

ERNEST J. MONIZ AT THE NEW HAMPSHIRE WORLD AFFAIRS COUNCIL

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Ernest J. Moniz at the New Hampshire World Affairs Council

MR. HORGAN: Hello, everyone. Thank you all for coming out tonight. My name is Tim Horgan. I am the Executive Director of the World Affairs Council of New Hampshire. We really appreciate you all taking time to come out for this wonderful event. And we really appreciate Secretary Moniz coming for this event. I want to take a moment to thank a couple people for helping to make tonight possible.

First the Nuclear Threat Initiative, helping us to bring the Secretary up for this event, as well as Shay (phonetic) from 360 Campaign & Consulting for helping us to make sure that this event goes off really smoothly. And while she doesn't live in New Hampshire anymore, she has great memories of growing up around here, and some really good contacts. So thank you, to both of them, for helping to make tonight possible. Also thank you to Southern New Hampshire University, our mission partner on events like this, to make sure that we have great space, and wonderful food, and all of the amenities that we need in order to make these events happen.

So, for those of you who may not know the World Affairs Council of New Hampshire, we are a nonpartisan, nonprofit organization that's dedicated to helping people understand complex international issues, so that they can make better choices and understand the impacts of global events and how they may come back to New Hampshire, as we live in a very globalized society.

We are a platform for discussion. And we hope that you take these opportunities, for all of our events, to talk -- to learn to talk, and to have further discussions about these complex issues.

Having said that, we are required by law to mention that because we are a nonpartisan and nonprofit, we do not support or endorse the thoughts or ideas of any of our speakers. They do not necessarily represent those -- the ideas of the World Affairs Council of New Hampshire, its board, its sponsors, its partners, all of those good things.

So, I will end my pitch there. And I will come back at the end to close some things up. I'd like to take a moment to bring Professor Pam Jordan up from Southern New Hampshire University, the professor of politics and global studies, to introduce. Thank you.

MS. JORDAN: Thank you. So, you all may already be aware that last Thursday, January 23rd, the Bulletin of Atomic Scientists adjusted the so-called Doomsday Clock to 100 seconds before midnight, which is the closest it's ever been to the brink of planetary destruction. That's why we're very fortunate to have with us today someone who can educate us further on the issues of nuclear dangers and a new nuclear arms race, former secretary of energy Dr. Ernest Moniz. Thank you very much for coming.

Dr. Moniz will address themes from his recent article in *Foreign Affairs* magazine, "The Return of Doomsday" -- the title, "The Return of Doomsday: The New Nuclear Arms Race and How Washington and Moscow Can Stop It," written with former senator Sam Nunn.

Dr. Moniz, now Co-Chair and CEO of the Nuclear Threat Initiative, will discuss today's growing risk of nuclear war, or detonation by accident, or terrible miscalculation, and he'll present solutions that can bring us back from the brink. Dr. Moniz is a leader on reducing the existential risks posed by nuclear and other weapons of mass destruction, as well as a leader on addressing climate change. As energy secretary, he advanced energy technology innovation, nuclear security, cutting-edge capabilities for the American scientific research community and environmental stewardship. He also negotiated the Iran Nuclear Agreement with then Secretary of State John Kerry. In 2017, he took the helm of NTI, a nonprofit, nonpartisan global security organization focused on the reduction of nuclear and biological threats imperiling humanity.

Thank you very much for coming to speak with us today, Dr. Moniz. We look forward to your remarks.

(Applause)

MR. MONIZ: Thank you, Ms. Jordan and Tim. But Pam, I have to say that I didn't actually negotiate with Kerry -- he and I negotiated with Iran. It is a pleasure to be here and I really want to thank all of you for coming out to have a chat about something light-hearted like nuclear dangers.

Let me just say a word as to why my colleagues and I are here in New Hampshire today. We've done a number of media events during the day. And we're here because the people of Iowa and New Hampshire have a special position in every four years, this being one of those years. And our view is that in Iowa and New Hampshire, they're such a different kind of relationship of the voters with the candidates. Frankly, I think the opportunity to influence, to raise issues with candidates helps set priorities. And what we're here for is to say that we believe that while we understand that health care and the economy and education are always going to be front and center, there are other issues in the foreign affairs, national security, and specifically, nuclear security realms, that really need to have more discussion among the candidates. These are areas where the president has especially unique responsibilities.

For example, only the president can authorize the use of a nuclear weapon. Not the uniformed military--it's the president. It's a unique responsibility. And yet, if confronted with information which may be correct or incorrect that there is, for example, an attack coming on the United States, that president, he or she, would have probably at best 10 minutes to make an extremely consequential decision. Therefore that's not the time to start the education. It would be a good idea right now to get to understand what do the candidates, what do those who might be the next president, what is their view in terms of currently how to address these nuclear issues, how to improve stability in the nuclear realm. And we think that this is not a partisan statement, it's certainly not a statement about any individual candidate. It's an issue of we very much hope that all of you and your neighbors and fellow voters in New Hampshire will be able to raise these issues and find out what the candidates think, how well they are prepared to deal with these extremely important issues.

So that's, I think -- that's the background as to why we are here today in New Hampshire as we were in Iowa some weeks back. So please, whatever your views, just

try to get this as at least a topic of conversation as we head to the primary and then to the general election.

Now with that, let me just comment on about four issues and then have time -- leave time for our conversation with Professor Jordan and questions and answers and comments, outraged statements, whatever you want, with all of you.

So first, as Professor Jordan said, let's talk a little bit about the situation in the United States and Russia with regard to the nuclear issues. The first thing is to just focus the mind. One should remember that the United States and Russia continue to have roughly 92 percent of the world's nuclear weapons. When you talk about existential threats, hopefully very low probability, but a very high consequence, -- you've got to start with the U.S. and Russia because that's where, on each side, there are thousands of nuclear weapons. And in our view, unfortunately, what you might call at least an incipient arms race prime in the sense that, for example, last year Russia's President Putin, many of you may have seen his PowerPoint presentation of what is eventually six new nuclear weapons delivery systems, including hypersonic, maneuverable missiles, including novel nuclear-propelled, long-range torpedoes with massive nuclear weapons attached to them, et cetera.

On our side, we saw the renewed commitment to developing and deploying new, so-called small nuclear weapons that still makes for a pretty bad day, like five kilotons, and on our nuclear submarines, creating a number of issues, including the fact that one is now getting confused signals. If a missile is shot from a submarine, the adversary doesn't know what it's carrying anymore, for example. And secondly, it is a slippery slope. I don't mean just what the United States and Russia are doing. There's a slippery slope towards losing the concept that the point of nuclear weapons are deterrence and not battlefield weapons. It's not just: 'Oh, it's a little bit of a bigger bomb, you know, to use in some battlefield situation.' So, we feel that the situation is such that the risk of a nuclear weapon being used, and I say this now, I want to make clear, not just U.S. and Russia, but the risk of a nuclear weapon being used in all parts of the world is higher today probably than at any time since the Cuban Missile Crisis. And so, the question is: How are we going to go about trying to reduce this danger, reduce the risk, and enhance stability?

Now, a second reason why we feel that the risks are higher today is not so much because of some intentional, premeditated, let's surprise them by sending a thousand missiles their way. We believe we are past that. There still is mutually assured

destruction. But the problem is mistakes, miscalculations, misunderstandings and there's many reasons why that could happen today, more so than in some decades past.

One is new technology like cyber risks. Not cyber risks of somebody -- a hacker, shooting a missile out of North Dakota --but, for example, compromising the early warning systems, the satellite-based systems, compromising the command and control system for weapons. Those are the kinds of actions that can lead to mistakes; very, very bad mistakes. We have had these kinds of things happen before for other reasons and barely dodged a bullet. Now with cyber, and it's not just country to country, it can be third parties obviously. That's an example of an additional element of instability. Yet we have no norms whatsoever for cyber actions or for space actions dealing with the nuclear weapon system and the decision system.

A second reason, which is more self-inflicted, is that we do not have the stabilizing influence of ongoing discussions on the existential threat of nuclear weapons anywhere near what we had at the height of the Cold War.

During the Cold War, we had ongoing military-to-military discussions. Something goes wrong, you know who to call. We don't have anything like the wealth of scientist to scientist exchanges that we had. The relationships that in a pinch really are brought to bear. We just don't have that today. And so this is why we consider the risk environment to be elevated, particularly through misunderstandings that could lead to escalations that would be very, very bad.

So, we do recommend a few steps and, you know, in this business, it's modest steps that one needs to take. Certainly re-establishing those channels of communication at various levels is important. Another thing of great importance is not ending the age of arms control. Today, and we know we've had a series of these actions over some time now -- I'm not talking about the last few years. We can go back to the abrogation of the Anti-Ballistic Missile Treaty. More recently, the Intermediate Nuclear Forces Treaty, which in the '80s kind of stabilized the situation between Europe and Russia with the elimination of intermediate range missiles that could strike each other quite quickly, that's now gone. And now, and this is the kind of area where understanding what candidates would do is so important, the New START treaty.

Now, I think most of you know, the New START treaty has two features common to arms control agreements. One is, it's a cap on the number of weapons and delivery systems that can be there. And two, less talked about but very important, providing mutual on-the-ground verification activities

so that each side kind of knows what's going on; very, very important. We are now in a situation where the New START treaty will expire two weeks into the next administration. So, whether it is this year, and we certainly hope it will be this year and soon that the extension for five more years takes place, or at the very beginning of the next administration that we think this is very, very important.

Let me tie that back to things like the new Russian delivery systems that Putin presented last year. The Russians have now acknowledged that if the New START Treaty is extended, things like the hypersonic weapons, which they say they have developed specifically to avoid missile defenses, will be covered under New START. So, if we have the treaty going on for five years, it will cover those new delivery systems. It will also provide the five years to six years from today, two weeks into the next administration, it'll provide the opportunity for restarting discussions, on those other systems that Putin presented that will not be covered by New START like the long-range torpedo, for example.

So, this is something that is absolutely critical for stability. Without it, there is nothing to stop an arms race. More important in my view, all verification measures, on-the-ground verification measures, are lost. This can only provide more uncertainty, more opportunity for miscalculation and blunder. That's why in this -- in the article that was referred to earlier, in the *Foreign Affairs* article, we say that we are -- that both countries are sleepwalking towards a disaster and seemingly wanting it that way at this stage. So, we need to have a serious discussion in the political sphere about how we are going to have stability going forward in a world with new threats, new risks and a lack of communication.

Finally, and I mentioned already the need to start these in the discussions, the norms for cyber, the norms for space, et cetera. These are all things that we need to do with Russia. But I'll mention one other step, there are many others out there, one other step that we need to take to help stabilize the situation and have these kinds of serious discussions. It starts at home. We do not have the kind of relationship between Congress and administration, between parties that we had in the 1980s. When Ronald Reagan was president, for example, the Senate had an explicit arms control observer group, high-level leaders in the Congress meeting monthly with the secretary of state. And that meant that we could generate a common position on something that clearly is not a partisan issue: our survivability in a nuclear age. And also very important would be a signal to Russia that if there were agreements reached with the administration that they would not be undermined than in a Congressional activity.

So, we have strongly advocated that the leadership of both the House and the Senate get together, put together teams who would work with, for example, the secretary of state, the secretary of defense, and get common positions that can give us a platform and give also confidence that fruitful discussions will actually lead to a successful outcome. So, that's the kind of general picture I would paint in terms of our need for working with Russia on these existential threats, even as we recognize that we will continue to have serious disagreements and serious issues in other domains. Actually, just to note that when President Reagan pursued a very active arms control agenda with the Soviet Union, it wasn't as though everything else was nice and peaceful between the United States and the Soviet Union. But he and the Secretary of State George Shultz recognized that, you know, you've got to compartment this and keep working on the other issues.

So, let me just touch on briefly three other areas and -- which we can have come up, if you like, in discussion. One obviously is North Korea. And we strongly supported the idea of opening up the dialogue with North Korea. However, the opening up the dialogue needs to be followed by arduous, difficult, step-by-step negotiations towards denuclearization, recognizing it's a long slog. And that's the only way you can get there, ultimately by building up enough confidence in the regional security situation that one could have North Korea verifiably eliminating its nuclear capabilities.

So, once again and, you know, you can see a hierarchy where you start out, for example, with a first step would be to codify a freezing, elimination of tests of ballistic missiles, long-range missiles, and weapons. You could then go to the nuclear materials, stop the production of materials, reverse that, get rid of materials. Finally, a longer step, the actual weapons themselves as the security situation and the economic situation potentially improves. So, just as an example of what we do at NTI, in terms of thinking about how this can go forward is a proposal that the Nunn-Lugar program -- you've heard now Sam Nunn, mentioned twice tonight. I should say that Sam was the founding CEO of NTI and was the only CEO of NTI until the summer of 2017 when I took that role, but remains a co-chairman of the board and we are very, very active collaborators. And so, one of the issues was to propose with North Korea early on in a negotiation, to put a Nunn-Lugar program on the table.

Those of you -- many of you may recall the Nunn-Lugar program was a very, very important program put forward just after the collapse of the Soviet Union and then the Russian economy in order to work with Russian scientists and engineers in terms of addressing the dangers. This is the same thing. With North Korea, the idea was we're not going to do denuclearization to you, we're going to do it *with* you. And that of

course has the collateral benefit as it did with the former Soviet Union of employing, frankly, the nuclear scientists and engineers who we really don't want wandering away. So that's the kind of solution that we are trying to think about how we can add concrete steps that, step by step, reduce dangers.

A couple of words on Iran. This obviously remains in the news. Let me just first clarify because there's a lot of misinformation and a lot of confusion as to what the Iran deal is. It's pretty simple at a high level: it's got two pieces. One piece is that Iran's peaceful nuclear program would have severe constraints on it for 15 years. That part now -- Iran has said in reaction to American withdrawal -- that part is now moot at least for the moment. Iran emphasizes, and it's true, that the steps they've taken are reversible. They can go back to where they were, get rid of the enriched uranium they produced, the extra heavy water they produced, et cetera. And that's no longer operative.

However, and this is the part that is not projected in the media coverage, the more important part of the agreement is that word that I mentioned earlier: verification. The agreement gives the international inspectors completely unique, very powerful opportunities to see what's going on in Iran. You know, Iran had a nuclear weapons program through 2003, there's no question about it. The idea that they would resume a nuclear weapons program now in an overt way, which they didn't do through 2003, is bluntly ridiculous. The issue is: Do they use the technologies that they've developed in a covert way to try to develop a nuclear weapon? This is where the extra tools given to the international inspectors is so critical. For example, it includes a commitment by Iran in the agreement that the IAEA inspectors can go anywhere in the country where there is suspect activity, forever. All you hear about is sunset clauses, this is forever if the agreement sticks.

The verification is the foundation of international confidence in non-nuclear weapons activities, not to mention things like uniquely for 25 years, this is for 25 years the IAEA, the international inspectors, have access to visibility in the entire uranium supply chain. So, if you're going to have a covert program, you also have to get the enriched uranium from somewhere, et cetera, et cetera. So, what I want to emphasize is up to now, proof is in the pudding going forward. And I also wrote an article a few years back on the Iran deal called "Don't Trust and Verify, Verify, Verify." That remains the philosophy. It's very important Iran has so far not violated the verification measures. So that's a big key. That's again the kind of thing we have to understand, how can we, with our partners in Europe and Russia and China, maintain that critical feature of the verification regime?

And finally, the last thing I'll just comment on is that, especially since 9/11, there has been enormous concern about terrorists' acquisition of nuclear weapons or, more likely, nuclear weapons material. Highly enriched uranium, 90 percent enriched uranium, for example. Because the bad news is: it's the material, stupid. If you got enough weapons grade uranium, making an explosive is not very difficult. In fact I remind you that if you think back to World War II, the weapon dropped on Hiroshima was a high enriched uranium bomb. It was never tested. The test in Alamogordo was of a plutonium bomb with a much more complicated mechanism.

So, keeping HEU out of the hands of terrorists is absolutely critical. Even better, eliminating it. At least here I can end with some at least half-positive news. First of all, I think it's not well known that 10 percent -- I'm averaging out -- 10 percent of American electricity for 20 years came from Russian weapons' high enriched uranium. It's the most successful non-proliferation program ever. 500 tons, conservatively, 20,000 nuclear weapons worth of high enriched uranium, was blended down to make nuclear reactor fuel for the United States. And it supplied half of our fleet for 20 years.

Now, the question is continuing to eliminate, secure this material. Over 20 countries in the last 20 years have become HEU-free. That's great news. And the bad news is there still another 22 to go. But enormous progress has been made in this. And again, one cannot, I think, overestimate the importance of controlling this material, securing it and even eliminating it from the earth.

So, those are four areas I just want to touch on to key off a conversation. And Professor Jordan, I'm ready for the conversation.

(Applause)

MS. JORDAN: Thank you very much. Thank you, that's fantastic. Thank you very much for your remarks. And it gives us a lot on which to build our questions. I know that we have, what, about 15 or so minutes because I wanted to give you enough time to ask questions to Dr. Moniz. I imagine that you'll have a number of specific questions about some of those points that he raised too about North Korea, Iran.

So, I wanted to ask you a few more questions about the kind of the architecture, more about the architecture of nuclear arms control. What do you think the NPT, the Nuclear Non-Proliferation Treaty, that's been around now for, what, 50 years, over 50 years, what kind of role it plays now in arms control? And then, also a bit about the

treaty that very few people know about and hasn't even entered into force, the Treaty on the Prohibition of Nuclear Weapons, that no nuclear weapon state yet has ratified. And only I think there are only about, what, 35 ratifications and 50 are needed for it to enter into force. So, could you talk a bit about those two treaties and especially, of course, the NPT which is the foundation of arms control? Thank you.

MR. MONIZ: Yes. Well, your last statement was exactly right. The Non-Proliferation Treaty ultimately is the key foundation for all of this. Every five years, there's a review conference that is coming up this year. The prospects for a productive discussion are not great. And it's gotten rougher and rougher every five years and this one looks to continue the trend.

The key hang up is that the NPT bargain, fundamentally, was that the signatories who don't have nuclear weapons don't develop nuclear weapons. The signatories that had nuclear weapons at the time would work down those stockpiles to zero over time. Now, when the abolition treaty was negotiated, unfortunately none of the weapon states elected to turn up for the discussion.

MS. JORDAN: In 2017?

MR. MONIZ: In 2017, correct. In 2017. And that did not increase the level of comity going forward. And now, the issue is that it makes it even tougher for the NPT review conference this year. So personally, I think it's going to be extremely difficult to come out of that with any kind of consensus statement. Personally, I think it's also why it'd be so important if the U.S. and Russia, particularly because of the enormous stockpiles. We should count our blessings in the sense that tens of thousands of nuclear weapons have been eliminated.

The question is people are wondering whether there's going to be a push to the end or not over the next decades. But I think that statements, agreements made by the U.S. and Russia in this time period could dramatically change the tone of the discussions. And the simplest thing is, in fact, this New START extension does not require any legislative action, it only requires the two presidents to agree and sign their names, and we have the extension. And that would be a very positive sign, in contrast to the very negative sign, if we have to go into that conference with the whole future of arms control in doubt. So, this is important.

There are also simpler things, which may not sound so consequential, but we think are. For example, and NTI has been very forward-leaning on this now for a couple years, in -- here I go again, President Reagan and Gorbachev in the '80s issued a very

simple statement with regard to the U.S.-Russia situation. They said, "A nuclear war cannot be won and therefore it should not be fought." Very simple, it doesn't have a force of law or anything but very, very simple elegant statement.

We suggest maybe a statement like that should be made again. And actually, frankly, Russia has announced now, just in the last months, that they are prepared to issue that statement. So, this is another opportunity, I think, for the United States to again do something that's positive. Frankly, an even more wild idea is that, you know, there's been a lot of discussion about not extending treaties unless China becomes part of it.

So, China has said something that you should just take them at face value and believe them, they are telling you the truth. No chance that we're going to sign, like, a New START treaty with the United States and Russia. Their arsenals remain more than a factor of 10 smaller, for one thing. And I don't want to negotiate them up to the same level that we have. So that's not going to happen.

But what about this elegant statement? Maybe they could join a statement like that. Okay. You know, I think looking for homeruns, it's just not the way this business works. Yet, you have to be ready to do the hard work and sustain it, sustain the human resource in the governments with constant contact and just keep working away at the problem step by step and eventually get there.

MS. JORDAN: I agree, I do not disagree with you on that at all. And no, no but in China -- yeah, I agree in terms of a New START Treaty, China shouldn't necessarily be a partner in that. But it should agree in terms of principles and norms, accepting those norms.

So, given kind of we are running out of time here. I did want to bring up a really interesting opinion poll that NTI just published recently about [voter opinion](#) on nuclear weapons. Just to emphasize the importance of this topic around this time, right, as voters. That in this poll, 87 percent of Democrats, 81 percent of Republicans, and 71 percent of independents said they would feel more favorably toward a candidate who puts a high priority on reducing the threats posed by nuclear weapons. So, we have to give our voters more credit. They're thinking along these lines already.

MS. JORDAN: So, that is a basis on which we all can agree, as Americans, regardless of our party, of our ideology. That's why having read your and Senator

Nunn's article in *Foreign Affairs*, I was very much persuaded by your solutions. As incremental as they are, I think that is for the best. And in terms of Congress, once this impeachment process is over, maybe they can settle on an issue that they know all Americans will back.

MR. MONIZ: Can I actually just insert an anecdote along those lines?

MS. JORDAN: Yes, yeah, absolutely.

MR. MONIZ: It's an important one, I think. That we have -- that Senator Sam Nunn and I have also written about. In fact, I think it's even in that article as well. Namely that the Congress, a couple of years ago, passed new sanctions on Russia that did not include the standard waiver opportunity for the president; that is the president waiving them in the interest of national security. We opposed that. That is Congress not including the waiver for the president.

And the reason is that if you are Russia in this case and it takes Congress to remove the sanctions, you have to figure you're never going to get out of the penalty box. That occurred, some of you may remember, the Jackson-Vanik sanctions, which came into force in the '70s that dealt with Jewish immigration from the Soviet Union. And it did not have that national security waiver. The Soviets fundamentally satisfied the requirement in the '80s. Finally, in the '90s, President Clinton certified to Congress that the Soviets were in compliance. And finally, I think it was in 2010, something like that, that Congress lifted those sanctions. And they lifted them only when simultaneously applying new sanctions. So, right now, we're in a situation where even if I want to, how do I get out of the penalty box?

MS. JORDAN: So, all right. So, I guess I'll go ahead. Aisha, the first person to ask a question. Very good.

AISHA: I'll start us off. So, you said that the U.S. was able to get like 10 percent of its energy from Russian nuclear material. I was wondering, do you personally support the U.S. using nuclear energy as like a different energy source than like the energy that we use now?

MR. MONIZ: So, this is really a climate question in effect.

So, the answer in the end is going to be yes, that we need to maintain nuclear energy as an option for decarbonizing electricity. Some places will want it, some places won't, it will depend upon the new technologies. But let me just say the rationale. All I care about is the carbon. I'm completely neutral in terms of what the technologies are to get there. All I know is, we're going to need a hell of a lot of them. And we can't afford to leave any of them on the table for getting the low carbon. The climate crisis has led to a considerable effort to make the low carbon targets much more stringent than they were even in Paris in 2015.

For example, in Paris in 2015, the outcome was that the world should reduce emissions by 80 percent. Now, as we've seen probably more than we'd like to see in terms of what's happening with global warming, we are seeing a much more significant commitment in the United States, many cities and states. In Europe, many countries are now committing to what's called net zero. I could discuss net for a long time here but let me just not do that for the moment.

That is one hell of a challenge. And you're only going to get there with several things. One is you will need -- I'm sorry, this is net -- you will need major negative carbon technologies, which we don't really have available today yet at scale and at cost. You will need to completely decarbonize the electricity sector as the lead horse compared to transportation and industry and agriculture and the like.

And then you will need, when you have that very low carbon electricity or zero carbon electricity, to electrify as much as you can in the rest of the economy to take advantage of that. That's all necessary, but not sufficient. But in that spirit, I just cannot endorse putting any low carbon technology aside, that includes nuclear. Especially the new nuclear that I hope to see deployed starting in the next decade or so, so called small modular reactors with advanced technologies, molten salt, we can go into that, high temperature gas, et cetera, et cetera. So that's pretty important.

But I think I will make one more point. I'm sorry but I do have long answers even if it's short questions. There is, to put it completely bluntly, a fiction that we can do zero carbon electricity with wind, solar and batteries. It is not credible at all for a whole variety of reasons. We will need -- it could be natural gas with carbon capture and sequestration, it could be nuclear, it can be modern hydro. But we will need other generation technologies. And more important than that, in a certain sense, is we will need a multiplicity of different storage solutions because storing electricity for a few

hours ain't good enough. You need it for days, weeks, months, seasons, years if you have, for example, a dependence on hydro, which has enormous annual variations.

So -- and that's the context that I look at it. It's all about the carbon. If I can use nuclear, great, let's do it. It's got to obviously pass the economic test, et cetera. Sorry, long answer.

MS. JORDAN: Thank you very much. So, do we have any other students? Sophie?

SOPHIE: So, I was wondering if you think that it's achievable to have a nuclear free world with countries like North Korea, who -- nuclear possession actually does a lot for them. Because they're still able to do whatever they're doing in their country and still will not be challenged by any big country for things that they're doing wrong.

MR. MONIZ: It's an important question and certainly we will not give up on the goal of a nuclear weapons free world. But having said that, we do think that that is not going to be in the immediate future -- like think about 2045. And it's 100 years of nuclear weapons and then move on, but we'll see.

But just to say that at NTI -- and I'm going to go back to your question with Koreans in particular. But at NTI, while we fully endorse that goal, our approach is, let's not have a nuclear weapon used again. And step by step. Sometimes there are big steps, sometimes there are little steps, but you just have to go step by step along what is a, regrettably, long road towards that outcome.

Now, you say North Korea will never give up nuclear weapons. I don't buy that. I don't think they'll give them up easily. They won't give them up without -- as I mentioned earlier and let me just repeat it -- a serious resolution of the regional security situation. It's North Korea, South Korea, Japan, China. While there is this kind of tension, in many ways, even between our allies it's going to be very, very difficult.

So that's why it's a long road, you've got to have a strategic view. There will be some risks involved in terms of providing incentives along the way and assuming that they can eventually get rid of their weapons. But I think the view has to be this, I strongly feel everything is step by step with a strategic view of where we want to go.

MS. JORDAN: Thank you. So, how many more student questions do we have? Yeah, we have -- okay, so, Nathan then. Okay and then maybe we'll move on to others. So yeah, go ahead. Thank you.

NATHAN: So, you talked about how Russia was thinking about making a statement of saying we shouldn't have -- like, we shouldn't use nuclear weapons. Especially since that statement was made in -- after World War II, or --

MR. MONIZ: The '80s.

NATHAN: The '80s, sorry, the Cold War. What then would America do -- and do you think maybe it should bring back the nuclear weapons to kind of -- sort of how --

MR. MONIZ: What do you mean, "bring back"? From Europe?

MR. NATHAN: Like, not proliferate nuclear weapons, coming up with new technologies to kind of help with that front of nuclear weapons are bad. And maybe bringing it back.

MR. MONIZ: First of all, I think nuclear weapons don't care very much whether they're called bad or good. It's what we do and don't do with them, obviously. But you said, "Bring nuclear weapons back." So, I may be answering a question you didn't mean but, nevertheless. The United States, it's obviously well known that we have a considerable number of nuclear weapons deployed in Europe. And not so recently, the president declassified one of the countries in which they are sitting. He mentioned Turkey as being one of those countries.

At NTI, we have a [paper](#), that we recommend that all of the forward deployed weapons should be removed. That may seem counterproductive or counterintuitive at the moment, given relationships with Russia. But our view is that their deployment serves no military purpose. It's purely a political purpose. But also having them spread around like this, it also increases risks including terrorist kinds of risks, et cetera.

So, we just think that we've got all the tools we need for deterrence. We don't need these forward deployed weapons, complicated command structures. We're going to have Europeans flying planes with our weapons. That's a *terrific* recipe for making a decision in 10 minutes. You can't do it without the political work with our allies. You know, none of this is simple. You don't just wake up one morning as the president and say, "All right, get them up," you know. Because there would be lots of concern. But

that's the kind of step that we should take, in my view, our view at NTI, that would lower risks substantially.

NATHAN: If we were to make the negotiation with Russia about taking some of it back, do you think maybe they could try taking some of theirs back?

MR. MONIZ: Sure, so for example, the INF Treaty was about weapons deployed close to the Iron Curtain basically at that time. And so we should -- for example, in my view, terrific policy. No nuclear weapons from the Atlantic Ocean to east of the Ural Mountains. Here you go, verifiably.

JEREMY: Hi, thanks so much for being here. My name is Jeremy. I'm a board member of New Hampshire Peace Action. I work with the New Hampshire Nuclear Weapons Working Group. I have two of my colleagues sitting on my left right here. And I also work for the Union of Concerned Scientists. I appreciate your preface to your remarks about the unique position that New Hampshire voters are in with being able to engage directly with presidential candidates.

I've been at work with my colleagues very hard this campaign season, trying to get candidates to talk about this during their campaign speeches. And it appears that it's really a third rail topic at this point. There are candidates who talk about this, unprompted, from audience questions. In my personal experience with other candidates, they will tell you in a side conversation that they are also concerned with the existential threat that nuclear weapons pose and say that they talk about it. And then go back to their campaign stump speeches and do not talk about it.

So, I'm curious what your thoughts are on trying to get presidential candidates to remove this topic from the third rail so that we can actually have that fruitful conversation that you referenced.

MR. MONIZ: I think, first of all, it requires a whole bunch of your colleagues to be doing the same thing that you're doing. Because, let's face it, in the political world when things are heard enough and are viewed as something that voters really want to hear about, they'll talk about it. If it's viewed as only a couple people here and there, it's less compelling.

However, we'll see what happens. Look, we did a similar outreach in Iowa as well a few weeks ago and all we can do is -- we can just do what we do. And that included like

today. We met with a similar group in Des Moines of concerned and actively engaged citizens. We also did various media, radio, TV, we did that as well today here, talked to the editorial board, et cetera. And, in the last debate in Iowa, it is a fact that there was more focus on security issues than there had been before. So again, we can't claim credit, all we can claim is that we're one of those beating the drum and hoping it goes forward. So, I don't have any magic thing other than keep at it and get others here to join you.

SPEAKER: I've been trying to decide between two questions, but I'll give you the one that I think is probably the most relevant here. You sat across the table from technical experts from Iran. And I wonder do you feel that the Iranians want a bomb in some way? Or do you feel that what they're doing, developing the nuclear program, holding out, is really a bargaining chip to provide them the security without having to double down and throw out the big timetable stakes of actually developing such a weapon?

MR. MONIZ: As I said earlier, I wrote a piece called, "[Don't Trust and Verify, Verify, Verify.](#)" So in the end, that's what matters to me. What I would say, I will answer the question more directly with a negative. I think it is quite credible that today they are not intent on developing a nuclear weapon. But my opinion doesn't matter. Don't trust, verify, verify, verify. Actually, former Secretary of Defense Mattis in testimony before the Congress said something that I very much appreciated. He said, "I've read all 150 pages of the JCPOA three times and sure doesn't sound like somebody is trusting somebody." Because it was so detailed, it's been called anal retentive compared to other acts of diplomacy, which often have all kinds of general statements and then there's reinterpretations, et cetera.

We felt precisely because despite the denials, there's no doubt that they had an organized nuclear weapons development program, ironically with one missing ingredient, the nuclear material. But they had that. It was a sustained program over many years. So they, frankly, did not earn the trust other than through agreeing to this pretty strong -- very, very strong verification measures.

SUSAN: Thank you. I'm interested in understanding your opinion about our vulnerability in the United States of America and specifically taking it apart in terms of technical chain of command and on and on and on.

MR. MONIZ: Again, could you just again, clarify? What is the focus of the question?

SUSAN: Vulnerability. What is our vulnerability here in the United States of America and specifically in what areas?

MR. MONIZ: To a foreign attack, you mean, or that's what I mean?

SUSAN: Absolutely.

MR. MONIZ: Yeah. Okay. That's true. That's true.

SUSAN: Yeah. And I think that's what's on people's minds.

MR. MONIZ: Yeah. Well again, the -- it's the simple fact that Russia has thousands of nuclear warheads, as do we, and they have very advanced and now even more advanced delivery systems for those weapons. So from that point of view, we are vulnerable, but that is offset by the guarantee that we would not be put out of business by a first strike. And that's the conventional deterrence that we've always had. But it's not a very satisfying way of providing security as opposed to continuing, again, the arms control reductions, the verification measures. But from that point of view, you can decide yourself whether that means vulnerable or not vulnerable. Technically, physically, we are vulnerable. There's no doubt that if they were to choose, they could drop nuclear weapons in the United States. But it would be inviting a very harsh response. Neither society would win. Frankly, it goes back to the statement, nuclear war between the U.S. and Russia really cannot be won, so why would you fight it?

MR. MONIZ: The issue is, we need to lower the risks. We cannot lower the risks without a joint effort that turns down the risk in some commensurate way to maintain a balance. And that's why there can be a lot of destabilization with a lot of these new systems, like I mentioned this torpedo for example.

It's all a question of having that systematic, organized, persistent, long-term strategic view of we are going to lower the risks until we can eventually eliminate nuclear weapons. Of course, as we make that progress -- if and as we make that progress, then there's no doubt that they will need to be, at some point, the much more multilateral focus with China and with the other states. But we're a long way from that.

SPEAKER: Thank you. It seems that in this, the world seems to be heading to a hyper nationalism, all sides kind of saying bad words to each other. How do we develop a trust structure or if we're not a trust structure, some kind of agreement that would even lead to verification possibilities? How do we begin a discussion between the various entities that would allow us to try to get back to perhaps a simpler time like the Cold War?

MR. MONIZ: The good old days you mean, right, right, right. Look, I don't have any magic solution. You got to have a view of where you're going and just keep working at it. And I think that the opportunities are there, I believe, to take these step-by-step actions. But you have to work at it. And that's where I think one needs commitments that also aren't measured in four years or eight years. And that's one of the problems, one of the issues that we now confront that, you know, the arms control agenda has been for many, many decades. It probably needs to be refreshed, for one thing because technology is so different.

And you go back many decades in the Cold War and there was kind of a bright line between strategic nuclear weapons systems and other military systems. Those lines have been blurred through with new technology. And so, I think the real issue is we need to get back at it step by step, et cetera, et cetera. But we also have to broaden the aperture to take account of the new technology realities.

I might add, by the way, at NTI, we have also in the last two years taken up a major focus on bio-security and the reason that we are involved in it, I mean, obviously there are pandemics out of the wild like Ebola, et cetera, but the reason that we are involved in it is because of the new technology in synthetic biology and the possibility of engineered organisms causing pandemics.

So, this theme of trying to have a relook at a lot of these issues in the context of where technology is and is going is very important.

SPEAKER: So, as a young student, most of us, students, have just recently had the right to vote. And with the upcoming elections, we're all looking at how our president -- you know, the impeachment process is upon us at this very moment. So, besides who to vote for using our better judgment, what do you suggest the younger generations do about this issue?

MR. MONIZ: Again, I'm obviously not going to get into the political realm. I

Well, I was in Davos last week, and not getting into detail, spoke with a very interesting person with considerable resources. And basically, what he said is, "When I think about human lives, my discount rate is zero. They're all valuable, whether today or many, many years in the future." And we got to think that way actually in this issue in particular and climate change as well.

MR. HORGAN: All right. Well, thank you very much.

(Applause)

MR. HORGAN: Thank you, Secretary Moniz and Professor Jordan for this lively conversation.

Thank you again to Secretary Moniz for his time and his wonderful insights. And thank you all for coming.

(Applause)

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