the United States already has robust engagement in the Indo-Pacific region with multiple Free Trade Agreements, alternative section 232 arrangements with multiple countries, more than $1 trillion in foreign direct investment in the region, and various defense and security arrangements. Regrettably, the

[8] "U.S. Small Business Bailout Money Flowed to Chinese-Owned Companies," Alan Rappeport. *New York Times.* August 2, 2020.
[9] *https://www.horizonadvisory.org/paycheckprotection.*

United States also has substantial trade deficits with a handful of key participants. The United States has massive 2021 trade deficits in the region, including $90 billion with Vietnam, $60 billion with Japan, $41 billion with Malaysia, $35 billion with Thailand, and $33 billion with India.

So then, the key question for IPEF is determining the goals and objectives for future engagement in the region. As I write this testimony, information available on the various issues within a potential IPEF is simply in development. We do not know which countries will ultimately participate, whether additional countries will be able to join via "docking" provisions in the future, whether the framework will include market access commitments now or in the future, the role of American manufacturing and its workers, and whether enforceable workers' rights and corporate accountability will apply across all modules.

The IPEF should not under any circumstances extend benefits, direct or indirect, to countries like China that are not a signatory. In fact, IPEF participants should be prepared to join the United States in confronting China's predatory practices.

While many argue that the IPEF represents an opportunity to address supply chain challenges, we must not move away from the lessons learned during the COVID–19 pandemic—that is, that the United States must prioritize reshoring U.S. supply chains. IPEF cooperation that shifts production or sourcing decisions away from China may be a worthwhile endeavor but is nevertheless insufficient without concurrent efforts to domestically produce goods and materials necessary for our economic, health, and national security. Merely reshuffling offshore supply chain continues to leave our Nation overly reliant on foreign production and susceptible to shocks from geopolitical or other events. The IPEF represents an opportunity to break the vicious cycle of adopting trade and economic policies that reward imports over domestic production and American workers.

Congress and the administration should proceed cautiously with respect to altering or removing existing trade enforcement actions. Any proposals to ease imports of finished goods or inputs should be carefully examined to ensure that we are not doubling down on risky global supply chains and making it more difficult to reshore them or undermine existing producers. While an accessible and transparent exclusion process is essential for trade enforcement actions, unwarranted tariff relief may very well signal the demise of a U.S. company that is seeking to establish a market foothold or one that has reinvented itself to fill gaps in our domestic supply chains.

China has not earned the right to additional U.S. market access. In fact, China has ramped up its industrial subsidies, strengthened its state-owned enterprises (SOEs), continued its horrific genocide of ethnic minorities, taken the side of Vladimir Putin, broken its promises on Hong Kong, and become more aggressive in the South China Sea and in its threatening posture towards Taiwan. Despite its empty promises, Beijing continues these egregious activities to the detriment of U.S. companies and American workers. If Beijing continues to disregard its commitments under the modest Phase One agreement, the United States should pursue its enforcement rights under that deal.

Senators, a brighter future for supply chains and manufacturing is possible. We see examples of where public policies have invited new investments over the past several years. Steel and aluminum industry capital investment in America has boomed since 2018. An electric vehicle charging network company based in Australia is establishing a factory in Tennessee thanks in part to new public investments and domestic preference rules. Semiconductor makers Intel, Texas Instruments, TSMC, GlobalFoundries, and others have announced new plants in America, based in part on CHIPS Act support. Ford, General Motors, and other automakers and partners are establishing EV production and battery plants in the United States rather than overseas in part because of USMCA domestic content rules, other existing trade policies, and public-private partnerships to build out charging networks. Overall, we've seen robust manufacturing job growth during this recovery. Just a generation ago, some economists predicted none of this—large new factories or surges in manufacturing jobs—would ever be possible again thanks to automation and import competition.

But we should not pretend that a brief focus on supply chains will right the ship. According to a new CSIS study, China spends 1.73 percent of its GDP on identifiable industrial subsidies, or $407 billion exchange rate weighted equivalent. By contrast, the U.S. spends 0.39 percent for this purpose. The proposed CHIPS Act investment is exponentially smaller than what China is prepared to invest in semiconductors: $150 billion. We don't need to spend that much, but we do need to be much more intentional about policies to strengthen supply chains for the long haul.

Public policy support for American manufacturing is crucial to tackling supply chain challenges, and we look forward to working with you to ensure a better future. Thank you for the opportunity to testify at today's hearing.

QUESTIONS SUBMITTED FOR THE RECORD TO SCOTT N. PAUL

QUESTIONS SUBMITTED BY HON. SHERROD BROWN

Question. Dexstar, a company in Ohio, once told me that keeping their company running while competing with unfair dumping felt like what happens when you don't keep up with the maintenance of your car. You can get away with it for a while—but eventually if you ignore it for too long, your car breaks down. If you don't invest in your workers, they'll leave. If you don't invest in your facilities, they start to fall apart. If you don't invest in new technology or innovation in your field, you'll fail to keep up.

It's nearly impossible for industries that are constantly battling unfair dumping to successfully compete. We've seen the importance of trade enforcement across dozens of industries, from tires, to steel, to paper making, to washing machines and other household electronics. Trade remedy laws need to keep up with the ways that countries try to cheat the rules.

What are some of the ways that countries attempt to circumvent antidumping and countervailing duties (AD/CVD)? One method of circumvention involves moving a company's operations to new country in order to evade trade rules, even when the product is mostly made in the original country. Why is it important for our trade remedy laws keep up with enforcement of strong circumvention provisions?

Answer. Thank you for bringing attention to circumvention of antidumping and countervailing duty (AD/CVD) orders. When domestic manufacturers and their workers are confronted with circumvention of trade enforcement actions, it is truly insult upon injury because injury, lost time, and significant resources have already been incurred to secure relief in the first place. When circumvention occurs, these domestic manufacturers and workers are forced to again spend additional time and resources to reestablish a level playing field for their operations and workers.

As you note in your question, there are a variety of methods used by foreign producers—and in some cases in conjunction with unscrupulous importers—to circumvent AD/CVD orders, including the relocation or coordination with third parties of downstream finishing, processing, and often lesser activities to a new country—even when the product itself is mostly or even entirely made in the subject country.

Moreover, these egregious efforts often involve foreign governments directly aiding in circumvention. The use of subsidies by China and other countries to enable these circumvention tactics is especially concerning as it demonstrates a concerted effort by foreign governments to undermine American manufacturing, its workers, and our trade enforcement tools.

It is critical that Congress provide new authorities and tools to the Department of Commerce to address these increasingly sophisticated, yet blatant, circumvention tactics. If we do not immediately address this issue, our efforts to revitalize U.S. manufacturing will face massive obstacles as it becomes more difficult for the incubation of new technologies into domestic production. Companies will be reluctant to invest in the United States for fear of being wiped out by a dumped and subsidized imports with seemingly no available opportunities to secure meaningful and sustainable relief.

AAM is a strong supporter of the Eliminating Global Market Distortions To Protect American Jobs Act (S. 1187/H.R. 6121), also known as Leveling the Playing Field Act 2.0. We appreciate your leadership on this issue and urge passage of this bipartisan measure.

Question. Do you have any additional recommendations for updating our trade remedy laws in a way that centers American workers and consumers?

Answer. Congressional action is urgently needed to address the systematic unfair trade practices of China and many other countries who promote market distorting policies designed to undercut American workers and U.S. production by passing the Eliminating Global Market Distortions To Protect American Jobs Act (S. 1187/H.R.

6121), also known as Leveling the Playing Field Act 2.0. This bipartisan legislation modernizes our antidumping and countervailing duty (AD/CVD) trade remedy laws to keep up with new and evolving unfair trade tactics used by foreign competition to seize U.S. market share.

Moreover, it is imperative that Congress act quickly to reauthorize Trade Adjustment Assistance (TAA) for these same workers who experience job losses or wage reductions resulting from unfair and other trade disruptions. TAA benefits are already disrupted for workers who experience layoffs after June 30, 2022.

Establishment of an outbound investment review process would warn of and avert the offshoring of production capacity to foreign adversaries in critical U.S. sectors. Congress should pass the bipartisan National Critical Capabilities Defense Act (S. 1854/H.R. 6329) as stand-alone legislation or as part of the National Defense Authorization Act (NDAA).

Congress should make common-sense reforms to our flawed *de minimis* policy that as currently structured invites duty evasion and systematic abuse of Customs enforcement by passing the Import Security and Fairness Act (H.R. 6412).

Question. U.S. trade and tax policies over the last 30 years have incentivized the movement of manufacturing capabilities and risks offshore in exchange for efficiency and profits. As a result, global trade is increasingly integral to supply chains. The Supply Chain Resiliency Act I introduced last November would help ease supply chain bottlenecks and decrease American reliance on long supply chains. In response to questions from Senator Whitehouse, a co-sponsor of my legislation, you expressed support for the establishment of an Office of Supply Chain Resiliency at the Commerce Department—something the Supply Chain Resiliency Act would provide for.

How would an Office of Supply Chain Resiliency help to better address supply chain vulnerabilities and decrease American reliance on long, off-shore supply chains?

Answer. An Office of Supply Chain Resiliency is an important component of creating a long-overdue policy framework for supply chain security, resiliency, and revitalization. This proposed office would have the ability to work with the private sector to coordinate and develop standards and best practices that encourage reliance on existing domestic capabilities. By mapping existing current supply chain vulnerabilities, it would also enable targeted, proactive policy actions to incentivize U.S. investments that increase the resiliency of critical supply chains.

To be effective, the Director of the proposed Supply Chain Resilience and Crisis Response Office, in setting standards and issuing guidance, should prioritize the expansion of all stages of manufacturing, including upstream inputs that are critical for the completion of a final product assembly or manufacture. Too often our policies overlook the components, parts, and upstream raw materials fundamentally necessary to produce a given product. In a future emergency, relying only on end products that are assembled or manufactured in the United States from all or mostly imported products is not a solution to the problems that have plagued our economy over the past 2-plus years. In fact, such approaches will only set us up to repeat this failure.

Prepared Statement of Douglas L. Potvin, Chief Financial Officer, Trinity Logistics, Inc.

Chairman Carper, Ranking Member Cornyn, and members of the Finance Subcommittee on International Trade, Customs, and Global Competitiveness and other members of the Finance Committee, thank you for the opportunity to speak with you today regarding how policymakers and business leaders are addressing the existing backlogs in our supply chain in the short term and build more resilient supply chains in the long term. I appreciate the invitation and opportunity to share Trinity Logistics' perspective on these significant issues facing international and domestic logistical supply chain issues.

My name is Doug Potvin; I am the chief financial officer of Trinity Logistics, Inc., a third-party logistics company, headquartered in Seaford, DE and with regional services centers located in Florida, Minnesota, Iowa, Missouri, Texas, and Arizona, and with agent offices located throughout the United States, Canada, and Mexico. I am privileged, honored, and humbled to be here today representing Trinity Logistics, our association, the Transportation Intermediaries Association (TIA), and the entire third-party logistics industry that we serve.

Trinity Logistics is a Burris Logistics Company, offering people-centric freight solutions®. Our mission is to deliver creative logistics solutions through a mix of human ingenuity and innovative technology, enriching the lives of those we serve.

For more than 40 years, Trinity Logistics has been arranging freight for businesses of all sizes, offering truckload, less-than-truckload (LTL), warehousing, intermodal, drayage, expedited, international, and technology solutions. We serve as the intermediary solving the logistical needs of our shipper customers by sourcing capacity from our motor carrier and vendor partners. We are proud to report today that this past year, we generated over $1B in revenue, arranged over 500,000 shipments nationwide, and offered over 350 individuals full and part time jobs. We are truly a proud Delaware company.

Trinity is currently recognized in the top 25 freight brokerages on Transport Topics' Top 100 Freight Brokerage List, in the Top 100 3PLs list by Inbound Logistics, and is named a top company for women to work for, in transportation, by Women in Trucking.

From Charles Dickens's novel *A Tale of Two Cities,* "It was the best of times, it was the worst of times, it was a season of Light, it was the season of Darkness, it was the spring of hope, it was winter of despair. . . ." Over the last 2 years, the same can be said for the international's supply chain, and from our perspective and closer to home, the domestic transportation industry. In March of 2020, as both domestic and international countries shuttered businesses (with varying coordination for closings or determination of essential businesses—including the shuttering of port cities and operations in China) and the fact that most consumers were at home facing an uncertain future, freight volumes plummeted. Motor carrier capacity increased dramatically due to the steep drop of goods moving and the transportation market saw prices to motor carriers fall. In fact, Trinity Logistics was mentioned on a Facebook post that stated we were earning an average gross margin over 60 percent, which was simply wrong. In addition, a small number of motor carriers came to Washington, DC and demanded rate transparency, wanting to know the rates of what all 3PLs charge shippers. Interestingly, after businesses, ports, and countries opened up, freight volumes began to skyrocket, available motor carrier capacity became scarce, rates paid to the motor carriers increased to reflect the change in the market conditions, the demand for rate transparency went silent. We believe if rate transparency is granted to motor carriers, it would cause even more disruption in the supply chain. Pricing would no longer be based on the free market. The pricing in our industry is driven by market conditions, supply and demand on a large scale. No entity, on either side of the equation, has enough market share to drive rates. In addition, each shipment has its own variables and considerations to take into account, including everything from available capacity in the various regional markets, lead time for products, dwell time at the shippers and consignees, commodities needing moved, and the type of equipment needed. All of this happens real time to ensure goods get to market, keeping our economy moving forward.

Unfortunately, due to the closing of businesses and trade ports, a surge in consumer spending on goods versus services, a lack of motor carrier drivers, and several other reasons, the regular and consistent movement of equipment has become largely imbalanced, hindering the transport of goods globally and domestically. Due primarily to the massive lockdowns in China including the closing of port operations, we have heard that talk of near shoring some of those manufacturing activities here in the United States, Canada, and Mexico and reducing our customer's reliance on activities an ocean away. Trinity Logistics stands ready to assist in sourcing available capacity to ensure those new investments will have the necessary equipment to meet their logistical needs.

Now more than ever, the role of the third-party logistics professionals has become more valuable. Companies like Trinity and the other 28,000 licensed property brokers are working overtime to ensure that essential goods continue to be delivered in an efficient manner to meet our customers and consumer's needs. Our industry, along with motor carriers, are a main component of why during this crisis and disruption, the supply chain bent but never broke.

Trinity Logistics applauds the U.S. Senate's and House of Representatives' bipartisan passage of the Infrastructure Investment and Jobs Act (IIJA) and the historic investment in transportation and infrastructure. We were very pleased to hear how quickly the Federal Motor Carrier Safety Administration (FMCSA) established the

Safe Driver Apprenticeship Pilot Program. Trinity hopes this 3-year pilot program will be successful, and made permanent, so that individuals ages 18–20 will explore interstate transport careers. This will go a long way in helping trucking companies hire and train drivers through the program and help to alleviate driver shortages in the future. Trinity also believes that as spending under the IIJA ramps up in the near future, it will provide enough support in the economy to keep the motor carriers employed as we are starting to see freight volumes begin to pull back over the last 30 to 60 days.

Trinity would also like to thank Chairman Carper, Ranking Member Cornyn, Senator Menendez, and Senator Tim Scott for their support in offering legislation to initiate the pilot program for brokers to become a part of the Customs Trade Partnership Against Terrorism program (CTPAT). We believe by allowing freight brokers to become CTPAT certified, this will add another valuable layer in assisting with providing a safe and smooth Customs clearance process for shippers moving cargo cross-border. Today we urge S. 2322 to be quickly sent to President Biden's desk for signature. We believe the third-party logistics industry does play a role in the safety and national security, in that the industry selects motor carriers who enter the country through our borders and plays an integral role in assuring the carriers are legitimate and understand the cargo transported.

Currently, the vaccine mandate for truck drivers coming into the country to deliver freight from Mexico and Canada continues. These professional drivers spend most of their professional time alone in a truck cab, presenting 0-percent risk of spreading COVID–19. This should be lifted immediately to open up capacity and shorten the amount of time to cover a load.

Another issue that greatly impacts not only the efficient movement of goods, but also highway safety is the lack of a Federal Motor Carrier Safety Selection Standard. Currently, because of a broken safety rating system from the Federal Motor Carrier Safety Administration (FMCSA) almost 90 percent of trucking companies are considered "unrated," due to the fact they have not received the in-person compliance review that promulgates a safety rating. This confusion logjams the carrier selection process and adds to the time it takes to vet a trucking company to the extent we are able to without a standard. Further exacerbate the situation with the fact that there are no requirements in place before selecting a trucking company drastically impacts the overall safety on our Nation's highways. The latest report from the National Highway Traffic Safety Administration (NHTSA) noted that the number of accidents involving commercial motor vehicles increased 13 percent in 2021, the status quo is not working, and highway safety needs to be improved. Trinity Logistics and our trade association, TIA fully support legislation to create a motor carrier safety selection and amend the safety rating process by shifting to a system built on data not physical audits.

I started my testimony with the opening sentence from *A Tale of Two Cities.* I wanted to turn our attention to the actual impact on the domestic transportation industry during the last 2 years, specifically from the various activities that took place during the COVID disruption. The activities, as I have mentioned, included the closing/opening of business, but those did not happen in a coordinated way globally or domestically. The disruption of manufacturing due to a lack of raw materials or goods to be utilized, the tremendous amount of stimulus injected into economies that drove consumer spending in magnitudes and ways that we had not seen before, the lack of workers and productivity in some areas, and others as well, caused the supply chain to experience a level of swings of such magnitudes between high and low over a very short period. We are just now seeing some return to normalcy (as best as it can be defined). With that said, let me interject some metrics to give a perspective of what has happened in the freight markets. Metrics to review:

The outbound tender rejection rate index—which is an indication of the percentage of loads being rejected by contract carriers on their contracted rates with shippers.

The Transactional Spot Market Rate for Dry Van Loads in $/Mile—these are negotiated rates as mentioned earlier that occur daily between shipper/broker and motor carrier.

The percent of Freight Volume Increase/Decrease from a 2018 baseline.

Index—Number Approximates	2019	March–June 2020	July 2020–December 2021	2022
Outbound Tender Rejection Rate	5 to 6%	1 to 2%	20%–25% approaching 30% in some instances	Steadily declining to 8.4% (currently)
Van Spot Rate	<$2.25/mile	<$1.50/mile	Climbed steadily to a high $3.75/mile	Steadily declining to $2.80/mile (diesel price keep elevated)
Freight Volumes	Slightly lower	75% to 90%	Climbing more than 50%	Steadily declining to now 26% over 2018

As these numbers indicate, simply the decrease in freight volumes and excess capacity drove the pricing significantly lower at the beginning pandemic. Carriers were competing against one another to secure freight to keep their truck operational, including asset-based carriers who contracted freight was not available during this time and added their excess capacity into the spot market. Once the businesses began to open up (though unevenly thus causing down chain issues), pricing begin to soar as trucking capacity got tight, and asset-based carriers were moving away from contracted freight to the spot market, forcing their customer to post more freight out into the spot market, driving up prices. Finally, as trucking volumes begin to retreat, the market forces depressed pricing, though it is still elevated by diesel prices and port operational challenges.

Another measure of freight capacity that Trinity utilizes is the Truckstop Market Demand Index (MDI) which measures the number of shipping loads posted by shipper/brokers in comparison to motor carriers posting their available equipment—a higher number indicates trucking capacity has gotten tighter as motor carriers no longer need to post available equipment as they are receiving enough inbound traffic from shippers and third-party logistics to get their equipment on a load. Here are the numbers for the same period.

Index—Number Approximates	2019	March–June 2020	July 2020–December 2021	2022
MID	35 to 45 Shipper Loads Per One Truck Posting	Less than 25 Shipper Loads Per One Truck Posting (higher truck postings)	On average over 150 with some periods exceeding 200 Shipper Loads Per One Truck Posting	Steadily Declining to approximately 100 Shipper Loads Per One Truck Posting (currently)

And finally, I would like to share with you, comments from Transportation Intermediaries (TIA) Association Chief Economist Noël Perry from the latest TIA Quarterly Market Report (1Q22).

> The latest data released by the U.S. Bureau of Economics (BEA) show a declining economy in the first quarter of 2022, creating a second consecutive quarter of slow growth in freight. This negative news is consistent with an unusual convergence of negative signals headlined by inflation, energy uncertainty, the war in Ukraine, and COVID lockdowns in China. Unless those situations change for the better soon, the U.S. economy is headed for recession. Fortunately, economists tell us that a timely resolution of the Ukrainian war could ease inflation and consumer fears. Also, the growing availability of computer chips should allow the auto market to recover from its supply-constrained lethargy. Nonetheless, inflation, lockdowns in China, and the Ukraine situation have proven surprisingly resistant to improvement, giving weight to the pessimist's fears. Deutsche Bank's economists are forecasting a global recession in 2023, perhaps a bad one. Finally, you will see that the U.S. trucking spot market conditions have inflected to-

wards weaker conditions. Whatever the result, conditions in the second half of 2022 and all of 2023 will not continue the historically favorable conditions of the last 2 years.

As earlier metrics have indicated, the U.S. trucking spot market conditions have inflected towards weaker and more normal conditions—though we will see what the future holds and how that trend continues. Hopefully, as the result of this meeting and coordinated actions taken by the U.S., our trading partners, manufacturers, and supply chain vendors, our Nation will become resilient when facing similar conditions or uncertainties in the future.

Again, I want to thank you for your time today and the opportunity to speak before you and present Trinity Logistics' perspective on the state of the supply chain. I would be happy to answer any questions.

QUESTIONS SUBMITTED FOR THE RECORD TO DOUGLAS L. POTVIN

QUESTION SUBMITTED BY HON. THOMAS R. CARPER

Question. Regardless of where goods are sourced or manufactured, how can we ensure they are delivered with efficiency and reliability, and what resources are needed to make this happen?

Answer. This is a very important question, and the answer is quite simple. No matter where the freight is sourced from, we as logistics companies just need the flexibility to continue to do our job without unnecessary interference and limitations. As I mentioned in my testimony, we describe the current supply chain discussion as the perfect storm of multiple factors that eventually bent the supply chain. Whether it be a shortage of truck drivers, trucks, real estate to store the containers, etc., all these conditions will over time work themselves out. The problem occurs when unnecessary constraints are continued to be added on top. Let me give you two examples, the first being the cross-border vaccine mandate for Canadian truck drivers. These mandates put additional constraints on capacity in cross border movements and added days on the carrier selection process, which causes disruptions. We in the United States classified our truck drivers as exempt because they are in a truck by themselves, the same should have been true for truck drivers entering the country, especially those from a country with an over 90-percent vaccination rate. Finally, California's AB5 law, this law now in effect will drastically change the way business in done in the State of California and could have a detrimental chain reaction throughout the country, especially if the PRO Act were to become law. This anti-business law will drive thousands of owner-operators out of the market and further hamper the capacity constraints that logistics companies like ours are facing today.

Simply put, the supply chain needs more time to normalize, not further roadblocks that continue to set back the recovery from this devastating pandemic and its effects on the supply chain.

QUESTIONS SUBMITTED BY HON. TODD YOUNG

Question. Earlier this month, the Port of Shanghai began returning to normal after a 2-month COVID lockdown.

Fortunately, congestion in our major west coast ports of Los Angeles and Long Beach eased earlier this year, but that doesn't mean we won't have logistical challenges due to more output from Shanghai.

The bottlenecks that occurred at our west coast ports were perfect visualizations of logistical breakdowns due to the pandemic. Given your experience in this sector, how should Congress—or the administration—prepare for Shanghai's reopening?

Answer. The best thing the Federal Government and the States can do is remove burdensome constraints on the supply chain. For example, in the State of California there are extreme regulations in place from the California Air Resources Board (ARB) that limit capacity (especially at the ports) and the California law AB5 is now in effect, that will without a doubt take thousands of trucks out of the State of California or off the highways completely. We need to ensure that the PRO Act never becomes law and that logistics companies are given the flexibility they need to ensure motor carriers are properly registered through the carrier selection process. As a country, we need to do a better job incentivizing new truck drivers into the marketplace, not restricting to the point they want out. These men and women were the heroes on the front lines during the pandemic that keep the American economy moving forward.

Question. How can Congress help optimize our logistics sector to prepare for future surges in product demand?

Answer. One issue that would help ease future surges and drastically improve safety would be the passage of a Motor Carrier Safety Selection Standard. As entities that utilize the services of motor carriers, we are asked to second guess the Federal Motor Carrier Safety Administration (FMCSA) in determining which carriers are safe to operate and which are not. FMCSA's incomplete database exposes the public to an unacceptable level of risk by having 90 percent of the motor carrier population being rated "unrated." Congress tasked the FMCSA with evaluating motor carrier safety and empowering them with the sole authority to revoke the interstate operating authority of unsafe motor carriers or otherwise place unsafe motor carriers out of service and off the road. There is bipartisan support to get FMCSA the necessary resources to continue to expand their reach into the motor carrier population and shifting the safety rating process to a data driven system, would greatly reduce the burden on the agency.

The lack of a clear safety standards by which to compare motor carriers, places entities that utilize motor carriers in an impossible situation in trying to responsibly select a carrier. It is worth noting that the situation is exacerbated because there is currently no Federal or State standard that requires an entity to check a single piece of information relating to the carrier safety history or credibility.

The Federal Motor Carrier Safety Selection Standard that our association, the Transportation Intermediaries Association (TIA), has been advocating for would address these concerns by establishing an interim selection standard and change the way that motor carriers are given a safety rating by shifting away from the current physical audit system. This shift would give logistics companies like Trinity Logistics the certainty in the carrier selection process, which would allow us to freely adapt to surges in the supply chain without hesitation.

COMMUNICATIONS

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The American Chemistry Council (ACC) appreciates the Subcommittee holding this hearing to examine supply chain resiliency, alleviate backlogs and strengthen long-term security. ACC represents more than 150 of America's leading chemical companies. Our members manufacture a wide variety of chemicals, polymers, and related products that make our lives and our world healthier, safer, more sustainable, and more productive. The business of chemistry supports over 25% of the U.S. GDP and directly touches nearly all manufactured goods. In addition to supporting a vast supply chain, our members help create more than half a million skilled, good-paying American jobs.

Chemicals and plastics are pivotal inputs to many critical supply chains such as for semiconductors, high-capacity batteries, critical minerals, automotive goods, and pharmaceuticals. For example, fluoropolymer chemistries are essential in the manufacture of semiconductors; bromine-based chemistries support the development of printed circuit boards; lithium batteries employ chemistry to create high-capacity batteries; industry uses many critical minerals to produce important chemistries of value in a wide range of products, including renewable energy, polymers, refrigerants, and water purification chemicals; solar power relies on important silicon-based chemistry. The business of chemistry is also essential to building and construction, electronics, farming, food production, vaccines, medicine, automobiles, aerospace and much more.

Supply chain and freight transportation disruptions have caused considerable challenges for U.S. chemical producers. In a recent survey of ACC members,[1] 97 percent of companies reported that they have been forced to modify or curtail operations because of supply chain issues and/or transportation disruptions. ACC recognizes and applauds the important steps that Congress and the Administration have taken to help address these challenges, including implementation of the Infrastructure Investment and Jobs Act, the Senate's passage of the Ocean Shipping Reform Act, and other supply-chain related measures included in U.S. Innovation and Competition Act (USICA) S. 1260. However, more needs to be done.

We would encourage this Subcommittee to take a holistic approach to these supply chain issues and examine and address policies that negatively affect the business of chemistry and can harm U.S. manufacturers, especially small businesses, potentially impairing the availability of delivering these essential goods across the supply chain. Such policies can work in cross-purposes to this Subcommittee and other Administration efforts to facilitate supply chains and make them more secure and resilient. In particular, several issues have emerged with one federal agency program, the EPA's Toxic Substances Control Act (TSCA) program,[2] that could negatively impact the resilience of U.S. chemical supply chains. Under the 2016 amendments to TSCA, EPA is tasked with evaluating potential risks to human health and the environment from new and existing chemicals and acting to address any unreasonable

[1] *See* ACC's Survey Report: Supply Chain and Freight Transportation Constraints for Chemical Manufacturers. Learn more at: *https://www.americanchemistry.com/media/files/acc/better-policy-regulation/transportation-infrastructure/infrastructure/supply-chain-and-freight-logistics-survey-findings-report.*

[2] *See* ACC's State of TSCA Report: Fix Implementation Now Before It Is Too Late. Learn more at: *https://www.americanchemistry.com/better-policy-regulation/chemical-management.*

risks. New chemistries face regulatory barriers under TSCA that impact the timing of reviews and availability of products, creating uncertainty in the supply chain and negatively affecting the ability of companies to bring new products to market. Such barriers and delays have led to a lack of innovation and onshoring of new chemicals in the U.S. Challenges in the EPA's implementation of the TSCA program also have the potential to jeopardize the availability of existing chemistries critical to this Subcommittee and other Administration efforts to promote the use of alternative energy, reduce greenhouse gas emissions, and ensure the availability of semiconductors and other critical goods.

We understand that there are many issues that affect supply chain resiliency and security, some of which may be outside the direct control of this Subcommittee and the Government. However, this Subcommittee can address these regulatory policies and encourage EPA to adopt a strategic approach to sound chemicals management through the TSCA program that supports the availability and creation of chemistries that strengthen supply chains and allows for transparency and timeliness in their reviews according to statutory requirements. Because of the chemical industry's large footprint across major economic sectors, such efforts would pay dividends across all critical supply chains and industrial bases of concerns to this Subcommittee and the Administration.

ACC stands ready and willing to assist this Subcommittee in such efforts and hopes the Subcommittee will use ACC as a source of information and experience regarding the role of the business of chemistry in enabling more vibrant, resilient, and secure supply chains in the United States.

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Statement of Michael G. Bindner

Chairman Carper and the Ranking Member Cornyn, thank you for the opportunity to submit these comments for the record to the Subcommittee on International Trade, Customs, and Global Competitiveness of the Committee on Finance. Please allow me to mention a few issues that the invited witnesses cannot.

The first is the role of the Chinese in the supply chain crisis. SARS–CoV–2 was not the reason for this issue, at least not directly. Rather, according to published reports, the Chinese government was offended by off-hand remarks by the Prime Minister of Australia on the origins of COVID, leading to an embargo on Australian coal. This led to an energy crisis in the industrial coast of China. In essence, China cut off its nose to spite its face. When Indonesia suspended all coal exports, including to China, the crisis deepened.

The Trump-manufactured trade war with China showed how bad petulance can be in trade policy. Such petulance is a key feature of authoritarianism. This always backfires on the authoritarian. The Chinese fit of pique had ramifications for the United States supply chain. Profiteering by port operators was not the sole cause of our current supply chain issues.

The United States and its commercial sector need to diversify, but not in the way capitalists would do so on their own. Africa will be the next major labor market. In the past, capitalist firms would set up factories in developing nations with excess labor forces (usually due to modernization of agriculture or rent seeking by landed elites) and pay the workers as cheaply as possible. It is the messy way to industrialize. It seems to work, but it carries human costs while workers gather the leverage to organize and the power to increase domestic demand by consumption. Both of these factors increase wages.

We need not be messy about assisting the Motherland on its road to industrialization. As capitalism moves toward establishing a foothold in Africa, our trade policy must be ready to insist on the right of African workers to organize, partnered with the American labor movement in helping them to do so. We can partner with American colleges to establish campuses in sub-Saharan Africa so that their best and brightest need not come to us. We can come to them.

Technical assistance on employee-ownership (which is still emergent in the United States), as well as in the creation of property rights for farmers, is essential. Finally, we can assist Africa in creating commodity futures markets of their own so that farmers can obtain working capital by selling futures and decide whether it is in their interest to sell food abroad. The natural progress toward industrialization is not inevitable. It can move past exploitation without stopping there.

This brings us to the second supply chain issue: energy prices.

The world has plenty of available oil. What it does not have is an honest futures market. The Dodd-Frank reforms led to regulation of the New York Mercantile Exchange, especially the oil futures floor. When Mick Mulvaney was made acting director of the Consumer Financial Protection Authority, these regulations were quietly gutted.

The petulance of Trump strikes again. If Obama did it, Trump tried to undo it. That the inevitable oil futures bubble happened to this Administration is simply bad luck. The prior Administration did not have the mental faculties to play such three dimensional chess.

The challenge for the current Administration is to quietly restore these regulations, which I assume it is doing. If this can be managed, energy prices will decline rather than crash—as they did in 2008. When Congress made attempts at regulating oil futures trading, the balloon burst and traders had to cover their positions. The assets available to do this were mortgage backed securities and credit default swaps. We all know where that led.

Action to increase capital gains taxes as part of Build Back Better will also help deflate commodity prices as smart traders cash out of all sorts of assets. As they do so, junk assets will quietly be devalued rather than starting a rush for the exits. When the oil futures prices begin to slide, those holding the bag may be able to cover their currently insane bets. At least we can hope so.

Massive pain may be inevitable, but we must at least try to avoid it. The best shot we have is to Build Back Better. Members of both parties need to put duty to country ahead of loyalty to party and make sure the bill passes (even with Potemkin opposition). Overt obstruction will be remembered in November if it leads to collapse. In November 2008, voters knew who to blame. They will know who to blame if the economic ship is not righted soon and obvious sabotage has occurred.

Thank you for the opportunity to address the committee. We are, of course, available for direct testimony or to answer questions by members and staff.

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The National Electrical Manufacturers Association (NEMA) represents more than 325 electrical equipment and medical-imaging manufacturers that make safe, reliable, and efficient products and systems. Member companies support more than 370,000 American manufacturing jobs in 6,100 locations across all 50 states. NEMA companies play a key role in transportation systems, building systems, lighting, utilities, and medical-imaging technologies and are playing a critical role in the implementation of the Bipartisan Infrastructure Law (BIL). These industries produce $130 billion in shipments and $38 billion in exports of electrical equipment and medical imaging technologies per year.

NEMA applauds the Subcommittee's leadership in addressing the supply chain crisis and working to highlight solutions via its hearing entitled "Supply Chain Resiliency: Alleviating Backlogs and Strengthening Long-Term Security." NEMA member companies continue to experience supply chain disruptions, labor shortages, and resulting inflationary pressures which have resulted in disrupted domestic production, reduced sales, increased consumer costs, and delayed delivery of critical products. The electro industry, like many other industries, has suffered grave supply chain disruptions. Securing critical components and materials—like semiconductors, transformer cores and laminations, and small electronic components—has become increasingly difficult.

Failure to solve short and long-term supply chain challenges stalls the transformation of U.S. infrastructure and energy systems, potentially delaying an accessible and electrified transportation system, modernized buildings and lighting, a more resilient grid, and increased efficiency of expanded domestic manufacturing. These supply chain issues require both near-term and long-term solutions and Congress has a crucial role in leading the nation's strategic solutions. In addition to

Congressional hearings and enhanced oversight of supply chain challenges, NEMA urges Congress to expeditiously reach a bipartisan compromise as it continues to work through the conference process for the pending competitiveness legislation. Specifically, NEMA urges Congress to:

- ***Support Supply Chain Provisions.*** The Manufacturing Security and Resilience Program and other provisions within the America COMPETES Act would bolster government-wide efforts to strengthen supply chains deemed critical to the nation's economic and national security. The bipartisan supply chain provisions would enable a source of funding for grants, loans, and loan guarantees to increase U.S. domestic manufacturing capacity as well as help to move manufacturing operations out of countries of concern into the U.S. or allied nations. **These provisions would also ensure the U.S. can effectively map and monitor supply chains, identify gaps and vulnerabilities, and take proactive action in collaboration with manufacturers to mitigate supply chain vulnerabilities.**
- ***Support funding for CHIPS.*** Efforts to increase onshore chip manufacturing and build a strong semiconductor supply will help to alleviate supply chain concerns tied to semiconductor chips in the long term. **NEMA urges Congress to ensure the funding will support the availability of all types of chips, including legacy chips as well as elements of the broader semiconductor ecosystem, including transistors, diodes, and other components which are critical to manufacturing many electrical products and are not currently available from U.S. sources.**
- ***Authorize Key Tariff Relief Measures.*** **One of the most direct and timely actions Congress could take to alleviate inflationary pressures in the supply chain is to restart and reform the Section 301 tariff exclusions process in a way that has clear eligibility standards for companies, is transparent, and is fair to all who apply.** Further, NEMA supports the reauthorization of the Miscellaneous Tariff Bill and the Generalized System of Preferences program.

In addition to legislative actions, including enacting key supply chain provisions via the pending competitiveness legislation, NEMA urges Congress to use its oversight authority to help proactively identify and mitigate supply chain pressures and constraints. The Subcommittee's hearing is a good example of how Congress can evaluate supply chain concerns, identify solutions, and work in a bipartisan manner to help address issues both long and short term.

Critically in the near term, the current labor contract between the International Longshore and Warehouse Union (ILWU) and the Pacific Maritime Association (PMA) will expire on June 30. Failure for the two parties to come to a timely contractual agreement would have a crippling effect on some of our nation's most important ports and result in additional supply chain disruptions and shipping delays. Disruptions of essential port operations, even for a limited time, would result in exacerbating supply chain disruptions for the U.S. economy and the electro industry. NEMA urges Congress to closely monitor developments in negotiations between the two parties in advance of the looming expiration of the current labor contract.

Given the urgency of lingering supply chain disruptions, inflationary pressures affecting all aspects of the U.S. manufacturing value chain, long lead times needed for manufacturing investments, volatility in sourcing material components currently experienced by NEMA member companies, and the Congress' conciliatory power to bring parties together to solve supply chain issues, we urge you to exercise your legislative and oversight responsibilities to identify, mitigate, and alleviate supply chain constraints in the immediate and long term.

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June 15, 2022

The Honorable Thomas R. Carper
Chair
U.S. Senate
Committee on Finance
Subcommittee on International Trade,
Customs, and Global Competitiveness
219 Dirksen Senate Office Building
Washington, DC 20510–6200

The Honorable John Cornyn
Ranking Member
U.S. Senate
Committee on Finance
Subcommittee on International Trade,
Customs, and Global Competitiveness
219 Dirksen Senate Office Building
Washington, DC 20510–6200

Dear Chairman Carper and Ranking Member Cornyn:

Restaurants appreciate the Subcommittee's examination of "Supply Chain Resiliency: Alleviating Backlogs and Strengthening Long-Term Security." The current supply chain backlogs and inflationary price increases are once again ratcheting up anxiety and uncertainty across our industry. **We write today to urge Congress to help remove harmful tariffs that are contributing these supply chain challenges and price inflation.**

Wholesale food prices increased more than 15% during the last 12 months, according to the consumer price index (CPI). Key commodities are creating whiplash for restaurants and customers, especially for eggs (259.9%), butter (50%), unprocessed fin fish (47.3%), flour (36.7%), fats and oils (32.5%), and processed poultry (25.2%). The fresh vegetables index jumped 39.6%. During this time, menu prices have only gone up 7.4%. For an industry that runs on 3–5% pre-tax margins, these prices increases are unmanageable.

Maguire's Craft Kitchen and Catering in Dallas is experiencing price increases on an unprecedented scale—if products are available at all. Fish, cooking oil, and packaging materials have all become unexpectedly unavailable during portions of the year. This year alone, *costs have doubled or tripled* for these ingredients essential to their menu:

- Boneless chicken breast
- Canola oil
- Jumbo lump crab meat
- Roof top unit HVAC system
- Atlantic salmon
- Grade A large eggs
- Styrofoam containers

Grotto Pizza in Rehoboth Beach, Del., is experiencing price shocks across the board. Each of their top ten product expenses rose by 10% or more over the past 12–18 months. When Grotto Pizza opened a new location in 2021, the exact same kitchen equipment package was 21% higher than it was 14 months prior. Skyrocketing prices are causing the company to hold off on growth.

The chef/owner of *Mac's on Main* in Grapevine, Texas, recently expanded her location. The costs to expand the restaurant were about the same as the total cost of the original location in 2015. Not only was the equipment generally 20–40% higher than similar items purchased in the past three years, but she waited more than six months for the delivery of some items. **Tariffs on aluminum, building supplies, and more items are adding costs and complexity to the supply chain.**

Platinum Dining Group in New Castle County, Del., helped sustained operations during COVID with off-premises sales and takeout orders. However, the cost for takeout containers and related products have jumped, nearly eliminating any financial benefit. The group has been considering additional projects and restaurant locations, which would significantly expand its 400-employee team. However, price inflation is putting a hold on much of this growth.

We urge Congress to take action to address cost increases for restaurants, such as: (1) **removing tariffs** on U.S. imports and any retaliatory tariffs; (2) **adopting the tariff exclusion process** in the Senate's U.S. Innovation and Competition Act (USICA) conference, and; (3) **including the Senate language on Sec. 71002 seafood regulations,** "Preventing Importation of Seafood and Seafood Products Harvested or Produced Using Forced Labor," in the final USICA conference report.

Restaurants, our employees, and our customers bear the brunt [1] of U.S. and global tariffs on the food and equipment supply chain. We appreciate that both of you signed onto the bipartisan Senate letter in February urging U.S. Trade Representative (USTR) Katherine Tai to relaunch a comprehensive tariff exclusion process. However, prices continue climbing higher each months, and restaurants are left without any answers on sustainability of operations.

Thank you for your consideration.

Sincerely,

Sean Kennedy
Executive Vice President for Public Affairs

[1] *https://thehill.com/policy/finance/trade/554136-trumps-china-tariffs-hit-us-businesses-consumers-hardest-moodys/.*