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SECURING AMERICA'S CRITICAL MATERIALS SUPPLY CHAINS AND ECONOMIC LEADERSHIP

THURSDAY, JUNE 13, 2024

House of Representatives,

Subcommittee on Environment, Manufacturing, and Critical Materials,

Committee on Energy and Commerce,

Washington, D.C.

The Subcommittee met, pursuant to call, at 11:30 a.m., Room 2322, Rayburn House Office Building, Hon. Buddy Carter [Chairman of the Subcommittee], presiding.

Present: Representatives Carter, Palmer, Pence,

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Crenshaw, Joyce, Weber, Allen, Balderson, Fulcher, Pfluger, Miller-Meeks, James, Rodgers (ex officio); Tonko, DeGette, Schakowsky, Sarbanes, Clarke, Ruiz, and Pallone (ex officio).

Staff Present: Sarah Burke, Deputy Staff Director; Jerry Couri, Deputy Chief Counsel; Nick Crocker, Senior Advisor and Director of Coalitions; Nate Hodson, Staff Director; Tara Hupman, Chief Counsel; Sean Kelly, Press Secretary; Peter Kielty, General Counsel; Emily King, Member Services Director; Drew Lingle, Professional Staff Member; Mary Martin, Chief Counsel; Brandon Mooney, Deputy Chief Counsel; Kaitlyn Peterson, Clerk; Karli Plucker, Director of Operations (shared staff); Dray Thorne, Director of Information Technology; Caitlin Haberman, Minority Staff Director; Tiana Hicks, Minority Intern; Kylea Rogers, Minority Policy Analyst; Rebecca Tomilchik, Minority Junior Professional Staff Member; and C.J. Young, Minority Deputy Communications Director.

*Mr. Carter. The Subcommittee will now come to order.

The chair will recognize himself for five minutes for the purpose of an opening statement.

Critical minerals and rare earth elements are fundamental to modern life, the American economy, and our national defense. Cell phones, vehicles, batteries, satellites, renewable energy technologies, missile systems, and numerous other products are all reliant on a secure supply of these critical materials.

Unfortunately, the U.S. supply chain to procure and use these essential materials is, at best, compromised. According to the U.S. Geological Survey, the U.S. is 100 percent import reliant for 12 critical minerals, almost 25 percent of all critical minerals. We also are more than 50 percent import reliant for another 17 critical minerals. Additionally, nearly all of our extracted rare earths are exported to China due to a lack of domestic processing.

Today we will examine these pressing shortfalls and the opportunities that exist to secure the supply chain for these materials through domestic extraction, processing, recycling, and trade with allied nations.

We are faced with a choice: We can choose to support American development of critical mineral supply chains through sound permitting reforms, strategic investments, and responsible trade, or we can continue the status quo, perpetuating the policies and permitting roadblocks which will delay the start of new mines, strengthening China's stranglehold on the processing sector, and forcing us to turn to the world's polluters and human rights abusers for the critical materials we need. We should choose the former, and pursue an all-of-the-above strategy for the procurement of these resources.

While developing and implementing policies to enhance American security, we must also examine the impact current policies are having on the U.S. economy. We are concerned that the current Federal policy direction has put the proverbial cart ahead of the horse. Lavish green product mandates and subsidies for technologies that support only those products are sending us headlong into the waiting arms of China, Russia, and others and their malign foreign influence.

Critical minerals and rare earths are environmentally

insensitive resources. We should not allow the development of these materials to be further offshored to countries that do not uphold the environmental and labor standards we have in the United States. For instance, China's mining district, which contains some of the largest rare earth mines in the world, has improperly lined tailing ponds that are leaching toxic sludge at a pace of 20 to 30 meters annually towards the nearby Yellow River.

Not only are policies that offshore our supply chains to China terrible for the environment, they also place us at a severe strategic disadvantage. Last year China announced it would be suspending exports of gallium, germanium, and graphite to the United States. They followed this up by announcing restrictions on the export of rare earth processing technologies. At a time when our national defense stockpile of critical materials has enough supply to meet less than half the demand for military requirements, this is a dangerous situation to find ourselves. We must remedy this shortfall and bolster our strategic position to secure our supply chains.

While mineral recycling and responsible trade presents

an opportunity to diversify our procurement, solely relying on these methods is not a substitute for the extraction of virgin minerals domestically. Estimates show that recycled quantities of critical minerals from used energy technologies have the potential to reduce further -- future supply requirements by just 30 percent.

Additionally, the concept of friend-shoring only takes us so far, and that goes for processing and refining of these materials, as well as for mining. China's average share of foreign direct investment into countries with a U.S. Free Trade Agreement soared from 4 percent before the passage of the IRA to 31 percent post-IRA, and is expected to grow. It is evident that to secure our supply chains for critical materials, we must increase dramatically the amount of domestic extraction and processing taking place.

There is no silver bullet for supplying the critical materials we need. Instead, we must pursue a comprehensive strategy that supports American workers and rewards those who responsibly produce and process these essential products. Today we will hear from multiple experts on the state of the critical mineral and rare earths market which could help

shape our thinking on these issues.

I would like to thank the witnesses for being here, and I look forward to today's hearing.

[The prepared statement of Mr. Carter follows:]

**********COMMITTEE INSERT**********

*Mr. Carter. I now recognize the gentleman from New York, Representative Tonko, for five minutes for an opening statement.

*Mr. Tonko. Thank you, Mr. Chair.

Critical minerals are essential building blocks for the clean energy economy. But we need to approach their production, their processing, and use in a responsible and, indeed, sustainable way. And I am hopeful that we will be able to find some bipartisan common ground this morning.

No one here wants to be reliant on foreign adversaries or unreliable supply chains, and no one wants to allow supply chains that utilize unsustainable or unethical practices, including environmental, labor, and human rights abuses. But from there I suspect we will have some disagreements on how to best fulfill our nation's critical mineral demands by addressing supply constraints, foreign entities of concern, and price volatility.

I fully acknowledge that China currently controls significant critical mineral processing and clean energy technology manufacturing capacity. China is clearly committed to manufacturing clean energy technologies, and we

should be clear-eyed that the rest of the world is committed to buying these technologies, regardless of which nation is producing them. These are very real trends in the global clean energy system, and China is not going to stop whether or not we embrace clean energy as a domestic priority.

I, for one, am not prepared to cede our global leadership of these strategic industries without a fight, and that was a major impetus for the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, which not only incentivized the deployment of clean energy projects, but also the manufacturing investments necessary to ensure these products are made in America.

So the IIJA invested $3 billion for battery materials processing, $3 billion for battery manufacturing and recycling, and $35 million for EPA to develop battery collection best practices and voluntary labeling guidelines.

IRA doubled down on domestic supply chains by reforming the EV tax credit to support domestic production of EVs, their batteries, and their critical mineral components. And new authority and funding for DoE's Loan Programs Office has been used to support several supply chain projects.

These efforts to onshore domestic industry are already creating tremendous job opportunities and economic growth across our country.

Supporting domestic production, processing, and manufacturing is certainly one part of the solution, but there is so much more that we can do. Innovations in new battery chemistries can reduce the need for some of the most challenging minerals, and we must also embrace recycling as an under-utilized domestic source of these materials. While recycling might not meet all of our projected needs, it can indeed certainly help relieve pressure on primary supply, provided we make investments today to be prepared for the rapid growth of batteries coming to the end of their operational lives.

So while we may not agree on the best methods by which to compete with China and strengthen our domestic supply chains, I hope we can focus on where we do agree. And one important way to protect human rights and uphold high labor and environmental standards is, indeed, through improved transparency. We must be able to see where the minerals in our clean energy technologies are coming from. That is why

Congressman Garret Graves and I have introduced the Critical Materials TRACE Act.

This bill proposes to improve transparency through digital identification systems, also known as battery passports. This is essentially a QR code that contains data and descriptions of a product, including each of its component's origins, manufacturing history, and information on end of life management. Improving transparency will require companies to be responsible for their supply chains, and allow us to bring accountability to bad actors.

Companies that are found to have suppliers that use child and forced labor would have to answer for those practices. And companies that source and manufacture products domestically or with recycled minerals could be recognized for their leadership. Transparency will foster innovation, and it will foster competition, reduce environmental, labor, and human rights abuses, and indeed, result in better products. The private sector and several European countries are already working to develop digital identifiers, and I would suggest we empower the DoE to help shape these tools to ensure they work for American companies.

Mr. Chair, thank you again for holding this hearing. I hope we can work together on policies to secure and improve our supply chains. And it seems that starting by bringing much-needed transparency to properly assess the sourcing and the processing of critical materials is just a great place to begin.

[The prepared statement of Mr. Tonko follows:]

**********COMMITTEE INSERT**********

*Mr. Tonko. With that I yield back.

*Mr. Carter. The gentleman yields. The chair now recognizes the chair of the full committee, Chair Rodgers, for five minutes for an opening statement.

*Mr. Tonko. Well, look at that.

*The Chair. Good morning, everyone.

*Mr. Tonko. I like that.

*The Chair. And thank you, Chairman Carter, for suggesting we hold this important hearing.

Today's hearing is an important opportunity to examine how we reduce our dependance on China and take steps necessary to maintaining American economic leadership for decades to come. An important step to achieving this is to significantly increase our domestic production and supply of critical materials which are foundational to America's ability to manufacture goods like batteries, electric grid components, semiconductors, and advanced energy technologies which are crucial to our economic and national security.

If we fail, America will continue to be dangerously reliant upon others for these critical materials, especially adversaries like China, and vulnerable to supply chain

disruptions and market manipulation. It starts with having an honest conversation about what has led us to where we are today, and how we became so dependent on others. Only then will we be able to advance the solutions necessary to creating the regulatory predictability needed for mining, processing, and refining of these materials domestically, ending our reliance on others, ensuring stable access to critical materials, boosting American manufacturing, and protecting America's economic future and national security.

Over the last several decades, America's capacity to mine, process, and refine minerals has been decimated. The United States once was one of the world's leading producers of minerals and metals that are foundational to America's economic success and national security. Today more than 90 percent of those minerals are under the control of the Chinese Communist Party. Their supply chains stretch from the jungles of the African Congo to smelters and refineries in China. We have allowed them to establish a monopoly on the core components needed to produce the batteries powering our smartphones, computers, electric cars, and many renewable sources of energy. To make matters worse, they do this with

zero regard for any environmental, labor, or human rights standards.

The Biden Administration's rush-to-green agenda will only further solidify China's stranglehold on the market. By advancing policies that mandate technologies whose core components can only be sourced from China, while failing to advance policies to onshore production of those core components, we are only further enriching China, the largest polluter in the world and abuser of human rights.

The Inflation Reduction Act and Infrastructure Investment and Jobs Act were filled with these mandates, and pumped hundreds of billions of taxpayer dollars into subsidizing the purchasing of these technologies, exacerbating the problem. We cannot continue doing the same thing over and over again and expect anything to change. We have to get serious about getting to the root cause of the problem, which is overburdensome regulation, and start advancing policies necessary to onshoring production of critical materials.

The U.S. has enacted the strongest environmental laws in the world, which have helped us clean up our air and water

over the last half century. It is possible to continue building on our legacy of environmental stewardship without pushing our supply chains overseas. To do this, however, we need reasonable solutions, rather than a continuation of the current regulatory and legal environment that has all but forced U.S. mines and smelters out of business or out of the country.

The good news is that the U.S. has been blessed with abundant, tremendous natural resources. We have a rich history of harnessing and leveraging these resources through free market principles And today I look forward to discussing what is necessary to continue building on that legacy. We do this by standing up for American values: free market competition, innovation, environmental stewardship, better aligning our environmental goals with the goals of economic growth and national security, and securing and growing our critical material supply chains to end America's dependance on our adversaries like China.

I thank you for the -- all the witnesses that are here today. I look forward to hearing your testimony and the discussion.

[The prepared statement of The Chair follows:]

**********COMMITTEE INSERT**********

*The Chair. And I yield back.

*Mr. Carter. The gentlelady yields. The chair now recognizes the ranking member of the full committee, Mr. Pallone, for five minutes for an opening statement.

*Mr. Pallone. Thank you, Mr. Chairman. Today we are discussing an increasingly important topic, and that is securing critical mineral supply chains.

Critical minerals are a vital component of many technologies, from our cell phones to solar panels to electric vehicles. And as we continue to transition to a clean energy economy, demand for these minerals will only keep growing.

Currently we rely on imports from many critical minerals, and China controls about 80 percent of the world's processing capacity for these minerals. I am confident we can all agree that this poses a significant risk to our economic and national security. These are not insurmountable challenges, but we must face them head on. There is much work to be done to secure our domestic critical minerals supply chains, help us meet our climate goals, and ensure we outcompete the rest of the world in the clean energy mission.

Now, we must strengthen our domestic capabilities to reduce our reliance on foreign sources like China. We must grow and cement our relationships with allies to develop and access new critical mineral supply chains, also known as friend-shoring, and the United States must invest in scaling up battery recycling and processing of critical minerals in order to mitigate supply chain vulnerabilities and increase our domestic supply of these resources.

And we must ensure that we continue to have a strong domestic market for clean energy technologies so that companies are willing to make long-term investments in this sector. Creating a circular economy for critical minerals is a win for our environment, our economy, and our national security.

And the expansion of responsible mining is also part of the equation. However, the global supply of critical minerals is not infinite, and we cannot mine forever. Securing our critical mineral supply chain must be a holistic, multi-faceted approach that includes onshoring, friend-shoring, and recycling. Mining is just one piece of a very large puzzle.

And I should note that this committee does not have a role to play in setting a changing domestic mining policy. But there are many issues Energy and Commerce should discuss regarding critical minerals supply chains, so I am a little disappointed that the majority chose to focus today's hearing on issues outside of our jurisdiction.

Securing our critical mineral supply chains is a challenge, but it is also an opportunity to outpace our economic competitors and dominate the next generation's worth of technology. The United States is in a race to the top in terms of who will have the strongest, most advanced economy moving forward into the 21st century. We cannot cede our global leadership position to China.

Now, thankfully, Democrats are determined to see the United States lead the pack, and have been working hard to ensure that outcome. Together, the Bipartisan Infrastructure Law and the Inflation Reduction Act included billions of dollars in Federal investments to strengthen our critical minerals supply chain, create new jobs, and cut costs for hard-working families.

The Bipartisan Infrastructure Law, for example, included

$7.9 billion for battery manufacturing, recycling, and critical minerals, and directed EPA to develop best practices for battery collection and voluntary battery labeling guidelines to help grow our circular economy for critical minerals.

The Inflation Reduction Act included tax credits for EVs, domestic or allied-sourced critical minerals for batteries, and domestic battery manufacturing to help grow our domestic capacity and supply chains.

But I have to point out that not a single Republican sitting on this committee today voted for either of these bills. In fact, they have spent much of this Congress crusading against these successful policies and investments.

Now, I understand that my GOP colleagues are concerned about the threat from China. I don't doubt that. But their policies won't work to accomplish the goal to effectively compete with China because time and again Republicans have put the interests of corporate polluters over those of our economy and the American people. We simply cannot allow our country to be dragged backward. We have to move forward. Laws like the Bipartisan Infrastructure Law and the Inflation

Reduction Act are important downpayments on our clean energy future. But it is clear that Congress must continue developing solutions to our critical minerals supply chain challenges.

Now, I welcome a productive conversation about strengthening our critical minerals supply chains, and growing domestic capacity, and expanding our ties with allies to achieve common climate goals. In my view, these should be bipartisan priorities that we can work on together. So I hope my Republican colleagues come to the table to discuss common-sense solutions for comprehensively addressing our supply chain challenges, and we can achieve a consensus.

[The prepared statement of Mr. Pallone follows:]

**********COMMITTEE INSERT**********

*Mr. Pallone. Thank you again, Mr. Chairman, and with that I yield back the balance of my time.

*Mr. Carter. The gentleman yields. We now conclude with member opening statements.

The chair would like to remind members that, pursuant to the committee rules, all members' opening statements will be made part of the record.

I want to introduce our witnesses for today.

First of all, Mr. Matthew Vincent, the executive director at the Montana Mining Association.

Thank you for being here, Mr. Vincent.

Mr. David Klanecky, the chief executive officer with Cirba Solutions.

Mr. Martin Stratte, partner with Hunton, Andrews, and Kurth.

And Dr. Michot Foss, energy, minerals and materials fellow at Rice University's Baker Institute for Public Policy.

Thank each of you for being here today.

Mr. Vincent, you are recognized for five minutes for your opening statement.

STATEMENT OF MATT VINCENT, EXECUTIVE DIRECTOR, MONTANA MINING ASSOCIATION; DAVID KLANECKY, CHIEF EXECUTIVE OFFICER AND PRESIDENT, CIRBA SOLUTIONS; MARTIN STRATTE, PARTNER, HUNTON ANDREWS KURTH; AND MICHELLE MICHOT FOSS, FELLOW IN ENERGY, MINERALS, AND MATERIALS, BAKER INSTITUTE FOR PUBLIC POLICY, RICE UNIVERSITY

STATEMENT OF MATT VINCENT

*Mr. Vincent. Good morning, Mr. Chairman, Ranking Member Tonko, and members of the committee. Thank you for your invitation and those great opening statements. It is my pleasure to be here today. My name is Matt Vincent, executive director of the Montana Mining Association, representing the responsible mining of hardrock metals and minerals in Montana.

Our Treasure State nickname probably tells you everything you need to know about our heritage. But to be clear, mining and also agriculture are the industries that founded our state, and which have contributed greatly and still do to America's prosperity and security for the last

going on 150 years. Gold and silver. Those two are actually listed on our state seal. Copper, lead, platinum, palladium. From aluminum to zinc, our mineral resources are outstanding. The mines, smelters, and refineries of Montana helped build and electrify this nation during industrial expansion, protected our democracy and our allies through two world wars, and have ensured our technology and manufacturing have advanced to give us the quality of life we enjoy today.

Montana is doubly blessed to have a robust outdoor recreation economy under our famous Big Sky, which many now opine as our state's new treasure. But it is alongside a burgeoning mining industry poised for growth. We can have both.

And this reality didn't happen by accident. Montana has some of the world's most protective environmental laws. Our proactive tailings dam regulations, which were adopted in 2015, were the industry's first of their kind and have helped inform the global standards for tailings storage management. Our comprehensive bonding review, minerals taxing structure, and Hardrock Mining Impact Act ensure that our environments are safe and our communities enjoy the benefits of a mining

economy beyond just those who work and serve in it.

We know how to do things right, in large part because of our lessons learned along the way, not the least of which is one of the nation's largest Federal Superfund sites, now in its final stages of cleanup and long-term management. Part of that management in my hometown of Butte is looking to be the key to unlocking more of the resources left behind.

Rare earths and critical minerals on which we currently rely too heavily and unacceptably on Russia, China, and others are waiting to be processed from our historic wastes. With help from Department of Defense, Department of Energy, our friends at Montana Technological University, and the Bureau of Mines and Geology, our next treasures may come from what we thought of up until now is simply waste. This innovative reuse and reprocessing is a quick route to meeting some of our most pressing mineral needs, much quicker than the 14 years it has taken to receive our first major mine permit in Montana in almost 30 years.

In order to truly secure our mineral supply chains, we need to keep mining, and we need to do more to responsibly develop new resources. Our nation's only platinum group

metals mine just received an expansion after four years of rigorous permitting, and we are okay with that. Other exploration projects in state are looking at graphite, copper, gold, antimony, and even rare earths specifically.

The discussions leading up to today and many important programs developed over the past several years is a good start. That said, many of these have yet to be realized or need substantive improvements, and the fact that we are still talking about it is a stark reminder we have a long ways to go and, more alarmingly, a limited amount of time.

I thank you again for the opportunity to be here and I look forward to answering your questions. Thank you.

[The prepared statement of Mr. Vincent follows:]

**********COMMITTEE INSERT**********

*Mr. Carter. The gentleman yields. The chair now recognizes Mr. Klanecky for his opening statement.

STATEMENT OF DAVID KLANECKY

*Mr. Klanecky. Thank you, Chairman Carter, and Ranking Member Tonko, and the subcommittee members. I appreciate the opportunity to address you today on this very important national security issue. My name is David Klanecky, and I am the CEO and president of Cirba Solutions, a U.S.-based battery recycling and materials company. I have been involved in every aspect of this industry, from mining to recycling of these critical materials over the past 15 years of my career.

The state of critical materials is at a pivotal moment in our nation's history. To reduce our reliance on foreign sources of these materials and secure the United States' global competitiveness, it is imperative that we strengthen our domestic capabilities and supply chains. The market for these materials is growing at an exponential rate, and the support of our government to ensure we have a sustainable domestic supply of these materials is paramount.

In 2023 more than two-thirds of the lithium chemicals supplied globally involve Chinese companies, and we are also

aware that China controls over -- processing over 80 percent of the rare earth elements on the world today. We are allowing American businesses and, more specifically, the future automotive supply chains to be controlled by foreign entities of concern.

The onshoring of manufacturing and creating a closed loop domestic supply is key to stabilizing the critical materials market, as well as protecting our national security. While the challenges we face may seem large, they are not insurmountable, and the partnership between private and public sectors is critical to resolve these matters.

The Bipartisan Infrastructure Law and the Inflation Reduction Act have created opportunities in the clean energy sector that have not existed at this scale historically. These pieces of legislation have attracted billions of dollars of investment in the United States, driven job growth, and are contributing to the long-term benefit of our national security. However, without follow-on rules or laws that protect these investments and continued funding support, we risk losing this opportunity over the long term.

Cirba Solutions is at the front lines of ensuring these

critical materials stay within our domestic supply chain. We are the leader in battery recycling, handling all types of batteries such as consumer devices, energy storage systems, and electric vehicle batteries. We collect, package, transport, disassemble, and process these batteries to extract the critical materials and return them back into the battery supply chain to produce a new battery.

Cirba Solutions alone will be investing more than $2 billion domestically into the battery recycling sector over the coming years, creating more than 500 jobs in the U.S. market by 2028, and supplying enough critical materials for over 750,000 vehicles annually. We have operational facilities in Ohio, Michigan, Arizona, California, and are expanding into South Carolina.

We are the proud recipient of two grants from the Department of Energy's Office of Manufacturing and Energy Supply Chains to support our expansion of the Lancaster facility. This project will bring battery grade metal sulfates into North America, providing the U.S. battery supply chain with something it has not had access at a commercial scale before. This will provide both domestically

sourced and processed material and support the efforts to attract cathode and lithium ion battery manufacturing to North America for the automotive industry.

We must work now to address these challenges, including infrastructure expansion and domestic production. For the United States to win, we need a combination of mining and recycling to assure that these materials stay in the United States, creating a holistic, closed loop critical material strategy. Cirba Solutions can recover over 95 percent of these critical materials such as lithium, nickel, cobalt, and manganese, and make these materials reusable again.

These materials are infinite in their recovery and reuse. Once batteries reach their end of life, recycling serves as a pathway to ensure that these critical materials don't end up in a landfill or back in China. This also enables traceability, which perfectly aligns with the effort to make sure that they stay domestic.

We would like to commend you, Representative Tonko, on your work that -- on this topic, and the introduction of the Critical Material TRACE Act, along with the admirable work by the EPA around collection and labeling efforts that is

happening today.

In about 15 years it is estimated the United States will have up to 34 percent of its lithium supply and over 40 percent of its cobalt supply coming from recycled content. We are building this infrastructure today to meet or exceed those estimates. For the United States to not only be competitive, but win, we have to continue these investments in this sector in such areas as production tax credits, grants, and addressing key issues such as leakage of batteries out of our country.

We have the opportunity today to build a domestically sourced, critical material supply chain that will positively impact generations to come through jobs and economic growth. The largest operating mine in the world today is currently driving around on our roads. We also need to assure that these critical materials remain within our borders, and the United States can choose to be a leader in the global critical supply chain.

Thank you very much for your time, and I look forward to the discussion.

[The prepared statement of Mr. Klanecky follows:]

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624 **********COMMITTEE INSERT**********

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*Mr. Carter. Thank you, Mr. Klanecky. The chair now recognizes Mr. Stratte for his opening statement.

STATEMENT OF MARTIN STRATTE

*Mr. Stratte. My name is Martin Stratte, and I am a partner in the San Francisco office of Hunton Andrews Kurth. I am a land use and environmental attorney, and I help companies obtain permits for development projects. My practice is focused on the permitting of mineral exploration and mine development throughout the U.S.

I want to thank the subcommittee for the opportunity to testify here today. I also want to thank them for having this hearing on this very important issue.

Today I will focus briefly on two things: first, I will share my thoughts on the status of the nation's critical materials supply chain; second, I will share some of the challenges that I see companies experiencing when they try to permit domestic sources of critical materials.

Critical materials are important because they support our way of life. Although critical materials are sometimes associated exclusively with the clean energy revolution that is wind turbines, solar panels, electric vehicles, batteries, they are already essential for things we use and need on a

daily basis. Computers, cell phones, hospital equipment, airplanes, internet cabling, cars all require critical materials. That is why they are critical, and why having a steady supply chain of these materials is essential to our country's economic growth, as well as the nation's strategic position in the world.

There are often no substitutes for these materials. They are the result of hundreds of millions of years of geologic events. They have to be mined where they are found. If they are not mined where they exist in the United States and processed here at home, others will do it.

In order to have a secure critical materials supply chain, America needs a complete critical materials supply chain. A complete supply chain is one that includes both the raw materials that need to be processed and the facilities to do the processing. America does not currently have a fully complete supply chain because companies trying to mine the raw materials face significant challenges with permitting. These challenges have a chilling effect on domestic production because there aren't and haven't been enough materials to process. As a result, our national industrial

base has been considerably diminished, to the point where some of the facilities necessary to process critical materials, like smelters, are not available in sufficient numbers.

What this all means from a supply chain perspective is that, for many -- perhaps most -- of the critical materials that are on the annual list published by the U.S. Geological Survey, we have no supply chain. Let's talk about that list. There is a lot of attention on the Critical Materials List. Let's give it some context.

Each week I prepare a list of groceries that I need to get at the store. This is a good first step, because it helps me know what I need to fill my cupboards. But I must then acquire the groceries. I have to go to the store. Fortunately, there is a steady supply chain for groceries in the U.S. that allows me to shop for what I need.

In the critical material space, every two years the Department of the Interior instructs the USGS, the U.S. Geological Survey to prepare this list. Like my grocery list, this is a good first step, but our nation's cupboards are not being filled with the critical materials that we

need. That is because many of the challenges -- that is because there are many challenges that limit the domestic production of critical materials. And unlike my grocery store example, where I have to go get my own groceries, the Interior is relying on private industry to source and produce the nation's critical materials.

I have limited time, so I will only share a few of the challenges that I see.

First, it is difficult to obtain permits, including permits for exploratory drilling, often due to lengthy, uncertain environmental reviews.

Second, applicants often find themselves in a loop of continuous requests for additional information before their application is deemed complete. Environmental review cannot begin until an application is complete.

Third, there is a lack of experienced mining and mineral development professionals and regulatory agencies available to review and process applications.

Fourth, there are new proposed laws and regulations that are in potential conflict with longstanding laws that prioritize the development of mineral resources.

Fifth, there are national monuments and land use plans and policies being advanced without due consideration of the effect on the development of mineral resources.

Now, there are some positives. We have the ability to responsibly mine and process critical materials in the U.S., and we have laws that mandate the development of these natural resources for the benefit of the nation. But we need to do more to bridge the gap between making a list and doing what it takes to get the materials.

Policy-makers have a have a decision to make: Do we prefer to mine and process our own materials while enjoying the economic benefits, or do we prefer for those materials to be processed elsewhere?

[The prepared statement of Mr. Stratte follows:]

**********COMMITTEE INSERT**********

*Mr. Carter. Thank you, Mr. Stratte, and I apologize for my mispronunciation of your name earlier.

*Mr. Stratte. No problem. Thank you.

*Mr. Carter. Thank you. Now we will hear from Dr. Michot Foss.

STATEMENT OF MICHELLE MICHOT FOSS

*Dr. Foss. Well, I want to thank the subcommittee, as well, for inviting us to join this panel and to tackle these very difficult subjects.

I have a lot on my mind. I will try to be brief. Just some reminders up front.

Energy transitions, which is a lot of what we are talking about these days, require a materials transition. So we don't get where we are today, with all of the amazing technology that we use, without other things going on to enable that.

Inventing new materials is one of our best solutions for going forward, and we don't think enough time and attention and R&D spending is focused on that.

The reality is that we tend to be focused on the end result. How many wind turbines can we install? How much solar can we build? How many EVs can we get on the road -- without thinking about what we really want to do to build all of that.

And then a final, really deep concern that I have, and

that I and my colleagues at Rice share, and that is that we are not thinking about the value of one of the elements in the periodic table, carbon. Carbon is the basis of life on Earth. We already depend hugely on carbon-based materials for everything. We have been displacing metals with carbon-based materials for decades. I showed that to you in figure 5 of the testimony. And we have an opportunity now to leapfrog a lot of our dilemmas in metals with advanced carbon materials, carbon nanotube fibers in particular, which we have developed at Rice, and are being commercialized. It is like magic. It is amazing material. And I would love an opportunity to talk with you all more about it.

The complexity of what we are undertaking is huge. This means that the costs will be higher. The timing is going to be longer and more difficult than everyone thinks, and we need to be able to do it right. And I think everybody would agree on that.

The world is dominated by the extraction of fossil fuels. Those materials, those fuels provide both energy and energy storage. A battery is an energy customer. It is of no use until it is charged, which means that you have to

service the battery, as well as real-time energy needs of customers from electric power systems, since what we are doing is a desire to electrify. That is a big challenge when you look at our grids, the basis for our electric power system in the United States, reliability, and other issues.

We have lots of challenges when it comes to procuring minerals, and I think my colleagues did a great job on that, and I think that we have to be clear about how those challenges play out with regard to our position in the world. I know the committee and the subcommittee are very concerned about our competitiveness in the United States. China's market power derives from its own domestic resource base. So when we look at what China uses, and we can measure it in the USGS data -- that 45 percent, roughly, of market share that China controls across all of the metals and materials of interest -- it comes mainly from their backyard and their willingness to use it.

It is not enough. And so they outbound invest. And as part of that, they have developed capacity at home to process, to smelt, and to refine metals that they procure from overseas. And that is where global tensions are rising,

is around that relationship, that reality.

China's processing and finishing of metals is anywhere from 50 percent to higher. It depends on the metal. We think they control roughly 50 percent of copper smelting and refining capacity. We know they control 90 percent of gallium and germanium processing capacity, because they control the ores from which that is derived.

Every country wants value added. Our main strategy right now for the United States seems to be mine abroad, bring it home, and process it, because we have so much trouble getting through public approvals and permitting for new mining capacity here. And we do need new mining capacity because the world's asset base is old, needs replenishment.

But we face the same issues for processing ores and concentrates that we bring here, just as we do for anything that we mine domestically. And so that conversation that Chair Rodgers wants to have, the honest conversation, really needs to be -- to revolve around those dilemmas. How do you process these materials? How do you commercialize them? How do you extract very, very small percentages of metal from very large amounts of rock, and make it work the right way?

Our competitiveness has declined, and I have given you good data on that in the testimony in table 1. Since the 1970s we have lost capacity in aluminum, lost capacity in copper, lost capacity in lead, zinc, and a host of other things. This happened because our own asset base aged, we have high labor costs, and we have a lot of regulatory oversight for a lot of good reasons, but regulatory oversight that needs to be dealt with creatively in most respects.

We can recycle. One note on recycling. I know that everybody knows this at David's company. They use the same processes, to a large extent. Those processes are also subject to review by EPA. They deal with hazardous materials that are subject to oversight by EPA and the state agencies, as well. And so we have to bear all of that in mind.

You have a lot to think about. I am glad that you invited us here to sort of -- to contribute as best we can to your thought process.

[The prepared statement of Dr. Foss follows:]

**********COMMITTEE INSERT**********

*Mr. Carter. Well, thank you, and thank you all for your testimony.

We will now begin with questioning, and I will recognize myself for five minutes.

As I mentioned in my opening statement, I believe that we should pursue an all-of-the-above-type energy strategy to shore up our supply chain for critical minerals. This includes extraction, processing, recycling, and trade. Dr. Michot Foss, in your opinion, is it possible for us to secure our supply chain through material recycling and trade alone?

*Dr. Foss. I don't think so, and I think it will be a really long time before recycling is able to contribute as much as we need.

And I appreciate fully your comment about the biggest mine being on our roads. It is already true. We recycle a lot, and we do a very good job with recovering metal, iron, scrap iron, steel, copper, aluminum. Lots of other materials come into the market from recycling, but we are in a building mode that, if you follow the logic that is out there -- and that is my first question: is the logic good logic of what we are doing -- will we be able to sustain supply and

delivery on time and at affordable cost? And that is the issue.

*Mr. Carter. Right.

*Dr. Foss. And I don't think that relying on just those two things does that.

On the trade side, looking at the call on taxpayer resources to support securing supply chains abroad, we really have not had a full conversation about that.

*Mr. Carter. Right, good.

*Dr. Foss. I don't think.

*Mr. Carter. Good. Well, as many of you have mentioned -- and I also mentioned it -- China announced export restrictions on gallium, germanium, and graphite last year. And prior to that announcement, the United States was 100 percent import reliant on China for gallium and graphite, and 50 percent import reliant on China for germanium.

So we understand that we need to produce more critical materials in the U.S. And I am very proud of the fact that one of the only mines that we have here, one of the few mines that we have here, is in my district, in the 1st district of Georgia in Jesup, Georgia. It produces several minerals that

go into products from aircraft engines to medical devices, and help us live our everyday lives.

But that mine also produces natural monocyte ore, which contains rare earth elements, and that ore is shipped to a company in Utah to recover rare earth elements like uranium, and they will be processed into fuels for nuclear energy or materials for magnet technologies that go into EVs and more. This mine is, as I say, one of the only handful of operational critical mineral mines in the United States, and we need to do more across the country. I think everybody would agree with that.

U.S. critical materials announced the discovery, Mr. Vincent, of a strategically significant high-grade gallium deposit in Montana. The state also has large graphite reserves and potential for germanium through its lignite coal. Can you discuss the extraction potential in your state as it pertains to these minerals, and is there interest in developing these resources?

*Mr. Vincent. Thank you for your question, Mr. Chair. Yes, absolutely.

I mean, I think in my written testimony I kind of

illustrated how we, our state, did fill that role during some of our most critical times, and we still have much more untapped resource within our state than what has already been tapped. And that also, like I said, includes what could be in our wastes.

*Mr. Carter. Right.

*Mr. Vincent. And so that is one of the things we are working as an association on with our members, is to look at what we might be able to get out of historic sources, as well as get more out of the permitted facilities that we have right now.

You mentioned the discovery of a deposit of rare earth elements down in the Bitterroot. It is in southwest Montana.

*Mr. Carter. Right.

*Mr. Vincent. That holds some promise, but it is very early in the process. I mean, there is a long hierarchy it takes from identifying a geologic resource to actually being able to develop it. I did hand out a simple graph that kind of --

*Mr. Carter. Right.

*Mr. Vincent. -- shows that process. So they are very

low --

*Mr. Carter. Thank you, I got that. Good. Thank you.

Mr. Stratte, I want to ask you. From your experience, what kind of midstream logistics are mining companies currently looking for when they are pursuing a mining project in the United States?

*Mr. Stratte. It is not uncommon for companies to look for port access, because they are looking for an ability to get the materials out of the U.S. to China.

*Mr. Carter. That is one of the reasons why this mine in my district, we have got the Savannah and Brunswick Ports right near there, so that is a big advantage for this mine here. So thank you for that.

Okay, thank you all very much. At this time I will recognize Mr. Tonko for five minutes of questioning.

*Mr. Tonko. Thank you, Mr. Chair.

I mentioned that IIJA and IRA made considerable investments in securing domestic critical material supply chains. So Mr. Klanecky, have you been involved in EPA's efforts to develop battery labeling guidelines?

*Mr. Klanecky. Thank you, Mr. Tonko, yes.

You know, one of the things, when you step back and look at battery recycling and being able to recover these materials, having the right regulation and registration to be able to transport those materials safely to processing facilities is absolutely critical. So we have been working with the EPA on trying to understand what are the right labeling requirements, for example, what are the right transportation requirements as you move these materials across the United States to ensure that they are processed safely.

We have -- we spent a lot of time, energy, and money in extracting these minerals out of the ground, putting them into a battery. And what we want to do is to be able to safely move them to our processes and make sure they are recovered effectively and efficiently.

*Mr. Tonko. And what does that process look like? And what does industry hope to achieve by engaging with EPA on these guidelines?

*Mr. Klanecky. It provides a framework for companies to actually operate safely. You know, we are dealing with materials that have to be handled safely, ensuring that there

is training for drivers, for example, ensure that there is special packaging requirements to be able to move these materials.

As the quantity of batteries increases in the United States, and the quantity of those materials that are end of -- reaching their end of life, making sure that we work with the EPA to ensure that that packaging, labeling, transportation, and guidelines are followed is going to be absolutely critical so we can ensure that those materials are safely transported and moved to facilities to be processed.

*Mr. Tonko. Thank you. Your testimony noted that we can fulfill a considerable amount of our projected lithium and cobalt needs through recycling. But I presume that won't happen if we don't have a well-developed system to collect and recycle batteries and avoid exporting these valuable products at the end of their useful lives.

Can EPA and other Federal agencies play a role in encouraging the adoption of best practices to enable our recycling industry to fully take advantage of this valuable domestic source of materials?

*Mr. Klanecky. Yes.

*Mr. Tonko. And minerals?

*Mr. Klanecky. Yes, the EPA definitely can help. I think there is ongoing activities and service solutions. We are working closely with the EPA to actually share our 30 years of experience of transporting batteries around the nation.

You know, one of the things that is important is regionalization of how you are moving those materials and having, again, licensed operators to be able to do that. We have a tremendous amount of expertise in packaging and how you package materials so they are safe, and that is something that we have been actually really, I would say, interactive with the EPA, in ensuring that they can provide those guidelines to other companies out there to ensure that we have the capacity to be able to package materials, to be able to transport them safely.

You know, our company is proud. We have been doing this for over 30 years. And, you know, we have a number of our customers that ask us how fast can they get to our -- their facilities to pick up our batteries. And with our extensive logistic network, the know-how we have in packaging, working

with the EPA on these regulations, we can get to pretty much any site in the United States within 24 to 36 hours to pick up a battery. And in some cases, that is pretty critical, depending on the state of a battery and the needs of our customers.

*Mr. Tonko. Thank you. I obviously see this as a great connection with the need to improve transparency more broadly, because I believe it will benefit both recyclers and miners from the U.S. and other allied nations to have credible and widely adopted ways to verify where their minerals come from.

So Mr. Klanecky, can you tell about -- tell us about how improved transparency may benefit service solutions and others that want to promote domestic supply chains?

*Mr. Klanecky. Yes, absolutely. You know, traceability is important, right?

One of the things that we are obviously working with a number of our customers on is around how we are tracing these materials, where they are coming from, whether they are coming from outside the country, or whether they are being produced inside the country, and providing that transparency

on traceability.

The goal for our industry is to make sure that those materials stay within our borders, and they are not sent back to China, for example. China will take all these materials back home, and they will keep them back there if we let them, right?

So having that traceability and that transparency of these materials, where they come from and how we keep them within our borders, is absolutely critical. And that is something that, again, working with the EPA and other agencies, we are working hard to ensure that there exists that transparency and exists the ability to trace those materials. And your Act, obviously, is trying to address some of those opportunities.

*Mr. Tonko. Thank you. And so obviously, domestic miners and processors and recyclers have a lot to gain by better mapping of these supply chains, and these identifiers are pretty neat. They can also provide information to businesses and consumers about end of life management of batteries, which will help with the collection and the reuse and recycling, and safe disposal of batteries when necessary.

One provision of the Critical Materials TRACE Act is to try to harmonize efforts to develop digital identifiers with the battery labeling work already underway by EPA. And I believe, yes, I have exhausted my time, but we have a question that I will send your way, and hope that we can get a response to the subcommittee.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Tonko. With that, Mr. Chair, I yield back.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentleman from Alabama, Mr. Palmer, for five minutes of questioning.

*Mr. Palmer. Thank you, Mr. Chairman.

Dr. Foss, MIT reports that China controls 95 -- between 95 and 97 percent of the world's rare earth production, and possesses 89 percent of the world's rare earth reserve base. In my mind, that creates a threat to our economy and to our national security. Would you agree with that?

*Dr. Foss. It certainly is complicating, and I think used incorrectly, yes, it can lead to a threat.

*Mr. Palmer. Used incorrectly by China?

*Dr. Foss. I am sorry?

*Mr. Palmer. Used incorrectly by China or an adversarial nation, any adversarial nation that controls that supply and production, the processing and refinement capabilities.

*Dr. Foss. I think it is a vulnerability that we don't want.

*Mr. Palmer. It absolutely is. I would make this

argument that, if we haven't learned anything from the war in Ukraine, it should be fundamentally this, that no nation should be reliant on an adversarial nation for something as critical to its economy and national security as energy. And I would add to that critical minerals.

And that is where we are, we are denying ourselves access to the existing supplies of critical minerals in this country. We don't -- we do very little processing in terms of really large processing facilities, refining facilities. I am not sure there is even a really large facility in the Western Hemisphere. So when we start talking about near sourcing our supply chain, we are way, way, way behind where we need to be.

So I just think that, when you look at what we have done to mining here, it takes a decade or longer to open a new mine. We have turned mining -- what used to be the backbone, really, in many respects, of America's economic might, we have turned it into a high-risk, anti-investment culture that drives capital out of mining.

I mean, take, for instance, the Twin Metals mine in Minnesota. They spent a decade, almost a decade, before the

permitting was terminated. That investment was all lost.

You take another one. When I was on the Science, Space, and Technology Committee, the Alaska Pebble Mine that would have produced a substantial amount of copper over two decades before they finally denied them a water permit that shut down the mine. This is insane.

Mr. Stratte, Mr. Vincent, you are -- I am happy for you to comment on this.

*Mr. Stratte. If I may, I think it would be helpful for the public to be educated more about mining. I am grateful to have gotten into the industry. I thought it was interesting, and I absolutely have loved it ever since. And when I go to a mine and see the hard-working men and women that are proud to provide the materials for this country, it is really an incredible thing to see.

*Mr. Palmer. Before Mr. Vincent responds to my point, would -- could you honestly make a statement that we do mining well, that we are -- we do a good job mining responsibly?

*Mr. Stratte. We are the best. These aren't people swinging pickaxes. We have computerized mining. We have men

and women sitting in control rooms. It looks like they are playing video games. They are mining. There is leak protection. There is air emission controls. There are mitigation measures.

And, of course, as has been mentioned this morning, in our country we have the strictest regulatory programs to prevent pollution.

*Mr. Palmer. Mr. Vincent?

*Mr. Vincent. Mr. Congressman, thank you for the question.

I would just echo some of what Mr. Stratte was saying. I mean, nobody does it better and more responsibly, from a safety perspective, from a labor fairness standard, and an environmental protection standard than the United States, which makes it frustrating, the permitting process that it takes to get from exploration to mine.

*Mr. Palmer. What we have done is we have created choke points in the supply chain. It was mentioned in your testimony, Dr. Foss, and by the chairman about China restricting exports of germanium and gallium. They also restricted graphite. We have created choke points that could

cause enormous harm to our economy. We understand that warfare is not just fought with bullets. And by the way, you need antimony to harden lead, and we are getting it from dead car batteries.

This Administration and some of the people in Congress have deployed some of the dumbest, most dangerous policy in the history of this country that I think has put us in a position where this is now a national security issue.

Mr. Chairman, I yield back.

*Mr. Carter. The gentleman yields. The chair now recognizes the ranking member, Mr. Pallone, for five minutes of questioning.

*Mr. Pallone. Thank you, Mr. Chairman.

As I mentioned in my opening statement, I support securing our critical minerals supply chains. And it is clear that demand for these materials will continue to increase as we transition to a clean energy economy. So we need to grow our domestic capacity for processing, refining, recovering, and recycling to meet the industry's needs.

But success requires us to take a comprehensive and holistic approach to addressing the critical minerals

challenge, and I believe those solely focusing on expanding mining are missing the bigger picture. There is a suite of complementary policies that can go hand in hand with sustainable mining practices to fostering growth in the entire domestic critical minerals supply chain.

So Mr. Klanecky, Solutions is a major player. I said -- Cirba, Cirba Solutions is a major player in the battery recycling industry. So could you explain the importance of battery recycling, and how it fits into the bigger picture of securing our domestic supply of critical minerals, if you would?

*Mr. Klanecky. Yes, thank you very much for the question.

You know, when you look at the overall supply chain -- I think I mentioned in my opening statement -- we have to create a holistic view of how we are going to manage these critical materials. It can't just be mining only; it has to be closing that back-end loop.

We spent a lot of time, like was just mentioned, a lot of time, sweat, tears, energy on extracting these materials out of the ground, or getting them from maybe another country

out of the ground. And the worst thing we can do is let them either leave our borders and go back to China, for example, or be put back in a landfill. So having a holistic, closed-loop supply chain is absolutely critical, and recycling is part of that.

We make sure that, you know, we obviously do this sustainably and responsibly. These materials don't evaporate, right? Lithium, nickel, cobalt, you know, manganese, they can be recovered over and over and over again. The infinite -- they are infinite in their recovery and reuse. So, you know, once we have these materials within our borders, and we have got a supply chain, they are created, you know, I think over the next, like I said, 15 years or so, you are going to see substantial quantities of material that has been reused one time in our lifetime, be reused over again into a new battery. Maybe it is an energy storage system or electric vehicle battery.

So creating that closed loop is, I think, the key to ensuring our national security for the long term.

*Mr. Pallone. And I, of course, in my opening talked about the significance of the Bipartisan Infrastructure Law

and the Inflation Reduction Act in terms of investments to strengthen critical mineral supply chains, you know, including recycling.

But I do think there is more to be done to continue driving growth in this sector. So your company has taken advantage of a number of these programs and investments that I mentioned. But, in your opinion, what additional policies or incentives should Congress consider in order to ensure the long-term success of the battery recycling sector in the U.S.?

*Mr. Klanecky. Yes, I think there is a few areas that we can focus on.

One is the traceability of those materials so that we ensure we know where the materials are, we ensure that they stay within our borders. So having some level of traceability so we know that we can keep them within the nation's borders and continue to recycle and reuse them.

I think there is opportunities for us also to, you know, to look at how do we compete nationally, in terms of -- on a global scale with companies providing them incentives. There is still a lot of work to be done to build this industry out.

If you step back and look at China, China has been doing this for over 15 years. They didn't just all of a sudden wake up yesterday and decide to recycle materials or recover materials or process materials. They have been thinking about this for a very, very long time. So all the batteries that they produce, they want to keep them within that country so they can recycle and recover those materials.

So this has to be a longer-term strategy, and an effort where I think continued investment supporting, obviously, the mining industry on different opportunities to be able to mine these minerals out of our borders, as well, but also just policies that enable investment, and enable companies like Cirba Solutions to continue to grow their business and create that infrastructure to close the loop of these critical materials.

*Mr. Pallone. I know I am running out of time. You know, the problem, though, is China just subsidizes everything as a command-and-control economy, and we believe in competition, as I do. But if we don't do something on a national level to encourage competition or help out industry, then we may not be able to compete with them.

So is there anything else that you wanted to add to this in terms of -- I mean, obviously, we all believe in competition, but --

*Mr. Klanecky. Yes.

*Mr. Pallone. -- the Chinese, you know, they just decide what to do and communist --

*Mr. Klanecky. Yes, we can't out-China China, right?

*Mr. Pallone. Right.

*Mr. Klanecky. You have all heard that phrase. They are going to continue to do what they need to do to protect their economy, as well.

I do think, again, the incentives, the grant programs, things like that are helpful. It helps to kind of kick start the economy off. I think you have things like the Inflation Reduction Act, which also provides incentives, tax credits, and things like that just to continue to enable this investment.

There is a lot of really smart people in this country. We are a very strong country of innovation. I think continuing that investment, that focus. That education that was mentioned earlier on what we need to do to secure our

critical materials is absolutely paramount for us going forward.

And that is where -- again, the investment is here now, and we can continue to build that for the next 20 years. People will continue to invest in this business if they see the returns, and also if they see that we are protecting our national security.

*Mr. Pallone. Well, thank you so much.

Thank you, Mr. Chairman.

*Mr. Joyce. [Presiding] The gentleman yields back. Next I will yield to myself for questioning.

First I want to thank our witnesses for appearing here today.

In the past 100 years, Americans and our government have spent large amounts of time and effort worrying about our access to fossil fuels. We have researched, developed, and invested in new ways to access the energy, the energy that exists under the feet of my constituents. And we have produced natural gas and oil that is a vital component to America's energy security.

In the 21st century, access to critical materials is

going to be as important as traditional fossil fuels. I am going to repeat that: Our access to critical materials is going to be as important as fossil fuels. These materials touch every congressional district and every single American. They are in everything from the grid that we rely on and the electric vehicles that people drive to the computers, electronics, and cell phones that each of us have access to.

The mining and processing of critical materials has large economic potential for America. One of the oldest companies in my district, for example, is McLanahan Corporation, which manufactures equipment for crushing, cleaning, and sorting of raw materials. The family-sustaining jobs that McLanahan provides are the lifeblood for my community.

We should not look at critical materials only through an economic lens. China's goal to dominate the mining and the processing of critical materials has created one of the largest current national security risks to America. In 1973, when OPEC started its oil embargo against the United States, the cartel's global oil market share was over -- just slightly -- over 50 percent. This sent through the American

economy shock waves.

Today China controls 90 percent of critical material processing. Again, 90 percent of global critical mining processing is done in China. If China were to halt exports of critical materials into the U.S., it would cripple our economy overnight. At the highest levels of government we need to be addressing this threat to our nation and planning to ensure that it does not come to pass.

Sadly, the Biden Administration's policies are pushing us further into dependency on China. Policies like EV mandates and forced power plant closures increase American demand for critical materials. Meanwhile, draconian environmental and permitting processes prevent domestic processing from occurring. We need to stop these ill-conceived efforts and put American ingenuity to the task for restarting our domestic industry and breaking China's grip on critical materials.

Mr. Stratte, how do these delays impact financing for these projects that you would recommend be done to bring greater predictability to the permitting process?

*Mr. Stratte. It is a problem because, as Mr. Vincent

alluded to, mineral exploration and development takes years and significant sums of money. And so if an application gets hung up, investors become concerned about the -- they become unwilling to invest the capital needed to move that project along. And as was mentioned earlier, there are projects that have invested hundreds of millions of dollars and gone through 10 or more years of permitting, only to end up with nothing.

*Mr. Joyce. Dr. Michot Foss, you have traveled extensively throughout Asia. How far behind are we to China in sectors of critical mineral mining and processing?

*Dr. Foss. We are really far behind. They were investing and building capacity while we were basically dismantling ours.

*Mr. Joyce. Mr. Stratte, is it fair to say that permitting is one of, if not the largest, obstacle to companies trying to start mining and processing operations here in the U.S.?

*Mr. Stratte. I agree it is.

*Mr. Joyce. Do you believe that permitting process is being weaponized to keep domestic mining and processing

activities from occurring?

In other words, are efforts to delay permits another way to politely stop a project without discussing its merits?

*Mr. Stratte. I can't say for certain that anything is being weaponized. And I was once -- I once heard a judge tell someone that if you don't know for certain, don't say so. I can't speculate on that, but I will say that the permitting system needs to be reformed.

*Mr. Joyce. Mr. Vincent, critics of permitting reform often claim that permitting reform is just another way to weaken our nation's environmental standards. Can you discuss the new technology that your industry has developed to allow us to protect the environment?

*Mr. Vincent. Absolutely. Thank you for the question, which -- it is somewhat insulting. I don't like anybody saying that we are trying to skirt environmental regulation by asking for more certainty in our permitting.

I mean, I already said in both my written and verbal statements that we don't have a problem with the regulations, for the most part. It is the uncertainty that comes in through the permitting process. A good example -- and it is

tied to litigation, which Mr. Stratte might want to weigh in on, as well -- the 14 years that Sandfire Resources America has endured in finally getting a permit, I would say roughly half of that is in litigation by environmental groups that know how to use that permitting process and the litigative nature of statutes of limitations to drag these out.

A mine already costs enough to do it right with -- adding in that certainty on when and if you are going to be litigated just adds to that uncertainty.

*Mr. Joyce. I thank all of the witnesses for participating here today.

My time has expired. I now yield to the gentlelady from Colorado, Ms. DeGette, for her five minutes.

*Ms. DeGette. Thank you so much, Mr. Chairman. I kind of want to follow up on this previous discussion, because I am also from the West, from Colorado, and I am somebody who has looked at these permitting issues on a variety of issues on mining and mineral extraction, oil and gas, and a variety of other things. And nobody wants excessive and unpredictable regulations. Nobody wants that. And I have worked in a bipartisan way for many years on trying to

streamline permitting.

But I have got to say my problem is that talking about permitting reform has become sort of a shorthand of somehow saying, if we waved our magic wand and we got that, then lo, we would have domestic development of these rare minerals and other things that we need for battery production. And I have seen no evidence to that effect.

And also, my Republican colleagues keep talking about how horrible it is that the Biden Administration is trying to move to renewable and clean energy. So I guess my assumption would then be they want to just preserve the current system. But as they admit, under the current system, two-thirds of -- I think it is -- no, it is -- yes, it is two almost two-thirds of these rare minerals and so on for the batteries come from China. So if we preserve the current system, we are just preserving this dependance on China.

In my perspective, the only group that has been trying to really -- not in a rhetorical way, but in an actual way -- develop domestic reliance on the components for batteries and other renewable energy is the Biden Administration and the Democrats in Congress in the last session, because we passed

the Bipartisan Infrastructure Law, which put $1.2 trillion into this infrastructure, which included $3 billion for battery materials processing and $3 billion for battery manufacturing and recycling, and more money to -- for EPA to develop battery collection best practices.

And also, other legislation that would try to increase domestic production and also increase our partnerships with our allies around the world because, as all of these wonderful witnesses know, we don't have all those minerals in the United States. We have to rely on alliances. And I would rather rely on, say, Australia than on China to help us get these minerals.

And so I just think, you know, this shouldn't have to be so partisan. All of us think that we should -- I guess maybe my colleagues on the other side of the aisle don't think we need to move to renewable energy and a carbon-free economy at some point, but I think most of them do think that we need to do that.

And so the question is, then, how do we work together to develop these domestic resources? And simply attacking what the Biden Administration has done is not going to get us to

that point.

And so I guess I want to ask you, Mr. Klanecky, is how would increasing domestic supplies of critical minerals in the U.S. reduce the volatility of critical mineral prices, and what role will battery recycling play?

*Mr. Klanecky. Thank you for the question. You know, you made some great comments there, I think, that are really important in the overall picture of what we are trying to accomplish.

You know, if you look at having our own supply of material, having a closed loop supply chain where we actually know that, once the material is in the United States borders, we keep it there, we are going to continue to reuse it, and creating that type of environment, we also have the opportunity to lower our costs --

*Ms. DeGette. Right.

*Mr. Klanecky. -- on how to produce these materials, right?

*Ms. DeGette. Right.

*Mr. Klanecky. We know that you can produce materials at a lower cost if you have them closer by, and you are not

having to ship them in from another country or depend on another country to ship them to you.

So I think, when you look at the overall closed loop strategy that we have been talking about, it is, again, opportunities in mining to continue to find those materials here locally, and make sure that we source those domestically, but also, once those mined materials come out of the ground, that we reuse them over and over again.

And --

*Ms. DeGette. So let me ask you this.

*Mr. Klanecky. Yes.

*Ms. DeGette. Let's say we just said, well, we are not going to have any more EVs, so we are not going to have any more batteries. Would that change the current economic situation and the need to have that closed loop system that you talk about?

*Mr. Klanecky. I think it would create a lot of challenges if we all of a sudden said we are not going to have any EVs.

At a broader scale, from a carbon footprint perspective, I think also -- again, not to bring up China too much, but

China is not slowing down.

*Ms. DeGette. Right.

*Mr. Klanecky. They are not going to slow down. Their goal is to produce electric vehicles for the world. We see that in Europe, we see that -- them trying to penetrate the United States. They are doing that for a reason, because it allows them to have a little bit more control on the transportation systems, it allows them to have more control on these critical materials. And we want to prevent that from happening.

*Ms. DeGette. Thank you. Thank you very much.

I yield back.

*Mr. Carter. [Presiding] The gentlelady yields. The chair now recognizes the chair of the full committee, Representative Rodgers, for five minutes of questioning.

*The Chair. Thank you, Mr. Chairman.

I just want to start by saying -- just reminding everyone the United States of America has been leading the world in bringing down carbon emissions. We have been leading the world, not China.

I represent a district that we used to mine silver,

gold, magnesium, lead, zinc, uranium. It has all been shut down. The fact of the matter, we are not sourcing domestically, and the policies that have been promoted by this Administration have continued to shut down American manufacturing, American mining, processing. And we are -- and it is making us dependent upon China.

I have talked to so many, so many companies who say they have no choice other than to source from China. That is why we are having this hearing today.

So along -- I wanted to start with Dr. Michot Foss because part of what is happening is that the United States -- and we also do this in the most environmental way, friendly, we have the most -- we have the strictest environmental standards, labor standards. We protect human rights. We really should be celebrating America and America's leadership on this front, while also becoming energy independent until a couple of years ago.

But we are the largest producer of oil and natural gas. It has made us more energy secure. It is foundational to everything: our economy, our national security. But Dr. Michot Foss, I wanted to ask, you know, because many of us

believe that the American shale boom has brought tremendous economic benefits both to the United States of America and to the world. Our surplus oil and natural gas is a lifeline for Europe, especially when we have President Putin that has waging this war in Ukraine, and then others that are attacking Israel. Are you concerned that the Biden Administration's policies, the forced transition away from fossil fuels will increase mineral dependency and make America less energy secure? And if so, why?

*Dr. Foss. I am concerned. In fact, I would say that all of us at the Baker Institute share the same concern. We are concerned that people want to move away from a really important part of our national security, our economic base, and not just for the United States, but for the global economy before we can fully execute on the alternatives. That is the big problem.

And to fully execute on the alternatives takes time, it takes planning. We have to think about where things come from, under what rules, with what standards, how we want to guide that process so that everybody can participate the right way, how to ensure transparency, how to achieve all the

things that we want to be able to achieve. And we are actually really worried about that.

And some related points to questions that have come up already, if I may, one is an electric vehicle today -- an electric vehicle in the future -- most of the material in that device is plastic, carbon-based composites. Again, we have been using those materials to move metals out of use because metals are heavy, they are difficult to get, they entail a lot in terms of the value chain, executing on the value chain. Plastics are light, they are strong. We want to make them lighter and stronger, and improve that part of the picture, as well. So we have to think about all materials, all of those supply chains. All of them need to be reliable. All of them need high integrity, not just some or the other, but all of them.

*The Chair. Thank you. Not only does China control the mineral supply chains, but last year China began restricting exports on several minerals, including graphite, that are important to American military applications. China has also manipulated the market for lithium, a key ingredient for batteries and a linchpin for President Biden's EV mandate.

Mr. Vincent, does the Chinese monopoly on mineral supply chain threaten our economic viability of the mines and American mineral processing facilities?

And we all know that President Biden has been blocking mining and drilling on hundreds of thousands of acres of Federal lands. What is at stake when this is happening?

*Mr. Vincent. Thank you for the question. I appreciate some of your comments before on the gravity of the situation we are facing here.

I mean, it is a huge risk. Even if we did increase our mining by tenfold, we still would send it over to China. So I don't know what that gets us. We have done this before, the mine-to-consumer model, when the United States was the unquestioned leader of the free world. And applying the lessons that we have learned through our environmental and our labor standards and our safety standards to that same model that got us to where we are is the key.

This has to be a circular, vertically integrated from-mine-to-consumer system. The more pieces of that circular system that we have here, from mining to recycling and processing and manufacturing, the less we have to worry about

what you are describing.

*The Chair. Thank you.

*Mr. Vincent. And so I think that is --

*The Chair. Thank you.

*Mr. Vincent. Yes.

*The Chair. Yes, America's strength is technological advancement and innovation. That is how we beat China.

I yield back.

*Mr. Carter. The gentlelady yields. The chair now recognizes the gentleman from Maryland, Representative Sarbanes, for five minutes of questioning.

*Mr. Sarbanes. Thank you, Mr. Chairman. Thank you all for being here. This hearing clearly gives us an opportunity to discuss the important topic of how we can strengthen the domestic supply chains that produce high-tech goods like batteries, which are critically important as we transition to cleaner energy sources.

It is no secret -- obviously, we are already discussing it here today -- that the vast majority of critical minerals are processed in other countries, including China. And that means that, even if we have imported these materials or

commodities, if we want to recycle them we are likely still to need to send them back out of the country for reprocessing, which represents a missed opportunity to strengthen our domestic manufacturing and recycling capability to support and sustain a North American battery supply chain, which, obviously, should be our goal here.

The Bipartisan Infrastructure Law is helping us address this challenge by investing in the sustainable sourcing and processing of critical minerals used in battery production without new extraction or mining. I mean, that is an important piece, as well as in end-of-life battery collection and recycling.

Mr. Klanecky, as I gather, it has been discussed already, I understand your company was awarded funding from the from the Bipartisan Infrastructure Law for batteries and recycling. What is the impact this funding has had on your company's operations and long-term plans? Just give us a sense, again, of what that has meant in terms of getting to that next frontier.

*Mr. Klanecky. Yes. Thank you for the question. You know, what it has meant to Cirba Solutions is it has helped

accelerate our asset build-out for these type of facilities.

You know, you mentioned that a lot of material, whether it is produced here, recycled, some of it has to go back overseas because we don't have the full, complete supply chain domesticated here in North America. And I think, you know, I was just actually in Japan and Korea last week talking to customers there, and really working to convince them why they need to build assets in North America. And the one thing that they keep coming back to us is, if there are sources of material locally, they are more than happy to invest money in the United States and put -- build plants here, which creates jobs and economic activity for our country.

So I think that is one of the things that, as you look at the investment that we have gotten to help accelerate our asset build-out -- and we are continuing to do that, we have we have got multiple assets planned over the next few years, and using that funding really helps to accelerate the growth of that, it helps accelerate building of those assets.

We are quickly closing that loop that I mentioned earlier, and ensuring that we have those materials available

for the downstream producers, the cathode manufacturers, the cell manufacturers so that they can domesticate their supply chain locally, as well. They want to have the materials here in the United States when they are going to build a battery or build a cathode, and then, obviously, build a vehicle for that.

So all of those things really help to accelerate that investment in jobs and in economic activity for the United States.

*Mr. Sarbanes. And how critical would you say it is? Does it border on being, in a sense, indispensable, at least in these early stages of building supply chains, that there are public-private partnerships that can drive this innovation?

Obviously, you are benefitting from that, you are a private-sector player, but the government support represented by the Bipartisan Infrastructure Law has been of consequence. So talk a little bit generally about the importance of public-private partnerships to drive innovation and growth in this domestic battery recycling sector.

*Mr. Klanecky. Yes, absolutely.

You know, the Department of Energy's MESC office has been foundational, really, to help us out. They have got a lot of, I guess, a very strategic look on how they want to help build the supply chain out. You have Department of Defense also is, obviously, getting involved from a national security perspective, right? There is a number of minerals that they want to make sure that we have access to for our defense systems, which is absolutely critical.

So when we have sat back and worked with the Department of Energy, we have really looked at how that investment could help accelerate what we are doing. And I think that is one of the things that needs to continue. This is not a four-year plan or another four-year plan. This is a multiple, you know, 10 to 20-year plan that we have to embark on. And that is why I think I mentioned in my earlier comments this is a long-term strategy to create this closed loop, right? It doesn't happen overnight.

We know it takes time to open new mines up and mine materials. Battery recycling can be propped up fairly quickly, and we can ensure that whatever materials are available, we can recover those. If we don't do that, they

will end up on a barge somewhere back to China, most likely, and we want to prevent that.

*Mr. Sarbanes. Well, I mean, I think many of us are excited that we are finding our way as a nation to some important industrial policies, and this is an example of that. And the partnering that needs to happen between the private and public sector is a critical ingredient there.

So with that, Mr. Chairman, I yield back. Thanks.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentleman from Georgia, Mr. Allen, for five minutes of questioning.

*Mr. Allen. Thank you, Chair Carter, for holding this very important hearing on securing our critical material supply chains, and I want to thank our witnesses for being here today and sharing and testifying as to what is actually going on in our space.

We should not be reliant on China for our critical material needs here in the U.S. I met with some -- the home builders in our state yesterday, and our state is the number-one state, Georgia, to do business in in the last 10 years. We are growing rapidly, have a tremendous demand for housing,

and we are meeting that demand.

The problem is we can't get transformers. So the Department of Energy has mandated this new transformer, and it is single source supply here. And they can't get the materials from China to make it. So we are sitting there with seven houses and no power to them. And even the power company says, "I don't know how we are going to hang these things on the poles.''

These are decisions coming out of this Administration that lack all common sense, total common sense. You know, it is a matter of national and economic security that the U.S. be a leader in the critical material economy. We cannot be dependent on other nations. We need to bolster our national critical material supply chain and the mining and processing. And like I said, we have heard that we, at one time, led the world in that.

Mr. Stratte, do you believe that regulatory environment would even allow for a new metal smelter or processing facility?

*Mr. Stratte. The regulations allow the use, but getting it permanent will be a long process.

*Mr. Allen. How can we -- I mean, Congress can fix that, right?

I mean, if -- we are passing permitting reform. We just passed it out of the House on nuclear facilities. We have the ability to do that. And rather than be subject to an agency who is the fourth branch of this government who is making these regulations on their own without congressional consent, so is that -- would that be a fix, to do it by law?

*Mr. Stratte. That would be helpful.

*Mr. Allen. Yes, yes --

*Mr. Stratte. It would be helpful --

*Mr. Allen. -- if we could get it through the Senate and get it through the Administration.

Dr. Foss, what would be the implications for the U.S. economy and consumers if China closed off supply chain of critical minerals to the United States?

*Dr. Foss. Can I add something to your previous question?

*Mr. Allen. Yes.

*Dr. Foss. Because I think people look at permitting reform, they look at certain things or they have certain

ideas about it. And I think that the smelter regulations in the Clean Air Act need to be considered, as well, specifically for processing.

*Mr. Allen. Thank you.

*Dr. Foss. I think the impact on U.S. customers, if China was to take an action to suspend supply, would be traumatic. We had a good analogy that we can look at, a good model from the pandemic of what happens when supply chains can't perform, and we saw all the implications of that.

But we need to also understand that there is an alternative scenario for China's actions that are equally traumatic. China can build scale so fast. They can put so much volume on the market that they affect commodity prices. So we have been seeing them do this for a host of materials, whether it is rare earths, nickel, you name it. We are trying to invest here in a more expensive context, one that has delays, one that just is higher cost. We need higher commodity prices to support that. The Chinese volumes are important for the global economy, but they undermine investment in more expensive locations like the United States. That is a harsh reality.

*Mr. Allen. In other words, we can't compete.

*Dr. Foss. It is really difficult to compete, unless we go back to what Chair Rodgers brought up, that honest conversation. How honest are we really willing to be? How honest do you all want us to be on this panel?

*Mr. Allen. Right. Well, I think it is time to speak the truth here.

*Dr. Foss. Well, my truth, my personal truth on this is, when I look at the mining industry I think it is hard to deliver, especially on a greenfield project, a new project as opposed to a brownfield site --

*Mr. Allen. Yes.

*Dr. Foss. My average is 20 years.

*Mr. Allen. Yes, well, you know, the American people --

*Dr. Foss. It is a reality.

*Mr. Allen. They expect -- when they flip that light switch on --

*Dr. Foss. For it to go on right away.

*Mr. Allen. -- for the lights to come on. Yes.

*Dr. Foss. Yes, exactly.

*Mr. Allen. And, you know, when that doesn't happen,

something is going to get done, I will assure you.

*Dr. Foss. I --

*Mr. Allen. Well, I have -- thank you. I have run out of time. I got a lot more questions. I am going to submit those for the record, if you don't mind responding to those so we can make this as a record.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Allen. Thank you, Mr. Chairman, and I yield back.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentleman from California, Dr. Ruiz, for five minutes of questioning.

*Mr. Ruiz. Thank you, Mr. Chairman.

Critical minerals such as lithium, cobalt, and rare earth elements are indispensable for the production of modern technologies, including smartphones, electric vehicles, defensive equipments, and batteries. The economic strategic significance of these minerals cannot be overstated, as all of you have mentioned, and we know that countries like China recognized the importance of critical minerals years ago, and have since positioned themselves as a world leader in the rare earth element production. And China currently accounts for over 60 percent of global output.

In the meantime, the U.S. possesses considerable mineral resources, but it has failed to prioritize the development of this sector. For this reason we are dependent on foreign sources, particularly from China, for many essential minerals. According to BBC, Chinese companies control over 33 percent of the lithium production projects, and this

dominance gives China substantial leverage in global markets and geopolitics, and the ability to influence supply chain prices and technological advancements.

And so, in order for the United States to meet its critical mineral needs, we must invest in the domestic production of critical minerals. And the first place we should invest in is Lithium Valley in my district near the Salton Sea region, which has the fifth largest lithium deposit in the world. It has the raw materials that can power our clean energy future. The region is home to one of the largest lithium deposits, with the potential to supply lithium not only for electric vehicles, but also for batteries that can make our electric grids more resilient. Lithium Valley is the key to unlocking our clean energy future, cementing U.S. leadership and securing our energy independence. And it is also produced in a very innovative way.

I first want to ask Mr. Klanecky --

*Mr. Klanecky. Yes, sir.

*Mr. Ruiz. In your past professional experience you worked for one of the companies, one of the world-leading

lithium producers. Can you talk about the effects of the United States lagging in producing lithium supply and in manufacturing batteries?

*Mr. Klanecky. Yes, thank you. That is a great question.

You know, lithium is obviously a hot topic, especially when it comes to batteries. And, you know, the United States, like you mentioned, has some resources in -- within its borders to be able to extract lithium and to be able to access that mineral. I think if -- you know, one of the things, if you look at where is the lithium produced today, it is usually in Chile, Argentina, some in Brazil now, and you have Australia. A lot of the processing capability to return that ore there is in China, right? So we depend on China for a lot of lithium hydroxide, specifically.

*Mr. Ruiz. How are they extracting the lithium? Is this large mines, salt lakes?

*Mr. Klanecky. Yes. So China doesn't actually have that much lithium resource within its country. They do have the salt lakes --

*Mr. Ruiz. They do more of the processing, but --

*Mr. Klanecky. Right.

*Mr. Ruiz. -- what about Chile and Argentina?

*Mr. Klanecky. So Chile and Argentina, you are having a lot of processing there. So you are doing the processing steps, so extracting the mineral out of the ground, whether it is a brine resource -- typically in Chile and Argentina it is brine resources -- you are extracting that out of the ground, converting that to lithium carbonate.

*Mr. Ruiz. Are they large lakes, are they big mines, big --

*Mr. Klanecky. They are salt flats.

*Mr. Ruiz. Salt flats.

*Mr. Klanecky. Yes. So you basically have, like the Great Salt Lake here in the United States, you have got -- there is salt underneath the ground there, and --

*Mr. Ruiz. Well, you know, I want to really emphasize this, especially for my colleagues here, is that the way we extract lithium in Lithium Valley is very different. There is no need for explosions. There is no dust in the air. There is no tearing up of the earth. It is simply extracting the fluid from the geothermal brine while it produces

geothermal energy --

*Mr. Klanecky. Right.

*Mr. Ruiz. -- which is something we want. It is a renewable, clean source of energy. And they filter out the lithium and other rare earths and other material, and the footprint and its carbon emission is very, very small relative to the other forms of lithium extraction. So this is an innovative and the cleanest way to extract lithium in the world right now, I believe.

*Mr. Klanecky. Mm-hmm.

*Mr. Ruiz. And in your experience, what is the biggest need that the United States has when it comes to lithium extraction, manufacturing, and battery development?

*Mr. Klanecky. Yes, I think it first starts with permitting, making sure that we have a robust permitting system that ensures that we are going to do these things safely and environmentally correct.

Once you have the permitting process down -- again, there are people that are innovating extensively in this area on how to extract things more environmentally friendly, whether it is not using large, you know, ponds, like the

South American assets use, and using things like direct lithium extraction that you just outlined, right, being able to extract that material out of there efficiently, and then put that material back in the ground safely.

*Mr. Ruiz. You know, I would like to follow up with all of you here, and especially you, because we are developing a tech hub to produce a full supply chain, from lithium to battery manufacturing and recycling. And the recycling part is a big component of that, as well. It is part of the CHIPS and Science Act, the tech hub that we are -- that has created great opportunities that we passed last Congress for this industry.

So thank you very much.

*Mr. Klanecky. Thank you.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentleman from Idaho, Representative Fulcher, for five minutes of questioning.

*Mr. Fulcher. Thank you, Mr. Chairman.

To the panel, thank you for being here. I am going to start with Dr. Foss, but would be open to comments from anyone on this.

But it is my understanding that in my home state of Idaho a cobalt mining operation was recently closed, primarily due to pricing pressure. And we have talked a lot about China, but in this case it is my understanding that that pressure was coming out of the Congo. And there are questionable processes for both the mining practices and labor there.

Of course, first of all, is that -- are you familiar with this?

Secondly, if so, what is our tools to try to deal with that, those kind of pressures?

*Dr. Foss. I am aware of your -- the situation with the mine in Idaho. It is correct to think that it is because of lower cobalt prices. Most of the cobalt in the world is produced in the Congo. They have been able to improve efficiencies and expand production. China controls at this point most of the cobalt output from the Congo, and also most of the processing of --

*Mr. Fulcher. Is it also true, or do you have an understanding that the processes and the labor are what we would deem as questionable?

*Dr. Foss. The big issue in the Congo is what we call informal mining, artisanal mining. And this is true in a lot of countries. Mining is important to the economies. All sorts of people participate, and not all of them participate as employees of recognized --

*Mr. Fulcher. Okay. In other words, there is abuses of labor, and there is abuses of probably environmental practices.

*Dr. Foss. Yes.

*Mr. Fulcher. Thank you.

*Dr. Foss. And it is a very unfortunate thing that everyone is very focused on and trying to correct, but it is difficult.

*Mr. Fulcher. Thank you for that, I appreciate it. Let's transfer to Mr. Vincent.

A lot of Western states have a lot of Federal land. And there is a tremendous disconnect, at least from my vantage point, between cooperation between Federal and state and private entities. Could I just get you to speak to that for a moment from your vantage point?

What is the best chance we have got to try to improve

that, and how do we go about it?

*Mr. Vincent. Thank you for the question. And I think, you know, there have been some good things that have come out of some of the acts just over the last couple of years here, but a lot of that is being erased by the, you know, the contradiction of and the lack of coordination between agencies.

I mean, it is -- we have identified that we want to try and stabilize our domestic supply chain, yet we have got Department of the Interior and the -- primarily the Bureau of Land Management that is going out there, elevating conservation over our multiple-use policies that have been in place for many, many years that makes it that much more difficult, in some cases impossible. You look at mineral withdrawals that are proposed and enacted for areas --

*Mr. Fulcher. So in this case -- and not to rush you, but I am short on time. It is -- am I understanding that you see a coordination problem, Federal to Federal?

*Mr. Vincent. Very much so.

*Mr. Fulcher. All right. Thank you for that. I appreciate the insight.

Mr. Stratte, you are the attorney in the room. We are trying to figure out creative ways to get access to some of these minerals. We have got a ton of it in the West. We have got a ton of it in my state, all across the board.

Land swaps. Any comments on that? Is that a strategy that we should be looking at to try to do to -- with the theory that private or even state -- we can have some channels where we can bypass some of the processes and the -- or at least make them more streamlined? Have you ever thought about that comment?

*Mr. Stratte. I have thought about it. It is a great idea, and that is why it was codified many years ago. The reality is trying to get a land exchange approved is a monumental task.

*Mr. Fulcher. Well, and we are open to ideas, okay?

I have got about 13 more questions. I am going to submit those in writing.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Fulcher. I am out of time. Thank you to the panel.

Mr. Chairman, I yield back.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentlelady from New York, Ms. Clarke, for five minutes of questioning.

*Ms. Clarke. I thank you, Mr. Chairman. Good afternoon, everyone, and thank our Ranking Member Tonko. I want to also thank our witnesses for testifying today and sharing your expertise with us.

As I have previously spoken about in this subcommittee, the transportation sector accounts for 27 percent of greenhouse gas emissions, more than any other sector in the United States. I commend the EPA for finalizing robust phase 3 greenhouse gas emissions standards for model years 2027 through 2032 heavy duty vehicles.

The final rule protects public health, sets performance based standards as required by the Clean Air Act, and accelerates our transition to cleaner, greener transportation technologies.

While strong vehicle emission standards drive

technological innovation, they don't operate in a vacuum. Effective, forward-looking Federal policy to reduce harmful air pollution from the transportation sector is a multi-pronged approach.

To achieve our ambitious goals to decarbonize the transportation sector, especially heavy duty vehicles, we need to grow our domestic supply of critical minerals in order to support production and deployment of cleaner technologies. To be clear, this means going beyond just mining for raw materials. We must build up our domestic capacity to refine, process, and recycle them, as well. Recycling our batteries so we can recover still viable critical minerals is a sustainable strategy that will not only contribute to our environmental goals, but to our economy, as well.

Mr. Klanecky, in your testimony you say that your company can recover over 95 percent of the critical materials from EV batteries, including lithium, nickel, cobalt, and manganese. These are pretty high rates. From your view as a recycler, what important -- impacts, excuse me -- does recovering and recycling critical minerals from EV batteries

have on our transportation sector?

*Mr. Klanecky. Thank you very much. Ninety-five percent is great, I want us to get to ninety-eight. You know, we are working hard on innovating how we continue to extract even more and recover more and more of those metals.

You know, I think the overall impact that it will have is it is going to, one -- do a couple things. It is going to drive down carbon emissions. So we, obviously, will reduce tailpipe emissions if we continue to recover these metals and promote electric vehicles. It will drive the cost of these materials down, as well, because we are able to actually recover them in the United States and in our borders, and that just creates a better opportunity for us to be able to manage the overall cost picture of how we manufacture these materials.

And I think, you know, when you look at it holistically, having a closed loop supply chain, it just -- it reduces our dependance on foreign entities. And it could be friendly, it could be FTA countries, it could be non-FTA countries. But it reduces our dependance on that, and allows us to create jobs and economic impact and activity within the United

States. So having those materials here and recycling them creates that opportunity.

*Ms. Clarke. I agree, and thank you. Being able to source more critical mineral content for EV batteries domestically is a win for everyone. In your testimony you mentioned that if we don't recycle the batteries from the cars on the road, they will end up back in China. Can you please explain how not investing in battery recycling would present a missed opportunity for our vehicle electrification goals?

*Mr. Klanecky. Yes, absolutely. You know, if you think about the time, energy, and money spent to extract these minerals from the earth, it takes a lot of time. We know, we have all heard that today, it takes a lot of energy and money. If we don't recover those materials, where are they going to go? They are either going to go back to China because China wants those materials. Every single kilogram that we produce, they will take all of that and they will keep it within their borders. Or we are not going to put it in a landfill, right? It seems kind of silly to do all this work and then send that battery back to a landfill and let it

sit there and degrade, right, which would not be a good thing environmentally, nor for our economy.

So I think that is -- those are some of the aspects we have to think about, which -- I think the recycling piece of this creates that closed loop. Again, lithium, nickel, cobalt, manganese, all these metals we are talking about, they don't evaporate. They are not a fossil fuel. They don't evaporate. They actually are -- can be reused over and over and over again. So that recovery rate that we talked about at the beginning is absolutely critical to show and demonstrate that we can, you know -- again, lithium can be used for decades, right, if we can recover it and recycle those materials.

*Ms. Clarke. Very well. Thank you. I agree that battery recycling must be a part of our clean transportation future, and I am looking forward to working on policies that grow and support this industry.

With that, Mr. Chairman, I yield back the balance of my time.

*Mr. Carter. The gentlelady yields back. The chair now recognizes the gentleman from Texas, Representative Pfluger,

for five minutes of questioning.

*Mr. Pfluger. Thank you, Mr. Chairman, and I thank the witnesses. I will take a quick point of personal privilege. Often times we don't get a chance to say thanks to those that support us. But my wife is here, and I want to say thank you to her, to Camille. She hates when I embarrass her like this, but we can't do what we do up here without their support. And I appreciate you having this hearing and letting family come and support us here.

[Applause.]

*Mr. Pfluger. I might pay for that one later.

Dr. Foss, I will start with you on -- there was a -- when we look at -- there is misconceptions, I think, about this energy transition. And you can -- shifting away from legacy fuels, and including oil and gas -- I represent the Permian Basin -- and nuclear power, that somehow that shift would ease the global energy security concerns that we have.

And there is several questions in here, but maybe talk to us about picking our friends in different countries for critical minerals, and what that does to maybe exacerbate or cause additional security problems like we saw with fossil

fuels, as well.

*Dr. Foss. For a very, very long time we have worked really, really hard to support oil and gas supply chains, oil and natural gas supply chains. And for natural gas it has been critical pipelines to deliver gas out of new areas like the Caspian region, as well as liquefied natural gas to deliver globally. And we have had great successes with that in terms of building confidence in the markets, developing partners, understanding where and how we need to apply security measures, and so on. And those are different molecules, of course, but basically two commodities.

Now we have 50 that come from different places, different locations, have different properties, different realities, different markets, different prices, and lots of different trade routes. And it is not anything that is -- has been well mapped out.

And I want to share with you all that, for our part at the Baker Institute, I and a colleague have been collaborating with Department of Defense on planning. We are participating in war games. I have one coming up in August. I don't like the phrase "minerals wars,'' I think that is a

terrible phrase that is starting to roll around on this. But we face very sensitive locations for trade that we are going to rely on until we have sufficient capacity coming from either domestic sources, recycling, closed loops, all of those kinds of things that are going to take decades to build.

*Mr. Pfluger. Not enough time in five minutes to go through this. And Baker Institute, by the way, does a phenomenal job of energy security, and thinking about it, and I think that is the point here, is that we were worried about energy security with fossil fuels, now we have the capability to do it right here in this country. Let's talk about critical minerals and how that -- and I will move on to Mr. Stratte a little bit on permitting.

I know in your testimony you have mentioned some concerns about permitting, but if we want to avoid those pitfalls of being dependent on other countries, and especially adversarial nations, then what do we need to do?

What are the key points to avoid a seven to nine-year timeline, which is just unbelievable that we have that here for permitting, to be able to domestically produce critical

minerals?

*Mr. Stratte. We need a clear schedule and process for the processing of an application. Applicants should know what to expect and when to expect it.

And I think what is getting lost in a lot of these conversations is that Federal law supports the extraction of these minerals for the benefit of our nation. The programs that an application goes through, the regulatory programs, are intended to allow the use, subject to compliance with certain standards and mitigation measures, environmental controls. And it has shifted to what feels like an absolute discretionary process that has shifted away from the underlying policy of the laws.

*Mr. Pfluger. "Discretionary.'' That term has come up so often and so many hearings that this committee has had, whether it is EPA or other agencies that are discretionary -- using "discretionary'' measures.

Mr. Vincent, do you feel like we are competing against the U.S. Government?

And I will ask that question to all of you. Are we competing against the U.S. Government?

*Mr. Vincent. I think we can do a much better job of coordinating from agency to agency.

I would like to respond, I mean, to the getting these products from our friends. Friends are not -- you can guarantee it is not going to be done as environmentally responsible. It is not benefitting us economically. We don't get those jobs.

And if what is driving a lot of these things, particularly with the inputs to batteries and renewable energy, how environmentally responsible is it to be shipping things across the world from Australia, when we can be producing these things right in our own backyard?

*Mr. Pfluger. My time has expired. Great discussion. We have more questions we will submit to you.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Pfluger. Thank you. I yield back.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentlelady from Illinois, Representative Schakowsky, for five minutes of questioning.

*Ms. Schakowsky. Thank you, Mr. Chairman.

Mr. Klanecky, I have some questions for you. I am very interested in the issue of recycling. But I also know that there was a recent report that showed that just over 20 percent of electronic waste has actually gone into recycling, and I wanted to focus a bit on what ordinary consumers can do.

I am interested in the clients that you have, but I am just wondering to what extent is the role of everyday consumer -- I have a lot of stuff in my basement that I don't actually know exactly what I am supposed to do with it. But it seems to me that it is much more efficient to do recycling, and probably safer to do that than things like drilling. And so I am wondering what kind of advice that you might be able to give to help consumers to participate in this kind of important recycling.

*Mr. Klanecky. No, that is a great question. I get

that question a lot: What do I do with my devices, and what do I do with the batteries that I have in my garage or in my desk drawer?

You can go to CirbaSolutions.com. We have a program there, where you can actually sign up and have your materials sent to us, and we will process them safely for you, and actually give you a certificate that shows that we processed those, whether it is a phone or a battery of a computer, whatever it might be.

But if you --

*Ms. Schakowsky. This is not something I am going to throw into my general recycling, right?

*Mr. Klanecky. No, it is a device that we have. It is a pail that we can -- you can put your device in. You call a phone number, and they will pick it up the next day and send it to our facility. So it is somewhat that simple. But imagine, you know, you have to get that access to -- you have to communicate that access to the 350 million people in the United States, which is hard to do. And it is something that we are working hard to, you know, really advocate for.

What are the collection centers? You can typically go

to some of your, you know, places like Home Depot, Lowe's, places like that, they will take -- actually use batteries. There are other facilities out there. We have partnerships with other companies out there. Best Buy does programs like that. But again, if you go to our website, we will take all your materials and make sure they get back safely and see that.

So education is part of it. You know, it was mentioned, education, in a number of areas this afternoon. I think we have to continue to educate consumers on what to do with their materials, with their batteries. I am fortunate enough I have two daughters that -- lovely daughters that go to school, and the school asked me to put a kiosk there. And that bucket fills up about every two weeks with people bringing those batteries in. So providing that access is absolutely critical.

*Ms. Schakowsky. In your testimony you mentioned that you are making a pretty big investment, $2 billion in your company. And I was just wondering, what does that mean for the workforce?

And what can we be expecting in terms of jobs that are

going to go into this recycling business?

*Mr. Klanecky. Yes. No, absolutely. Yes, with that investment comes jobs. And our facility in Ohio that we are expanding, currently today, as we speak, with some of the funding from the infrastructure law that was passed, we are going to create another 150 jobs in a small community of Lancaster, Ohio, which is a pretty significant increase in jobs there. These are generational jobs that will last for a very, very long time, good-paying jobs. We have great, you know, great programs, great benefits and training.

The facility we are going to build in South Carolina will create over 350 jobs. And as we look to expand, it is almost kind of that model. Every facility that we build is in that 300 to 500 job level of new jobs that have -- don't exist today. These are brand new jobs that will go into the manufacturing economy.

*Ms. Schakowsky. Thank you for that, and we wish you good luck, because I certainly want to see -- I don't know if there is -- who to ask this of, but I am concerned, for example, when we go to DRC for critical minerals, do we have -- or any place else around the world, do we have any

obligation on how the workers are treated? DRC has a bad history of child labor, et cetera.

*Dr. Foss. They are not the only one that struggles with good practices. A lot of the countries that we worry about have the same challenges, and it is cultural. It is cultural, it is social, it is deep, and it is difficult to fix. And what we are trying to do, along with our partners and allies, is try to bring best practices into these places, get people to understand what it means to operate responsibly, how they can bring new technology into the picture. But it is really difficult, and it is a long, long haul.

*Ms. Schakowsky. Thank you. And with that I am going to yield back.

*Mr. Carter. The gentlelady yields. The chair now recognizes the gentleman from Michigan, Representative James, for five minutes of questioning.

*Mr. James. Thank you, Mr. Chairman.

Ladies and gentleman of the committee, I want to express my gratitude to the House Energy and Commerce Committee for the opportunity to participate in the hearing today, and I

would also like to thank the witnesses for coming to the Capitol today. I know it is very hot, and you have a lot of other things that you are committed to, but this is of vital importance to the American people and to our futures. And I appreciate your service to your nation and in your long careers, and also in being here today.

We are here to discuss the future of America's critical minerals supplies. And I would like to focus specifically on nickel for a moment. As highlighted in a recent article by Michigan Country Lines, the Eagle Mine in Michigan's Upper Peninsula stands as the only active nickel mine in the United States. Given the escalating demand for nickel, particularly for electric vehicle batteries and also for hypersonics for military applications, it is imperative to address the security and sustainability of our nation's nickel supply.

How can you advise that we support the expansion of domestic critical mineral mining to ensure a stable supply chain for critical minerals like nickel in northern Michigan and up through Minnesota and such?

*Dr. Foss. I will start, and --

*Mr. James. I -- go ahead.

*Dr. Foss. Do you care who goes first?

*Mr. James. That is to the panel. Yes, it is to the panel.

*Dr. Foss. It is a --

*Mr. James. Free for all.

*Dr. Foss. First of all, can I just say that it is a pleasure to meet you and your assistant? And I guess I will be seeing you on the 26th.

*Mr. James. Yes, ma'am. Looking forward to it.

*Dr. Foss. So I just wanted to get that done.

*Mr. James. Thank you.

*Dr. Foss. There are a couple of considerations for nickel that others can build on.

We have got the same problem going on with nickel that we have with other metals. The Chinese have been able to develop and scale up very fast very large volumes of nickel production. And we are currently -- we, the United States, the State Department in particular -- are trying to support the nickel industry not only here, but in Australia, trying to figure out how to keep those operations from going out of business in the face of the collapse in nickel prices that

have happened since mine planning started.

So that is a -- that goes back to the reality. These are commodity markets. They are very tough.

And then back to the question that came up earlier, are we fighting ourselves in the United States, is it the U.S. Government against the U.S. Government, it is really hard. And I am going to say this, because probably Matt and others won't want to say this.

But it is really, really difficult to talk to people in the mining business -- this is mining, processing, smelting, refining, whatever -- and have them be told on the one hand they are very important, we need them for all of the new technologies that are trying to be developed for the big business in your state and Michigan, for autos, electric vehicles, and so on and so forth, but then not to support them when it comes time to actually being able to move forward not only with permits that are in hand, but to execute on the permits that are in hand to develop operations.

So there is a mixed message going out to the mining businesses not only in the United States, but in Canada this

is filtering around from how we are posturing on these things, and --

*Mr. James. Yes, and --

*Dr. Foss. It is very difficult.

*Mr. James. -- not only a mixed message, but it is very, very clear. Here is an example. In Idaho, a cobalt mine was forced to suspend operations before it was able to commence extraction because China flooded the market and tanked the price of cobalt. And so this is not ambiguous; this is very clear -- there are no mixed messages -- that our businesses are left hung out to dry when they are navigating a regulatory environment with dynamic changes happening in our world, and they don't have the support of the American Government.

So let me, in the limited time I have, I am actually looking at an article from Berkeley. Now, Berkeley is no one's conservative organization, and they are even saying America's recycling system is broken. This is an article from May 30, 2023, so not exactly ancient history. And they are looking at things like plastic and glass and cardboard. And they cite five areas of this is broken: supply and

demand volatility, consumer confusion, contamination cost, barrier to international market, and inconsistent data collection.

I would say, if we have been trying to do recycling on the most simple things for decades, how can you propose that we would get this right?

*Mr. Klanecky. I will take that.

*Mr. James. Please.

*Mr. Klanecky. It is different. Recycling plastic is very different than recycling a battery. And we have --

*Mr. James. Which would you say is more complicated?

*Mr. Klanecky. I would say plastic is more complicated.

*Mr. James. Please educate us.

*Mr. Klanecky. You know, when you look at batteries, we have been recycling batteries for over 30 years. I can point to an example of lead acid. Lead acid is a very, I would say, very positive story of how recycling a certain metal can actually be achieved in the economy in the way we operate. And that is a model that we are looking for in terms of recovery of those metals. It is not exactly the same because, again, a lead acid battery is different than a car

vehicle battery.

*Mr. James. Is the process more or less expensive, and is it more or less safe?

*Mr. Klanecky. I think the processes that we are designing are cost effective to be able to make sure that those metals can be returned back into the supply chain, and it is very safe.

*Mr. James. Well, with the balance of my time, which is one second, I will thank you each for coming. I look forward to continuing the conversation.

*Mr. Carter. The gentleman yields. The chair now recognizes the gentleman from Ohio, Representative Balderson, for five minutes of questioning.

*Mr. Balderson. Thank you, Mr. Chairman, and thank you all for being here today.

I first want to give a shout out, and I heard that, Mr. Klanecky, you are located in the 12th congressional district in Lancaster, Ohio. So thank you for doing that.

*Mr. Klanecky. Thank you.

*Mr. Balderson. I appreciate that. I don't have any questions for you, so -- but I did want to make that

announcement to you. My first question is for Dr. Michot Foss.

Electric vehicle adoption is a key demand driver for critical minerals. Has a less steep demand trend for EVs put downward pressure on commodity prices? First question.

And what challenges does the -- does that present for the new projects, particularly in North America?

*Dr. Foss. I am sorry, can you repeat the first question?

*Mr. Balderson. Yes, ma'am. Has a less steep demand trend for EVs put downward pressure on commodity prices? First question.

And what challenges does that present for new projects, particularly in North America?

*Dr. Foss. So yes, in part, the slowdown in sales, the difficulty with adoption and other things, the slower rates of growth, the confusion in the auto industry as a result of that definitely are helping to bring down commodity prices, along with all of the expansions and capacity with the associated metals. There has been a tremendous amount of hype about this.

And then second of all, does it undermine projects? Well, of course. I mean, you know, you are investing on the basis of a belief or, you know, a set of assumptions about what will be your demand drivers. If the demand drivers don't materialize, well, then clearly there is an issue.

*Mr. Balderson. Thank you. Well done. I appreciate that. My next question is for Mr. Stratte.

Mr. Stratte, some of my colleagues have mentioned the so-called Inflation Reduction Act. It has almost been two years since the IRA was signed into law. I am curious, given your practical experience in permitting and financing projects to help build the future of this country, and what did we get for all the taxpayer dollars the Federal Government spent with this bill?

*Mr. Stratte. In terms of permitting, I haven't seen much of an effect. I have read the IRA, and what comes through is a real focus on production and processing, and I think that has been echoed here today.

And, you know, there was some discussion earlier about why are we talking about permitting? Well, because the supply chain begins with permitting. And if we are not

permitting the raw materials, there is nothing to process.

And I also want to point out that there is -- at times today there seems to be a suggestion that mining and recycling, it is an either/or. It is not. Recycling is a way to avoid sending materials that have already been mined to a landfill or to a competitor. There is still a delta, a demand that needs to be fed, and that is where mining comes in. And the government data shows that the demand is growing rapidly, and that is why mines need to be permitted faster to feed the demand.

*Mr. Balderson. A follow-up. We have also spent significant resources mapping and identifying these resources in the United States. What are we getting for it? Do you think we are seeing a return on this investment?

*Mr. Stratte. You know, I am familiar with the new mapping objectives, and it is great to use new technology to look for new resources, resources that are deeper underground and hidden under cover that have not been explored or noticed before.

But I think it is important to point out that the USGS, the United States Geological Survey, one of the oldest

agencies in the country, has decades and maybe centuries of data and maps. We know where the materials are. And I think, if there was a real desire to permit them and to develop them, we could call the USGS and they can say, "Here is three meaningful deposits that you can focus on.''

*Mr. Balderson. A follow-up with you, also. We have seen significant -- nope, sorry, I am running around too much. My next question is for Matthew Vincent.

Sorry, Mr. Vincent. You know some examples of the United States taking positive steps toward addressing our critical minerals and material needs, but you also discussed the many instances of us standing in the way of our own progress. It seems to me like every step we take, we take one step forward, we take two steps back. Can you expand on how some of these bureaucratic rules and policies, such as the new BLM Conservation Rule and sage-grouse rules, are standing in the way of our progress and reducing our reliance on China?

*Mr. Vincent. Thank you for the question, Congressman. I mean, I think it is a real -- ties right into what Mr. Stratte was saying. I mean, we have got old data showing

where deposits are. There is actually government funding that has come to our Bureau of Mines and Geology Montana to do new, updated mapping showing where there is critical minerals potential.

In the case of Montana, there was a -- there is a proposed conservation area, which would make it exponentially more difficult for us to ever be able to develop that resource.

I think another example on the IRA is, you know, 45X goes towards the value-added supply chain, but they leave out mining. Our only platinum and palladium mine in the United States is in Montana, and they are roughly about 50/50 mining and recycling. Because of the way that is written -- and there is still an opportunity to address it, because I believe it is in the Administration's office right now, looking at some changes that can be made -- but let's look at the whole supply chain, from rock to product, from mine to consumer. Make sure that those facilities are being incentivized from the ground up, literally.

*Mr. Balderson. Thank you, I appreciate that.

I apologize, Mr. Chairman, I yield back.

*Mr. Carter. No worries. The gentleman yields. The chair now recognizes the gentlelady from Iowa, Dr. Miller-Meeks, for five minutes of questioning.

*Mrs. Miller-Meeks. Thank you, Mr. Chairman, and I thank the witnesses for testifying before the subcommittee here today.

In 2022, 62 percent of Iowa's total electricity net generation came from wind, the largest power share in any state. Iowa was the second largest wind producer in the nation behind Texas, and that capacity is expected to increase. We also have a variety of renewables and 50 percent of our energies from renewables.

However, critical minerals are essential components of renewable technologies. Mr. Stratte, as you stated in your testimony, there are often no substitutes for these materials, and China controls about 70 percent of the global processing capacity for those these minerals, as well, as you stated, 47 percent of the mining rights. We know that security and supply chains comes from having diverse options and inputs from multiple sources. But China, a nation who already controls the majority of processing and critical

minerals investment, has benefitted from these investments in mining operations since the passage of the IRA, while domestic cobalt mines are forced to suspend operations.

The United States' strength, competitiveness, and economic dominance came about because we were willing to utilize our own abundant natural resources. In your view, how can we curb the direct benefit to China without jeopardizing the security of our supply chain while we work to reduce our dependance?

*Mr. Stratte. Thank you for the question. And it is very interesting that you started with wind because, as I was preparing for this hearing, I was thinking about things that I encounter when trying to permit a mine. Often times a company is trying to permit a mine in an area that has been designated for solar development. The Federal Government has said this should be used for solar. More and more, there are plans popping up that prioritize wind, and for good reason. As you point out, some parts of the country are great places for wind-generated energy.

If we know where the critical materials are in the U.S., and we have a list saying that America needs more and has a

shortage, why aren't we going to the maps and the data that says the mines are here, these are the areas that should be prioritized for development?

*Mrs. Miller-Meeks. Thank you. I am going to deviate a little bit, because I want to get this question in.

Dr. Michot Foss, we have highlighted some of the more immediate challenges to our critical minerals supply chain and ways Congress and the Administration can begin to work to fortify access to those resources. I am going to pivot for a moment, because I would like to focus some of my time on seabed mining. This is an issue that has not received as much attention, but could hold some promise.

What is the state of seabed mining for critical minerals today?

And are you optimistic that American companies will have an opportunity to compete for this resource?

China has a longstanding interest in deep sea mining, and I believe China is positioning itself to be the world leader in this technology to recover minerals from the sea floor.

*Dr. Foss. Thank you for putting that on the table.

What we have on the seabed is a huge resource, and it has tremendous benefits in purity. So for all of the concern about environmental mitigation, environmental impacts of extracting seabed minerals, you are actually saving on the processing side because you are removing almost pure metal. It is a very interesting resource to consider.

Unfortunately, the International Seabed Authority, which is the keeper of the keys on rulemaking permitting for seabed development, was not able to reach an agreement. There is a lot of unhappiness about whether or not to extract from seabed resources. The Europeans have proposed a ban. There are various issues like that.

There are projects underway in territorial waters. Those governments are moving forward: Cook Islands, Solomon, and so on.

There are American companies with a lot of technology kit around this, and I am happy to say that we have a lot of them in Houston, because the overlap between the offshore oil and gas businesses and marine mining are very, very robust and very lively. They are convinced -- we have looked at it -- we can do this safely. And because of the benefits on the

processing side, it is very alluring. But it is a tough one to talk about. We are seeing some movement in support of it, though.

*Mrs. Miller-Meeks. Thank you.

And then, Mr. Vincent, I think you have mentioned that the IEA estimates the demand for key minerals such as lithium, cobalt, copper, rare earth elements will grow by 40 times the current demand by 2040. Yet the United States produces less than two percent of global lithium supply. What can Montana and other parts of the U.S. do to fill the domestic upstream supply and then midstream supply chain?

*Mr. Vincent. Thank you for the question. Lithium is one of the few minerals that we don't have a lot of in Montana, but domestically we have lots of it. I believe the congressman from California alluded to the opportunity they have there.

I mean, it just goes back to what we have been talking about: better coordination, more certain permitting, and extending the incentives that go for the upper end of the value chain starting from the ground up.

*Mrs. Miller-Meeks. Thank you very much. It sounds

like we need to do more mining and process in the U.S. We would do it more environmentally friendly and wouldn't use child labor. Thank you.

*Mr. Carter. The gentlelady yields. The chair now recognizes the gentleman from Texas, Representative Crenshaw, for five minutes of questioning.

*Mr. Crenshaw. Thank you, Mr. Chairman. Thank you to our witnesses.

I want to point out, I think, two overarching themes. One is considering the environmental trade-offs between certain forms of energy production based on the material inputs required to create that energy production. So we will get into that. But regardless of how you answer that question, the reality remains that critical minerals are a necessity for modern life, everything from semiconductors to automobiles to lifesaving medical equipment to manufactured goods to cutting-edge military technologies. They all require these critical minerals, and they require that they be mined and processed somewhere.

I noticed that my colleagues and radical environmentalist allies love to talk about this utopian

future, where everything -- or all the world's energy demand is met by a massive amount of wind and solar farms, with a massive buildout of transmission lines and grid-scale batteries that don't really exist yet. What they don't want to talk about in that energy transition is the trade-offs and the massive expansion of mining worldwide that is required to make that happen.

Worth noting, just as an example, just a statistical example, a data point, an offshore wind plant has 13 times more material resources than a gas-fired plant producing the same amount of energy. That is not an insignificant fact. That is a significant fact. The International Energy Agency's projections show that in 2040 the demand for critical minerals like lithium and graphite will increase by 4,200 percent and 2,500 percent, respectively. Demand for cobalt and nickel also expected to dramatically increase.

And so we have to ask ourselves, what is our plan here? Are we going to import it all from China? I hope that is not our answer. It shouldn't be, especially since we don't really have to. No reasonable person would believe that you should enact policies that actually increase the need for

critical minerals, while also making it harder to mine them. That is a crazy thing to think, but people think it anyway.

We need to be able to build things, and we need our policy to actually reflect that reality. You know, it is one thing to import televisions from South Korea. It is completely different to rely primarily on China for critical minerals that are critical to our national security and our ability to live a modern lifestyle. So we are not striking that balance. It takes 7 to 10 years to permit a new mine here in the U.S. It takes other developed economies like Canada two to three years. I think that is pretty shameful. I think we can do a lot better.

Dr. Foss, I have a question for you. And welcome. It is great to see a fellow Houstonian. I know we have talked about this before. When you -- in your analysis, and when you include all the additional mining, processing, and land use requirements of renewables, in addition to the transportation and storage needs for the energy transition to happen, is it really that obvious that that transition has a positive environmental impact?

*Dr. Foss. Mr. Crenshaw, good to see you. We are

struggling with that question right now. And from the looks now, based on the data we have -- and we don't have much -- in fact, it is a substantially larger footprint. And we have to acknowledge that and deal with it.

People worry about emissions in the current state of the world, with the amount of tonnage that we produce. The mining industry, with processing and finishing of metals right now, constitutes anywhere from 11 to 17 percent of greenhouse gas emissions, depending on where it is located, what sources of energy it uses, logistics, all of that kind of thing. To enlarge that slice of the pie that I put in my testimony, to grow that to displace fossil fuel production will obviously put a lot of pressure on the environmental impacts associated with mining. We need to manage those. We think we can. We can mine responsibly. But the fact of the matter is we have to deal with it.

*Mr. Crenshaw. Yes, and that is pretty wild, that your answer wasn't even we are not sure. Your answer is it might even be bigger.

*Dr. Foss. We think it actually is. We look at the carbon footprint, our associated capacity worldwide for all

of the crude oil that we produce and use every day, crude oil equivalent of natural gas. We can live within that footprint and continue to extract energy and materials for a really long time.

And part of it is just the demographics of the industry is different.

*Mr. Crenshaw. Yes.

*Dr. Foss. We have a lot of old mining assets. We have a lot of newer capacity in oil and gas.

*Mr. Crenshaw. I appreciate it. And in my limited time to Mr. Stratte on the NEPA reform, we were all really excited about NEPA reform, and perhaps that ability to mine more and do more.

How has the Council on Environmental Quality's implementation of those NEPA reforms helped or harmed our ability to build infrastructure and develop critical mineral projects?

*Mr. Stratte. I would say it hasn't helped. I haven't seen any changes so far, and what I have seen is a prioritization of certain development projects over others.

*Mr. Crenshaw. Okay, I am out of time, I yield back.

Thank you.

*Mr. Carter. The gentleman yields back. The chair now recognizes the gentlelady from Florida, Representative Castor, for five minutes of questioning.

*Ms. Castor. Well, thank you, Chair Carter and Ranking Member Tonko, thank you to our witnesses for being here.

I think there is a great room for bipartisan work here, and I, in addition to this committee, I serve on the Select Committee on the Strategic Competition with the Chinese Communist Party. It has got a long name. But we released a bipartisan economic report at the end of December that had some recommendations for -- in the critical minerals area, and we intend to ramp up our work in the coming months to introduce bipartisan legislation. So this is very helpful.

And Chair Carter will probably remember when he and I served on the Select Committee on the Climate Crisis, we kind of dived into what we need to do to counter China's multi-decade subsidies and critical mineral processing, and their partnerships for minerals -- for mining abroad. And that is where a lot of the recommendations came from for the Inflation Reduction Act and the Infrastructure Law.

And the majority memo actually did a good job in summarizing some of the IRA policies. So if you are interested, you are in the public, you can go there for -- the IRA contains multiple critical minerals provisions, including advanced manufacturing, production tax credits for production of certain eligible components in the U.S., including critical minerals, a credit for producing and refining a mineral.

The IRA also includes sourcing requirements for critical minerals for electric vehicles. To receive half of the EV tax credit, at least 50 percent of the value of certain critical minerals in an EV's battery must be sourced and processed in the U.S. or a trade partner country. And starting in 2025, an EV battery may not contain any critical minerals that were extracted, processed, or recycled by a foreign entity of concern. We also put some funds into the Defense Production Act and in mapping that was woefully inadequate.

So Mr. Klanecky, I heard you say that these have helped you accelerate your investments in recycling. It is not all going to be just mining. We really want to ramp up the

recycling. Can you go a little deeper into those, how the IRA tax credits and other new provisions are helping you?

And then where are the gaps? As we look forward and want to develop more bipartisan solutions here, what else should we be doing? Doubling down on what is happening or adding something new?

*Mr. Klanecky. Yes. No, thank you, that is a great question, and a great summary of the overall, I guess, objective of the IRA. I think there is a lot of -- you know, the BIL kind of did some enabling of investment, and now the IRA has the tax credits and things like that which really kind of just helps the longer-term view of how a business operates.

And, you know, both of those laws that are put in place are opportunities for companies to take advantage of not only accelerating their capital investment and building out those assets, but also taking advantage of manufacturing tax credits, which also helps out from a cost perspective in looking at how you are -- when you are competing with someone like China, who doesn't have actually the same pricing mechanisms that we would have in the free market.

So those two areas are really helpful. I do think -- and I will just kind of echo what was mentioned earlier -- I think there is even more opportunity that these type of grants or funding opportunities can help the entire supply chain, whether it starts in mining all the way to recycling. As we continue to invest in this infrastructure, the only way we really create a closed loop is if everybody in that chain can actually participate and benefit from the incentives for these programs. And I think there is opportunities for us to continue to expand on that in the future, and that will also help the United States be much more competitive, and also create that closed loop domestic supply chain that we are talking about.

*Ms. Castor. So we are -- this committee has jurisdiction over the Department of Energy, and we want to do some things on tax credits, and also things in the Natural Resources Committee jurisdiction. But for the Department of Energy on -- they are doing the demonstration projects, they have the loan programs. What specifically in -- out of DoE is particularly helpful, looking forward?

*Mr. Klanecky. Yes, I think supporting manufacturing

efforts and building out those assets in North America is really where DoE has helped us. They have been a great partner with us, and we continue to work with them on other grant opportunities that we have as we expand out our asset base. You know, this, like, $2 billion is a lot of money to be investing for a company our size. And having the support from the DoE to see that that gap and that need is there for companies like Cirba Solutions is really, really helpful.

I just want to comment on one thing you mentioned about this being bipartisan. This is a national security issue. This isn't one side of the aisle or the other side of the aisle is the issue that we have got in front of us. This is a national security issue, and I think everybody working together -- the United States is a really good country. We do a lot of, really, things well. And if we all work together, I think that creates a huge opportunity for our country going forward in the future.

*Ms. Castor. Thank you for that. I agree.

And I yield back, thank you.

*Mr. Carter. The gentlelady yields.

I ask unanimous consent to insert in the record the

documents included on the staff hearing documents list.

Without objection, that will be the order.

[The information follows:]

**********COMMITTEE INSERT**********

*Mr. Carter. I remind members that they have 10 business days to submit questions for the record, and I ask the witnesses to respond to the questions promptly.

Thank you all for being here. This has been a very, very good hearing, very useful information, and we appreciate your attendance very much.

Without objection, the subcommittee is adjourned.

[Whereupon, at 1:56 p.m., the subcommittee was adjourned.]