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# CLIMATE CHANGE LEGISLATION: INTERNATIONAL TRADE CONSIDERATIONS

## HEARING

BEFORE THE

## COMMITTEE ON FINANCE UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

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## COMMUNICATION

# CLIMATE CHANGE LEGISLATION: INTERNATIONAL TRADE CONSIDERATIONS

**WEDNESDAY, JULY 8, 2009**

U.S. SENATE,
COMMITTEE ON FINANCE,
*Washington, DC.*

The hearing was convened, pursuant to notice, at 10:02 a.m., in room SD–215, Dirksen Senate Office Building, Hon. John F. Kerry (acting chairman of the committee) presiding.

Present: Senators Conrad, Kerry, Stabenow, Cantwell, Nelson, Carper, Grassley, and Bunning.

Also present: Democratic Staff: Bill Dauster, Deputy Staff Director and General Counsel; Amber Cottle, Chief International Trade Counsel; and Maureen Wieland, Intern. Republican Staff: Stephen Schaefer, Chief International Trade Counsel; and David Ross, International Trade Counsel.

## OPENING STATEMENT OF HON. JOHN F. KERRY, A U.S. SENATOR FROM MASSACHUSETTS

Senator KERRY. The hearing of the Finance Committee will come to order.

As everybody knows, the chairman of the committee and the ranking member are deeply engaged in the effort to advance the health care bill out of this committee. We are hoping, obviously, to have that bill moving before the committee, and the chairman was called to an urgent meeting regarding that issue at the last moment. He had intended to be here.

So, I am going to chair the meeting until that time. We are going to wrap this up quickly. I think you may be pleased and, hopefully we can cover this topic as rapidly as possible by 10:45 or a little bit thereafter, because we have two votes that will take place at that time. I think it is disruptive enough, not to mention the fact that I have to chair a Foreign Relations Committee vote during that period of time, simultaneously. So, we will try to move this expeditiously.

This is an important hearing. This is a very critical component of climate change legislation and debate. We have been engaged in many discussions on this topic.

I just came this morning from a breakfast with the Secretary of State who is leaving to go to India in a few days. We talked about this very issue, among others, because India and China and other developed countries' participation in Copenhagen is going to be absolutely essential.

It will be essential to come out of Copenhagen with some kind of structure that satisfies America and the American people, and through them this legislature, so that we have a mechanism to be able to guarantee that American industry is not going to be disadvantaged, or that we do not have a carbon leakage which is effectively people, because there is some restraint or requirement here in our country that they go seek another site for the manufacturing of the same product and then try to slip those products back into the country.

Obviously, it has to be an even playing field, or as even as we can make it. And the question is, how do you get there? How do you make it enforceable under WTO? What kind of restrictions can you put in place? The legislation we had a year ago under the Warner-Lieberman bill had one provision. The House Waxman-Markey bill has another provision. Senator Boxer and I met last night and are discussing still a different provision here at this point in time.

So, today's hearing has the ability to educate and shed light on what are the best possibilities for our legislative route and how we proceed. There are a narrow set of industries—very narrow, I want to emphasize—that the GAO identifies, in response to Senator Boxer's request, and now in their report today, a very narrow set of U.S. industries that are energy-intensive and trade-exposed. And I am convinced that within the allowance scheme, let alone in these other mechanisms available to us, there is enormous capacity to be able to address our concerns.

So, I think today's hearing will be very helpful in that regard. So, without further ado, let me turn to the ranking member, Senator Grassley, for his opening statement.

**OPENING STATEMENT OF HON. CHUCK GRASSLEY, A U.S. SENATOR FROM IOWA**

Senator GRASSLEY. You raised some of the same concerns that I am going to raise, so it will be a little bit repetitive, but I appreciate very much your saying those things.

Today's hearing is going to explore international trade implications of possible carbon emission legislation. The House has passed a bill. The Senate is about to begin its legislative process, so it is important for our committee to explore these issues, because Congress could be setting up our manufacturers for a lot of trouble.

I have said many times that we ought to approach this issue through a worldwide international agreement. That is the only way to ensure that China and India, and other major carbon-emitting countries, are involved. Otherwise, our industry is going to be left very uncompetitive. We are going to see more manufacturing moving overseas with less efficient plants that produce far more pollution than our American industries, and nobody should want that to happen.

Some in Congress think the answer to that problem is to include some type of border measure in any legislation that Congress passes. That is what the House of Representatives did last week. I am skeptical of that approach.

I think it would be difficult to design such an approach that would be consistent with WTO rules. If we do something that is in-

consistent with the rules of the WTO, we are going to open ourselves up to trade sanctions that could dwarf our sanctions that we have seen in the past, and then we will have hurt our manufacturers, actually, twice.

We will have raised their costs by imposing the cap-and-trade system in the first place, and then we will further compound the problem by giving foreign countries a license to hit us with sanctions. That would not be good for us, and it would not be good for the trading system, either. And it could be even worse, because other countries could follow our lead and impose their border measures against our exporters. We could find ourselves defending our measures at the WTO and challenging other countries' measures at the same time.

Now, the World Trade Organization would prefer to avoid that scenario. The Director General, Pascal Lamy, stated recently that the WTO membership would not want to decide what is or is not allowed from a trade perspective. He indicated that the WTO would much rather have the trade issues addressed as part of whatever comes out of the meeting scheduled to take place in Copenhagen. That makes very good sense.

If the United States unilaterally imposes border measures, it will make it that much harder to reach international agreement. Other countries are not going to want to negotiate with us if they think we are dictating a specific outcome.

Border measures are not the only approach that has been suggested in addressing these competitiveness issues. Another suggestion is to give free emissions allowances to domestic industries. That is the approach that the European Union took. I have some questions about that approach. I am not convinced that giving away free allowances would be consistent with subsidy rules of the WTO.

At a minimum, there would be a risk of other countries arguing that free emission permits are subsidies that cause adverse effects to their industries. If we lost a subsidy case, we would have the same risk of trade sanctions. So, for this reason as well, we would be better off waiting for an international agreement instead of operating unilaterally.

I thank you, Mr. Chairman.

Senator KERRY. Thank you very much, Senator Grassley.

Let me just say to you that we do not want to turn this into our conversation, but I will say to you very quickly that I just came back from a week in China to talk with the Chinese about this, and the reality is that we signed up to an agreement in 1992.

It was a voluntary agreement, but we did sign it, and we did ratify it. And the fact is that the world has been watching while they know that we did not do anything to try to meet what we did ratify. So, we are in a position here where most of the world is waiting to see what the United States does.

And we will not get an agreement in Copenhagen, pure and simple, if the United States does not lead. Point blank, flat statement: we will not get an agreement unless the United States is prepared to lead. If we do lead, China has said they are prepared to be a positive, constructive force and comply with the requirements of having measureable, reportable, verifiable reductions in emissions.

The Secretary of State is leaving to go to India in a week, and she will raise this issue to get the Indians on board, and then we have the Europeans and Americans. Those are the four largest emitters, four largest emitters in the world prepared to actually go to Copenhagen to actually do something. So, we get caught in the chicken-and-egg situation. I think we have to really be thoughtful about it.

The second thing I would say to you is that, on the border tax issue, I have serious questions about that, too, and we will raise them today. But, if we have an international agreement and this is the law globally and we have accepted it, then you have an ability to be able to put in place some restraints that are compliant, I believe, with WTO. They are not solely a border tax, but they restrain people's ability to sell products. They have to sell to us.

China, unless they sell to the United States, has a serious problem. So, I think there are options available to us. Europe did use allowances. Allowances have been part of the process.

So, let us talk about this as we go into the day, here.

Ms. Claussen, if you would lead off. I am sorry. I apologize. Dr. Loren Yager is going to lead off, and we will discuss the findings of the GAO report. We appreciate your being here. The second witness will be Ms. Eileen Claussen, president of the Pew Center on Global Climate Change Strategies for Global Environment. And finally, Gary Horlick, international trade lawyer at the Law Offices of Gary Horlick. Thank you all for being with us.

Dr. Yager, if you would lead off, please.

**STATEMENT OF DR. LOREN YAGER, DIRECTOR, INTERNATIONAL AFFAIRS AND TRADE, GOVERNMENT ACCOUNTABILITY OFFICE, WASHINGTON, DC**

Dr. YAGER. Thank you, Mr. Chairman, Ranking Member Grassley, members of the committee. Thank you for the opportunity to appear again before the committee to provide insights from GAO's work on important international issues.

In order to mitigate climate change effects, countries are considering varying approaches to reducing greenhouse gas emissions, such as carbon dioxide, which is the most important greenhouse gas due to its significant volume. However, imposing costs on energy-intensive industries in the United States could potentially place them at a disadvantage to foreign competitors.

As the Congress considers the design of a domestic emissions pricing system, a key challenge will be balancing the need to reduce greenhouse gas emissions with the need to address the competitiveness of U.S. industries.

In my statement, I will provide excerpts from the report that we are issuing today to the Finance Committee. In particular, I will describe, briefly, some of the key challenges associated with estimating the industry effects from climate change measures and illustrate key characteristics of some potentially vulnerable industries.

In terms of estimating the effects of domestic emissions pricing for industries in the United States, the magnitude of effects on output, profit, and employment depend on the greenhouse gas intensity of industry output. The effects will also be dependent upon the

stringency of U.S. climate policies in comparison to other nations, in the extent that emission pricing encourages technological change that reduces greenhouse gas intensity.

Finally, the effect on U.S. industries will also depend on the features of the legislation designed to address these competitiveness issues, such as border measures and output-based rebates, to the most affected industries.

Let me use one set of the industry graphics from our report to illustrate some of the characteristics that make industries more vulnerable to international competition. Looking at Figure 1, the height of the columns in Figure 1 shows the size of the industry relative to the other sub-industries, and in this graphic, iron and steel mills is the largest sub-industry category. The axis extending to the right reflects the energy intensity.

So, on the graphic, the primary aluminum sub-industry near the top of the figure has an energy intensity of 24 percent, the axis extending to the left shows trade intensity, and, in this case, the electro-metallurgical products sub-industry has the highest trade intensity of about 70 percent. The shaded floor in this graphic indicates those industries that meet these two criteria from the Waxman-Markey legislation for industry eligibility for output-based rebates or trade measures.

The second graphic provides information about the source of energy for the various industries, which is important since some fuels are more carbon-intensive than others. As shown by the first column in Figure 2, iron and steel mills use the greatest share of coal and coke, and steel manufacturing in ferrous metal foundries, the third and fourth columns, use the greatest proportion of natural gas.

Since coal is more carbon-intensive than natural gas, sub-industries that rely more heavily on coal could also be more vulnerable to competitiveness effects. Industry vulnerability may further vary, depending upon the share of trade with countries that do not have carbon pricing.

To illustrate this variability, Figure 3 provides data on the share of imports by the source country. As shown, while primary aluminum is among the most trade-intensive industries, the majority of imports are from Canada, which is shown in the graphic as black with a diagonal stripe, and Canada is the country with agreed emission reduction targets. However, for iron and steel mills, almost 30 percent of imports are from China, Mexico, and Brazil.

Finally, many members have expressed concern about the potential for increased imports from China. As shown in Figure 4, China already has an increasing share of imports in some of the primary metal sub-industries. Although the increases are not uniform across sectors, iron and steel mills still manufacturing in aluminum products have all shown a growing trade reliance on Chinese imports since the year 2002.

Mr. Chairman, as Mr. Baucus stated in his opening statement for last month's hearing on climate change, he wanted to examine what the legislation will mean to trade-exposed industries. Ranking Member Grassley also noted and stressed the importance of an examination of the effects on the U.S. economy.

I hope that our analysis contributes to that discussion, and I welcome the opportunity to answer any questions from you, and other members of the committee.

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

Senator KERRY. Thank you very much.

Ms. Claussen?

**STATEMENT OF EILEEN CLAUSSEN, PRESIDENT, PEW CENTER ON GLOBAL CLIMATE CHANGE, ARLINGTON, VA**

Ms. CLAUSSEN. Mr. Chairman, members of the committee, thank you for the opportunity to testify.

Addressing global climate change presents policy challenges at both the domestic and the international levels, and the issue of competitiveness underscores the very close nexus between the two.

In the long term, a strong multilateral framework ensuring that all major economies contribute their fair share to the global climate effort is the most effective means of addressing competitiveness concerns. In designing a domestic climate program, the question before Congress is what to do in the interim until an effective global agreement is in place.

Concerns about competitiveness center on energy-intensive industries, whose goods are traded globally, such as steel, aluminum, cement, paper, glass, and chemicals. As heavy users of energy, these industries will face higher costs as a result of domestic greenhouse gas constraints.

However, as the prices of their goods are set globally, their ability to pass along these price increases is limited. To empirically quantify the potential magnitude of this competitiveness impact, the Pew Center commissioned an analysis by economists at Resources for the Future. This work, which was published in May, analyzes 20 years of data in order to discern the historical relationship between electricity prices and production, consumption, and employment in more than 400 U.S. manufacturing industries.

We found that, at the price levels studied, the projected competitiveness impact, as well as the broader economic effects on energy-intensive industries, would be fairly modest, and in our view are readily manageable with a range of policy instruments.

In a domestic cap-and-trade system, competitiveness concerns can be addressed, in part, through banking and borrowing and the use of offsets, which can help reduce the costs to all firms. However, other transitional policies may be needed to directly address competitiveness concerns in the period preceding the establishment of an effective international framework.

Allow me to mention a couple of options we would not recommend, and then a few that we would. One option is to exclude vulnerable sectors from coverage under the cap-and-trade program. Exclusions, however, would undermine the goal of reducing greenhouse gas emissions economy-wide and reduce the economic efficiency of a national greenhouse gas reduction program. They also would give exempted industries an economic advantage over non-exempt competitors.

A second option is to try to equalize greenhouse gas-related costs for U.S. and foreign producers by imposing a cost or other requirement on energy-intensive imports from countries with weaker or no

greenhouse gas constraints. However, as such measures would apply only to goods entering the United States, it would not help level the playing field in the larger global market, which is where U.S. manufacturers compete. In addition, if the United States were to impose unilateral border requirements, there is a greater likelihood that it would become the target of similar measures. There is a significant risk that border adjustments would engender more conflict than cooperation, in the end making it more difficult to reach agreement that could more effectively address competitiveness concerns.

The Pew Center, instead, believes that Congress should seek to address competitiveness concerns by: (1) strongly encouraging the executive branch to negotiate a new multilateral climate agreement, establishing strong, equitable, and verifiable commitments by all major economies; (2) including in domestic legislation incentives for such an agreement, including support for stronger action by developing countries; and (3) including in cap-and-trade legislation transitional measures to cushion the impact of mandatory greenhouse gas limits on energy-intensive trade-exposed industries and the workers and communities they support.

These transitional measures should be structured as follows: in the initial phase of a cap and trade program, free allowances should be granted to vulnerable industries to compensate them for the cost of greenhouse gas regulation. For direct cost, allocations should be based on actual production levels. For indirect costs, allowances should reflect an emitter's production-based energy consumption, taking into account the greenhouse gas intensity of its energy supplies.

Allocation should be set initially so a producer whose emissions intensity is average for that sector is fully compensated for regulatory costs, while those who are above or below receive allowances whose value is greater or less than their costs, respectively. This factor should be adjusted over time as an incentive to producers to continually improve their greenhouse gas performance.

Allowance levels should decline over time, gradually transitioning to full auctioning, although at a slower rate than for other sectors. A review should be conducted periodically to assess whether sectors are experiencing competitiveness impacts and, if warranted, to adjust allowance levels at the rate of transition to full auctioning. A portion of allowance auction revenues should be earmarked for programs to assist workers and communities in cases where greenhouse gas constraints are demonstrated to have caused dislocation.

We believe this approach addresses the transitional competitiveness concerns likely to arise under a mandatory cap-and-trade program, while maintaining the environmental integrity of the program and providing an ongoing incentive for producers to improve their greenhouse gas performance.

Thank you.

[The prepared statement of Ms. Claussen appears in the appendix.]

Senator KERRY. Thank you, Ms. Claussen. We appreciate it.

Mr. Horlick?

**STATEMENT OF GARY HORLICK, LAW OFFICES OF GARY HORLICK, WASHINGTON, DC**

Mr. HORLICK. Thank you, Senator Kerry, Senator Grassley, members of the committee. It is a pleasure to appear here today.

I would like to first address two basic rules which I think are worth considering, and then deal with some of the specifics of WTO law and climate change. The first rule is, before adopting something, we want to make sure that we do not mind if other countries do the same to our exports. Conservatively, we export about 20 percent of our manufactured goods, and about 30 percent of our farm products. So, it is a very practical concern. If someone is going to do something to us, we better think about it.

Second, we want to ask ourselves: is the measure consistent with WTO rules and other international agreements? We have a series of FTAs, as well as WTO to consider. It is very tempting, and you have seen a lot of debate about this, whether we can re-interpret these WTO rules.

Again, just from a practical consequence, I want to ask: do we want to do that? America's economy depends more than anything else on innovation in both agriculture and manufacturing.

A good example is biotechnology. We lead the world in biotechnology. It is revolutionizing medicine, agriculture, and manufacturing. We have been resisting for years European attempts, and other countries', to stop us from selling products made with biotech. So, the idea that we would re-interpret WTO rules in the climate change context based on how things are made means we could well lose exports of crops like corn and soybeans to major markets. Again, this is not saying yes or no. It is saying we should think about it.

Let me turn to specifics. Border measures. As the WTO itself pointed out in a recent report with the United Nations Environmental Program, border measures are permitted, the WTO is quick to point out, under certain conditions. Certainly, if the U.S. did a VAT-like carbon tax or energy tax, we could impose that on imports and rebate it on exports, and indeed, some members of this committee, historically, have wanted to do that in general.

Once you get away from a pure VAT tax, it gets really complicated. I am happy to discuss some of the complications. I will mention some of them, but before I do that, before I get into questions of legality again, do we want other people doing the same to us? It is always a concern of mine.

As President Obama pointed out recently, both India and China have lower per capita greenhouse gas emissions than we do. So, you could easily imagine India and China, both large, growing economies and major targets for U.S. exports, saying, well, we are going to impose border measures based on U.S. per capita emissions. It is a practical concern, as much as a legal one.

Another practical concern is that border measures would raise costs for some U.S. manufacturers, just as they are adapting to other costs that may be in the legislation. It cuts several ways.

And, finally, I see in practice as a WTO lawyer, countries get mad about border measures. We do, too, by the way. They do not seem to get mad about subsidies, or not as mad. There are many fewer cases in the WTO challenging subsidies than there are chal-

lenging border measures. So, to some extent, that argues in favor, just from a pure likelihood of litigation standpoint, of permit allocations rather than border measures.

Turning to permit allocations, permit allocations are permitted by WTO rules, but again, it depends on the design and the details. If permit allocations are linked to requirements to use domestic content or to export, it would be prohibited, and, indeed, most of the WTO cases on subsidies are about those kinds of requirements. Even if there is not a requirement, as Senator Grassley pointed out, they can be challenged and, if they are big enough, might be.

The point I want to make here is we insisted on those rules. Those rules came into effect in the WTO because we wanted them, so, before we start changing them, we need to make sure we know all the consequences. I would note the same subsidy rules apply not only to permit allocations, but also to incentives for developing new sources of energy, and even to renewable energy standards. Again, I am not saying do not do them, but be careful how you design them.

The best way to do all this is through an international agreement. I keep harping on the fact, let us not do something we do not want others to do to us. The cleanest way to do this, the most efficient, is do it with everyone else.

And one final point which I want to emphasize most strongly is the sheer practicality of it. If a third of the countries adopted a permit requirement, a third adopt border measures, and a third simply allocate permits, how are you going to link all those up?

An Apple iPod is made in 20 countries. The box says "Made in China," but that does not come close. How are you going to figure out what the carbon content of each of those parts is? You are talking about a customs officer at the border dealing with all these.

Thank you.

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

Senator KERRY. Thank you very much, Mr. Horlick.

I am going to reserve my time in deference to the ranking member's schedule and recognize Senator Grassley.

Senator GRASSLEY. Thank you, Mr. Chairman. I appreciate that.

Mr. Horlick, I am going to start with you, and I will not use more than my 5 minutes. I would like to ask several questions, so if you would give short answers——

Mr. HORLICK. Sure.

Senator GRASSLEY. You testified that requiring emission permits for importers would raise serious WTO questions, especially if permits are given away to domestic producers, yet some legislative proposals currently on the table would allow that scenario. Would you elaborate on "the serious WTO questions" that such a scenario would raise?

Mr. HORLICK. The WTO permits you to treat foreign producers the same as your own domestic producers. If you are giving away permits to your domestic producers, maybe not all of them, but some, and you are requiring permits from foreign producers, that is an immediate problem.

Second, when you start doing things based on sector averages—and there is case law on this—some foreign companies in many of

those sectors will have different emission profiles than other foreign companies. So, you would have potentially some foreign companies that emit less than U.S. companies being treated worse than those U.S. companies.

And, again, I note, we might be the ones raising these challenges against other countries' systems. This is definitely a reciprocal system.

Senator GRASSLEY. I will follow up with you on another point on this. In your testimony, you talk about the risks that, if we impose unilateral border measures, the developing countries might impose their own measures to block our exports on the grounds that our per capita emissions are higher than theirs. Would you elaborate on that point about per capita emissions, and particularly, what would be the consequences for U.S. exporters?

Mr. HORLICK. The Indian environment minister, a few days ago, announced that India would accept a binding limit of the average per capita emissions of developed countries, noting that India has one-tenth of the per capita emissions of the U.S. So, you can easily imagine India saying, well, we are going to require permits from all U.S. exports to India until your per capita emissions are the same as ours. Well, that is not going to happen for a long time.

So, again, I think the best way to avoid this is some sort of international agreement. But doing things unilaterally, particularly border measures—we react negatively when other countries do it to us. I have spent most of the last 10 years fighting border measures against U.S. livestock exports.

Senator GRASSLEY. Ms. Claussen, following up on the same point that was just made, would you agree with Mr. Horlick that, if we include unilateral border measures in U.S. legislation, other countries would likely apply such measures to U.S. exports?

Ms. CLAUSSEN. Yes.

Senator GRASSLEY. Thank you.

Dr. Yager, earlier this year we heard testimony that imposing border measures could raise costs to U.S. manufacturers that use imported inputs. Mr. Horlick has already alluded to this. What is your view of the issue and, for example, what might be the impact on manufacturers of steel products? I do not want to limit it just to steel products, but I use that as an example.

Mr. HORLICK. Yes, Senator Grassley. Certainly, some of the industries that we showed in the graphics, there are products that are intermediate goods. And so, if those intermediate goods have to face a tariff at the U.S. borders, U.S. producers that purchase those goods for incorporation into products or into the infrastructure in the United States would have to pay the higher price for those goods. So, there is some issue about the effect on domestic firms, and also on the downstream purchasers in the United States that would be, in general, forced to bear the higher costs associated with those border measures.

Senator GRASSLEY. To you, Ms. Claussen, and to Dr. Yager. Some people have argued that including border measures in U.S. legislation would not create a meaningful incentive for China to enact its own emission control regimes. They would point out that most of China's carbon-intensive production remains in China. Only a relatively small portion of that production is exported to this country,

thus, the potential impact of U.S. border measures on China's economy is not likely to be substantial. My question, simply: are you in agreement or disagreement with that reasoning?

Dr. YAGER. Senator Grassley, we have a table, actually, on page 25 of the report that shows the percentage of Chinese output that is shipped to the United States, and the industries that we show here, iron and steel primarily, aluminum, cement, pulp, and others, in no situation is more than 1 percent of their production shipped to the United States as U.S. imports.

So, people can look at with these figures differently, but what we try to ask is the extent to which this provides the U.S. leverage over China, and we also have other countries in the table. But in each case, the share of Chinese output that comes to the United States is less than 1 percent.

Ms. CLAUSSEN. Yes, I agree completely.

Senator GRASSLEY. All right. Thank you Mr. Chairman. Thanks to each of the witnesses.

Senator KERRY. Thank you very much, Senator Grassley.

I am going to continue to reserve my time and try to expedite for other colleagues here.

So, Senator Stabenow?

Senator STABENOW. Thank you very much, Mr. Chairman, and welcome to our guests this morning.

When we look at all of these issues——

Senator KERRY. You know what? I have reversed the order between you and Senator Bunning.

Senator STABENOW. Oh no, that is fine.

Senator KERRY. I apologize, Senator Bunning.

Senator STABENOW. All right. Thank you. Thank you very much. I think Senator Bunning and I share many of the same issues around trade enforcement and how to help manufacturers, and so on.

Certainly, coming from the State that I do, obviously these issues are incredibly important, and I believe, absolutely, that we have to do a number of things in the context of passing global warming legislation and that, in fact, the question of free allowances and what we do at the border to level the playing field—not to give advantage, but just to try to level the playing field—is very important in all this.

Senator Brown and I are working on a number of things. Senator Bingaman and I have put a couple of important things in the energy bill that relate to funding technology, which is the other piece, not before this committee, but other countries are aggressively funding and subsidizing the development of technology, and we need to be providing better financing mechanisms for that as well.

But I guess my question goes more to the question of compliance, as we are looking at all of these things in theory.

When we talk about, we do not want other countries doing things that we would not want them to do, they already do that. They already do that. I mean, I can give you case after case. We had counterfeit auto parts coming into the United States for 2 years before we even filed the case before the WTO, another 2 years before anything ever happened. In the meantime, I had several auto suppliers declare bankruptcy, major suppliers in the United States, because

of what China was doing and we were not taking any kind of action.

We can go piece by piece, action by action. And my questions relate to compliance as we look at all of these things. As we are looking at being concerned about WTO compliance, which I understand we need to do, there are two sides of that, and whether or not other countries are going to be as well.

One concern that I have, as it relates to China, is that while their policies right now—and I have met with the head of their climate change initiatives—their policies are ambitious, but they have a very poor record of implementing their policies. That is a concern of mine. And right now, Wang Canfa, China's top environmental lawyer, estimates that only 10 percent of China's environmental regulations and laws are actually implemented.

A recent MIT study that surveyed 85 coal-fired power plants in China discovered that, although many of them installed state-of-the-art emissions reduction equipment, they were not using them. And on top of that, they subsidized heavily, if not owned, their manufacturers.

And just for the record, they have now instituted a "buy China" policy, where they are requiring certificates to be able to do business with the government, and only Chinese businesses are getting the certificates.

So, while I appreciate the concern about whether they will retaliate against us, Mr. Chairman, I think we are the only ones who do not stand up for our businesses, quite frankly. We do not make sure that other countries are fair to us, and that is a real concern of mine in the context of going into this, that we have in fact, a system that enforces these items.

So, if we are not talking about it, if there is a concern about a border tariff or concern about these other things, what would you do, instead, and how do we make sure that other countries are, in fact, living up to what they have on paper at this point in time and that we are not continuing a series of policies that have cost American jobs over the last couple of decades?

Anyone? Yes.

Mr. HORLICK. I am all in favor of better compliance mechanisms. One of my clients is America's largest agricultural organization, and we lose about $3 billion a year in beef sales because other countries are not complying. But one of the things we run into is other countries say, well, you keep out our poultry. I am not saying we are wrong and they are right, I am just saying, if everyone complies, it would be great.

Now, in the climate change context, the best place to do this is going to be an international negotiation, and the concern I raised is making sure we have mechanisms that do not screw up trade by bureaucratic means.

I do not think enough work has been done yet in that arena as to how we are going to make all the parts fit—if every country has its own system, how are they going to mesh? But every country is going to have to do something, because, if one country cleans up its emissions and no one else does, it will not matter. So everyone is going to have to do something.

Senator KERRY. Senator Bunning?

Senator BUNNING. Thank you, Mr. Chairman.

Mr. Horlick, I have, more than once, or often, pointed out that any action to reduce U.S. greenhouse gas emissions will be pointless if there are not similar limits on emissions in China, India, Russia, and other countries.

Mr. HORLICK. Correct.

Senator BUNNING. China plans to build 500 coal-fired generating plants over the next 2 years and has already overtaken the U.S. as the largest emitter of greenhouse gas. Is it possible that border measures, such as the tariffs in the House-passed bill, will actually make it more difficult to reach an international agreement by inviting a series of WTO disputes in trade retaliations?

Mr. HORLICK. That is a good question. I do not envy the U.S. negotiators or you Senators who have to do this. It is, in a sense, a tactical issue of when you pass legislation and what is in the legislation against what is negotiated internationally.

Senator BUNNING. Well, let us just say what we presently have negotiated. Senator Stabenow brought out the fact that China does not enforce some of the agreements that we have had with them, and even Senator Kerry, in his visit to China, said that they were negotiating and there would not be a global agreement coming out of Copenhagen.

Mr. HORLICK. Five hundred coal-fired plants is a lot.

Senator BUNNING. You bet it is.

Mr. HORLICK. As Dr. Yager pointed out, though, the largest emitting industries ship a relatively small percentage of what they sell——

Senator BUNNING. Less than 1 percent, or 1 percent.

Mr. HORLICK. I would guess, and I do not know this but it is a safe guess, China's largest export to the U.S. is probably clothing, which does not have a very high carbon footprint. So, I cannot give you a firm answer. I do not know what will motivate them.

At some point, from all the maps I have seen—and I defer to Ms. Claussen—China is going to have desertification problems from climate change much worse than we will. Something is going to have to be done, but you are right. Something is going to have to drive China, and every other country, including the U.S., to reach an agreement that will——

Senator BUNNING. Globally enforced.

Mr. HORLICK [continuing]. That will be enforced, because, otherwise, it is not worth doing.

Senator BUNNING. To the same person. Would it make any sense, from an international trade perspective, to have an international agreement in place before we pass legislation with border measures?

Mr. HORLICK. I would defer to the U.S. negotiators. As it happens, I worked with the U.S. negotiator, Todd Stern. I have great respect for him and his team. I think that is going to be a really interesting negotiating question. I am not sure. I think my guess is, going into Copenhagen, having a House-passed bill but not a Senate bill actually gives them some flexibility. But I would defer to what he tells you, to be honest. One person has to make the call.

Senator BUNNING. If the import tariffs in the House bill are imposed, could China retaliate by imposing tariffs on U.S. goods based on our per capita emissions?

Mr. HORLICK. There are two answers to that. One, China could challenge what we did in the WTO and, if it won and we did not comply, retaliate.

Second, in practical terms, China could pass legislation based on per capita emissions and say, if what you did is all right, what we did is all right. As I said, and it is pretty obvious, it is much better if both countries agree fairly soon on something. Litigation is not usually the answer to stuff.

Senator BUNNING. Ms. Claussen, according to your testimony, the EPA estimates that complying with the House bill's emission targets will shrink our GDP by only 0.37 percent, the same EPA that recently suppressed an internal report that was skeptical of the dangers of greenhouse gas emissions. I remember hearing outrage when the Bush administration was accused of suppressing scientific evidence for political purposes, and now the Obama administration appears to be doing the same thing. How can we trust the information from any agency that selectively suppresses findings from its own career employees?

Ms. CLAUSSEN. Let me try to answer that in two ways. I think the EPA analysis of the House bill is by far the most honest and the best economic assessment, because it actually looked at the bill and did an assessment, whereas a lot of the other economic analyses where the numbers are thrown around actually did not look at and analyze the bill.

Senator BUNNING. All 14 pages?

Ms. CLAUSSEN. No. The draft before them. So, yes, they are going to do a re-assessment. There was at least an attempt to be honest about what the bill did and did not do, and to do an economic analysis based on that.

Second of all, I mean, I actually was a career employee at EPA for about 20 years. There are always differences of opinion. I am not sure I would call it suppressing it if one analyst, or two analysts, or five analysts have one point of view and the preponderance of the analysts have a different point of view, which I believe is what happened in the endangerment finding.

Senator BUNNING. Thank you.

Ms. CLAUSSEN. There are always different points of view.

Senator KERRY. Thank you very much, Senator Bunning.

Let me just clarify one thing that I said about China. China is willing to have mutual, have verifiable reductions, and reportable reductions. What they made clear is that, if the United States is not prepared to reduce, we are not going to get them to reduce. So, it is a question of who goes first here, and our bonafides are not great on this. That is all I said. It is not that there will not be agreement at all.

Senator BUNNING. But you did say there would not be one.

Senator KERRY. Unless, no, I did not say that. I said, unless we take steps here to reduce. If we reduce, if we show them our willingness to proceed forward, then we have the opportunity to get the agreement in Copenhagen. If the United States is unwilling to

participate, and we defeat an effort to do it here, then we are not going to have a global agreement, and we are all in trouble.

China is now looking at the loss of their major rivers. They estimate that they could lose the glaciers in the Himalayas by the year 2035. They have major silting now; boats are running aground in the delta of the Yangtze River—the Yellow River. They have huge fears. They have 800 million people living in agriculture still, making less than $2 a day. If they lose that water, they are in trouble. The same thing is being felt in India on the other side of the Himalayas.

So, there are huge implications now. That is what Mr. Horlick was just referring to. We are going to have to do something here. So, China assured me that they intend to be a constructive, positive force in Copenhagen, and that they will meet the standard that was set up in the prior negotiations at Bali and at Poznan, which require them to have verifiable, reportable, measureable reduction.

Senator BUNNING. All well and good, if they enforce it.

Senator KERRY. If they enforce. That is the scheme that has to be arrived at in Copenhagen, and we will ratify——

Senator BUNNING. We have experienced the fact that she has some industries, Senator Stabenow does, and I do in Kentucky, that are being injured seriously by not having the enforcement in China.

Senator KERRY. And Senator, I could not agree with you more. We are all concerned about that.

We have industry, different kinds in many cases, in Massachusetts that get injured. We lose a lot of money because of market manipulation and other games that they play. We all understand that. That is the key to the negotiation. We need a mechanism.

I would assume that you would agree, Mr. Horlick, that, if you have a global agreement, and 160 or whatever nations sign on to a reduction target, but China were to stay out, or India were to stay out, you then have a kind of global renegade. At that point, we can set up a mechanism whereby, within the WTO or somewhere else, we can take measures. Is that not accurate?

Mr. HORLICK. I think it would be difficult. It is not impossible. Changing the WTO is not easy, and indeed the U.S. wanted it that way, but I think in practical terms you are going to need a China or India in.

Senator KERRY. We all agree.

Mr. HORLICK. And they are going to do it for their own motives. The one you addressed, of running out of water, is a strong motive. The good news is that, as I understand it—I am not an expert in this—they run out before we do. That is a really crude way of putting it.

Senator STABENOW. Mr. Chairman, I realize my colleagues want to speak. Could I just make one comment on this? And that is, Mr. Chairman, I agree with you totally. We have to do something. I just think in the context of this hearing, as it relates to the border tariffs, the allowances are absolutely critical.

Senator KERRY. I could not agree more. How do we do it?

Senator STABENOW. We cannot just take it on face value. We have to have in place, not later, but in the context of whatever we do, the ability to enforce it.

Senator KERRY. Right. We all agree with that. The key is getting the global agreement to be able to do that, and we cannot get a global agreement if we are not willing to take some steps.

Let me just say for the knowledge of our colleagues, that we are going to be very careful in the formulation of the Senate bill. We are reaching out to all of our colleagues, have met with Senator Conrad, Senator Dorgan, Senator Bayh, and a lot of folks.

We are meeting now to discuss it. But we are going to hew pretty closely to a lot of what they did in the House, because a lot of coal State interests were taken into account, manufacturing interests taken into account; people who have been through this effort. We have some notions where it could be legitimately improved, but we are going to try to approach it in a thoughtful way.

Senator Cantwell?

Senator CANTWELL. Thank you, Mr. Chairman. I welcome all the discussion this morning about China, because I really do believe that we need a U.S.-China energy bilateral. And I know the chair traveled there recently and saw the work and effort that people are putting into trying to come up with an agreement.

We in the Northwest look at China as a market. We already sell them software and airplanes and coffee, and we would like to sell them some clean energy technology.

And the fact that our State Department is working with our national laboratories to help China on their building compliance—half of all the buildings in the next 10 years built on this planet are going to be in China. And, if the United States was supplying them with some of the energy efficiency tools that we have already implemented in the United States, it would be a big boon to our economy.

So I hope that, when the President goes there in November, that we really are seriously looking at this as an agreement and an opportunity for a market. Energy is a $6-trillion market. It is the mother of all markets. The internet, by comparison, is only $1 trillion. If we were working together on a streamlined approach, it would be a big economic boost.

I want to ask a question about the output-based allowances that are kind of under consideration in one of the proposals. On the face of this, this seems to be a very difficult thing to implement effectively and equitably. Where does the money come from for refunds to consumers paying higher prices or to impacted industries? Ms. Claussen or Mr. Horlick?

Ms. CLAUSSEN. Maybe I can deal with the household thing in the House bill a little bit. What households will face most of all is an issue of electricity prices. The way the House bill is structured, the money goes to the local distribution companies in most cases, and particularly where it is coal-fired power that we are talking about, which is where the price increases would invariably be the greatest, those local distribution companies are regulated at the State level.

The basis of that regulation is to make sure that consumers do not pay high prices, pay the lowest possible prices. So I think by

giving the allowance value to the local distribution companies, you are essentially protecting consumers from price spikes and high price increases. We think that is the best way to protect consumers.

Now, industries are different. I think the way we deal with that for energy-intensive industries, which is really the subject of this hearing, is to give them allowances. And, actually, it is a substantial amount of money. It is $9.4 billion in the House bill, 15 percent. So, this is quite significant, and we believe that will cover competitiveness impacts for a pretty substantial period of time.

Senator CANTWELL. Mr. Horlick?

Mr. HORLICK. Just to add one thing. As I understand it, and obviously people differ on the numbers, industrial manufacturing use or manufacturing emission of greenhouse gases in the U.S. is only about 6 percent of the total, so this is not an unsolvable problem, an unsolvable problem in terms of giving them allowances, et cetera. Once you get into energy and transportation, it gets a lot harder, because the numbers are bigger.

Senator CANTWELL. Where does the money come from to pay for the allowances?

Mr. HORLICK. Well, the allowances—in effect, the government—I should not say this—is creating money by—they are printing——

Senator CANTWELL. Mr. Horlick, I think you have said it exactly right. [Laughter.]

Mr. HORLICK. Sorry. By creating allowances, which is something of value, they will be giving them to some people. And that is not automatically bad, as I said, on the manufacturing side, it is just not that big a number.

The minute you get to household use and transportation use in the U.S., as I understand it—and I would defer certainly to both of the other witnesses—it becomes a much harder number. The only thing I would add is the need to learn from experience. As I understand it—and I believe there is a later hearing at a different committee today—the European Union's initial attempt at this was, they gave utilities the allowances, and the utilities raised the prices anyhow.

Senator CANTWELL. That is because they were not regulated. But the proposal here is not to regulate them either, and we already had the hearing with the EU representatives. This is exactly what they told us, that we made mistakes in giving away too many allowances, and prices still went up and consumers were not protected. To say, all right, UTCs, you go do that, I think is problematic.

I did want to ask, quickly, about the exporters of energy-intensive commodities, because we are asking the other question, which is the import issue. But if carbon controls make energy more expensive, will that not impact the competitiveness of some of our exporters?

Mr. HORLICK. I am glad you asked that, because competitiveness is both sides, it is exporters as well as importers. You could well be penalizing U.S. exporters substantially. To go back to basics, under WTO rules, if you had a pure VAT-like energy tax—I am not saying I advocate it, I am just using it as a baseline—then you could rebate that on exports. It is what every VAT system does.

Once you get into permits, that gets really hard to do, and you run the risk, which is why the committee obviously should be concerned, of raising the cost for exporters, possibly several times if they are buying imported inputs, and you cannot give them export subsidies under WTO. This is really complicated.

I would note, again, a note of reality: it is not just the Apple iPod. The best example is the U.S. automobile industry, which is a fully integrated industry in North America and all three countries. In the Pacific Northwest, there is a regional compact to look at this. It is the same land mass.

Senator KERRY. Senator Conrad?

Senator CONRAD. Thank you, Mr. Chairman. Thanks to the witnesses who are here today. We appreciate very much your taking the time and effort to be here to help the committee in its deliberations.

I am interested in whether you think the definition of "trade-exposed" should be expanded from industries that have significant export components to those that might be vulnerable on an import basis? I do not know if anybody else has asked that question, but it is of considerable interest to me.

As I understand Waxman-Markey, they are focused on those that have significant export business. But, how about the flip of that? How about businesses that would be exposed to imports and be unfairly affected as a result? And, I could just go down the line. Dr. Yager?

Dr. YAGER. Yes. Actually, I think that Waxman-Markey does focus on imports and looks at the share of imports. The graphs that we have in both the written statement as well as in the report use trade intensity, and the basis there is on the importance of imports for each of those industries and sub-industries.

But I think you made a good point, that there are certain industries in the United States that are very strong exporters, and some of the issues could be competing with other countries in third markets where there could be that differential, for example, in the cost of energy to the U.S. producers that might face a tax and foreign producers that may not. I think when we went out and spoke to experts about this, as many people have mentioned already in the hearing, just about everyone that we spoke to indicated that international agreement is the most preferable method to solving this, because otherwise you may assist certain producers, for example, in the border measure or with output-based rebates, but by far the most comprehensive treatment would be international agreement.

Senator CONRAD. All right. Ms. Claussen?

Ms. CLAUSSEN. Senator, that was a great answer. [Laughter.]

Senator CONRAD. Dr. Yager. I have been here 23 years. I do not think I have ever seen one witness complimenting another.

Mr. Horlick?

Mr. HORLICK. Let me join the crowd. Yes, we should look at export impacts, as well as import impacts. I just add, for technical reasons, in WTO law and lore, it may be better to base permit allocations on energy intensity rather than on trade factors. That might help your legal case.

Senator CONRAD. Let me ask another round with respect to the three of you. Is there anything that you have heard from any of the

other witnesses here that you would take exception to or have a different take on?

Dr. YAGER. No.

Ms. CLAUSSEN. No.

Mr. HORLICK. I do not believe there has been much difference now. And we did not coordinate in advance.

Ms. CLAUSSEN. And we come from different kinds of places.

Senator CONRAD. So, you do not have a disagreement or a different take on any of the issues that have been before us here this morning?

Dr. YAGER. I should mention that, when we did our work to provide the report for the Finance Committee and also for the statement, we interviewed a number of experts, including, of course, Pew experts and also other legal advisors. So, we actually believe that this does represent the majority of the views that we heard, and they are now represented in the GAO report.

Senator CONRAD. Let me ask this, if I could. Whatever testimony you have provided here, separate and apart from that, as somebody knowledgeable in the area, what is the thing that most concerns you about going forward? In your view, as you were thinking in preparation for this hearing, what is the thing that you would want to make certain that we are focused on, because it concerns you? Mr. Horlick?

Mr. HORLICK. It was the last point in my testimony, and it is the one I do not think enough attention has been paid to—the sheer, practical way this is going to work. If one country requires a permit and another has a border tax or there is one country that has a green permit, another that has a red permit, and they have different requirements. We have spent 60 years trying to simplify matters. I am not talking about raising tariffs or lowering them, just having the same document or the same categories. So the idea that we would have every country that would do its own thing without coordinating is scary.

Senator CONRAD. If I could just follow up, how big a danger is that?

Mr. HORLICK. Quite large, as I mentioned in my testimony. I do a lot of work on agricultural exports where, to be blunt, on the BSE thing, every country has a different set of requirements—on the shop floor, someone is shipping beef to Korea that has a slightly different requirement than shipping beef to Japan, and you run into problems all the time.

Senator CONRAD. It is interesting you raise this. I was just home during the July 4th break. One of the major agricultural exporters in my State raised this specific concern. He said, look, Kent, we have a hard enough time dealing with all the different requirements. This is an agricultural exporter that takes identity-preserved grains of different kinds, ships them identity-preserved, and of course they get premium pricing for that. And the concern that he raised with me is these differential requirements across borders.

Ms. Claussen, what would be your answer?

Ms. CLAUSSEN. I should say up front that we like a great deal that is in the House-passed bill, but when we look at the border measures, there are a couple of things that really concern us.

For one thing, there is no presidential discretion in how they are applied. It becomes almost automatic. The test in the end is countries having programs that are as stringent as ours, which I think is not helpful, because in the early stages developing countries will have different kinds of commitments. I think they should be measureable and verifiable and reportable and binding, but I do not think they are going to be the same. And yet there is no presidential discretion, so that is one thing that really concerns me.

The other thing is that it is actually very hard to tell from the House language what is included and what is not, what goods this would be applied to, or how EPA would determine the carbon footprints of any of those goods. And I realize that can be done in an administrative way, but it is totally unclear if you are including everybody, or just a few people, or all kinds of goods, or just a few. So, there are lots of things about how this is structured that I think give us a lot of pause.

Senator CONRAD. All right. I am over time.

Senator KERRY. I appreciate your question. I think it is important. I will just say very quickly, we have already come to the conclusion, in working on the Senate bill, that we are going to try to change that provision with great difficulties in it. We have not landed yet completely on where we come out, so this is helpful today. We need your input, everybody.

I would say to Senator Cantwell, just quickly, that the Europeans began very ineffectively. I remember in the Kyoto negotiations, they did not believe in trading at all. In fact, they fought it. They thought it was an American scheme not to reduce emissions at all by allowing this trading to go on. And, so they began reluctantly, and frankly casually, and they gave out allowances and did a lot of things. They made mistakes.

Now they have actually tuned their market and they have made a number of corrections that are important as we think about how we do it. But we also have lessons from our own $SO_2$ market, the $SO_2$ market that we created in the 1990 Clean Air Act. So, we have had a market.

The second thing I would say to you is, we are going to regulate on the Senate side. We want to avoid speculation. We know that some Senators are concerned about that, so we are going to come up with a mechanism.

And, third, it is not quite accurate or fair to say that we are really just printing money. What we are doing is creating, we are commoditizing something that does not exist today, that is sort of out there, which is the concept of these reductions. We create the commodity by setting up a regulatory structure, so suddenly it has value. We do not print any money, we do not take anything out of the Treasury, and there is no Federal deficit add-on here. This is, in fact, creating a marketplace through the regulatory process. I think that we need to think about it in that context.

Senator Nelson?

Senator CANTWELL. If I could, Mr. Chairman, respond to that.

Senator KERRY. Yes. Please. Absolutely.

Senator CANTWELL. I think the main improvement the EU is looking at is going to 100-percent auction. I think that learning from the Europeans is something that is very important. I think

the fact that the Europeans have now had incidents of people taking carbon futures and cutting them up and slicing them up into tranches and trying to sell them, similar to what we did with the credit default swaps, is something that we should be paying attention to. And so I look forward to the improvements that you think——

Senator KERRY. Well we want no derivatives, no games,——

Senator CANTWELL. Thank you, Mr. Chairman.

Senator KERRY. I could not agree with you more.

Senator Nelson? Let me just say to colleagues, the vote has started. There are 14 minutes. So Senator, you should have time, here.

Senator NELSON. I will make it quick. Paul Krugman has said we ought to have a punitive carbon tax against the Chinese goods that come in. What do you think about that?

Mr. HORLICK. Well, just to start, as I understand it, their largest export is clothing, which has very little carbon footprint. I suspect Professor Krugman was looking for some sort of lever to get the Chinese to agree to a binding international agreement. I think that there will not be an agreement unless every country comes with some sort of motive.

I have also heard people say that such a tax would lead the Chinese not to participate. So, you can argue it both ways.

It would have, as I mentioned and the other witnesses mentioned—you also have to see all the other impacts to say it is a punitive tax on the Chinese. To take my Apple iPod example, of the $299 retail price, only $4 stays in China, $130 is in the U.S. So, as I say, that is just an example. I want to see where the tax winds up. It could be here.

Senator NELSON. All right. Now, one of the things that China is trying to do, government directive, is get into energy efficiency and the renewable energy, green energy, and so forth. And if they outpace us, as was recently expressed in Tom Friedman's column, what are the implications for all of that for us?

Ms. CLAUSSEN. Maybe I can answer that. I think there is going to be, in the future, a huge market for clean energy. We should compete in that market. We should win in that market. I think the best way for us to do that is to move some legislation that puts a price on carbon, which will provide a great incentive for renewable and cleaner energy, so that we can move as fast as possible to fill the market demand, and it is going to be a global one.

Dr. YAGER. I have nothing to add, Senator Nelson.

Senator NELSON. Thank you, Mr. Chairman. I know we have the vote.

Senator KERRY. I really appreciate your participation. If I can just ask you, sort of, give me a summary here. We have to reduce. We have to get the world to reduce. We are going to go to Copenhagen, and hopefully, we all come up with an agreement. In your judgment, what is the best mechanism by which we can turn to the American people and look them in the eye and say, yes, you are going to be helping to reduce, but so are they, and, if they do not, here is what is going to happen? Mr. Horlick?

Mr. HORLICK. The trade threats always sound good, but——

Senator KERRY. I understand that. You have said that. Everybody gets that here. What is the mechanism that does not just sound good, but might be effective?

Mr. HORLICK. Incentives work better than threats. What incentives do other countries have to reduce their emissions; indeed, what incentives do we have? The first one, actually, is the impacts on their physical——

Senator KERRY. What if the incentive is not working fast enough that they meet the goal and we do? What if the incentive is not sufficient? I mean, if they build 500 coal-fired plants as you have heard described?

Now, I do not think they are going to do that. What I have heard in China is, first of all, they are moving down the nuclear road. They have tripled their wind power targets. They are going to be doing a huge amount on solar. They are going to lead us in solar. If we do not get our act together, we are going to be chasing China in 3 or 4 years, and people had better focus on that quickly.

Ms. CLAUSSEN. I think that is the answer. I mean, the future of all of this is in clean energy. Whoever gets there first will have a wider share of the market. The best way to get there is by dealing with this problem in a constructive energy and climate piece of legislation. That will benefit us, and I think that is the point that we have to keep making.

Senator KERRY. Well, we need to close, and I need to go vote, because I have to chair this other meeting. I will just close by saying to you I want to emphasize what Senator Cantwell said. She and I were just talking about it a moment ago. The internet, which drove the 1990s bubble and created an enormous wealth in our country and millions of jobs, is a trillion-dollar market. It has about—I forget the numbers of millions of users—about a billion users. One billion users for a trillion dollars of market. The energy market is a $6-trillion market and has about 4.5 billion eligible users.

Now, as Senator Cantwell said, that is the mother of all markets. If you want to talk about Googles, or Microsofts, or whatever, the next four or five energy equivalents are going to go to the winners here, the people who get there first.

Ms. CLAUSSEN. Exactly.

Senator KERRY. And that is why China is moving so aggressively to be the world's number one electric car producer. That is the solution for Senator Stabenow, for Detroit, and so forth. So, I hope we can get that appropriate focus in these next months.

Dr. Yager, thank you. This study is going to be important to us. It is helpful. It isolates those industries that will or will not be affected, how they will be, and it will help us to be able to figure out some of the allowance component of this as we go forward.

Dr. YAGER. Thank you, Chairman Kerry.

Senator KERRY. Senator Conrad, you are recognized. I am going to leave the hearing in your hands, if you do not mind. Have you voted already?

Senator CONRAD. The hearing is adjourned. [Laughter.]

Senator KERRY. That is the best you have ever been.

Senator CONRAD. I learned that from Joe Biden.

[Whereupon, at 11:15 a.m., the hearing was concluded.]

# APPENDIX

## ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

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**Climate Change Legislation: International Trade Considerations**
**Hearing before the Finance Committee**
**Statement of Senator Max Baucus**
**July 8, 2009**

The 18th-century British physician and preacher Thomas Fuller wrote: "We never know the worth of water till the well is dry." Today, we examine the international trade considerations of climate change. As we do so, we remember that few goals are more important than protecting the world in which we live. We cannot afford to let this well run dry.

We have a moral imperative to address climate change. But we cannot step in hastily. We cannot act without careful thought. And we must work together to achieve this worthy goal. Climate change affects all Americans. The solution must take into account the concerns of all Americans, as well.

Americans have raised significant concerns that we must consider. We must craft legislation that withstands the test of time. But we must be mindful of our current economic situation. We must craft legislation that reduces greenhouse gas emissions. But we must be mindful of the effects that legislation will have on our workers, companies, ranches, and farms. We must craft legislation to address a global problem that knows no boundaries. But we must be mindful that some regions and industries will be hit harder than others.

In Montana, ranchers, farmers, utilities, and coal producers are concerned about the increased costs that climate change legislation may impose on livestock, agricultural, electricity generation, and energy-intensive industries. And because Montanans rely so heavily on exports, they worry about the effects of those costs on their ability to compete internationally.

We have to address these concerns head on. We have to identify which industries need help. And we have to give those industries the tools that they will need to transition to newer and greener technologies and practices.

We must also consider the concerns of the international community. Climate change is a global issue, not just an American issue. As we proceed towards the United Nations Climate Change Conference in Copenhagen at the end of the year, the world will be watching how the United States addresses this issue. And we will be watching how the rest of the world addresses this issue, as well. U.S. climate change legislation must be part of the global climate change solution. But other countries must also commit to curbing their own carbon emissions. No country can solve this problem alone. And none must stand in the way of a global solution.

We must also ensure that our respective climate change proposals comply with international trade rules. As we make new commitments in climate change, we must abide by the commitments that we have already made. International trade rules provide flexibility for nations to preserve their environment. We should design and implement our legislation to fit within that flexibility.

A great deal of work lies ahead of us. So let us act urgently. Let us act wisely. And let us preserve our environmental heritage, long before its waters run dry.

**Climate Change Legislation:**
**International Trade Considerations**

**Testimony of**
**Hon. Eileen Claussen, President**
**Pew Center on Global Climate Change**

**Submitted to**
**the Committee on Finance**
**United States Senate**
**July 8, 2009**

Mr. Chairman, Mr. Grassley, members of the Committee, thank you for the opportunity to testify on the international trade considerations of climate change legislation. My name is Eileen Claussen, and I am the President of the Pew Center on Global Climate Change.

The Pew Center on Global Climate Change[1] is an independent non-profit, non-partisan organization dedicated to advancing practical and effective solutions and policies to address global climate change. Our work is informed by our Business Environmental Leadership Council (BELC), a group of 44 major companies, most in the Fortune 500, that work with the Center to educate opinion leaders on climate change risks, challenges, and solutions. The Pew Center is also a founding member of the U. S. Climate Action Partnership, a coalition of 25 leading businesses and five environmental organizations that have come together to call on the federal government to quickly enact strong national legislation to require significant reductions of greenhouse gas emissions.

Addressing global climate change presents policy challenges at both the domestic and the international levels, and the issue of competitiveness underscores the very close nexus between the two. The immediate task before this Committee, and before the Senate, is developing and enacting a comprehensive domestic program to limit and reduce U.S. greenhouse gas (GHG) emissions. Moving forward with a mandatory program to reduce U.S. emissions in advance of a comprehensive international agreement presents both risks and opportunities. On the one hand, domestic GHG limits may lead to a shift of some energy-intensive production to countries without climate constraints, resulting in "emissions leakage" and posing competitiveness concerns for some domestic industries. On the other hand, a mandatory domestic program in the United States is an essential step towards the development of an effective global climate agreement.

In the long term, a strong multilateral framework ensuring that all major economies contribute their fair share to the global climate effort is, I believe, the most effective means of addressing competitiveness concerns. Achieving such an agreement must be a fundamental objective of U.S. climate policy. In designing a domestic climate program, the question before Congress is what to do about the potential for leakage in the interim – until an effective global agreement is

[1] For more information on the Pew Center on Global Climate Change, please visit http://www.pewclimate.org

in place. In considering this question, it is important to distinguish two distinct but closely related policy challenges: (1) how best to encourage strong climate action by other countries, and in particular, by the major emerging economies; and (2) how best to minimize potential competitiveness impacts on U.S. industry. I believe that each of these two objectives is most effectively addressed through a different set of policy responses, and it is important to ensure that our efforts to address one do not undermine the other.

I will focus today primarily on the second of these challenges: designing transitional policies to minimize potential competitiveness impacts on U.S. industry.[2] Our analysis of the underlying issues leads us to conclude that the potential competitiveness impacts of domestic climate policy are modest and are manageable.

In my testimony, I will:

1) present our analysis of the nature and potential magnitude of the competitiveness challenge;

2) discuss a range of options for addressing competitiveness concerns; and

3) outline what we believe would be the most effective approach. This approach would employ output-based emission allocations to vulnerable industries, phased out over time, and other transition assistance to affected workers and communities.

**Understanding Competitiveness Concerns**

A first step in considering options to address competitiveness is assessing the potential scope and magnitude of potential competitiveness impacts. It is important to note that it is not the competitiveness of the U.S. economy as a whole that is at issue. (According to the Environmental Protection Agency's (EPA) analysis of the American Clean Energy and Security (ACES) Act of 2009 passed last month by the House, the cost of meeting the bill's emission reduction targets in 2030 would be a 0.37 percent loss in GDP.[3] Put another way, GDP would reach $22.6 trillion, nearly 60 percent higher than today, approximately two months later than without the bill.) Rather, the concern centers on a relatively narrow segment of the U.S. economy: energy-intensive industries whose goods are traded globally, such as steel, aluminum, cement, paper, glass, and chemicals. As heavy users of energy, these industries will face higher costs as a result of domestic GHG constraints; however, as the prices of their goods are set globally, their ability to pass along these price increases is limited.

Competitiveness impacts can be experienced as a loss in market share to foreign producers, a

[2] For a discussion of how best to encourage strong climate action by other countries, see the testimony on The Roadmap from Poznan to Copenhagen – Preconditions for Success by Elliot Diringer, Vice President for International Strategies for the Pew Center on Global Climate Change, submitted to the Select Committee on Energy Independence and Global Warming, U.S. House of Representatives, February 4, 2009. (http://www.pewclimate.org/testimony/diringer/02-04-09)

[3] EPA *Analysis of the American Clean Energy and Security Act of 2009* H.R. 2454 in the 111th Congress 6/23/09: Data Annex http://www.epa.gov/climatechange/economics/economicanalyses.html

shift in new investment, or, in extreme cases, the relocation of manufacturing facilities overseas. In assessing the economic consequences of past environmental regulation in the United States, most analyses find little evidence of significant competitive harm to U.S. firms. Many studies conclude that other factors – such as labor costs, the availability of capital, and proximity to raw materials and markets – weigh far more heavily in firms' location decisions. One comprehensive review – synthesizing dozens of studies of the impact of U.S. environmental regulation on a range of sectors – concluded that while new environmental rules imposed significant costs on regulated industries, they did not appreciably affect patterns of trade.[4]

In the case of GHG regulation, the additional cost to firms could include the compliance cost of purchasing allowances to cover direct emissions; indirect compliance costs embedded in higher fuel or electricity prices; further demand-driven price increases for lower-GHG fuels such as natural gas; and the costs of equipment and process changes to abate emissions or reduce energy use.

In gauging the potential impacts of GHG regulation, it is important to distinguish the "competitiveness" effect from the broader economic impact on a given industry or firm. A mandatory climate policy will present costs for U.S. firms regardless of what action is taken by other countries. In the case of energy-intensive industries, one potential impact of pricing carbon could be a decline in demand for their products as consumers substitute less GHG-intensive products. This is distinct, however, from the international "competitiveness" impact of GHG regulation, which is only that portion of the total impact on a firm resulting from an imbalance between stronger GHG constraints within, and weaker GHG constraints outside, the United States.

To empirically quantify the potential magnitude of this competitiveness impact, the Pew Center commissioned an analysis by economists at Resources for the Future.[5] This work, which we published in May, analyzes 20 years of data in order to discern the historical relationship between electricity prices and production, consumption, and employment in more than 400 U.S. manufacturing industries. On that basis, the analysis then projects the potential competitiveness impacts of a U.S. carbon price, assuming no comparable action in other countries. The analysis assumes a $CO_2$ price of $15 per ton. (EPA's preliminary analysis of the American Clean Energy and Security Act (ACES) Act estimates an allowance price of $16 per ton $CO_2$ in 2020.[6])

The Pew/RFF analysis finds an average production decline of 1.3 percent across the U.S. manufacturing sector as a whole, but also a 0.6 percent decline in consumption. This suggests that the decline in production that can be attributed to increased imports – in other words, the

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[4] Jaffe, A.B., S.R. Peterson, P.R. Portney, and R.N. Stavins, "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?," Journal of Economic Literature, Vol. 23, March 1995.

[5] Aldy, J.E. and Pizer, W. A., *The Competitiveness Impacts of Climate Change Mitigation Policies*, Pew Center on Global Climate Change, May 2009. http://www.pewclimate.org/international/CompetitivenessImpacts.

[6] EPA Analysis of the American Clean Energy and Security Act of 2009 H.R. 2454 in the 111th Congress 6/23/09http://www.epa.gov/climatechange/economics/pdfs/HR2454_Analysis.pdf .

competitiveness effect – is just 0.7 percent. For energy-intensive industries (those whose energy costs exceed 10 percent of shipment value), the analysis projects that average U.S. output declines about 4 percent. However, consumption declines 3 percent, so that only a 1 percent decline in production (or one-fourth of the total decline) can be attributed to an increase in imports, or a loss of competitiveness. For specific energy-intensive industries, including chemicals, paper, iron and steel, aluminum, cement, and bulk glass, the analysis projects a competitiveness impact ranging from 0.6 percent to 0.9 percent, although within certain subsectors, the impact could be higher.

What this analysis demonstrates very clearly is that most of the projected decline in production stems from a reduction in domestic demand for these products, not an increase in imports. In other words, most of the projected economic impact on energy-intensive industries reflects a move toward less emissions-intensive products – as would be expected from any effective climate change policy, even one with global participation – and not a movement of jobs and production overseas. At the carbon price level studied, the projected competitiveness impacts, as well as the broader economic effects on energy-intensive industries, are modest and, in our view, can be readily managed with a range of policy instruments.

**Policy Options**

In the design of a domestic cap-and-trade system, competitiveness concerns can be addressed in part through a variety of cost-containment measures, such as banking and borrowing and the use of offsets, which can help reduce the costs to all firms, including energy intensive, trade-exposed industries. However, other transitional policies may be needed to directly address competitiveness concerns in the period preceding the establishment of an effective international framework. Options include: fully or partially exempting potentially vulnerable firms from the cap-and trade system; compensating firms for the costs of GHG regulation through allowance allocation or tax rebates; transition assistance to help firms adopt lower-GHG technologies, and to help communities and workers adjust to changing labor markets; and border measures such as taxes on energy-intensive imports from countries without GHG controls. In addition, a domestic policy could be designed to encourage and anticipate international sectoral agreements establishing the respective obligations of major producing companies within given sectors.

**Exclusion from Coverage** – One option is to fully or partially exclude vulnerable sectors or industries from coverage under the cap-and-trade program. For instance, under the Lieberman-Warner Climate Security Act of 2008,[7] the direct "process" emissions of many energy-intensive industries would not have been subject to GHG limits. This type of exclusion would have reduced the number of emission allowances a trade-exposed firm would need to hold and would thereby eliminate some of the direct regulatory costs, shielding it not only from competitiveness impacts but also from some of the broader economic effects of pricing carbon. However, by limiting the scope of the cap-and-trade system, exclusions of trade-exposed industries would undermine the goal of reducing GHG emissions economy-wide, and would reduce the economic efficiency of a national GHG reduction program. Exemptions could also give exempted industries an economic advantage over nonexempt domestic firms and sectors, including

[7] S.3036 of the 110th Congress.

competitors. Moreover, firms whose emissions are exempted would still face the indirect costs of higher energy prices and would not be completely shielded from the competitive impact associated with this cost increase.

**Compensation for the Costs of GHG Regulation** – Another option is to include these sectors in the cap-and-trade system but compensate them for the costs of GHG regulation. Key design considerations include the scope, form, and means of calculating such compensation, and whether and how it should be phased out. As noted earlier, firms covered by the cap-and-trade system face both direct and indirect costs of regulation. Direct compliance costs include the cost of purchasing any allowances needed to cover direct emissions regulated under the cap and/or the cost of equipment and process changes to abate emissions. Indirect costs include higher prices for electricity and natural gas (reflecting an embedded carbon price and, in the case of natural gas, rising demand for this less GHG-intensive fuel). For energy-intensive industries, the indirect cost of higher energy prices represents a significant portion of the total potential cost.

One form of compensation is providing free emission allowances. Because free allocation provides the same economic incentive to reduce emissions as does an auction,[8] keeping energy-intensive sectors under the cap, but providing free allowances, provides for greater environmental effectiveness and economic efficiency than excluding them. Furthermore, additional allowances could be provided to compensate for indirect costs, thus providing a more complete shield from international competitiveness impacts.

Another form of compensation for direct and/or indirect costs could be tax credits or rebates. One potential source of revenue for such measures is proceeds from the auction of emission allowances. A tax rebate would be a direct payment to compensate a firm for GHG regulatory costs; a tax credit could alternatively offset those costs by reducing a non-GHG burden such as corporate or payroll taxes, or healthcare or retirement costs.[9]

Whatever form the compensation takes, the central challenge is determining the appropriate level. In the case of direct compliance costs, allowances could be granted on the basis of historical emissions ("grandfathering") and energy-intensive sectors could receive more generous allocations than other emitters. For instance, energy-intensive industries could receive a full free allocation while others receive 80 percent of their historical emissions. Over time, the energy-intensive sectors could continue to receive a higher proportion of free allowances than other sectors as the allocation system transitions to fuller auctioning. However, granting allowances on the basis of historical emissions can effectively penalize early action and reward relatively heavier emitters within an industry. In addition, it does not necessarily guard against

[8] The cap in a "cap-and-trade" system determines its environmental stringency by setting the number of emission allowances that are available. These allowances are equal to the amount of emissions that are permitted under the cap and their number declines over time as the cap is tightened. From an environmental perspective, it doesn't matter how the emission allowances are distributed. They could be auctioned or freely distributed or any combination of the two. All that matters is the total number of emission allowances that are distributed – the environmental goal is determined by the cap itself and is not in any way impacted by whether the allowances are auctioned or distributed freely. A company that is included in the cap-and-trade program but given free allowances still has an incentive to reduce its emissions because that would free up allowances that the company could sell.

[9] Houser, Trevor et al., *Leveling the Carbon Playing Field: International Competition and US Climate Policy Design*, Peterson Institute for International Economics and World Resources Institute, May 2008.

emissions leakage or a loss of jobs, as a firm could choose to maximize profits by selling its free allowances and reducing production. There is also the risk that firms will be over-compensated and realize windfall profits.

Alternatively, compensation could be "output-based," pegged to actual production levels and/or energy consumption. This would shield energy-intensive firms from regulatory costs, and lower the risk of emissions leakage and competitiveness impacts, while providing an incentive for continued production. Firms could be compensated in full for their direct and indirect costs. Or, an output-based approach could incorporate a performance standard (i.e., emissions or energy use per unit of production) to encourage and reward lower GHG-intensity production. For instance, free allowances could be pegged to the level needed by a firm whose emissions intensity is only 85 percent of the sector average; that percentage could decline over time, providing an ongoing incentive to switch to lower-GHG processes and energy sources. This was the approach adopted in the Inslee-Doyle Carbon Leakage Prevention Act introduced in the 110th Congress.[10] The ACES Act adopts an output-based approach, initially allocating 15 percent of the total allowance pool to energy-intensive industries to compensate for both direct and indirect costs based on a facility's level of output. However, as allocations to individual firms would be based on average emissions intensity within the sector, rather than a stronger benchmark, there is no added incentive to improve GHG performance beyond the average.

If compensation is provided, one important consideration is how long it should be maintained and at what level. Phasing out the compensation would give firms additional incentive to improve their GHG performance but would also make them more vulnerable to competitiveness impacts. A mandatory program could provide for periodic review of any allowances or other compensation to vulnerable sectors to consider adjusting them on the basis of new information. For instance, if the legislation establishes a specific timetable for moving from free allocation to auctioning, this transition might be slowed for specific industries if there are clear indications of competitiveness impacts. Alternatively, compensation could be phased out or ended if other countries take stronger action or new international agreements are reached. The ACES Act incorporates such approaches. It would phase down the output-based allowance rebates 10 percent a year starting in 2026, but allow the President to adjust that rate depending on an assessment of emissions leakage.

As with the exclusion of trade-exposed sectors from the cap, the remedy provided by these compensation approaches extends beyond any actual competitiveness effect. Whether based on output or historical emissions, most of the proposals offered to date aim to compensate firms for most or all of the increased costs associated with GHG regulation, not just for the impacts they may face due to the asymmetry between GHG constraints within and outside the United States. To limit compensation to competitiveness impacts alone would require in-depth financial knowledge of each firm and/or complex calculations that could be reliably performed only once the impacts have occurred. A drawback of a broader compensation approach is that the financial resources required – whether drawn from auction revenue or other sources – are not available for other climate- or non-climate-related purposes.

[10] H.R. 7146 in the 110th Congress.

**Transition Assistance** – Another option is to provide transition assistance to vulnerable firms to help them adopt lower-GHG technologies, and to communities and workers affected by competitiveness impacts. In the case of firms, measures could include tax incentives such as accelerated depreciation to encourage the replacement of inefficient technologies, or tax credits for the development or adoption of lower-GHG alternatives. Firms could also be incentivized to switch to low-carbon energy sources, for example through subsidies for the purchase or generation of renewable energy.

Where competitiveness impacts are unavoidable, assistance can be provided to both workers and communities. Previous government efforts to help communities adjust to economic changes resulting from national policies provide lessons for shaping similar efforts as part of climate change policy.[11] At the level of individual workers, policies such as the Workforce Investment Act providing income support and retraining to help move workers into new jobs can provide a blueprint for transition programs to assist workers adversely affected by competitiveness imbalances under a climate policy.[12] The ACES Act would provide worker transition assistance through two set-asides of emission allowances: one to support retraining and other benefits when employers, unions or other groups of workers demonstrate that employment has suffered as a result of the bill; the other to support training for new jobs in clean energy industries.

**Border Adjustment Measures** – Another strategy is to try to equalize GHG-related costs for U.S. and foreign producers by imposing a cost or other requirement on energy-intensive imports from countries with weaker or no GHG constraints. One option is a border tax based on an import's "embedded" emissions (equal to the compliance costs for a domestic producer of an equivalent good). Alternatively, under a cap-and-trade system, emission allowances could be required for the import of energy-intensive goods. In the 110th Congress, the Lieberman-Warner bill, the Bingaman-Specter bill, the Markey ICAP bill, and the Dingell-Boucher discussion draft all adopted variations of this approach. Under the ACES Act, "international reserve allowances" would be required for energy-intensive imports starting in 2020 unless a new international agreement meeting the bill's negotiating objectives has entered into force, or unless Congress concurs with the President's determination that the requirement is not in the national interest.

One major shortcoming of unilateral border measures is their limited effectiveness in reducing competitiveness impacts. As the border adjustment measures would apply only to imports to the United States, they would not help "level the playing field" in the larger global market where U.S. producers may face greater competition from foreign producers.

Among the other issues raised by unilateral border measures is their consistency with World Trade Organization (WTO) rules. The legality of a given measure would depend in part on its specific design and on the types of climate policies in place domestically. As such approaches have not been previously employed, there are no definitive rulings, and experts differ in their

[11] Greenwald, Judith M., Brandon Roberts, and Andrew D. Reamer, *Community Adjustment to Climate Change Policy*, Pew Center on Global Climate Change, December 2001.

[12] Barrett, Jim, *Worker Transition and Global Climate Change*, Pew Center on Global Climate Change, December 2001.

interpretation of relevant WTO precedents.[13] The legal uncertainties ultimately would be resolved only through the adjudication of a WTO challenge, a likely prospect if unilateral border measures were to be applied by the United States or another country.

Another important consideration is the potential impact on trade and international relations. If the United States were to impose border requirements, there is a greater likelihood that it would become the target of similar measures. European policymakers also are weighing the use of border measures and have argued that the emission targets under consideration in the United States are not comparable to those adopted by the European Union. U.S. trade officials and others also have voiced strong concern about the potential for retaliatory trade measures by targeted countries, leading to escalating trade conflicts.[14] Proponents argue that the threat of unilateral trade measures would give the United States greater leverage in international climate negotiations. However, there is a significant risk that they would engender more conflict than cooperation, in the end making it more difficult to reach agreements that could more effectively address competitiveness concerns.

**International Sectoral Agreements** – All of the preceding options are measures that would be implemented domestically. Another approach that would help reduce emissions within and outside the United States, while addressing competitiveness concerns, is to negotiate international agreements setting GHG standards or other measures within energy-intensive globally-traded sectors. For example, major steel-producing countries could agree on standards limiting GHGs per ton of steel, which could be differentiated initially according to national circumstances and converge over time. Sectoral agreements could take a number of forms, depending on the specific sectors, and could be stand-alone agreements or integrated into a comprehensive climate framework.[15]

Within the domestic context, a purely sector-by-sector approach would sacrifice the broad coverage and economic efficiency of an economy-wide cap-and-trade program. However, sectoral agreements could exist alongside a cap-and-trade program, and the system could be designed to encourage U.S. producers to work toward their establishment. One option would be to provide for a sector's exclusion from the cap once an international agreement of comparable stringency is in place (although, as noted, diminishing the scope of the cap-and-trade system by exempting one or more sectors would limit its economic efficiency). An alternative is to keep the sectors under the cap but align their obligations under the domestic program and the international sectoral agreement. For instance, a firm's emissions allowance allocation under the trading system could be based on the GHG standard that is agreed to internationally.

In keeping with the principle of "common but differentiated responsibilities," an international sectoral agreement may not set fully equivalent requirements for all countries, particularly at the

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[13] For a discussion of WTO-related issues, see Bordoff, Jason E., *International Trade Law and the Economics of Climate Policy: Evaluating the Legality and Effectiveness of Proposals to Address Competitiveness and Leakage Concerns*, Brookings Institution, June 2008.

[14] Remarks of U.S. Trade Representative Susan C. Schwab to U.S. Chamber of Commerce, January 17, 2008.

[15] Bodansky, Daniel, *International Sectoral Agreements in a Post-2012 Climate Framework*, Pew Center on Global Climate Change, May 2007.

outset. In that event, compensation for energy-intensive industries could be maintained at some level and phased out as the requirements for other countries rise to those borne by the United States.

**Recommendations**

Based on our assessment of the available options, the Pew Center believes that the Senate should seek to address competitiveness concerns by:

1) strongly encouraging the executive branch to negotiate a new multilateral climate agreement establishing strong, equitable, and verifiable commitments by all major economies;

2) including in domestic legislation incentives for such an agreement, including support for stronger action by major developing countries; and

3) including in cap-and-trade legislation transitional measures to cushion the impact of mandatory GHG limits on energy-intensive trade-exposed industries and the workers and communities they support. These transitional measures should be structured as follows:

- In the initial phase of a cap-and-trade program, free allowances should be granted to vulnerable industries to compensate them for the costs of GHG regulation. For direct costs, allowance allocations should be based on actual production levels. For indirect costs, allocations should reflect the emitter's production-based energy consumption, taking into account the GHG intensity of its energy supplies.
- Based on an analysis of GHG performance within a given sector, allocations should be set initially so that producers with average GHG performance are fully compensated for regulatory costs, while those performing above or below the norm receive allowances whose value is greater or less than their costs, respectively. This factor should be adjusted over time as an incentive to producers to continually improve their GHG performance.
- Free allocation levels should decline over time, gradually transitioning to full auctioning, although at a slower rate than for other sectors.
- A review should be conducted periodically to assess whether sectors are experiencing competitiveness impacts and, if warranted, to adjust allocation levels and/or the rate of transition to full auctioning.
- A portion of allowance auction revenue should be earmarked for programs to assist workers and communities in cases where GHG constraints are demonstrated to have caused dislocation.
- Transition assistance should be curtailed for a given sector upon entry into force of a multilateral or sectoral agreement establishing reasonable obligations for foreign producers, or upon a Presidential determination that such measures have been instituted domestically.

We believe this approach addresses the transitional competitiveness concerns likely to arise under a mandatory cap-and-trade program, while maintaining the environmental integrity of the

program and providing an ongoing incentive for producers to improve their GHG performance. We commend the Committee for focusing the attention of the Senate on this critical issue, and would be happy to work with you as you develop legislation to address this and other dimensions of the climate challenge.

I thank you for your attention and would be happy to answer your questions.

*United States Senate*
*Committee on Finance*

*Sen. Chuck Grassley · Iowa*
*Ranking Member*

Opening Statement of Senator Chuck Grassley
Senate Finance Committee Hearing
"Climate Change Legislation: International Trade Considerations"
Wednesday, July 8, 2009

Today's hearing will explore the international trade implications of possible carbon emissions legislation, also known as "cap-and-trade" legislation. The House has passed a bill, and the Senate is about to begin its legislative process as well. So, it's important that the Finance Committee explore these issues, because Congress could be setting our manufacturers up for a lot of trouble if we don't. I've said many times that we ought to approach this issue through a worldwide, international agreement. That's the only way to ensure that China and India and other major carbon emitting countries are involved. Otherwise, our industry is going to be left very uncompetitive. We're going to see more manufacturing move overseas where less efficient plants produce far more pollution than our American industries, and nobody should want to do that.

Some in Congress think the answer to that problem is to include some type of border measure in any legislation that Congress passes. At least that's the view of the House of Representatives. But I'm skeptical of that approach. I think it would be difficult to design such an approach that would be consistent with the rules of the World Trade Organization. If we do something that's inconsistent with the rules of the World Trade Organization, we're opening ourselves up to trade sanctions that could dwarf any sanctions we've seen in the past.

And then we'll have hurt our manufacturers twice. We'll have raised their costs by imposing cap and trade in the first place. And then we'll compound the problem by giving foreign countries a license to hit us with sanctions. That wouldn't be good for us, and it wouldn't be good for the international trading system either.

And it could get even worse. Other countries could follow our lead and impose their own border measures against our exporters. We could find ourselves defending our measures at the World Trade Organization and challenging other countries' measures at the same time.

I understand that the World Trade Organization would prefer to avoid that scenario and not have this issue thrust into its lap. The Director-General of the World Trade Organization, Pascal Lamy, stated recently that the WTO membership does not want to decide what is or isn't allowed from a trade perspective. He indicated that the World Trade Organization would much rather have the trade issues addressed as part of whatever comes out of the meetings scheduled to take place in Copenhagen later this year.

That makes sense. If the United States unilaterally imposes a border measure, we'll make it that much harder to reach an international agreement. Other countries aren't going to want to negotiate with us if they think we're dictating a specific outcome. Border measures aren't the only approach that has been suggested for addressing the competitiveness issue.

Another suggestion is to give free emissions allowances to domestic industries that are deemed to be trade sensitive. That's the approach that the European Union took. I have some questions about that approach too. I'm not convinced that giving away free allowances would be consistent with the subsidy rules of the World Trade Organization. At a minimum, there would be a risk of other countries arguing that free emission permits are subsidies that cause "adverse effects" to their industries. If we lost a subsidy case, we'd have the same risk of trade sanctions that I mentioned earlier. So for this reason too, we'd be better off waiting for an international agreement instead of pushing ahead unilaterally. I look forward to exploring these issues in further detail with our witnesses, and I thank each of them for appearing here today.

**TESTIMONY OF GARY N. HORLICK**
**BEFORE THE UNITED STATES SENATE COMMITTEE ON FINANCE**
**JULY 8, 2009**

Thank you, Mr. Chairman, and Senator Grassley, for the opportunity to appear before this Committee. I wish to state at the outset that I am not appearing on behalf of any client or any other organization or person.

The issues presented by climate change are extremely complex, and seem to evoke extremely complex solutions. I wish to start, however, with two basic rules to apply to these very complicated questions.

1. Before we adopt any measures in our legislation, would we like it if other countries adopted the same measures? There are good practical reasons for this old-fashioned rule. The U.S. exports about 20% of its manufactured goods. And 30% of U.S. manufactured exports are by small and medium companies. We export about 30% of our agricultural production, which is the difference between a profit and a loss for many of America's farmers.

2. Is the measure consistent with the obligations we have undertaken, most obviously through the WTO Agreements, but also our other agreements? There are also very practical reasons for following this rule. It is tempting to say that we can re-interpret existing WTO rules to permit whatever measures are necessary to protect our environment. But do we really want to change those existing rules? The key to the U.S. economy is constant innovation. One of the important fields where we lead the world of innovation is biotechnology, which is revolutionizing medicine, agriculture, and even many of the environmental concerns dealt with in proposed legislation (such as environmental remediation and renewable fuels). So far the United States has resisted efforts in Europe and elsewhere to limit our market access for our products because of how they are produced – from biotech means. But if we re-interpret WTO rules to allow trade barriers based on how things are made, we open up a can of worms – and might permit other countries to block our biotech exports, including major items such as corn, soybeans, and other crops.

With these two points in mind, I would like to address some of the international trade issues that have arisen in the context of the climate change debate:

1. The WTO itself, in a recent report with UNEP, has pointed out that some border measures would be permissible as part of a climate change package. But the WTO very carefully stated that WTO rules "permit, under certain conditions" (emphasis added) the use of border measures and indeed the devil is in the details. A VAT-style tax, imposed identically on domestic and imported goods, should past muster, but after that, it gets very difficult to design a border tax which would pass muster, as we have seen with prior GATT and WTO litigation. Requiring emission permits for importers – especially if there are any restrictions on those permits, or if any are given away to domestic producers – would raise serious WTO questions. But before we even get to those legal issues, it may be worth pondering the practical ones.

- As noted above, do we want similar import taxes or permit requirements imposed on our exports. Do we want each country finding a separate basis for imposing border restrictions? Do we want countries with stricter emissions standards than our factory emissions standards blocking our exports? As President Obama pointed out, India and China have lower per capita emissions than we do. Do we want developing countries, including not only China and India, but indeed most countries in the world, blocking

our exports on the grounds that our per capita greenhouse gas emissions are greater than theirs?

- Border measures would raise costs for some U.S. manufacturers – just as they have to adapt to new climate change standards.

- In practice, it seems that import restrictions are much more likely to be challenged in the WTO than is financial assistance to producers, such as offsetting costs or giving away permits. Thousands of pages of non-export subsidies are reported to the WTO, but only a handful have been challenged in the WTO, while literally hundreds of border measures have been challenged in the WTO and its predecessor GATT.

2. Permit allocation is not prohibited by the WTO rules – but, again, it depends on the details of the design. Linking permits to export requirements, or requirements to use domestic goods, would be prohibited. And even without those problems, permit allocations could be challenged in the WTO as an "actionable" subsidy. WTO rules require objective criteria – rules insisted on by the United States. The same subsidy rules would also be relevant in designing incentives for developing new sources of energy, and even renewable energy standards.

3. Obviously, no one country, even one as large as the United States, can clean up Earth's atmosphere on its own. It is essential that all major emitters co-operate in this effort. U.S. efforts will fail if other emitters do not do their part. I have great respect for the U.S. negotiator, Todd Stern, and his team. They certainly have a difficult job, and one which will require close cooperation between Congress and the executive as the U.S. pursues an international agreement. Fortunately, all the major countries realize that they have a stake in this game – some major developing countries face rapidly increasing desertification if GHG emissions are not reduced worldwide, including by those same countries. Even though there are shared interests, the climate change negotiation will not be easy, and numerous tactical choices will have to be made, such as whether to complete the legislation before the Copenhagen talks. If we make choices which reduce the chances of a good international agreement, we harm ourselves as well.

4. Perhaps the biggest international trade challenge – and one on which a lot more work needs to be done – is how the mechanics of international trade will work if each of the hundred and ninety countries (or even 10-15 regional groupings) has its own individual climate change implementation. What if some of them have border taxes, some require permits for imports, and others instead offset the costs for their domestic industry. Or each country has a cap-and-trade system with different limitations on the permits? These are highly practical questions, but, in the end, they will determine the true economic impact of the climate change legislation and agreements.

According to a recent study, an Apple iPOD with a retail price of $299 arrives in the U.S. in a box labeled Made In China, but only $4 stays in China while $130 stays in the U.S. and the remainder is scattered among 18 other countries. How are the 20 countries that collectively make an Apple iPOD going to calculate all the carbon impacts and untangle all those permits, taxes, and rebates? These details need to be worked out carefully – and in advance.

Thank you very much, I would be happy to answer any questions.

United States Government Accountability Office

GAO

Testimony
Before the Committee on Finance,
U.S. Senate

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# CLIMATE CHANGE TRADE MEASURES

## Estimating Industry Effects

Statement of Loren Yager, Director
International Affairs and Trade


GAO-09-875T

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to appear again before the Committee to provide insights from GAO's work on issues related to important international issues. Changes in the earth's climate attributable to increased concentrations of greenhouse gases may have significant environmental and economic impacts in the United States and internationally. To mitigate climate change effects, countries are taking or considering varying approaches to reducing greenhouse gas emissions, such as carbon dioxide, which is the most important greenhouse gas due to its significant volume. Between 2007 and 2009, Congress introduced a number of climate change bills, many of which contained proposals for a domestic emissions pricing system, such as a cap-and-trade system or a carbon tax. However, imposing costs on energy-intensive industries in the United States could potentially place them at a disadvantage to foreign competitors. In addition, emissions pricing could have negative environmental consequences, such as "carbon leakage," whereby emissions reductions in the United States are replaced by increases in production and emissions in less-regulated countries. As Congress considers the design of a domestic emissions pricing system, a key challenge will be balancing the need to reduce greenhouse gas emissions with the need to address the competitiveness of U.S. industries.

In my testimony today, my comments are based on a report that we are issuing today to the Senate Committee on Finance.[1] In particular, I will briefly describe some of the key challenges associated with estimating the industry effects from climate change measures, and provide illustrations of key characteristics for potentially vulnerable industries.

To address these objectives, we interviewed officials and reviewed climate change literature and documents from U.S. agencies, international organizations, policy institutes, and professional organizations; reviewed and analyzed a selection of climate change legislation introduced between 2007 and 2009 and congressional hearing records; analyzed data from the Census Bureau and the Departments of Energy and Commerce, among others; and reviewed and presented summary results for studies attempting to quantify the potential international competitiveness effects on domestic industries from emissions pricing. We conducted our work

[1]GAO, *Climate Change Trade Measures: Considerations for U.S. Policymakers*, GAO-09-724R (Washington, D.C.: July 8, 2009).

from October 2008 to July 2009 in accordance with all sections of GAO's Quality Assurance Framework that were relevant to our objectives. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions in this product.

## Summary

Estimating the potential effects of domestic emissions pricing for industries in the United States is complex. If the United States were to regulate greenhouse gas emissions, production costs could rise for certain industries and could cause output, profits, or employment to fall. Within these industries, some of these adverse effects could arise through an increase in imports, a decrease in exports, or both. However, the magnitude of these potential effects is likely to depend on the greenhouse gas intensity of industry output and on the domestic emissions price, which is not yet known, among other factors.

Estimates of adverse competitiveness effects are generally larger for industries that are both relatively energy- and trade-intensive. In 2007, these industries accounted for about 4.5 percent of domestic output. Estimates of the effects vary because of key assumptions required by economic models. For example, models generally assume a price for U.S. carbon emissions, but do not assume a similar price by other nations. In addition, the models generally do not incorporate all policy provisions, such as legislative proposals related to trade measures and rebates that are based on levels of production.

Proposed legislation suggests that industries vulnerable to competitiveness effects should be considered differently. Industries for which competitiveness measures would apply are identified on the basis of their energy and trade intensity. Most of the industries that meet these criteria are in primary metals, nonmetallic minerals, paper, and chemicals, although significant variation exists for product groups (sub-industries) within each industry. Additional variation arises on the basis of the type of energy used and the extent to which foreign competitors' greenhouse gas emissions are regulated. To illustrate variability in characteristics that make industries vulnerable to competitiveness effects, we include illustrations of sub-industries within primary metals that meet both the energy and trade intensity criteria; examples that met only one criterion; and examples that met neither, but had significant imports from countries without greenhouse gas pricing.

## Background

Countries can take varying approaches to reducing greenhouse gas emissions. Since energy use is a significant source of greenhouse gas emissions, policies designed to increase energy efficiency or induce a switch to less greenhouse-gas-intensive fuels, such as from coal to natural gas, can reduce emissions in the short term. In the long term, however, major technology changes will be needed to establish a less carbon-intensive energy infrastructure. To that end, a U.S. policy to mitigate climate change may require facilities to achieve specified reductions or employ a market-based mechanism, such as establishing a price on emissions. Several bills to implement emissions pricing in the United States have been introduced in the 110th and 111th Congresses. These bills have included both cap-and-trade and carbon tax proposals. Some of the proposed legislation also include measures intended to limit potentially adverse impacts on the international competitiveness of domestic firms.

## Estimating Competitiveness Effects

Estimating the effects of domestic emissions pricing for industries in the United States is complex. For example, if the United States were to regulate greenhouse gas emissions, production costs could rise for many industries and could cause output, profits, or employment to fall. However, the magnitude of these potential effects is likely to depend on the greenhouse gas intensity of industry output and on the domestic emissions price, which is not yet known, among other factors. Additionally, if U.S. climate policy was more stringent than in other countries, some domestic industries could experience a loss in international competitiveness. Within these industries, adverse competitiveness effects could arise through an increase in imports, a decrease in exports, or both.

For regulated sources, greenhouse gas emissions pricing would increase the cost of releasing greenhouse gases. As a result, it would encourage some of these sources to reduce their emissions, compared with business-as-usual. Under domestic emissions pricing, production costs for regulated sources could rise as they either take action to reduce their emissions or pay for the greenhouse gases they release. Cost increases are likely to be larger for production that is relatively greenhouse gas-intensive, where greenhouse gas intensity refers to emissions per unit of output. Cost increases may reduce industry profits, or they may be passed on to consumers in the form of higher prices. To the extent that cost increases are passed on to consumers, they could demand fewer goods, and industry output could fall.

While emissions pricing would likely cause production costs to rise for certain industries, the extent of this rise and the resulting impact on industry output are less certain due to a number of factors. For example, the U.S. emissions price and the emissions price in other countries are key variables that will help to determine the impact of emissions pricing on domestic industries. However, future emission prices are currently unknown. Additionally, to the extent that emissions pricing encourages technological change that reduces greenhouse gas intensity, potential adverse effects of emissions pricing on profits or output could be mitigated for U.S. industries.

Several studies by U.S. agencies and experts have used models of the economy to simulate the effects of emissions pricing policy on output and related economic outcomes. These models generally find that emissions pricing will cause output, profits, or employment to decline in sectors that are described as energy intensive, compared with business-as-usual. In general, these studies conclude that these declines are likely to be greater for these industries, as compared with other sectors in the economy. However, some research suggests that not every industry is likely to suffer adverse effects from emissions pricing. For example, a long-run model estimated by Ho, Morgenstern, and Shih (2008) predicts that some U.S. sectors, such as services, may experience growth in the long run as a result of domestic emissions pricing.[2] This growth would likely be due to changes in consumption patterns in favor of goods and services that are relatively less greenhouse gas-intensive.

Potential international competitiveness effects depend in part on the stringency of U.S. climate policy relative to other countries. For example, if domestic greenhouse gas emissions pricing were to make emissions more expensive in the United States than in other countries, production costs for domestic industries would likely increase relative to their international competitors, potentially disadvantaging industries in the United States. As a result, some domestic production could shift abroad, through changes in consumption or investment patterns, to countries where greenhouse gas emissions are less stringently regulated. For example, consumers may substitute some goods made in other countries for some goods made domestically. Similarly, investment patterns could

[2]Ho, Mun S., Richard Morgenstern, and Jhih-Shyang Shih. (November 2008) "Impact of Carbon Price Policies on U.S. Industry." RFF Discussion Paper No. 08-37, Resources for the Future, Washington, D.C.

shift more strongly in favor of new capacity in countries where greenhouse gas emissions are regulated less stringently than in the United States.

Stakeholders and experts have identified two criteria, among others, that are important in determining potential vulnerability to adverse competitiveness effects: trade intensity and energy intensity. Trade intensity is important because international competitiveness effects arise from changes in trade patterns. For example, if climate policy in the United States were more stringent than in other countries, international competition could limit the ability of domestic firms to pass increases in costs through to consumers. Energy intensity is important because the combustion of fossil fuels for energy is a significant source of greenhouse gas emissions, which may increase production costs under emissions pricing.

Legislation passed in June 2009 by the House of Representatives, H.R. 2454, 111th Cong. (2009), uses the criteria of trade intensity and energy intensity or greenhouse gas intensity, among others, to determine eligibility for the Emission Allowance Rebate Program, which is part of the legislation.[3] H.R. 2454 specifies how to calculate the two criteria. Trade intensity is defined as the ratio of the sum of the value of imports and exports within an industry to the sum of the value of shipments[4] and imports within the industry. Energy intensity is defined as the industry's cost of purchased electricity and fuel costs, or energy expenditures, divided by the value of shipments of the industry.

Reducing carbon emissions in the United States could result in carbon leakage through two potential mechanisms. First, if domestic production were to shift abroad to countries where greenhouse gas emissions are not regulated, emissions in these countries could grow faster than expected otherwise. Through this mechanism, some of the expected benefits of reducing emissions domestically could be offset by faster growth in emissions elsewhere, according to Aldy and Pizer (2009).[5]

[3]Proposed legislation specifies that, in addition to trade intensity, either energy intensity or greenhouse gas intensity should be considered.

[4]An industry's value of shipments represents its value of output.

[5]Aldy, Joseph E. and Pizer, William A. (May 2009) "The Competitiveness Impacts of Climate Change Policies." Pew Center on Global Climate Change, Arlington, VA.

Second, carbon leakage may also arise from changes in world prices that are brought about by domestic emissions pricing. For example, U.S. emissions pricing could cause domestic demand for oil to fall. Because the United States is a relatively large consumer of oil worldwide, the world price of oil could fall when the U.S. demand for oil drops. The quantity of oil consumed by other countries would rise in response, increasing greenhouse gas emissions from the rest of the world. These price effects may be a more important source of carbon leakage than the trade effects previously described.

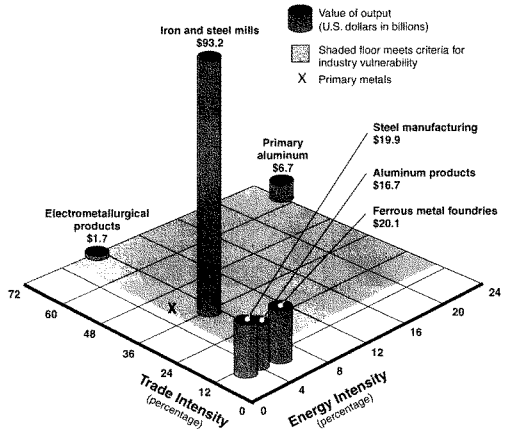
## Potentially Vulnerable Industries

Two key indicators of potential vulnerability to adverse competitiveness effects are an industry's energy intensity and trade intensity. Proposed U.S. legislation specifies that (1) either an energy intensity or greenhouse gas intensity of 5 percent or greater; and (2) a trade intensity of 15 percent or greater be used as criteria to identify industries for which trade measures or rebates would apply. Since data on greenhouse gas intensity are less complete, we focused our analysis on industry energy intensity. Most of the industries that meet these criteria fall under 4 industry categories: primary metals, nonmetallic minerals, paper, and chemicals. However, there is significant variation in specified vulnerability characteristics among different product groups ("sub-industries").

Although our report examined the four industry categories, figures 1 through 4 or the following pages illustrate the variation among different sub-industries within the primary metals industry, as well as information on the type of energy used and location of import and export markets.[6] The data shown in these figures are for the latest year available.

[6] For examples in nonmetallic minerals, paper, and chemicals, as well as further information on data sources and our methodology, see GAO-09-724R.

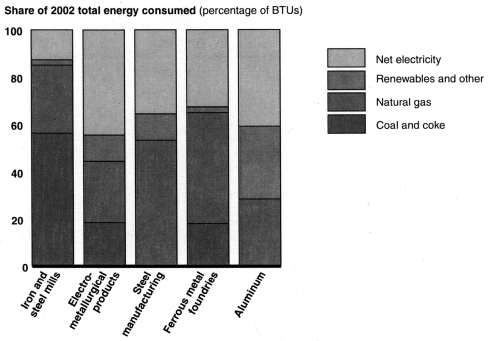
**Figure 1: Energy and Trade Intensity Indicators for Primary Metals Sub-Industry Categories**




Source: GAO analysis of Department of Commerce energy data for 2006 and trade data for 2007.

As shown by sub-industry examples in figure 1, energy and trade intensities differ within primary metals. For example, primary aluminum meets the vulnerability criteria with an energy intensity of 24 percent and a trade intensity of 62 percent. Ferrous metal foundries meets the energy intensity criteria, but not the trade intensity criteria. Steel manufacturing—products made from purchased steel—and aluminum products fall short of both vulnerability criteria. Iron and steel mills has an energy intensity of 7 percent and a trade intensity of 35 percent and is by far the largest sub-industry example, with a 2007 value of output of over $93 billion. The energy and trade intensity for all primary metal products is denoted by the "x" in figure 1.

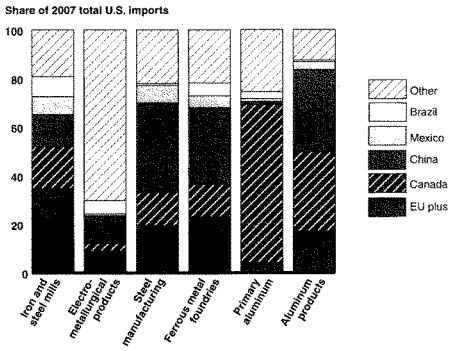
**Figure 2: Type of Energy Used by Primary Metals Sub-Industry Categories**




Source: GAO analysis of data from the Department of Energy.

Among the primary metals sub-industry examples shown in figure 2, the types of energy used also vary. Iron and steel mills uses the greatest share of coal and coke, and steel manufacturing and ferrous metal foundries uses the greatest proportion of natural gas. Since coal is more carbon-intensive than natural gas, sub-industries that rely more heavily on coal could also be more vulnerable to competitiveness effects. The carbon intensity of electricity, used heavily in the production of aluminum, will also vary on the basis of the source of energy used to generate it and the market conditions where it is sold. Data shown for "aluminum" include primary aluminum and aluminum products, and net electricity is the sum of net transfers plus purchases and generation minus quantities sold.

**Figure 3: Source of Imports for Primary Metals Sub-Industry Categories**

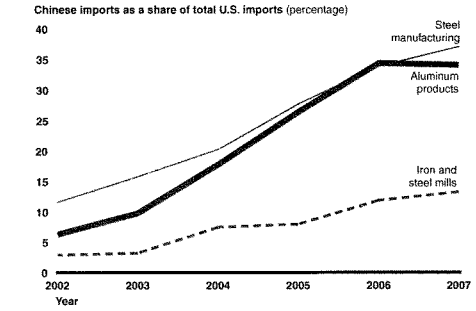



Source: GAO analysis of data from the Department of Commerce.

Industry vulnerability may further vary depending on the share of trade with countries that do not have carbon pricing. To illustrate this variability, figure 3 provides data on the share of imports by source, since imports exceed exports in each of the primary metals examples. As shown, while primary aluminum is among the most trade-intensive, the majority of imports are from Canada, an Annex I country with agreed emission reduction targets.[7] For iron and steel mills, over one-third of imports are from the European Union and other Annex I countries, not including Canada ("EU plus"). However, for iron and steel mills, almost 30 percent of imports are also from the non-Annex I countries of China, Mexico, and Brazil. While less trade-intensive, steel manufacturing and aluminum products each has greater than one-third of imports from China alone.

[7]Annex I countries are parties to the United Nations Framework Convention on Climate Change that are industrialized countries and were members of the Organization for Economic Cooperation and Development in 1992, plus countries characterized as economies in transition.

**Figure 4: Chinese Imports as Share of Primary Metals Sub-Industry Categories**




| Total U.S. imports by value (U.S. dollars in millions) | | | | | | |
|---|---|---|---|---|---|---|
| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Iron and steel mills | $12,558 | 10,808 | 23,355 | 25,131 | 33,060 | 30,445 |
| Steel manufacturing | $1,110 | 1,184 | 1,792 | 1,884 | 1,916 | 1,822 |
| Aluminum products | $498 | 549 | 718 | 913 | 1,209 | 1,183 |

Source: GAO analysis of data from the Department of Commerce.

As shown in figure 4, adverse competitiveness effects from emissions pricing could increase the already growing share of Chinese imports that exists in some of the sub-industries. Among the examples, iron and steel mills, steel manufacturing, and aluminum products exhibit a growing trade reliance on Chinese imports since 2002. This trend has largely been driven by lower labor and capital costs in China, and, according to representatives from the steel industry, China has recently been producing 50 percent of the world's steel.

Mr. Chairman, this concludes my prepared statement. Thank you for the opportunity to testify before the Committee on some of the issues addressed in our report on the subject of climate change trade measures. I would be happy to answer any questions from you or other members of the Committee.

## Contacts and Acknowlegments

For further information about this statement, please contact Loren Yager at (202) 512-4347 or yagerl@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this statement include Christine Broderick (Assistant Director), Etana Finkler, Kendall Helm, Jeremy Latimer, Maria Mercado, and Ardith Spence.

COMMUNICATION

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**BEFORE THE**
**COMMITTEE ON FINANCE**
**UNITED STATES SENATE**
**WASHINGTON, D.C.**

## Climate Change Legislation: International Trade Considerations

## Comments of the Cargo Airline Association

## July 8, 2009

Mr. Chairman and members of the Committee: My name is Steve Alterman and I am the president of the Cargo Airline Association ("the Association"), the nationwide voice of the all-cargo air carrier industry.[1] I also have the honor of serving as the current Chairman of the FAA's Environmental Subcommittee of the Agency's Research, Engineering and Development Advisory Committee (REDAC). As a key segment of the air transportation industry, the all-cargo carriers recognize the growing importance of addressing our industry's contribution to global climate change. At the same time, especially in a time of global economic uncertainty, any environmental legislation must take care not to impair our ability to compete in the worldwide marketplace.

**Background**

The nation's aviation community plays a pivotal role in maintaining United States leadership in world trade. Indeed, the industry represents approximately 5.6% of the U.S. Gross Domestic Product (GDP); contributes over $1.2 trillion annually to the U.S. economy and is responsible for approximately 11 million jobs.[2] In addition to these economic facts, the industry has been in the forefront of addressing environmental issues associated with our operations. To a large extent, of course, the environmental record of the entire aviation community is a result of a search for greater fuel efficiency in an era of generally rising fuel prices. Nevertheless, the environmental benefits of this quest for fuel efficiency cannot be overlooked. For example:

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[1] U.S. air carrier members of the Cargo Airline Association are ABX Air, Atlas Air, Capital Cargo, FedEx Express, Kalitta Air and UPS Airlines.

[2] FAA, *The Economic Impact of Civil Aviation on the U.S. Economy* (October 2008). This report is available at: http://www.faa.gov/about/office_org/headquarters_offices/ato/media/2008_Economic_Impact_Report_web.pdf

- Emissions from aircraft now account for less than 3% of the total U.S. Greenhouse Gas emissions.[3]
- Over the past 40 years, fuel efficiency has improved by over 70%[4] and, compared to 2000, in 2007 the U.S. commercial airlines consumed 3% **less** fuel while transporting over 20% **more** passengers and cargo.

**Addressing the Future**

While these accomplishments are significant, we recognize that more must be done to meet the environmental challenges of the future. Many of the necessary improvements will come from advances in technology and the implementation of FAA airspace modernization initiatives. This process requires the cooperation of all parties to the aviation environmental debate – industry, Congress and the Administration. Accordingly, an FAA Reauthorization bill in this Congress becomes an environmental imperative. The substantive provisions of all versions of FAA Reauthorization contain significant environmental initiatives that require both authorization and funding – including a joint industry/government initiative to develop, test and certify alternative aviation fuels that may well be the most promising way of addressing aviation emissions in the future. In addition, FAA Reauthorization will help to advance the move toward the airspace system of the future. This system will permit more direct flight paths, more efficient landing trajectories and better use of movements on the airport surface. In turn, all of these results will save fuel and reduce emissions that contribute to global warming. In the longer term, a new generation of aircraft and aircraft engines being developed by industry and NASA will further help reduce aviation's environmental footprint.

**"Cap and Trade" and its Impact on Trade**

How does all this activity impact world trade and the ability of the U.S. aviation sector to remain competitive? Simply stated, the entire aviation industry is extremely capital intensive and any move to impose significant additional costs on an industry already suffering in today's economy will reduce the industry's ability to make the investments necessary to service customers around the world. Unfortunately, some of the initiatives now being advanced for dealing with global climate change will have this negative effect. Specifically, the House of Representatives has already passed legislation that includes a cap and trade regime that potentially will have a severe dampening effect on aviation's global competitiveness. (See, H.R. 2454, the Waxman-Markey Bill). This bill would impose an "upstream" tax on aviation, with the industry forced to buy carbon credits from fuel producers who will pay the fees directly (or in a secondary market that will undoubtedly emerge). At least for aviation, this method of attempting to deal with global climate change is extremely problematical. Some of the obvious downsides of such a cap and trade system are:

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[3] This figure includes all segments of U.S. aviation, including commercial aviation, general aviation and the military. See, *Inventory of Greenhouse Emissions and Sinks: 1990-2006*, U.S. Environmental Protection Agency (April 15, 2008).

[4] International Civil Aviation Organization, *Environmental Report 2007*, page 107.

- As noted above, such a system will, in effect, impose a significant additional tax burden on an already heavily taxed industry.
- These taxes will inhibit the ability of the industry to make the capital expenditures necessary to take advantage of a modernized airspace system – a system that will provide significant environmental benefits.
- As we understand the current proposals, they will potentially funnel monies collected to a variety of programs – none of which have any relation to aviation or modernization of the aviation system.
- The bureaucracy necessary to administer any cap and trade program will siphon off a significant portion of any funds collected.
- A cap and trade system is subject to market manipulation.[5] Indeed, the potential effects of establishing carbon credits as an investment tool (a result of enactment of H.R. 2454) may mirror the current wild swings of oil prices as speculators, not the natural effects of supply and demand, set the price of oil to all consumers.

**Potential Alternatives to "Cap and Trade"**

Faced with these facts and potential pitfalls, is there another way for aviation to meet its environmental responsibilities, while, at the same time, remaining competitive in the world marketplace? We believe that there is. Rather than being subjected to a cap and trade system, a tailored **revenue-neutral carbon tax** for the commercial airline industry appears to make more sense.[6] Under such a system, the commercial airline industry could be further directly taxed on its use of aviation fuel (the source of pollutants contributing to global climate change),[7] with these levies offset by a corresponding decrease in the existing excise taxes paid by the airlines.[8] Such a scheme would provide a powerful incentive to modernize aircraft fleets, while, at the same time, retain the same overall level of industry taxation.[9] In addition, the funds collected could be used to assist in the effort to convert the nation's air traffic system into one based upon satellite technology rather than the existing reliance on decades-old ground-based radar. And, since such taxes would be collected at the pump, virtually 100% of the proceeds could be used on aviation programs that benefit the environment.[10] As noted by the non-partisan Congressional Budget Office (CBO), "A tax on emissions would be the most efficient

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[5] See, for example, op ed piece by Rep. Peter DeFazio in the January 27, 2009, edition of the *Oregonian*.

[6] **If** a cap and trade system is enacted, however, with respect to aviation it should contain "safety valve" provisions to protect carriers if the price of oil escalates past a predetermined level and funds collected should be transferred to the Aviation Trust Fund for use in system modernization.

[7] Commercial airlines currently pay a fuel tax of 4.3 cents per gallon.

[8] The existing excise tax on air cargo is a 6.25% airway bill levy.

[9] We recognize that variations of the carbon tax possibility set forth herein have been suggested by various parties to the global climate change debate. Each of these other proposals should be analyzed for their merits and their impact on U.S global competitiveness.

[10] Other, ancillary, issues that should be included in the discussion of aviation's place in the global warming debate include (1) the role of the International Civil Aviation Organization (ICAO) and its ongoing attempts to establish international standards for aircraft emissions that relate to climate change and (2) the need for any federal action in this area to preempt any state and local action that would result in a patchwork quilt of regulations on an industry that operates nationwide.

incentive-based option for reducing emissions and could be relatively easy to implement."[11] Further, the GAO's recent report on Aviation and Climate Change, asserted "Economic research indicates that an emissions tax is generally a more economically efficient policy tool to address greenhouse gas emissions than other policies, including a cap-and-trade program, because it would better balance the social benefits and costs associated with the emissions reductions. In addition, compared to a cap-and-trade program, an emissions tax would provide greater certainty as to the price of emissions."[12]

**Conclusion**

The challenge of addressing global warming, while at the same time remaining competitive in the international marketplace, is perhaps one of the most difficult balancing acts that commercial airlines currently face. On the one hand, we must be able to meet the demands of businesses throughout the world. On the other hand, in planning to meet the requirements of our customers, there must be an environmental overlay on all corporate decision-making. On the government side, we understand the reasons that legislation is being considered to ensure that global climate change is addressed – and addressed as expeditiously as possible. But that legislation must take care not to cripple an industry that is necessary for economic recovery and that has a long-standing record of environmental sensitivity.

We recognize that the suggestions made herein are broad overviews and that the details of any final plans to address global climate change will require difficult negotiations among both industry and government representatives. For our part, we stand ready to engage in this necessary dialogue. If the Subcommittee, or its staff, wants to discuss these issues further, please do not hesitate to contact us.

Thank you very much.

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[11] See, *Policy Options for Reducing CO2 Emissions*, Congressional Budget Office, February 2008.
[12] See, *Aviation and Climate Change*, General Accountability Office Report GAO-09-554, page 42, June 2009.