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Efficient Appliances for People & the Planet

Webinar Panel and Q&A Summary

How to Achieve the World's Best MEPS – Americas/Africa/Europe

08 February 2023

The following questions were received during the Q&A portion of CLASP's webinar, How to Achieve the World's Best MEPS – Americas/Africa/Europe. This webinar provided an overview of latest tool "World's Best MEPS", which assesses the stringency of appliance efficiency standards across ten economies. Afterward, a panel of experts in policy and appliances shared their insights on the process of implementing MEPS in their regional contexts.

Panelists for this event included:

- Clara Camarasa, International Energy Agency
- Theo Covary, Unlimited Energy Resources
- Rob Singlehurst, Natural Resources Canada
- Maarten van Werkhoven, TP Adviseurs
- Matt Malinowski, CLASP (host & co-author)

A recording of the event is available on YouTube. The presentation is available on the CLASP website. To receive invitations to future webinars, subscribe to our newsletter.

Panel Q&A

What potential challenges do you foresee in advancing MEPS in the countries you have expertise on / what are tools policymakers can use to overcome those challenges?

Theo
Political will and political understanding of the potential of MEPS is a huge issue. I would imagine it is so around the world, but specifically in the region where I've worked, Africa, people are obsessed with supply-driven solutions to energy access like increasing energy supply to reduce the price of electricity and energy poverty as opposed to energy efficiency.

Rob
Natural Resources Canada is provided the authority to regulate energy-using products under our Efficiency Act. One challenge that we face is really just the sheer market weight of our neighbors to the south. Including Mexico, Canada's just about 8% of the North American market. So, to develop unique regulations is not only an uphill battle in terms of our work as policymakers, but it can lead to testing and administrative burden and potentially reduced availability and choice of products and increased costs for end users.

Now, for many products with global markets, and for which Canada has limited manufacturing capability (e.g., lighting, electronics, and major appliances), we recognize that alignment of regulations with the US is the least burdensome and most practical approach, and we're fortunate

that the US is now rapidly advancing MEPS for many products. This move by this heavyweight will lead to sort of trickle-down improvements irrespective of regulatory action.
Regarding regulatory tools, recent changes to our energy efficiency acts now provide our Minister of Natural Resources with the authority to sign into law amendments to the regulations. This is for the purpose of maintaining alignment, not for new products. The normal product process is certainly much more bureaucratic. So, this tool of ministerial regulations has the potential to really streamline the regulatory process and to minimize or eliminate the time of misalignment.

Natural Resources is making increased use of incorporation by reference, not only to other jurisdictions' regulations directly, but of a new tool, technical standards documents. This is a new instrument that we're piloting such that the regulations reference this technical support document that can be modified outside of a regulatory or government cycle, but still with full stakeholder engagement and consultation. So, this will allow us as regulators to be nimbler.

Maarten
For the first question, I'm focusing on electric motors and motor systems, including air pumps, fans, and compressors. Talking from a European perspective, where MEPS for these products have been in place for a number of years, the most important product is the motors themselves. For these, the benefit is that there is a global standard available, a standard which defines the testing methods and the efficiency classification of the product.

Also, the first MEPS goes back about 10 years. And what you now see is that in a revision cycle, the EU has decided to increase the stringency but also the scope. Showing that the scope is widening to include other products like other types of motors of different sizes. And the second one is the transition from product-only to the entire unit. So, not only the pump itself but the motor, the VSD, and the pump in one metric and in one MEPS.

I think every MEPS in the world has something like a 5-year revision cycle, and the good news for EU is that with this step, which has had some delays, still brings further energy savings for the EU and countries which do not have yet MEPS in place. They can take EU, China, or US MEPS as a model and benefit off the experiences gained within these regions. MEPS has a main set of elements being market knowledge. What does the market look like in a specific country? But the backbone of MEPS is the availability of global applicable standards and a mechanism for monitoring verification and enforcement. And each country has to decide themselves how to set them.

But there we have the information (model regulations) set by U4E which defines a guide for governments and all the NGOs working on MEPS as a start.

Clara
I'll share my experience from the Latin America region. We're now in the process of what we call the Latin America SEAD pathway, which is trying to, within the Call to Action make sure that we support countries in the region to achieve this doubling of efficiency of sold products for four appliance categories (refrigerators, fans, ACs and electric motor systems). Within that, and based on a very long process discussing with the number of countries in Latin America, one of the key findings and common challenges as pointed out by the policymakers and other stakeholders involved in the process when it comes to advancing MEPS for these selected products would be the lack of market data to explain both the benefits of more efficient products the viability of

promoting them via MEPS and labeling.

When we talk particularly about regional harmonization, one of the key challenges would be the lack of sustainable business models to ensure long-lasting test lab facilities. This would require mutual recognition or agreements to take place, as well as other enabling policy framework or regulation. Some countries argued that they would not have test labs outside the region due to the regulation, and therefore regional harmonization might be challenging.

As part of the second question, the tools that policymakers can use to overcome these challenges, I would highlight systematic market data collection to ensure an up-to-date understanding of MEPS and how are these being implemented in the market: making sure that these MEPS are also accompanied by labels and actually enforced, as far as market data can tell us, and an effective timely revision through solid market tracking.

Other information that we've seen to be very useful is efficiency versus retail price and making sure that the market understands what's really happening. For instance, in most if not all markets that we've studied, you can purchase a more efficient appliance for the same price as a less efficient one. So that's information that would be very helpful for governments to collect in order to support and revise their own MEPS.

Another important tool is setting product-specific goals, objectives, and pathways. So really making sure that they do have that on the national level and even on an international level in case they're exporters of these products.

All stakeholders should participate in the design implementation, revision, and monitoring process. This is crucial, particularly in the case of a regional harmonization. So, 1) making sure that everybody's working towards the same goal that is based on a product-specific goal that has been set previously, 2) alignment of test procedures for energy performance with international protocols, 3) if not already in existence, the creation of a regional registration system for all products and appliances in the market, and 4) making sure that MEPS is not the only policy instrument that is present in the market.

I know today, we're focusing mostly on MEPS; they're important. They are maybe the most relevant or the strongest tool, but they should be accompanied by a policy package, including incentives, information, instruments, etc. in order to raise awareness for consumers, for installers, and motivation for manufacturers and retailers. Within the IEA, we developed the energy efficiency policy package for appliances which condenses this understanding of making MEPS one of the most important tools. But make sure that there's a bundle of other policy instruments that really strengthen the power of MEPS.

Theo
I would also say that government needs to be a little bit bolder. Often, they're too accommodating to the private sector's requests. Now, I'm not suggesting that they should be destructive in the sense of impacting local manufacturing, but when there's a clear-cut case that there will be a net benefit to the economy and it's proven through research, and there's one or two members in the private sector who are objecting to it for profit motives... well, it's my experience that government often rolls over, gives them the benefit of the doubt, we lose another year, and they just keep

kicking the can down the road. I've got countless examples from South Africa where this is the case. And it's just not helping. We've got 6 to 8 hours of outages a day, and I'm not suggesting that our MEPS would have stopped that, but they certainly would have helped if they were implemented when the program wanted them to be.
In South Africa, people typically had 150-liter electric water heaters, which are grossly inefficient. The standing energy losses were around 2.5 kWh per day. It's all local manufacturing for these types of low-technology, large units that you can't really import because they're easy to make. We wanted to drop that [maximum] to around 1.4 kWh, and the local industry fought us tooth and nail. Then for some reason, someone in government decided to go ahead with it, and it was fine — industry adjusted, and water heaters are our biggest contributor to electricity savings in the entire program. Whereas now, we're trying to introduce MEPS for electric motors. We want to go straight to IE3. There's an established value supply chain. These are accessible. 80% of the market wants it to go to IE3. And we've got one or two small companies objecting and it's stalling us. The same thing with general service lamps. These have been sitting on the minister's desk for 3 years because the European suppliers claimed that Africa's not ready for this type of technology, citing concerns around affordability and energy security, which is nonsense. I think sometimes government needs to be bold and call the bluff, especially when they're backed by credible research.

Is there any product category that you think a particular economy should prioritize when advancing their MEPS? Or enabling specific actions that will help improve the overall process?

Clara
In general, focusing on appliances for space [heating] and cooling seems like a large logical step. According to IEA estimates, almost half of the energy demand for buildings probably was used for space and water heating in 2021. And within the space heating and cooling technologies, heat pumps are increasingly recognized as a critical cornerstone technology for heat decarbonization. So, it seems like a product category that should be receiving increasing policy support and prioritization in many regions, particularly in Europe and the US.

I also have to mention then in the Call to Action that has been mentioned several times now, we identified industrial motor systems, refrigerators, lighting as product categories that should be prioritized globally, as together, they account for approximately 40% of the global electricity consumption.

In Latin America, and I know this is not particularly related to MEPS, there are other policy actions that need to be prioritized, like the transition to clean cooking. Latin America has been kind of a testing ground for policies and approaches toward clean cooking and a range of different approaches and actions have been tried in different countries with very different results because it's a very heterogeneous region.

Policies that can support this transition to clean cooking and complement MEPS would be a ban on non-clean cooking options, such as firewood or charcoal, in parallel to developing procurement models and finding mechanisms. This could be a subsidy to pay for energy-efficient clean cooking appliances in segments with more issues of affordability — this has already been proven to be effective in the region.

So once again, highlighting not only the importance of MEPS, but also the importance of creating a

bundle of policy instruments that accompany them in order to really make the right transition in the market.

Theo
It's a quite different approach if you go for the residential sector, e.g., ovens, laundry, water heaters, versus the industrial sector, where you're going after electric motors, chillers, etc. They require quite different competencies. And often these program teams are underfunded. You don't have the time to go between the two sectors, so it's quite important to be strategic about how you implement and being able to broaden the scope. The National Cleaner Production Centre was running industrial energy efficiency under the radar. It was very successful, huge savings, working with companies, and all of that sort of thing. But that was voluntary without the MEPS. It would have been great if that program could have had the ability to introduce MEPS for some of these products.

On the other side, where I've been more involved, is the residential sector. So, once you start getting involved in a household, one appliance just follows another. You start with the ones: laundry, dishwashers, AC, water heaters, refrigeration, etc. And then we did a study to identify the next set of appliances. And the brief to the consultant was "Go and find the ones that will give us the biggest savings," which means they have a high penetration rate and a high usage rate.

Also, there are products that have programs that been implemented around the world. So, we can learn from them that we don't have issues around importing those kinds of products. We don't want to break new ground, right? We just want to align because that'll give us a greater push.

What's often overlooked is a review of standards because that's almost like introducing a new standard. We introduced our refrigerator MEPS in 2015. It's now 2022. We've far outlived the usefulness. So, if we introduced updated standards to refrigerators, the process would be almost like introducing new MEPS to another product. But we already know we'd get bigger savings because of refrigeration and the role it plays in people's lives.

Maarten
Some data from the IEA shows that in terms of electricity use worldwide, between 40 and 50% is from electrically driven motor systems, so it makes very good sense to start including them in your policies. And then depending on the country, you can make other supporting choices for other products, like chillers, cooling units, and ventilation units. Within the EU, all motors, including embedded motors in other products, are governed by one MEPS that can directly grasp a large portion of the market.

In every country, you do have to have some knowledge of what the market actually looks like. And it's a risk, of course, that a lot of time will pass before you know. You have to level between deep knowledge and making progress in the short term.

Especially talking about motors and the verification and enforcement aspects, you do have to have this testing standard. That's just the basis. But then the testing capacity within countries really depends on if there are national facilities available or not. You can also think of sharing knowledge of the actual test results on a broader scale. This is being done within the EU itself. Depending on the type of regulation you choose, the biggest burden is placed on the manufacturers and/or it's brought to the government agency who then has to take care of everything. So, my plea here would

be that any country interested in developing MEPS really make use of the experience of countries that already have MEPS in place.

Rob
Changes to Canada's regulatory process that I mentioned previously will facilitate and accelerate the alignment of Canada's regulations with other jurisdictions for lighting, electronics, and appliances. Once fully implemented, these tools will provide us with additional capacity to address fossil fuel space heating, which is our biggest target. Natural Resources has a pretty aggressive mandate to phase down the use of fossil fuels for heating, so we'll need that added bandwidth provided by those tools to really get creative. We need to continue pushing electrical efficiency, which provides the needed grid capacity to support the mass electrification of heating and transportation.

We've aligned the testing procedure and MEPS for heat pumps with the US, but with a specific Canadian deviation to require them to be tested at -15 degrees, to ensure they're appropriate for Canada's operating conditions.

Regulations have typically been used to remove the worst performers from the market which primarily affects manufacturers. Labeling helps to inform decision-making by consumers. But we as regulators must figure out how to nudge behavior so that manufacturers change not because of our sticks but to meet market demand.

Economies need to address their largest emitters. For Canada, that's heating. This is really the most practical approach, and if politicians present good data to rationalize this approach, they should have some political coverage from the storm.

Audience Q&A

You mentioned the importance of using a seasonal energy performance metric for air conditioners. Are there some climates where that is really not necessary and EER will suffice?

Rob
Canada's heating dominated, so for air conditioning, we align with the US where cooling dominates and there's great incentive for them to improve the stringency of those MEPS. We defer to those warmer countries' standards to really push the envelope on our own. Most of the time in most areas in Canada, we can get by without air conditioning. We're happy to adopt those more stringent standards no matter the metric.

Theo
In South Africa, we've got a low penetration of air conditioners. It's growing, but as with Canada, our peak electricity demand period is during winter for 2 months. It doesn't get as cold as Canada, but typically there hasn't been much air conditioning around here, and we use the old metric. But what I'm noticing now is more and more influence from international partners and donors to standardize to a seasonal approach. So, in terms of standardization, it's useful.

Clara
We always recommend converging into a seasonal metric because it is more accurate. It also enables comparison across different regions. The appliance market is a global market. So as much as possible, we should make efforts to identify common units and metrics for comparison.

Harmonized seasonal metric also highlight the operational efficiency of inverters in the case of split ACs, for instance. That's something that only the seasonal metric would be able to support.

Matt: We've seen many economies that had previously used EER that are hot or hotter than most switching to CSPF or SEER. In the US, both metrics are in use. There is a seasonal metric and an EER in some of the climates. Perhaps if there is a need to be able to highlight both metrics, that's an option.

How do we best make the results of the World's Best MEPS analysis salient in decision making? Is it really "ammunition" for energy efficiency advocates? Is it a tool for government officials to refer to directly? Is it valuable for their consultants?

Maarten
The document gives very practical information on the status of MEPS worldwide for these important products. I think, is very valuable. Condensed information like this always leads to more questions, but I think, as a starting point, it gives a very good overview.

Theo
It's a very, very useful resource when needed. When research is being done or government is thinking about instituting MEPS, it's always useful to have a comparison. I know when we do our techno-economic analyses, there's always a request for case studies beyond the EU because it's not really relevant to South Africa. We've got very different GDPs, climates, population density, etc. It also puts you in context on the global map. Regarding those two antagonistic companies I spoke about earlier, they said, "Well, these MEPS don't exist." Then you put the map up and they have to keep quiet because what they're saying is simply not true, and you've got evidence.

And, as exciting as MEPS is for all of us, most people in the mainstream aren't that interested. It's certainly not going to compete with the latest iPhone model or what Tesla is doing tomorrow. We're just not going to get that kind of traction. What's important is if that information is available when you need it. When you need it, is it accessible? Is it available? Is it reliable? What we need is to have it available when we need it so that we can defend positions and make evidence-based decision making.

Clara
It brings a very necessary view on MEPS. If countries are looking to improve, increase the stringency of, or revise their MEPS, what's typically done is a domestic national study and if at best, compare that to neighbors. But that exercise does not necessarily include the global vision of the best in class. And that comparison is really useful to see. Where's the bar? Where should we be heading? Including countries, big manufacturers, such as China, in this analysis is definitely very useful, because it does bring the perspective of what people are actually producing in-house versus what they export. And if they export, that makes, on some occasions, the bulk of the global markets. We don't know when each of the countries will need this, but it's really useful that it's there. Whenever there are conversations with different governments, different countries, or

even on a more regional level, this is definitely a very useful tool to present and say, "Well, this is where you are. But let's not only stay at what we can improve within our baseline, but really try to try to compare this with the global trends of what the best in class are doing."

Rob
As a representative of the Government of Canada I can say that certainly this is very useful. We often work under the shadow of the US and what they're doing. This provides a great insight into the more global marketplace, where things are, best approaches, and some great suggestions and recommendations. Some affirm that we're on the right track, and some affirm that we've got more work to do in certain product areas.

Is there something that could be done for smaller economies? So, can we actively support the benchmarking of MEPS across individual governments that may feel these goals are too ambitious?

Rob
Economies with less stringent MEPS often lack the political will, to echo Theo's note. Economies that have robust regulatory processes and mature supply chains of compliant products could reasonably quickly and easily adopt more stringent MEPS. An assessment for regional impacts would need to be done. That, said, I do appreciate that I'm speaking from a pretty comfortable home in Canada and have limited knowledge of some of the smaller economies that face these challenges.

Perhaps those economies with most stringent MEPS should look outside of their borders with their analyses, more globally into product design and supply chains and consider negotiating maybe more flexibility within their own jurisdiction to achieve greater effects across all jurisdictions and take a bigger look at the process and what will benefit not only their own citizens but this global effort of mitigating climate change and adapting to it.

Theo
From a developing world perspective, often these countries are not wealthy, and I think the first big step is to ban the importation of used appliances and goods. I know sometimes you can't buy an appliance, so when one is given to you for free, it seems like a good deal, but if you speak to our friends in Ghana, it's a huge problem.

In South Africa, it's less so because there is a manufacturing base and many years ago under apartheid and the closed economy, imports for used products wasn't allowed. So, we don't really get them, though they're starting to creep in. That's a good starting point for those economies because a lot of junk is coming in from the EU, from the Middle East and Japan, especially vehicles. And they don't have a long life, they use a lot of electricity, and then they're just going to dump them there. The refrigerants are released in a reckless way. So that would be a good starting point.

The developed world should ban the export of these products. They should take care of their own products in their own ways.

Clara
I very much agree with that point that Theo just made. Electric and electronic waste is the fastest

growing waste in many countries in the world. And when it comes to appliances or products like refrigerators, it is indeed more critical, given the hazardous gasses that come out of them if they're mismanaged in the value chain process. It's definitely a very important point to include within any policy advice when it comes to appliances and increasing product efficiency. In as much as we want to increase product efficiency, we need to make sure that we properly manage waste nationally and internationally.

You mentioned 279 kWh goal for refrigerators, for a small economy which currently does not have MEPS which measures could be taken for the introduction to be less steep?

Theo
I don't know what size those refrigerators are, but I think that's a huge consideration. Sometimes people by the wrong size refrigerator, so buying a very efficient large refrigerator is not as good as buying a less efficient, right-sized refrigerator.

Maarten
If I look at the number of 279, if I am correct, this is used as a reference to compare the level of the different MEPS, and not so much as a target for any fridge in any country. Depending on the size, you have a different yearly energy use even if you have a very efficient fridge. At least in the EU, it's also accompanied by a labeling scheme, making it easy for the consumer to assess the actual efficiency of fridge. Then second comes the yearly energy use. So, I wouldn't take the 279 as a benchmark for all fridges.

Why are commercial refrigerators/freezers and their MEPS not mentioned in the analysis?

Matt
Of course, that is a major category. From our perspective, they are very difficult to compare across economies, as there are many different product definitions. Sometimes even the size of products can't be compared across economies because some look at the linear frontage, some look at the area.

Wouldn't it be more helpful for consumers to make the right choice when purchasing appliances if MEPS were expressed in terms of annual energy cost?

Theo
There is an opportunity to do some of the nudge stuff and position appliances like “This refrigerator takes you toward what the goal is.” We should give it a bit of a different slant because our research has shown that often in South Africa people look at the energy label, but they don't go further than looking at “A” or “B”. They don't look at more of the detail to do a proper comparison and think, “if it's an A well, that's good enough,” even though “A” may be the [minimum] with our old triple pluses. It would be good to push consumers in a direction that's easy to follow.

I think the best we can do is have good MEPS that are updated regularly and do some of the decision-making for the consumer, because when they got out into a store to buy whatever it is they're buying, they could be looking at other features that serve their needs and forget about kilowatt-hours. MEPS are there to protect consumers from their lack of knowledge and interest.