

Improving Global Comparability of Appliance Energy Efficiency Standards and Labels

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Webinar Panelists Debbie Karpay Weil, Senior Associate SEAD Initiative, CLASP
Mia Forbes Pirie, Director, The Policy Partners
Frank Klinckenberg, Director, The Policy Partners

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Sean

Hello, everyone. I'm Sean Esterly with the National Renewable Energy Laboratory, and welcome to today's webinar, which is being hosted by the Clean Energy Solutions Center, in partnership with CLASP. And today's webinar will provide an overview and key findings from the Improving Global Comparability of Appliance Energy Efficiency Standards and Labels report. And one important note of mention, before we begin our presentations, is that the Clean Energy Solutions Center does not endorse or recommend specific products or services. Information provided in this webinar is featured in the solution center's resource library, as one of many best practices resources reviewed and selected by technical experts.

And I just want to go over some of the webinar features. For audio, you have two options. You may either listen through your computer or over your telephone. And if you do choose to listen through your computer, please select the Mic & Speakers option in the Audio pane. Doing this will just eliminate the possibility of feedback and echo. And then, if you choose to dial in by phone, please select the Telephone options in the Audio box, and then a box will display, uh, the telephone number and the audio pin that you should use to dial in. And panelists, just a reminder, we do ask that you please mute your audio device while you are not presenting. And if anyone's having technical difficulties with the webinar, you may contact the GoToWebinar help desk at the number at the bottom of the slide. That number is 888-259-3826.

We encourage anyone from the audience to ask questions at any point during the webinar. And to do that, simply go to the Question pane, and you can type in your question and then submit it there. Um, we will receive those and present them to the panelists during our question-and-answer session, following the presentations. And if you're having difficulty viewing the materials through the webinar portal, you'll find PDF copies of the presentations at cleanenergysolutions.org/training. You may follow along as our speakers present. Also, an audio recording of the presentations will be posted to solutions center training page within a few days of today's broadcast. And we are also now adding all future webinars to the solutions center YouTube channel, where you'll find other informative webinars, as well as video interviews with thought leaders, on clean energy policy topics.

And today's webinar agenda centers around the presentations from our guest panelists; Debbie Karpay Weil, Mia Forbes Pirie and Frank Klinckenberg. And the webinar will present an overview and key findings of the Improving Global Comparability of Appliance Energy Efficiency Standards and Labels report. And this analysis report provides policymakers with international comparisons of energy performance requirements and product coverage. And before our speakers begin their presentations, I just want to provide a short, informative overview of the Clean Energy Solution Center initiative. And then, following the presentations, we'll have a question-and-answer session where the panelists will address those questions submitted by the audience, and then followed by closing remarks and a very brief survey.

So this slide provides a bit of background in terms of how solutions center came to be formed. And the solutions center is one of 13 initiatives of the Clean Energy Ministerial that was launched in April of 2011. It is primarily led by Australia, the United States and other CEM partners. Some outcomes of this unique initiative include support of developing countries and emerging economies through enhancement of resources on policies relating to energy access, no-cost expert policy assistance and peer-to-peer learning and training tools, such as the webinar that you are attending today.

The solutions center has four primary goals. The first goal is to serve as a clearinghouse of clean energy policy resources. Second is to share a policy best practices data and analysis tool specific to clean energy policies and programs. And third, the solutions center delivers dynamic services that enable expert assistance, learning and peer-to-peer sharing of experiences. And then, lastly, the center fosters dialogue on emerging policy issues and innovation around the globe. And our primary audience is energy policymakers and analysts from governments and technical organizations in all countries. But then we also strive to engage with the private sector NGOs and, also, civil society.

And so this slide provides a little information on one of the features that the solutions center provides, which is the no-cost expert policy assistance known as Ask an Expert. The Ask an Expert program has established a broad team of other 30 experts, from around the globe, who are each available to provide remote policy advice and analysis to all countries at no cost. So, for example, in the area of appliance and equipment, we are very pleased to have Christine Egan, executive director of CLASP, serving as one of our experts. So if you have a need for policy assistance in appliance and equipment, or any other clean energy sector, we do encourage you to use this valuable service. And again, it's provided free of charge. So to find out if the Ask an Expert service can benefit your work, please contact me directly at sean.esterly@nrel.gov or at my phone number, which is 303-384-7436. And we also invite you to spread the word about this service to those in your networks and organizations. So in summary, we encourage you to explore and take advantage of the solutions center's resources and services, including the expert policy assistance, the database of clean energy policy resources. Subscribe to the newsletter for additional information, and participate in webinars like this one.

And so, now I'd like to provide some brief introductions for today's distinguished panelists. Our first presenter that we'll be hearing from is Debbie Karpay Weil, a senior associate at CLASP, where she provides programmatic support to the SEAD Global Efficiency Medal competition. And then, following Debbie, we will hear from Mia Forbes Pirie, a director with the Policy Partners. And Mia has worked on two of the world's leading appliance standards programs, the U.S. Appliance Standard-Standards program with the Lawrence Berkeley National Lab and the U.K. Market Transformation Programme. And then, our final speaker today is Frank Klinckenberg. Frank is also a director with the Policy Partners and the founder of Klinckenberg Consultants, and has been involved in establishing and shaping new policy frameworks and legislation in energy efficiency for more than 15 years. He has worked on energy efficiency programs in over 30 countries around the world and has set up and carried out monitoring of numerous government policies. And so, with those brief introductions, I'd now like to welcome Debbie to the webinar.

Debbie

Thanks, very much, Sean, and then you, everyone, for joining us. We're really excited to roll out this study that we've been working on for a number of months, about 18 months now. And, we're excited to announce, with this webinar, the publishing of the report. Everyone should have received an email with that web address, in it, and if not, it will also be in this presentation, towards the end. So the reason that we did this study is that there are a lot of variations in product policy components, and these lead to difficulty in comparing these policies, from country to country. Next slide.

So in order to address this, we, CLASP and the Policy Partners, who you will hear from for the majority of this presentation, collected data to compare the components of product policies for more than 100 products across nine economies. Those nine economies are Australia, China, the European Union, India, Indonesia, Mexico, Russia, South Africa and the United States. And the main goal of this, of this work is to improve the technical foundations to enable viable policy improvement. This study contributes to global knowledge, as well as furthering the work of initiatives like these, which, as Sean mentioned, is one of the Clean Energy Ministerial initiatives. Um, and CLASP is also the operating agent for SEAD. And as the operating agent, uh, CLASP collects this kind of data and is in a position to also support action on it, through the SEAD initiative, in order to turn this technical information into, um, what we hope will be policy improvement.

This was built on a study that was completed in 2011, called Opportunities for Success and CO2 Savings from Appliance Energy Efficiency Harmonization. Um, that was the first study of its kind to really look at what the opportunities are for improving the alignment of policies across countries. And this study, that we're just publishing now, extends that initial study with a stronger evidence base. We've collected more data, extended the number of products and increased the number of countries. So this was a really ambitious undertaking, and we're very excited to share the results with you today.

I have a few questions for you to think about as we go through this presentation and these might be things that we can talk to in the question-and-answer period, at the end. So some of these questions to think about include, as we go through and talk about different product opportunities, are there some products, in particular, that it would be good for... that it would be beneficial for the... for International Standards Organizations, such as the ISO and the IEC to take the lead on? What could CLASP or, for that matter, SEAD do to further align the opportunities? How much of this do we think requires manufacturers to take the lead? And again, how exactly would... How, how do you think that CLASP can help move, move alignment forward? So with that, I'm going to hand off the discussion of the results of the study to Mia Forbes Pirie to talk about what we did, in the study.

Mia

Hi. Thanks, Debbie. So, um, obviously, often, in developing... in the development of energy efficiency policies like standards and labels, you want to be able to compare policies from other economies and see what you can learn from what's already out there, instead of having to reinvent the wheel every time. Those different test procedures and different energy efficiency metrics labels sometimes make it difficult to make meaningful comparison, so the report that we've drawn together aims to address this issue.

The report and the conversion factors that it contains were developed through four main tasks. First, there was an inventory of max-minimum energy performance standards and labels and the underlying test procedures and metrics that were drawn together from the various nine economies. In doing this, we collected data for over 400 policies, uh, and the types of data are listed on the slide. We then assessed the energy performance levels across the different economies. And from that, we developed conversion factors and assessed the robustness of those conversion factors.

We developed, different types of conversion factors—conversion factors for test procedures and conversion factors for the energy efficiency metrics. And the conversion was generally from or towards an international standard, such as an ISO standard or an IEC standard. Uh, it varies. It's the one that's the most applicable, by products. Not all conversions are made equal, so we developed a traffic light system. And before explaining the traffic light system, I should probably say that the conversion factors that we developed... The aim of this study is really to help develop policies at a macro level, so you can't go down to a specific product and use the conversion factor to convert. The idea is it gives you an order of magnitude, and you can't... You shouldn't even use it for subtypes. It's just, on average, what do this type of product do?

And so, to evaluate or to give an indication of how robust the conversion factors are, we used a traffic light system, which you'll see in the reports, which I'm sure you'll all be reading avidly, after this call, if you haven't read it already. So green indicates a high-level confidence, around 10%. Then amber, a slightly lower level of confidence, that the results are probably within 25% of the indicated value. And red are conversion factors that are probably more than 25% out, and you need to, obviously, be pretty wary of those. Uh, can we move on to the next slide, please?

So we looked... The key findings, S&L policy aspects, we looked at efficiency metrics, product definitions and requirement scope as important as test procedures and the alignment of S&L. When we looked at alignment, there was quite a wide range of alignments, and we looked at alignment potential, as well. All of the products have alignment potential to some degree or another. But the alignment potential is not the same for every product. It can be quite different. So some products can be aligned in terms of their test procedures and bare minimum energy performance standards. Whereas, with other products, it would only be possible to align them in terms of their test procedures and still, further, maybe only certain components of the test procedures.

In general, when selecting the countries and the products, we went as wide as we, we felt that we could within the scope of the time and resources available. And we decided to go as wide as we could and provide the information that we could find, rather than not provide information where it wasn't possible. So, so data was sometimes hard to come by. And where

that was the case, that's indicated. And Frank will talk you through the next slide, which is S&L policy elements.

Frank

Thank you, Mia. I'd like to start telling you a little bit about our findings. And before I do that, I'd like to tell you a bit, first, about how we've looked at this, in general, how we've defined S&L and, and the various levels of standards and labels. We often talk about standards and labels as one thing; that there is a standard, and that's it. If you look at a standard, as it is, or a label and look at how comparable that standard is. What we've done for this type of study is disentangle that a bit. And I'd like to talk you through this, starting from the bottom up, in the slide you see right now. Starting with product definitions, an often forgotten part, actually, of standards and labels, but quite relevant. Different economies define a product in different ways. And one obvious example that many of you will have seen before has to do with air conditioners, with what manufacturers call central air conditioner, whole-house units with ducts. It's actually labeled as a room air conditioner in the U.S. Now, this may seem trivial. It probably is, from a U.S. perspective. It probably is also from... respective to other economies. For a comparison, it actually isn't. It means that the same product is covered by different regulations, and it's actually a different product in different economies. That's a pretty trivial one.

In some ways, some things are also trivial, but also quite relevant. And that's, for example, motors are regulated different ways. Some economies regulate motors up to 200 kilowatts; others, up to 375 kilowatts. Some up to 400 horsepower, and it's all broadly in the same range. But it isn't the same, uh, which means that there are some things that really fall through the cracks and are, therefore, incomparable.

A next step is test procedures. That is a pretty common one, and we all look at test procedures when we look at how products are rated and ranked in various economies. Uh, test procedures, obviously, are important. ISO, IEC test procedures are very well-known, are common to many economies, and then there's standards and labels. And yet, there are still ranking differences. And one example of such a difference, where you might have this happen, is, for example, in washing machine energy demands. Um, Europe and India basically use the same test procedure for washing machines. The main difference is that Europe tests at a temperature about... a high temperature of 60 degrees centigrade or Celsius. Whereas, India tests at room air... at room temperature, uh, which, in India, is higher than it is in many other places. Still, the results are quite incomparable. Trivial, perhaps, but very important.

One aspect that we've maybe pulled out of the mix in this study, that I think is a major element and major contribution that this study is making to this field, is to separate our test procedure and efficiency metrics. Uh, you may think they're the same. And, well, we thought that, also, for some time, and then we decided to disentangle them. An efficiency metric, in our view, is the formula that determines how a test result calculates into an

energy performance level. Um, obvious ones, say, include, for example, refrigerators where you do a test over a 24-hour cycle or some days. You come up with an energy demand, and you calculate that, in some way, into an annual energy demand that is used in many regulations. That is one example of efficiency metric. There are more examples, of course.

The relevance of this is that even if test procedures are the same, if all countries use the same, say, IEC test procedure for a product—for example, a television—the efficiency metric may still be different. For example, Europe and the U.S. test their test procedures using the same IEC test procedure as Australia does. The difference is that, where Europe and the U.S. can calculate in daily energy demand, um, Australia calculates... sorry... calculates a watt, a power demand. Australia calculates a daily energy demand and calculates that onto an annual energy demand, which makes these results a little bit harder to compare.

Um, energy performance levels, the thresholds that a product efficiency must meet. Um, in a way, that's the value everyone looks at. In this country, a product is allowed to use this many kilowatt hours. In that country, it's allowed to use that many kilowatt hours. In a way, very easy to compare, as it's two numbers, and if one is number is larger than the other, then the allowable energy demand is higher than in the other case. Then again, that performance level reflects the efficiency metrics, and past procedures and product definitions, that are underpinning it. So the number, in itself, is not that—not always that informative.

And the final component, the max-minimum energy performance standards and labels, themselves. These are the actual regulations that the governments adopt, and governments determine regulations, product requirements. They put this down in MEPS and label requirements, and suppliers usually have to live up to these regulations. They, again, include the performance levels, the efficiency metrics, the past procedures and the product definitions that underpin all of that. And sometimes, that's obvious. Sometimes that's always clearly defined, and in many cases, it isn't. Can I have the next slide, please?

So what I'd like to talk about now, for a little bit, is what we've done to compare test procedures and efficiency metrics and, more importantly, what we found. And to do that, we'd be mapping test procedures and efficiency metrics. We've been analyzing them in quite a bit of detail, comparing them to IEC and ISO test procedures, a lot of international test procedures. And a relevant factor... fact might be that, in some cases, ISO and IEC are not relevant in the national test procedures. For example, for many electronic products, the US Energy Star test procedures serve as the data or international standards that everyone looks at and everyone compares with.

We're going to be looking at converting the test procedures. So if I measure 100 kilowatt hours a year in one test procedure, or I measure a power demand of 100 watts for a test procedure, how much would that be if I used a different test procedure? And in some cases, it's possible to develop those conversion factors. In some cases, it wasn't. You'll see more of that later on in the slides. And finally, we can compare the results of that. Could I have the next slide, please?

So to give you a first overview, um, we've been looking at the alignment of test procedures and efficiency metrics for various product areas. And in our study, we identify nine product areas; lighting; consumer electronics and ICT; transformers, which is a pretty small product area consisting of one product, distribution transformers; um, motors, pumps and fans; household appliances; air conditioning equipment; commercial refrigeration equipment; cooking products; and space and water heating equipment. We've been looking at the level of alignment within each of these areas to see if some product areas show more alignment than other product areas, and they do, as you can see.

Those alignments, for us, have a complicated calculation behind them, which is explained in more detail in the report. And I won't bore you with all the details, just to say that we've been looking at how comparable individual products, regulations and test procedures and efficiency metrics are. Um, giving those scores, that includes, also, the robustness of the conversion. Is it a reliable conversion? Is it that of a shaky conversion? That is also reflected in our report, in our some scores. And so, you won't be... find any surprises where we pretend that a very shaky is actually a quite robust one. If it is shaky, we say it's shaky. Um, with all the scores of individual products, they'd obviously be added up, averaged out, depending on how many products there are in an area, and that gives you an average score for that area. Could I have the next slide, please?

What you then see, if you look at product areas, is that some of these things show more alignment than others. And this probably will not come as a big surprise, but the lighting product area shows a lot of alignment, that's procedures and efficiency metrics between economies are reasonably not aligned already. And, on the other end, scale for space and water heating is quite different. There is hardly any alignment between economies and test procedure, and one economy is probably quite different from test procedure in another economy for virtually every space and water heating product.

The fact that lighting products have so much more light may probably be the result of coordinated efforts to get there. CFLs, for example, are one area where there has been some of that coordinated effort. LEDs is one area where there have been coordinated efforts. But a bigger factor, to us, seems to be that the products, themselves, are actually comparable. A CFL in India is the same as a CFL in Europe is the same as a CFL in the U.S., except for small voltage differences; um, whereas a heating product in

India is very different from a heating product in the U.S. The system, itself, is simple different. A typical U.S. heating furnace is not something you usually find in Europe, for example. Whereas, a typical European hot water heating system is not something you typically find in the U.S. That, alone, makes it hard to rely on test procedures. If the products are very different, the test procedures and the efficiency metrics can't equally be aligned.

And you see the same in terms of comparable products within the consumer electronics and ICT area. ICT products, in particular, are globally traded, are very much the same across the world, which makes a whole lot easier to align test procedures and efficiency metrics. It kind of comes naturally for those areas, plus, of course, the dominance in... the dominant excellence of U.S. Energy Star in electronics. Um, with [inaudible] (0:25:56.4) transformers, where there is a lot of alignment. Motors, pumps and fans is actually everywhere there is a lot of alignment, probably partly because motors are, again, internationally traded products; very comparable around the world. But there also have been quite powerful international efforts to make sure that motor test procedures and efficiency metrics are aligned through IEC, and we'll talk about... more about that in a minute.

As an example of what you can achieve, in terms of alignment, and what the benefits might be. Household appliances are, again, a different... of an odd category. Um, we can align and compare product performance in household appliances quite well across economies, largely because these products have been regulated for so long that we really understand the differences, unless the products, themselves, in some cases, are quite different. A top-loading washing machine, as is common in, for example, the U.S., but also in Australia, is not exactly the same product as a front-loading machine, which is far more common in Europe, for example, or also in India. Washing in cold water, as is common in India and sometimes, also, Australia, is quite different from washing in hot water, as is common in the U.S. and Europe. And those differences come into play there, that the products are actually quite different. Um, but we understand the differences so well that we can still say a lot more about how aligned... how comparable products are internationally.

Air conditioning is an interesting area. The test procedures there are actually pretty well-aligned. There has been some international efforts to make that happen. What we've seen in recent years in that virtually every economy is moving towards seasonal energy efficiency performance metrics. And the downside of that is that, whereas the testing, itself, is quite comparable, the efficiency metrics actually differ a lot. And what, what was a very aligned area and a very comparable area, maybe only five years ago, actually isn't so comparable anymore.

Commercial refrigeration equipment is an area that is very much in development. Many new products that are being regulated for the first

time in various economies. Not that many economies, yet. And test procedures and efficiency metrics are still a bit underdeveloped for that area. The same for cooking products, which is a fairly new area in terms of standards and labels. And space and water heating, I mentioned it before; an area where most of the products, themselves, are actually quite different. Can I have the next slide, please?

Now, some examples of standards and labels policy and comparability, and how easy it is, how relevant it is. I mentioned CFLs, compact fluorescent lamps, before; a great example of international alignments. Test procedures are the same. Efficiency metrics are aligned. The products, themselves, are very comparable. Basically, the only thing that's not aligned are the actual performance requirements. Um, various countries define CFL performance in exactly the same way. It still has a difference. Efficacy, lamp efficacy, that needs to come out in order to comply with the regulations; that winding area where there's potential for movement which could increase the global market for better products.

Pump systems and motor systems are good example of what can be done through international organizations; ISO and IEC, for example. And what you see there is that there have been great efforts, internationally, to define test procedures that includes, not only product definition, but also test conditions, um, the whole test procedure, energy efficiency metrics and, in some cases, even energy performance levels. And other energy performance levels—that's motors, for example—have to comply with energy performance levels that countries can align to. And you see that a lot in the motors areas, where there are basically four international efficiency levels. Five now, I believe, since a new one has been defined, that countries can choose to use as their standards or label level. And that seems to be working pretty well. The next slide, please.

Unfortunately, we also see some areas of non-alignment and sometimes, some really small things where alignment would be really easy and might actually help with larger markets for energy efficient products, um, which is still not happening. One example we stumbled on are directional lamps. And everything is the same for directional lamps in terms of test procedure, efficiency metric and et cetera, except for one thing. The shape of the cone that you use to measure the light with is different in Europe than in other economies. Now, that seems like a small thing. It probably is a small thing. Still, it matters an awful lot because it renders any test result that you have incomparable between EU and other economies. And EU is one of the large economies that's... that partly determines the global market. It's the little things that matter, basically, and this is really one example of the little things.

The room air conditioners, I mentioned that before. The efficiency metrics are really divergent there, where some countries choose... where all economies are choosing seasonal efficiency performance metrics, and all economies are choosing different factors in that performance metrics.

Now, that really reduces comparability. That's interesting from an analytical perspective, maybe not so much from a policy or market perspective. It also means, however, that products need to be designed in different ways to meet performance requirements.

Some countries emphasize latent heat removal protection. Some countries emphasize partial-load conditions. Some countries emphasize a mix of partial-load, full-load conditions. And all those different mixes probably require a different product optimization to perform best under the conditions that the country defines. There may be good reasons for those differences. It does mean that different products are needed for different economies. And global market for the most efficient product is probably smaller, and it might be otherwise.

Televisions are an interesting example. We always think of televisions as having one of the most aligned test procedures and efficiency metrics in the world, and in a way, that's true. There is global IEC test procedure, which was developed through international efforts. The way you test energy efficiency for a television has been defined internationally, and yet, we see that there... diversion is setting in around the automatic brightness control and how you measure it and how you make that. And it looks like television energy performance is becoming less comparable than it was before. It probably also means that different countries, again, will need different optimizations to best meet the performance requirements in a country. And that can mean that the global market for the best televisions may be less optimal than it could be otherwise. The next slide, please.

One other comparison we've done is alignment by country to see to what extent one country is aligned most to all the other countries, to the other countries together. Let's see what we see, then. And if you look at the scales, ranging from Australia to Mexico to the EU to the U.S. to China to India to South Africa to Indonesia and to Russia, and in terms of decreasing alignments... The scores, by the way, the numbers, themselves, don't have an absolute meaning. It's a radical score.

But what, what you see there, what we think we see there is that Australia and Mexico have made the deliberate choice to align their test procedures and efficiency metrics, as much as possible, with other economies. In Australia, at the base, that typically is the... either the European or the U.S. test procedure efficiency metric, whatever is most applicable. So the products we are dealing with, Mexico does, typically, the U.S. test procedure and efficiency metric, and it shows. Um, it shows that, since that deliberate policy is to align, that alignment shows up in our results, of course. The EU and U.S. follow best and probably for an interesting reason. Neither the EU or the U.S. have a policy of aligning their test procedures and efficiency metrics so much with other economies. They have a policy to align with IEC and ISO standards where that is feasible, where that matches the needs of the country well. Um, still, EU and U.S. show a lot of alignment, basically because they are leading economies. If a

product has never been touched by standards and labels before, the first economy to touch it typically is either EU or the U.S. And if you're the first, you're likely to set a standard, and that's what shows up here. Many products are... that goes first in EU or the U.S., that sets a standard, and other countries tack onto that.

China and India, two developing countries that are rapidly evolving standards and labels programs, they typically look at major economies; EU, U.S., sometimes Australia, sometimes Japan. And, also, they're always, both India and China, aligned, and that's their standards and labels to best... better meet the needs of the country. And there are climatic differences. There are cultural differences. There are more differences which make it necessary, sometimes, to adapt certain requirements, and that shows in the somewhat lower-aligning score. That South Africa and Indonesia have developing standards and labels programs, many things are in development, are not yet fully defined, yet; therefore, not so comparable and not so aligned, yet. We can't say how that will evolve over next years. I would expect, if the programs evolved as they seem to be evolving, have been evolving for years, the alignment will go up.

And Russia really has a program in transition, uh, moving from using old Russian cast standards to more alignment with IEC, ISO, sometimes EU standards. And that is showing up, that Russia is creating a program transition where many things are moving, and not much is set in stone, yet. And with that, I would like to hand it over, back to Mia, who will talk more about policy coverage and stringency.

Mia

Thanks, Frank. So we're looking, next, at policy coverage and stringency, so the number of policies, the number of products that are covered and how ambitious they are. Having been gathered all of these policies, and we're now in a position to convert between the results of different standards and test procedure results. We then compared the policy coverage—so that's the number of products covered by standards and labels—and how stringent the requirements are of those standards and of the label classes. So could we move onto the next slide, please?

So this about coverage, and, there's been an interesting shift in terms of coverage and what you might expect. Traditionally, the US led on MEPS and the EU on labels. And now the situation is different. It's been reversed. So the EU's new Eco Design program has been very active and has taken on a lot of new products. And it's now overtaken the U.S. in terms of MEPS coverage, and the U.S. has overtaken the EU in terms of labels.

I should probably specify here that, in terms of labels, what we mean in the U.S. is we're referring to Energy Star labels. Um, and there's nothing that... in our report that refers to the U.S. what... There's no—none of the products in our reports, that have Energy Star labels, don't have Energy Guide labels. I should probably say that clearer. All of the products in our

reports that have Energy Star labels also have Energy Guide labels, so if you looked at it on that basis, it wouldn't be different. So that's the interesting shift.

In China, we looked at the categorical label. And China also has an endorsement mark, but largely, products with the endorsement mark also have the categorical label, which is the leading label in China. And what we see here is a result of China working really hard at expanding the scope of its S&L program. The rest of the list, um, I'm probably going to give you similar information to what Frank just gave you on alignment. But Australia is doing good work and has solid coverage. Probably not as many labels as I would, personally, have expected, but still very sound, in fourth place, in terms of coverage. Uh, Mexico and India are building their coverage by generally copying from other economies. So India copies from a variety of economies, and Mexico, mainly from the U.S. and sometimes old standards. And as Frank mentioned, Russia is in transition, but moving towards new standards and test procedures. And Indonesia and South Africa are still developing their programs.

Internationally, CICT household appliances, and space and water heating, are the most regulated product areas. All of those have over 45 S&L regulations. They are closely followed by lighting, which have 39 regulations. Then motors, fans and pumps, with 38, and commercial refrigeration products were 34. For cooking products and AC, the numbers are lower at 26 and 25 regulations each. And transformers, which are kind a smaller and more distinct product area, have six regulations.

So there's a lot more detail that's available on this in the reports. And the EU obviously have consistently had... also have wider S&L coverage across all product areas, with China and Australia following closely. Mexico seems to be focusing on lighting and commercial refrigeration products, and South Africa, primarily on household appliances. And unsurprisingly, household appliances are still the only product area with S&L regulations in every economy in our analysis because, generally, household appliances are the starting point for new economies.

So if we move on to the next slide, we look at the ambition levels, so the most ambitious MEPS and labels. And as I mentioned on the slide before, the EU Ecodesign has been really active in taking on a lot of new products. And it really stands out as the clear leader in S&L development, so it's kind of one to watch. Not only does it have the largest number of MEPS, as we saw on the previous slide, but also the most ambitious MEPS and labels for more than half of the S&L products. And many of those are unique, so for 9 out of 18 comparable MEPS and for 9 out of 15 comparable levels. So if... Economies in transition should really watch what's going on in the EU.

And then we see that Australia follows the EU with three most ambitious MEPS and five labels. And then the U.S., with five and one. And I won't, I

won't bore you by going through the rest of the table. But, uh, but, yeah, I think, I think that's pretty clear. Could we move on to the next slide?

So yeah, alignment by economy can be complicated. And there are a number of differences, among economies that contribute to variations in policy coverage and stringency, and these are listed here. Energy prices, product ownership, product usage patterns, they should be reasonably familiar. They lead to different economic assessments from country to country.

The next slide looks at future directions. And if we look... We looked at the potential for alignment between different products, uh, across different economies. Uh, next slide, please. So as I mentioned before, all products have a potential for increased alignment, but this can mean different things for different products. So at individual product level, we did this on this product-by-product basis, and this is the example for the CICT area, where various products are aligned to various degrees and having different potential for alignment in the future.

If we see, in the blue, we have computers and imaging equipment. They're already aligned, internationally, both in terms of efficiency metrics and in terms of test procedures. Then, less aligned, we go to the green areas of TVs, displays and external power supplies. They already have aligned test procedures, and there's potential to align efficiency metrics in the future. And then we go to the red, which is the least aligned, and that's the set-top boxes here, both the simple ones and the complex ones, and the servers. It's really hard to align test procedures and standards in these areas, but it may be possible to align several components of these test procedures. So that's what the red means. So if, if we look across all of these areas, we see that across the whole of the CICT area, there's quite a wide range of alignment potential. We could move on to the next slide.

So the next slide takes us up a level, and, and in the report there's detail for each one of the areas, the product areas, and for each of the products. And this is an amalgamation of those areas. So if, if you look at the CICT line, you'll see your three, kind of, colors that we, we just talked through in the previous slide. So this gives an overview. And then we, we drew the products together by product area, so that we could have an indication of the potential across the area. And this chart shows, in block colors, essentially, how we drew together the individual sub-products alignment into broader product areas. And then the arrows give you the overall range. So again, if we focus on the CICT, we see the range is wide, the widest of all, and it goes across all of the potential for alignment. And Frank's going to give you a little more detail on these product areas.

Frank

Thank you, again, Mia. Um, if you look at household appliances and our assessment of the alignment potential there, how much is possible in household appliances, you'll see the range, indeed, from red to orange. And that mostly reflect-reflects differences between the products, and household appliances are not that comparable, product-wise, around the world. Um, another aspect that comes into play here is, is how ingrained test procedures are and how interwoven test procedures are with product design. And for some products, the test procedure really defines how you design the product in an optimal way for an economy. And our experience is that if test procedure is so ingrained in product design, if the differences are so large between products and if that product has been around for a long time, the test procedures have been in use for a long time, they are really hard to change. So we put that potentially relatively low, for further alignment. It doesn't mean nothing can happen, but we estimate that it's not the promising area for alignment.

If you then look at the lighting area, for example, you'll see that test procedures are already pretty well-aligned. Um, there is potential to align performance efficiency, efficiency metrics. And we believe that that's the case because the differences, in general, are not so big, that the products are more comparable in the lighting area, that the changes that would be needed to also align efficiency metrics are relatively small to make and possibly relatively easy to make. The consumer electronics and ICT area, we had just discussed that, so I'm going to skip that one now.

Air conditioning is an interesting area. The test procedures are pretty well-aligned. efficiency metrics, in theory, could be aligned further if every economy use the same test points, or somewhat the same test points, and uses somewhat similar ways of defining energy efficiency for an air conditioning... air conditioner. However, air conditioning seasonal efficiency requirements are also reflective of climatic conditions, and we expect that those climatic conditions will always come into play and that economies do want to have a seasonal efficiency metric that really reflects the specific circumstances of that economy.

The space and water heating equipment, generally we consider that space and water heating equipment is quite different between economies, that the products show large variations; that test procedures, where they exist, show large variations, that it will not be easy to align those test procedures fully. There is one exception around electric heating, where we believe that it's a lot easier to align test procedures and possibly efficiency metrics there. There's still some way to go there, also, probably, but still, it should be a lot easier than for most non-electric heating equipment.

Commercial refrigeration equipment, we talked a little bit about it before. It's a relatively new area. There are not that many CRE products that's... that are important in that area. And the ones that are around are somewhat comparable around the world. Another aspect that really helps in our assessment that potential for alignment is that not many economies have

well-defined S&L for commercial refrigeration equipment. And, and because things are still moving, it's probably easier to align things there and, and increase the market for better commercial refrigeration equipment.

Cooking products, on the other hand, I think, like heating equipment, um, the products varied a lot around the world. Test procedures, as far as they are existing, are very different. And there doesn't seem to be that much interest, around the world, in aligning S&L for cooking products, partly probably because they're not so much traded internationally. The market for cooking products, as is the market for space and water heating products, is still largely national, sometimes regional, at the regional economy scale; just not so much a global market, as it is for many other products.

The motors, pumps and fans areas, um, a large variation in that area. Some products are already fully or almost fully aligned. Motors is one where the IEC test procedure defines virtually everything, up to performance levels. The only thing not defined in the IEC test procedures are the actual regulations and the actual performance levels that products have to meet in a given economy, and that's not something you can align internationally. Um, there is probably potential for more products in the motors, pumps and fans area. For pumps, developments are on the way. For fans, it may be possible for more products than we think right now, to align this further.

Distribution transformers is, is one product. Um, the test procedure is already aligned, and it's probably possible to also align the efficiency metrics for distribution transformers, which would make it easier to trade distribution transformers internationally. It would probably also make it easier to transfer efficient technologies more quickly and more rapidly and more easily from one economy to the next. If I could have the next slide, please? Thank you.

And with that in mind, we thought about if we were to give this audience a few practical options... Say someone would like to start working tomorrow on more alignment of test procedures and efficiency metrics that would really benefit energy efficiency around the world, a few things that might be possible, and by no means expensive or exhaustiveness. For directional lighting start looking at the cone shape that is used in testing directional lighting. Aligning that might make that area a lot easier to address. For all lighting products, start looking at generic performance levels that provide the efficacy and other characteristics that lights has to meet in order to either meet a standard performance level or an energy label clause. It doesn't have to be the same. It doesn't have to be one performance level around the world, especially for lighting products. Just experience with defining a few performance levels, and countries and economies can choose the performance level that best meets their needs. For televisions, we talked about it before. Uh, automatic brightness control is, is kind of

putting a [inaudible] (0:51:28.4) in the wheel there, and it would really make sense for economies to start talking about how they regulate automatic brightness control, and that's all of them doing something about it, individually.

External power supplies, those procedures, again, are quite aligned. Performance levels are not, and the products are quite similar. In Chinese economies, you often see, actually, external power supplies that meet the performance requirements of various economies, yet performance levels, as they are required... as they are defined in standards... set out in standards and labels requirements, very quite a bit. And it may add a complication that the market really doesn't need because the market probably is better off focusing delivering best energy performance for the lowest cost and not on playing with the particularities of various standards and labels in various economies.

We talked about some CRE products before. Refrigerated cabinets and refrigerated display cabinets probably show the biggest potential for further alignment. Um, there is a lot of movement around these products. Their products, themselves, seem to be quite comparable around the world. Not many economies have test procedures, efficiency metrics and standards and labels in place, although, many are developing them. And it seems the perfect opportunity to create common destinations and create energy efficiency metrics that all countries can work with and really move this area forward.

And various types of fans and pumps. And it's not the same across the whole area, but there are various types which seem very promising. It should be possible to agree on common energy efficiency metrics and maybe, also, common performance metrics and performance levels for these products. That, again, could really help in increasing the global market for energy efficient products. And with that, I would like to conclude or overview of findings and hand it over to Debbie for some final comments.

Debbie

Thank you, Frank and Mia. Um, can we move to the next slide, please? Thank you, so to think about some future opportunities on the research side... So Frank just spoke about future opportunities on the alignment side, with policies, in particular. This, as we said at... As I said at the beginning, this study is, follows or builds on a study that, CLASP did in 2011. And we also plan to do future research along these same lines. The first two bullet points here both are about, um, highlighting opportunities for, undertaking these concrete opportunity improvements that Frank was just discussing, both collaboration with the civic countries, as well as opportunities for international organizations, such as IEC and ISO to lead the way.

We also... The next two, we are thinking to exam the cost and benefits from adopting more ambitious policies—one of the benefits including

energy savings potential as well as the cost and benefits of filling any gaps in policy coverage. And finally, looking at a different angle on the same topic, which is looking at the cost... What are the costs, to industry and government, of having non-aligned test methods? And these are all potential research lines that we're thinking about right now. And we certainly welcome feedback on these future research directions. We want to make sure that we build on the impressive technical research that has been done to this point, in the ways that are the most useful for creating impact and affecting improvement in both the alignment of S&L components and product energy efficiency through S&L. Next slide, please.

So again, everyone should have received an email with this link. But I just want to highlight that all of the resources, uh... or all of the resources that we have created to date, on this topic, are available on www.clasponline.org/igc. And these include the full report, which is actually about 60 pages. It's a really interesting read, in my opinion. There's also a policymaker summary, which you'll see the... The charts and graphs that you've seen in this presentation, you'll see in the policymaker summary, as well, and two annexes. One is an overview table, which is an Excel file containing quantitative information about the conversions and the levels of the MEPS and the high labels that we were talking about.

And annex two, the product fact sheet, is, um, an incredible resource, especially if you're looking for product-specific, detailed information. Um, this document is divided up by product categories. So there are nine product categories, plus a sort of miscellaneous one, to catch one or two that didn't fit, um, and includes just a lot of information about what the, what the regulations are in each of these economies, how they compare—there's a table comparing each of them—and then what the global situation is and some of the background and, and context for each product. Um, and it... Again, it's broken out by product category, but within that, it really dives into each product, in particular. And this is, again, a great resource, especially for, uh, technical people who are looking for product-specific information I really encourage you to look there. Next slide.

So thank you all, very much. Uh, this the contact information for myself and Mia and Frank, and we encourage you to reach out, both with, um, any questions or comments, with ideas on future research, anything related to this, at all. We really look forward to continuing the dialog and moving forward this line of research. Sean, I'll pass it back to you.

Sean

Great. Thank you, and thank you to each of the panelists for those great presentations. Um, and at this point, we will move on to the question-and-answer session, involving the audience. So if any of our attendees, today, have questions for the panelists, uh, please submit those through the Question pane, and I will present it, to them for discussion. And so, I'd like to start with the first question, and that question is, “How did you select the economies?”

Mia Hi. Yeah, we had the original four economies from the previous study, and then, basically, it's described, in quite some detail, in the report. We used a number of criteria, but most of the criteria are mainly focused around the potential for impact for the additional economies. So, in particular, we looked at CO2 mitigation potential. And as I mentioned before, in the end, we decided to go for a broader coverage, so including more economies than originally planned, even where there was less information available. Um, but yeah, it... There's a description of all of the individual criteria used, in the report, that they center around the potential for CO2 mitigation.

Sean Great. Thank you. Moving on to the next question. One of our attendees didn't catch the label types that were included for the U.S. And they were wondering, "Were the Energy Guide and Energy Star labels included?" And they note that they were under the impression that Energy Star covered over 70 products.

Mia So if you look at the products that we cover... Although, we cover a lot of products. We cover over 100 products. We don't cover every single product in existence because I don't... I'm not sure that that study would've been possible. So it, it may well be that Energy Star, overall, covers many more products than are listed in the table that we showed. Um, in terms of the labels for the U.S., we looked at Energy Star. And then we did a check to make sure... to see whether there were any additional products that were covered by the Energy Guide label, that weren't covered by Energy Star, because we were looking for the highest label. So obviously, that would Energy Star. And there were no products that, out of the ones that we select, that we were looking at, that were... that had an Energy Guide label, but didn't have an Energy Star label. Also probably worth noting that Energy Star and its labels covers some building products, as well. So we didn't cover any building products. Hopefully, that's clear and that answers the question.

Sean Yes. Thank you. We'll move on to the next question that I received. And they wonder, "Are there any product alignments for small island-developing states who do not manufacture or assemble appliances?" They note that, Mexico appears to be the nearest economy.

Frank There, there are many. I'm not sure Mexico appears to be the nearest economy. It really depends on the, the country, itself, I think. And what many economies do is they check which economy most align with their markets and with the products and from where they import most of the products or which market their national market is most aligned. And for many countries—North Africa, for example—that's EU. For Mexico, that's the U.S. It probably makes more sense to check which market is most aligned with marketing country than to, to look at the country that's most aligned with another economy.

Sean

Great. Thank you, Frank. And for the next question, “With respect to lighting, what is your recommendation about how to ensure that the needs of countries that do not have S&L programs are considered in alignment processes that can affect product design, so for example, robustness of LED products and light of large grid fluctuations and ambient temperatures in many developing countries?”

Fran

That is a really interesting question. And it's, it's an interesting question for lighting, and it's an interesting question in general. It's hard to represent the interest of countries that aren't even aware of the fact that, in the future, they might meet standards, test procedure for specific products. And as relevant as it is for lighting and as relevant as it is for LED, I think the answer is kind of similar for all products. When developing global standards and labels, you need to factor in that not only countries with a very well-established S&L program use these standards. They need to be applicable to all countries involved. And what we typically see is that global manufacturers play a big role in standards and labels... in test procedure development. Excuse me. And it is in their interest to make sure that whatever is developed also works for new markets.

Having said that, it, it does make more sense to focus on markets that actually use these features, so the ones that do have standards and labels programs. It won't necessarily make much sense to develop that procedure that may be applicable to countries 20 years from now, when they get to the point when they want have standards and labels program for that product, when that procedure might be obsolete by that time. So that may not fully answer the question. It's more like thinking that you need to factor this in, in the work, even if there is no representative of the economy. It's step back if it is a problem that a country doesn't have an S&L program, may not even know that it has an S&L program. It's really hard to factor in their needs because there's no [inaudible] (1:03:46.4) representing those needs. So it will depend on global participants to really pay attention to that.

Debbie

I'd just like to add a little... one thing to that. On lighting, in particular, what we've seen is that in addition to the international, the in-process development in international standards for LEDs, um, there also has been regional developments. So for instance, there's a program called Lights Asia, um, that has put in place testing and requirements specifically for tropical environments, and so this takes into account some of these conditions. Um, and in the case of LEDs, it's interesting because that's coming out at the same time as the international standards are being developed. So potentially, for other products, uh, could lead to some sort of a divergence in testing that then would have to be reverted if you wanted to create a new aligned standard. But I think that those, sort of, regional developments can help pave the way for the, sort of, future pathway for that product category.

Sean

Great. Thank you, both, for the, uh, the response. And the next question I'm going to move onto, bare with me, is a... it has some pretext to it. And if you need me to repeat anything, I'll be happy to do so. So the attendee notes that, as Frank and Mia stated, a number of products, for a number of products, there is a desire to harmonize either test methods, metrics and/or performance levels across a number of economies. However, the test methods/performance metrics that industry desire and prepare to make in ISO, IEC standards committees may not align with the requirements of the regulator or may make regulatory implementation almost impossible. So for example, Frank mentioned that CFL standards and regulations were quite well-aligned. Yet, to undertake enforcement testing of a single CFL model could easily be \$5,000 simply because the standards committee have insisted sample sizes are 20 MEPS. What are Frank and Mia's opinion on how to balance the needs of industry and the regulator? And how can the regulator actually influence the outcomes from the industry-led standards panels?

Frank

I obviously can't answer for Mia, so I'll give my answer and let Mia add. Um, that's an excellent question. Um, there is no full answer that I know of. I know that some regulators have been struggling with this question for a while. One thing regulators could easily do is actually show up for meetings where test procedures are being discussed because I know that the usual practice is that there are 10, 15, 20 industry representatives who take this quite seriously. And if you're lucky, one or two of the representatives participate in meetings where test procedures are being discussed. And that may not reflect how important test procedures are for regulators. So simply paying attention to this could be a good start.

The other thing is that it may be good to have a discussion with the test procedure bodies, standardization bodies, IEC, ISO, um, about this, and, and maybe it's just how government could take a larger role in test procedure development. Maybe also take more of a leading role and help in defining the characteristics the test procedure needs to meet because often, test procedure development starts with a blank sheet, basically. There is no requirement except "Give us a test procedure." Well, if the question is undefined, what you're going to get meets your requirements. And so, thinking about what a test procedure actually needs to do, from a regulatory perspective, and telling standardizations organizations what that is, would really help. And I'm sure there are many more recommendations and many more solutions. These two might already make a start. Yes, is there anything you'd like to add that?

- Mia** I think my answer was going to be along those same lines. But, um, I would have phrased it differently, more in terms of collaboration, sort of increased collaboration between governments and those creating the test standards. And really, kind of, on a basic level, they control, within this increased collaboration, the, the... The governments make sure that they listen to all of the stakeholders views—so around the whole spectrum—and in understanding whether the test procedure meets their leads, and keeps on discussing that. And it's difficult for governments, I understand, because of the limited resources. But it's, it's... The test procedures are, obviously, incredibly important and, kind of, like the bedrock of standards and labels, so definitely worthwhile and definitely important for them to engage lawfully.
- Debbie** Um, Sean, I would just like to add that the, um... There are several initiatives working together, actually, on this, uh, which include the SEAD initiative, IEA/4E and IEA. And the governments within these initiatives have identified this need, as well, and they're working with IEC and ISO to come up with a solution. Um, so it's a really good question and, I think, something that we're starting to try to look towards.
- Sean** Great. Thank you, everyone. And so we'll move on to the next question, which, uh, switching tracks a little bit, asks, “How do you define most ambitious and unique most ambitious?”
- Mia** Most ambitious is we—we've looked at the level, and we've said, “This is the highest level.” And then, sometimes, there were levels that were tied, so that's included in that number. So for example, it was nine of some of them in EU, but eight were unique. So when they're unique, they're not tied with any other country. They are the only ones who have the highest standard.
- Sean** Great. Thank you. Uh, and the next question, uh, is asking specifically about motors. And it notes that countries are aligning to IEC standards for motors, uh, particularly IE3 and IE4. Um, so, “What is the relevance of separate nation-specific labeling, given that motor consumers are mostly industry, itself? And who are already aligned to IEC standards?”
- Frank** A good question, again. The relevance really is that IEC standards, in themselves, have no legal meaning. Um, IEC may define something as an IE3 level or an IE4 level. That doesn't mean that industry, itself, has to live up to that. Um, if, if a country were to specify an IEC standard as a label method, frankly, anyone could just put IE3 or whatever they want and really start marketing as an IE3 level and really confuse the markets, but there's a legal benefit in it, to these test procedures, that only country can provide.

Sean Great. Thanks, again, Frank. And our next question asks, “When we speak about comparing, we speak also about mutual recognition, for example. And do you think that a screen, like for safety with Cd screen, is imaginable?”

Mia I'm not sure I fully understand the question.

Sean That's fine. Um—

Mia Does anybody else understand it fully? Whoever asked the question, would you be able to clarify?

Sean Yeah. Uh, uh, the attendee that submitted that, if you'd like to, uh, just reword that and submit it again, I'd be more than happy to present it to the panelists for you. So we'll move on to the next question, and if that one pops up, I'll jump to that one. And so, the next question that we received, asks, regarding the statement made on TVs and the need to harmonize on ABC approaches, some variation and calculation of ON mode with ABC can be explained by regional differences and ambient lighting conditions, which means that ABC behaves differently, resulting in different savings. “Where do you think the line is between achieving harmonization and the need for regional tailoring of approaches?”

Mia Sean, I'm going to let all of the participants in on a little secret; that I asked Sean if he would send me the questions. And I see there were a few questions that touched on the same topic, which are, kind of, what's the benefit of alignment versus being more precise with the specific conditions in a local area or in a local economy. And I think that's, that's the heart of this questions. So maybe we can, we can answer a few of those questions together. How does that sound to Frank and Debbie?

Debbie It sounds good.

Frank Sure.

Sean And would you like me to read those questions first, or do you want to just go ahead and, um, approach that topic?

Mia Sure. Maybe you read... Maybe if you can pick them out, yeah, that would be great.

Sean OK. Uh, I think the next question that you're referring to, that's related, “Is alignment always relevant?” Well, and I think you're right. I think that basic question, um, is prevailing through several of these, so, um, if you want to go ahead and address that issue.

Frank

So the, the question about what's the... where to draw the line between looking at regional specifics, regional characteristics and favoring to that first conversation, I'm not sure it has one answer. Both are needed. Um, you do want standards and labels to be representative of the specific circumstances in an economy. At the same time, it seems to help global markets if test procedures, efficiency metrics and, sometimes, performance methods are aligned. And more efficient and more effective global markets can deliver efficiency at better cost, usually.

For a specific product, I would have to do the analysis and you would have to look at it in greater detail, I think, than we can do in this call. More in general, what we see is that there is an awful lot of... a lot of talk about tailoring standards and labels to a regional market and looking at the characteristics and how different product use is. Um, that usually looks like average use and average values. And it commonly ignores that, within an economy, there's a lot of variation. And I wouldn't be surprised if, like when people start looking at this in greater detail, they'll see that the similarity between product use and conditions in a country, or between economies, are actually larger than the differences that appear to be so relevant when you look at averages.

For example, on televisions, if you see lighting conditions, um, light conditions are different in different people's homes in an economy. They're also different, on average, between economies. I think that overlap is actually larger than the difference. And on many products that are globally traded, there are probably much benefits to organization. On products that are mainly traded in a region, benefits, they ignore.

The final answer would probably depend on doing the analysis for a region and keeping everything in mind, also looking at cost and benefits, of course. Energy prices are also different between economies. Product prices are different. Uses are different, hours of use, types of use, uh, how products are used. There is not one single answer that covers everything, and I think that a detailed analysis is needed when you actually get to defining standards and labels. And then it's common practice, in most economies, to do a detailed analysis before you actually cite a recommendation. So the system seems to work.

Debbie

I also want to add that, as Frank has mentioned, uh, the cost and benefits in terms of both the energy and the money savings, um, or cost. That's one of the, uh, additional, sort of, follow on pieces of research that we're looking to do. So we don't have, um, an updated assessment of that. There is some of that in the 2011 study. Um, but we are planning to do an updated assessment of that for particular countries of interest and looking at particular products of interest. Um, and that will provide more information about, sort of, the concrete benefits of alignment.

And to compliment that, we're thinking about potentially doing research on the cost of non-alignment, because that's not really something you'd

capture in a cost... Like, “What are the cost and benefits of aligning,” um, doesn't necessarily capture, “What are the costs of not aligning,” or, suppose, benefits?” Um, and so, those are two different pieces of research that we're, um, thinking about. And if you have thoughts on that, please do feel welcome to contact me.

Sean Alright. Thank you, Frank and Mia for that. And so, we do have a related question that may have, uh, just been touched on, but want to make sure that it's addressed directly. So it, um, it does ask, “Is alignment always relevant, and have some cost benefits, in terms of energy and money savings been made? And did the team pick out some key conditions to make alignment beneficial?”

Mia I think most of that has already –

Frank Um, we covered that.

Mia (Chuckle.) OK.

Frank Most of that has probably been discussed already, indeed, and no, alignment is not always relevant. It usually is a relevant factor to MEPS, I would say. It's not always... So in that sense, it probably always... it's relevant. It may not necessarily be the best thing to do. I think it's looking at cost and benefits, um, and, and how to make it work are things to look at, in, in specific circumstances.

Mia Yeah. You'll always, you know, want to look at what's going in the rest of the world, what other people done before in an area. But you're not necessarily going to think “benefits” for your area. And, and did we pick out key conditions? Uh, we didn't. That's not included in the report. We just looked at how to do the conversions and the other things that we mentioned.

Sean Great. Thanks, again, you guys. I'm going to skip ahead now. We did have our, our attendee resubmit their question, um, reworded it. And so, let me read this. And it says, uh... It asks, “The Cd screening allows to produce a test report, internationally recognize by IEC members, with national deviation. Producer pay only for one test reports. Producers pay for only one test report, which include all the deviations and which allow them to obtain related certifications. Is the same approach imaginable in FES? Or would it be... Which kind of body would head that?”

Frank Thank you for clarifying that. I'm actually not familiar with Cd screens, so I can't answer in detail. But in general, yes, of course, this is imaginable. In many cases, actually, test scores have already [inaudible] (1:20:13.1) internationally. A product that is sold in Europe may pass in China, for example, by a Chinese testing lab using a European test procedure or a relevant international test procedure. So that's how things are already moving in this direction. Whether one test could cover all deviations to the test procedure for various economies will depend partly on how comparable test procedures are, I think because, in many cases, it's not so easy to add a national deviation to test procedures as they currently exist, with few exceptions. So imaginable, yes—around the corner, probably not yet. And it's a topic to look at a little more in detail, I guess, at a later moment.

Sean Thank you. We'll move on to the next question, and it asks, “Since many appliances cater to different geo-climatic conditions, is it practical to expect them to be comparable, and would it be better to compare standards in different climatic conditions?” And we did already address this, so if you'd like to move on to the next one, just let me know?

Frank I'll answer very briefly. Different climatic conditions do matter, mainly for those products that actually deal with heating and cooling, and for many other products, actually, not so relevant. There are many products that, for [inaudible] (1:21:33.9) conditions, have hardly any impact. So the question really applies to a subset. For that subset, yes, it does matter. In some cases, you do want to align with national conditions more than international test procedures. Uh, space and water heating was one example that we talked about, and air conditioning, the other one, I think.

Sean Thank you for addressing that, Frank. And the next question asks, “A country may not be interested in developing global solutions. What organizations are best positioned to develop and support global test, metrics and levels?”

Frank That probably is one... the [inaudible] (1:22:13.3) question. Um, in some ways, it's easy to answer. If companies are not interested in developing global solutions, is there a need for them? Um, in the end, this international work is being done to support countries. There are global organizations that can do this kind of work. IEC, ISO come to mind, for example, as organizations that are set up specifically to develop international test procedures and sometimes efficiency metrics. And, of course, there is a SEAD initiative that Debbie can say a lot more about than I can.

Debbie

Yeah. Thanks, Frank. Um, I think, you know, obviously, the IEC and ISO are the international bodies that everyone looks... that I think a lot of companies look to when they're setting their own national, uh, test procedures, in particular. And in some cases, as I think Frank mentioned for motors, the IEC method also has the actual, uh, levels: the IE2, IE3, IE4 levels. Um, I think, um, as I mentioned earlier, there's collaboration between SEAD, the SEAD initiative, IEA/4E and IEA, together, working with the IEC and ISO to try and figure out these kinds of questions as to how we can do this better on an international scale, um, especially given... All countries have resources stretched thin on this. And so, to the extent that we can come up with these international or global solutions to make the lives easier for national policymakers, that's always, um, useful. So that is something that we are working on, and again, if this is a particular area of interest for you, please feel free to contact me. This is Debbie. (Chuckle.) And, uh, and we'll be happy to fill you in more on what we're doing there.

Sean

Great. Thank you, Debbie and Frank. And the next question from our audience asks, uh, "How soon do you see the standards for various appliances getting revised, and how should these aspects be figured, from starting... from the starting of the program or policy?"

Mia

I think it really depends on, on the countries. Are we talking about test standards, or are we... for various appliances? I guess we're talking about appliance standards. Well, the U.S. has a schedule that, um, is pretty reasonably clear. Um, other countries, the EU in particular, seems to update much faster than the U.S. If you look at Energy Star... And Energy Star also is faster than the U.S. federal test standards.

And in terms of international test procedures, they are... Some them, like the new MOTIS test standard, is being developed, currently, for certain perks because there was a need for a different type of test procedure. And other test standards are developed on their own schedules. So it, it varies considerably, and it varies with need and political will and I guess the will of industry, also, as they call this. So, uh, not, not an easy question to answer. But, um, hopefully, that was of some help.

Sean

Great. Thank you, Mia. And we are running low on time here, so I'd like to move on to our last question. Um, and that question asks if there has been any study conducted, uh, testing the products again, after one of usage, to gauge the variations in the Nameplate rated values?

Frank

I believe there has to be some incremental studies. Not that many. In general, regulated energy performance of a product is defined as at the moment of sale, and not after products have been in use for a while. And from that perspective, these tests are not done so often. I believe there are some incremental studies by the Lawrence Berkeley National Laboratory. I actually don't know what the results of that are. Um, and in many cases, I wouldn't expect much variation in terms of performance. The only product which I know that testing after some time of use is included are some lighting products, where an aging factor is built into the test procedure. But in general, I don't think we have seen many studies looking at performance of the product after a year of usage.

Now it wouldn't be an easy study to use because product performance, as it is defined in a test procedure, is usually tested in a test lab under specific conditions. But defining conditions, for us, "in use" usually means in use in a household or a company, where the test conditions are quite different, so results may also not be that comparable. And it would be quite... It, it might be a complicated, interesting study to, to look at usage after some time of usage, whether it's one year or five years. I'm not even sure.

Debbie

This is also... This is Debbie. This is also a line of research at CLASP, that we've been interested in and looking to a little bit. We have found that there is a study being conducted by the Brazilian government, by Electrograph, in Brazil. Um, and they're looking at the energy efficiency degradation of refrigerators. And it does exist, but I don't remember, off the top of my head, what the percentages are. Um, and I think we may have one or two other studies that we have in mind, but I can't recall what they are. Um, so again, I'd ask for whoever submitted that question, if you can get in touch with me, that would be great. And we can share what resources we do have. There's also been, for lighting—in particular, LED lighting—there's been a lot of testing about the degradation of LEDs, and they hold up pretty well. I'm happy to share more information. I just don't have it on hand.

Sean

Thank you, Debbie. Um, and Mia, I believe you wanted to address one more question. If you want to go ahead and just read that questions, and provide a very brief response to it, as we are running out of time.

Mia

Uh, I think Frank wanted to address a question.

Frank

I, I just saw one question pop up that I think might be interesting for other participants, also. And the question is, “In cases where a country does not have much in terms of S&L policies, how should that country be prioritized for possible introduction of energy policy standards, especially if they don't have local production capacity for most of such technologies? Um, equipment and appliances are mostly imported.” And the question is specifically about Central Asia, also. Although, the answer is probably more generically. It probably helps to start looking at products for which standards and labels and past procedures are already well-defined. It means that international manufacturers, which are also the ones exporting to countries without S&L programs in place, are familiar with the past procedures, the efficiency metrics and standard levels, and can probably manufacture efficient products at a reasonable cost because they have that experience in other economies.

So that's where we want, actually, to look at another one, and certainly not trivial, is the energy demand of various products. It probably makes sense to look which products consume most energy and which products show the largest efficiency improvement potential for the lowest cost. And there are some tools—and CLASP has offered many of those over the years—that really help in assessing this. And I definitely encourage you to look at the CLASP website, look at the various tools available and make use of those to determine which products are the easiest and the most beneficial, to start with, in a given economy. And thank you for the question.

Sean

Thank you, Frank. And we will move on quickly. Again, thank you to the panelist for the, the question-and-answer session and the discussions, and the attendees, for those. We do have a very quick survey for our audience. It's just three quick, multiple choice questions. Heather, if you want to go ahead and display that first question. And the question is, “The webinar content provided me with useful information and insight.” And then the next question, please. “The webinars presenters were effective.” And then our final question is, “Overall, the webinar met my expectations.”

Great. Thank you, very much, for answering our survey. And on behalf of the Clean Energy Solutions Center, I would just like to, again, thank our panelists for joining us today, and for our attendees, for participating in the webinar. Uh, we very much appreciate everyone's time. And, uh, I do invite our attendees to check the solutions center website if you'd like to view the slides and listen to a recording of today's presentations, as well as previously held webinars. Additionally, on there, you can find information on upcoming webinars and other training events. And we are now also posting webinar recordings to the Clean Energy Solutions Center YouTube channel. Please allow a couple days for the audio recording to be posted to the solutions center website and for a couple weeks for it to be uploaded to YouTube.

We also invite you to inform your colleagues and those in your networks about solutions center resources and services, including the no-cost policy

support. With that, I hope everyone has a great rest of your day, and we hope to see you, again, at future Clean Energy Solution Center events. And this concludes our webinar.

Mia

Great. I just wanted to say... If I still have time, I just wanted to say thank you to all of the attendees and for the great questions because we spent, obviously, a long time on this report. And it's only interesting as much as it's interesting to you guys. And you've asked great questions, so that's really great for us. Thank you.

Sean

Great. Thanks, again.

DRAFT