

Murat Mirata	IIP
Ernst Worrell	Utrecht University
Jeff Sautin	Lafarge
Arvind Thekdi	E3M

Heather I'm Heather Stafford with Confluence Communications. Welcome to today's webinar hosted by the Clean Energy Solutions Center. We are fortunate to have a terrific panel of speakers today, who will be covering the topic of, "How to arrive at free-throw in information on Industrial energy efficiency between governments, industry and the financial sectors."

One important note I'll mention before we began our information is that, the Clean Energy Solutions Center does not endorse or recommends specific products or services. Information provided in this webinar is featured in the Solutions Center resource library as one of many best practices, resources reviewed and selected by technical experts.

Before we begin, and a note that in a few moments, Vickie Healey from National Renewable Energy Laboratory will be taking over from me. So, she might jump in any moment.

But, before we begin, I'll quickly go over some of the webinar features. For audio, you have two options—you may either listen to your computer or over your telephones. If you choose to listen to your computer, please select the mic in speakers' option in the audio pane. By doing so, we will eliminate the possibility of feedback in and echo. If you select the telephone option, a box in the right side will display the telephone number and audio pane you should use to dial in.

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If you would like to ask a question—we ask that you use the question's pane, where you might type in your question. If you're having difficulty viewing the material to the webinar photo, you will find PDF copies to the presentations at cleanenergysolutions.org/training—and you may follow allowing to your speakers present. Also in audio recording and the presentations will be posted to the Solutions Center training page within a few weeks.

We have an exciting agenda for you, prepared for you today that is focused on the topic of, “How to allow the free flow of information on industrial energy efficiency between government, industry and the financial sectors.”

As you can see, we have an impressive group of panelist presenting on this topic. Before our speakers begin their presentations, I will provide a short informative overview of the Clean Energy Solutions initiative. Following the presentation, we will have a question and answer session and wrap up with discussion and closing remarks. Let me take a moment here—it sounds like Vickie Healey has joined us. Vickie, are you there?

Vickie Healey

Yes, I’m sorry, I am here.

Heather

Super, would you like to take over?

Vickie Healey

Okay, actually could you continue Heather? Thank you.

Heather

Sure, absolutely.

Vickie Healey

Okay, more background. This slide provides a bit of background in terms of how the Solutions Center came to thee. The Solutions Center is an initiative of the Clean Energy Ministerial and then supported through a partnership with UN-Energy. We’ve launched in April of 2011 and it’s primarily lead by Australia, the United States and other CEM partners.

Outcome with this unique partnership includes support of developing countries through enhancement of resources and policies related the energy access, no cost expert policies assistance and peer-to-peer learning and training tool such as the webinar you are attending today.

The Solutions Center has brought four primarily goals:

- It serves as a clearing house of energy, clean energy policy resources.
- It also serves to share best policies, practices, data and analysis tools specific to clean energy policies and programs.
- The Solutions Center delivers dynamic services that enables expert assistance, learning and peer-to-peer sharing of experiences.
- And lastly, the center of foster’s dialogue in emerging policy issues and innovation around the globe.

Our primary audience is energy policymakers and analysts from government and technical organizations in all country. But, we also strive to engage with the private sector, NGO’s and civil society. A mark feature that the Solutions Center provides is expert policy assistance; “Ask an Expert” is a valuable service offered to the Solutions Center.

We have established a broad team of over 30 experts from around the globe who are available to provide remote policy assistance advice and analysis to all countries at no cost. For example, in the area of building efficiency, we have Cesar Trevino, president of the Mexico Green Building Council.

If you need your policy assistance on building efficiency or any other clean energy sectors, we welcome and encourage you to use this useful service. Again, this assistance is provided free of charge and to request assistance—you need to make your request by registering through the “Ask an Expert feature at cleanenergysolutions.org/expert.

We also invite you to spread the word about this service to those new networks and organizations. Some broad sectors covered by our experts include:

- Energy access
- Energy efficiency
- Renewable energy
- Smart grid, micro grid
- Clean transportation and regulation
- And utilities.

We encourage you to explore and take advantage of the Solutions Center resources and services—including the expert policy assistance. Subscribe to our newsletter and participate in webinars.

Now, I would like to provide brief introductions to our distinguished panelists. First up is, “Murat Mirata”. Apologies if I mispronounce your name—who is technical manager Institute for Industrial Productivity.

Next up would be Arvind Thekdi, who’s president of E3M—and then, Jeff Sautin, Energy Efficiency Consultant and Plumber, senior Manager at Lafarge. And lastly, Ernst Worrell—Energy and Resources Professor at Utrecht University.

And we’re going to start with Murat Mirata. Murat, over to you.

Vickie Healey

Hi and got technically—I’m sorry, excuse—this is Vickie Healey. I would like to remind our speakers to mute your device system while you’re not presenting. So, with that—Murat, uh, welcome.

Murat Mirata

Thank you Heather. Thank you Vickie and thank you to every—all the audience who’s tuned in. I just would like to say a couple of minutes to set

the foundation for the list of the speakers before I come back and tell me a bit more about some of the initiatives of IIP.

The concept of energy efficiency gap over the last several decades, the Industry Energy Efficiency has been improved significantly. However, credible studies still indicate that there's still a significant energy efficiency gap.

In other words, there's still a size about potential to improve energy efficiency cost effectively with the widespread of optional proven technologies. A study by the Intermission Energy Agency from 2011-2012 sorry estimates that potential to be over 25 extra joules—which corresponds to that 20% of the current industrial energies.

Yet, a number of days to energy efficiency wide is a proven potential is not been, is not been harvested. And this is a complex set of rather interconnected eh, effect uh barriers. And, this are rooted in issues related to the interest and priorities of industry managers through the existence and effective of relevant post elements to the difficulties in excess and necessary finance—and to the length of relevant and reliable information which is the core focus of our webinar today.

The information—the importance of information is highlighted and acted upon by a number of organizations including the Institute for Industrial Productivity who's acting over a document improving the accessibility of this practice information.

In today's webinar, we are going to elaborate the forms of impact of information related barriers and discuss alternative ways of overcoming these barriers. When, when you look at the information issues from an uh, industrial perspective—the lack of reliable and relevant information can hinder the investment in energy efficiency to measures by limiting the capabilities of decision-makers.

And this can be in the form of limiting their capabilities of understanding difference situation.

And this can be in terms of energy used as well as improve potentials.

It can limit their opportunities to identify applicable options for their context.

It can limit their capabilities for assessing the feasibility of these options in terms of imaging and cross effectiveness. And the stuff related to the concept of information asymmetry meaning that they might be some other parties out there who held this information but their information does not effectively and efficient with all the industry decision makers.

And the last point would be assessing the performance of measures after being implementing eh, which is of course important to trace and monitor the progress of any more actions, uh, actions taken.

Before Heather—I would like to give the rope to Arvind, who is going to tell us a little bit more eh how the information challenges are being faced by the small and mediums sized eh, companies practically in the developing world. And with that ended, I would like to hand over the control back to you.

Heather Thank you. We are up and headed for Arvind slides. One moment please, there we go. Arvind Thekdi, off to you.

Arvind Thekdi Good morning. Good morning, I would like to give you a little bit information on this, the benchmarking and best practices information for SMEs and industries in developing countries.

Next slide, next please. The big question that really comes up is, “What is benchmarking?” And benchmarking has been reported in many different ways. But basically, it process of studying the comparative practices or industrial practices—now, finding the ways to pull the practices.

Specifically for SMEs is identifying the best practices and improving the performance of the organization uh, which already find the benchmarking is defined. It involves developing standards, and operating procedures—so that we can measure, monitor and modify the performance while we are complying with the regulatory requirements.

Benchmarking issues have been discussed in great detail that will all, Ernst will also, will address this issue in he’s upcoming presentation. Next slide please.

So, where does the benchmarking stays right now? As far as the lot industries are concerned, uh, they’re gonna put you up. We see benchmarking going on and being applied worldwide with developing countries or developed countries for large industries, sectors aluminum chemical processes, cement, petroleum refineries, so on and so forth.

Large amount of effort has been done with a bit of well established industries and large industries. Iron and steel industry is starting to work on their also. However, as far as the SMEs are concerned—the effort has been very fragmented and mostly emanate Arvind in he’s presentation.

The efforts which are being made by large industries are not easily accessible. The industry tends to keep this thing pretty confidential if you want to call it. And sometime they’re not available or applicable to SMEs. Particularly, countries like India and China—the information sources is not that easy available. Next slide please. Next please, yeah.

So, what are the information sources that people use for benchmarking? One of a few sources out, you can classify them into two categories. One is what we call, “Conventional Sources” which is:

Talking to people, having information exchange with colleagues, industry conferences and gathering. And there are major more of communications on benchmarking in the 20 years or 25 years ago or so.

Then, there are industry conferences and the suppliers and vendors will give you the information, consultants.

Obviously, there are magazine articles.

Industry and organizations have paid a good role uhm, steel industry, petroleum industry, so on and so forth.

And then finally, they go them in such as USBOER, ERV, uh, in India the EE and those kinds of organizations are giving you these information.

However, things have changed a lot during the last 5, 10 years. Even in 5 years or so. And thus, the “emerging resources” so. The web-based group that people have. These and there are different types of web-based group. Webinars such as this and webcast. And obviously, there is the social media which is in many different forms which gives [inaudible 00:14:04]. Next please.

Many of the sources that are not uh, are easily accessible in terms of I’m talking about information sources—I’m not talking about information per se. But people in China, India anywhere, in any corner of the country could access many of these energy resources. The problem is “the lot of information.” And sometime, it’s very difficult to figure out which one is right, which one is correct, which one is reliable.

There is whether the quality control that you want to look at this way. This information needs to be valued at; it has to be carefully applied. One just cannot get a piece of information work in all of these piece of risk call it “rumor” and start up applying them.

So, it’s very important to establish the accurate and verified, and trustworthy information. International organizations such as IIP, can play a pretty good role in collecting this information from whatever source they could get. Evaluating, this information and then finally disseminating the information which is “Having controlled very carefully in terms of in terms of its quality.”

And, the quality control is extremely important because the more widespread the social media if you want to call it is being used people can give any kind of information they think is right in their mind which may or may not be the actual fact. Next slide please.

So, as far as SMEs are concerned, it is important because there are so many small industries—there are so many people working in there. And each one of them, they have their own opinions, their own experience and they may be true for their own situation but may not be necessarily be true for the industry genre.

There are so many different place of SMEs which we have found way working in a countries like India, China and South America, Africa—using called, “Small to medium-sized countries, food and beverage industries, metal industry, plastic industry, so on and so forth.”

India some of the organizations such as Bureau of Energy Efficiency, BEE and UNIDO are cooperating to do the benchmarking for SMEs and that’s a good thing to do. In China, there are several organizations standard institutes and Energy Foundation, IIP and other Chinese government organizations which are cooperating and trying level up the benchmarking for all kinds of industries like SMS, SME’s.

This will give the best practices for SME’s and eventually help in establishing standard processes for benchmarking. Next slide please. So, what are the problems? You know, why isn’t everybody just jumping in and trying to establish a very good source of information or very good members of benchmarking?

But, first—there is no clear definition of the word “Benchmarking.” People have been using it very loosely. They know one definition where the industry, the financial people, the government people, and the different organizations agree on. Either people talk about energy benchmarking and management benchmarking, financial benchmarking, so on and so forth—so that needs it clearly be defined. That’s another big barrier there. Then, on obviously the accepted practices and methodology for measurement and reporting the benchmark.

We could so, this is a benchmark but we need more exactly uhm, what methodology is. Why the variation in products, the lack of reliable best practices, information? Limited experience, of use of modern or social media to compile and widely disseminate this information.

People have done a good job of using the so called, “conversional media.” But, social media that maybe because of the hesitation of people to go on and broadcast their situation to the world without any control of who and where they see the information.

So, there is a—in my mind, there is a traffic, a need of traffic police uhm, oversight the quality control of the information. So, the information is just for the reliable. Next slide please. What could we do? What are the potential strategies there? And there are many, many strategies that people have this “trust in the past.” This is just a summary of what I have seen.

The first thing we need to do is to have a clear definition and understanding of benchmark. And what is this called the scope for SME's? As many in fact, as many areas on manufacturing cells as possible. Then develop and use the useable tools or methodology for benchmarking.

So, people just go on and go on their own way in who will be sure what they like and report a number. Confidentiality concerns need to be consent. Look back, if people will say, "If I give away my information—my competitors are gonna use it so on and so forth."

So it hasn't been lead by industry-based efforts preferably having some sort of international cooperation so that different countries and industries in different countries will develop the same methodology and reporting procedure.

Commonly an easy understandable format was "presentation." A lot of applied could have estimate ... in a lot of conditional statement that if this is the case that this benchmarking member—so on and so forth. That will needs to be clearly understood.

And finally, a very well-organized information dissemination—we can get the information. But, again it has to disseminated properly in proper format, and with proper quality control. A social media is now that it could be used beneficially. But once again, it should be used in the controlled fashion.

And hopefully, the necessary established new organization but we can use one or more internationally recognized in just the organization for the information dissemination. Some of this thing could duplicate by Dr. Ernst Worrell also.

But basic messages that we need to come up with a method of developing definitions, procedures and reporting them so that people can trust it and use it for their benefit. Next slide please. Okay, thank you. Jeff can take over from here.

Jeff Sautin

Okay, thank you Arvind.

Arvind Thekdi

Thanks.

Jeff Sautin

So in my set let's go to the synopsis slide please. Okay, in my, in my presentation clearly it's a follow-up on Arvind's presentation on Benchmarking which is a very significant process that was getting awareness and getting interaction.

I'm trying to show my experience—an experience I've gained working for a very large international industrial player in the cement called the Lafarge group—which has implemented internally many of the steps recommended by Arvind. What it's saying would echo some, what has

been said so far—I think it's inevitable. But, I think it shows more in the context the operational group how it works.

Here's the common thread to my presentation, basically, when you try to move from knowledge to action—it has to be a collective effort. It requires strong will. It requires discipline and I think we should never forget that it takes time because things you know, take time to implement.

So, if you go to the first slide—what I wanted to show in this slide is that the complexity is always pursuing. I think that we have to look at it in the standpoint of the things that confronted with the desire to the progress. We have many things that genuinely interested in changing the situation was regard to energy efficiency or similar things. And basically they want to get very tangible results for their company or you know, for whatever ultimate motives that they have.

There are technical and there are technological complexities and they are different. There are team and people complexities. We're gonna start a little further. There's a need for clear focus on what needs to be done. You cannot, you cannot pursue uh, too many targets at the same time.

And there's also some steps to show require to motivate the decision makers. You may see the things that you want to change but you have to motivate the decision makers and so, where does one start is—is really a question. I'd like around that to give a very simple example that leads through recently which is the most start-up company trying to propose to industrial operations to waste heat as it called sometimes into electricity using an organic ranking cycle.

In other words, this is a pretty general solution you get a fatal heat or waste through a heat exchanger. And then you have a turbine and you make electricity. And obviously you apply that to the cement sector or to the glass industry and so, it's generic solution offered to somewhat similar called, “processes.”

Actually, there are quite significant difficulties in doing that because for example, I will talk about the cement process. The process of heat exchange is very critical to the efficiency of the overall project. You are tapping, you are putting your heat exchanger in the stream of gasses that are arriving with dust—sometimes it's tikki dust. And the efficiency of your heat exchanger could be affected by that.

So, it is not as trivial as it is sounded at first. And no one, you know, you can look at it at a general stand point—but you have to look at it in a very local and practical stand point in a given plant at a given time in the history of that plant. Let's go to the next slide please.

So, let's spend a little bit of time on the Lafarge example. Lafarge is well-leading in construction materials. Today it operates over a hundred and fifty some of the plants around the world in the very, very different

geographies of the five continents. Very early on, in 1990 also, the group created what was called, “The Cement-Know-How-Center” which is a device for internal benchmarking.

It’s very interesting to think that in 1988, there were two managers in Paris operating an, an apple laser computer. I’m sure a few of you would remember what an Apple Laser is, but it is a very, very primitive computer that. You know in those days, you didn’t have the internet. You didn’t have the, the facilities—the IT facilities that we are all enjoying today.

So, it was—it was already interesting to see that large groups have joined on the information age to improve uh, their, their management of operational information. Why—because it makes a big difference. When you are a cement maker, when you are steel maker, uh, there’s a lot of uh, things that go always what is minute performance improvements that you can read through you know fight during process

And find during the process is indeed the first result of benchmarking. Today, a group of Lafarge having a hundred and fifty seven plants or more, tracks probably over 200 parameters in a mostly basis. It is done of course through internet very efficiently.

And basically, there are the challenges to extract meaning from this uh, enormous amount of information. So, the group have learn to give love uh, different what we called “indexes” which is a standardized index like things like looking at the chemistry of make sure the uniformity of the mix as you’re working at them.

We’re looking at maintenance uh indexes that will taken to account the different size and capacities of your plans. And all that allows to analyze difficult relations between your parameters and you can look at it over a period of time and you can really extract a lot of intelligence from the analysis of your data.

Just gives something very concrete, very important parameter when your operator continuous fired process like cement is you know the “operating time.” Ideally, you would want a cement kiln to want 100% of the time between major maintenance.

So, one of the parameters will be uh, the operating time. Is it 100%? Is it 95%? Is it 80%? But, you can sophisticate that by saying, “Well, not only that but how many short starts do we have?” Do we have a series of short shut downs—or do we have significant breakage that gives you long shutdowns? And again, it would mean a lot of intelligence about your process by doing that.

So, to do that—you have not a sort of point of this transparency, you have to really have a big log—the clear definitions and standards and studies. And ensure the best we could applied. I think that Arvind was mentioning

that earlier. There's no benchmarking, it was very clearest of definitions and stand-ons.

It is interesting to analyze jointly the technical and economic values. Finally, we need to centralize analysis. Most of all, if you would like your operations because you won't to use emulation between the operating plants and you could reward those that through the game of benchmarking coupling.

In Lafarge for example, we, we had like uh, uh, a prize for the best case every year that would allow one plant to team to go visit another plant and you know with a little bit of visual benchmarking so to speak between the plants.

And to finish with this—I'll talk about the outcome of all these benchmark. For example, full the wheel, maybe in early 1992—Lafarge set itself ago, reducing 3 or 2 by 20% The five that we have developed internal benchmark experience uh, allow Lafarge to take us significant more ways in our world players in cement can read the methods formation letters here to emissions.

Again, this is not trivial. You have to agree with the protocol that is rigorous that can be audited, that can be verified. And in the end, this is the only way to progress and Lafarge wasn't been able to meet its target of 20% reduction in 3 or 2 over a 20-year period.

So, maybe we can move on to the next transparency. My title is, "The making progress from knowledge." But, in fact I could have said, "Translating knowledge into action" which is really a little point of this transparency.

I think there the key point is that it is a collegial class. It could spell one individual somewhere in the planet looking at the internet who can on its own—his or her find the way to uh, translate knowledge into, into progress—or translate knowledge into action.

You, you have, you know science and engineering won't give you some goals and they helped define you know what is feasible, what is the limit where you can go. If you want to talk to technology suppliers, they have the options and solutions. It may or it may not be the [inaudible 00:32:43]. It may or it may not be total optimized but there are very good source of knowledge and understanding to translate into action.

It is very important to involve the local practitioners to know the constraints of their sides. There are specific things nurture some plants with exactly what you chose and if you do not involve them, chances are that you will not get an optimized solution.

I think it's important also to say that you know you know, "At some point, you will need capital." And, and so, it's going to be dependent on

resources—so you need the connectors, the leadership of the group to make sure that you know, that what you pursue makes sense and that has to be done properly.

And again, reaching out for financial support is another set of issues of making progress. I think that the second point is that uh, we, we need, need to-to balance short or long term visions. It is important that you demonstrate locally that you have a good mastery of your process as it is.

If you want to succeed in the steps of [inaudible 00:34:02]. Thinking that putting a new technology is you know, totally gonna solve your problem is irrelevant, if you do not master the operation of your plant because it's, it's you know—the new technology may not work better than the previous one.

I think that the next presenter will talk about Kaizen and, and it's very important—getting the credibility locally by showing that you go to the limit of efficiencies that your process of your getting process may also—and then embark into the more uh, capital intensive types of equipments.

And finally, make sure that when you do that—you have well-structure than any of these projects because all is stakes. This is a matter sources. So, let's go to the next slide. Okay, so now, we, we, have to reach out to reach out to expertise and know-how. There is a good in internet information—in fact, it's almost overwhelming.

So, it is, it's been said in the previous presentation, “It is very important to maintain the critical eye and also an open-minded eye because behind all that uh, there are aspects of you know, innovations that, that are learning—and once you're not limit itself to client and existing solutions, it should also look into what's going on out there and other innovative steps that we should keep an eye on because at some point, that may be very critical for progress.”

The second is, internal company—why the information is very strong? In the end, assuming that you can collected unbiased and, and there's a good rigor—but again, even in a large group, you can still benefit from outside sources and it's important you know—to always be inquisitive and curious about what's going on out there.

And finally, of things very importantly to remind ourselves that, “industry associations there are areas where—you know, let's say the people who operate the same processes can get uh, the encouragement and, and again, the make sure that—that the key developments are properly put out and implemented.”

The industry associations may also be a partner to work with the regulatory bodies to set the mandatory rules and goals that also help with this progress. So, and I moved to my last slide which is “Set a road map and time table.” I would like to use this as my conclusion slide.

It is an exciting journey to strive for excellence in fine tuning and optimizing and industrial process. Were there as an SME or was a very large group? There is a lot of opportunities out there to do better. And when it comes to energy consumption—this is the key for solving some of the problems were dealing with today.

Again, uh, we need to optimize what is uh, the process as it is before and demonstrate operational mastery before we embark to more complex schemes. So, there are elements that are not so technical and are much more in the human resources such as making sure that your people have the right training, with the right understanding, with the right knowledge profile to deal with all these issues.

And avoid allure of saying, “That new technology has a magic solution.” So, mastery of your uh, process for example and making a side on that is not the topic of the day. But for example, I’m ensuring that an operation has a strong emphasis on the safety of its operators is a good indicator of the mastery of the process. This is not the topic of the day but it something to keep in mind.

You won’t call your operation before anything could be done. And so, in the end, there are process changers that are needed and they will require the mobilization of making disciplinary teams. And I think it’s important also to make sure that there is you know a high-ranking manager that really want these things to happen so that it can happen. Thank you. Next slide and it’s Ernst.

Ernst Worrell

Yes, thank you Jean-Francois. So this is Ernst Worrell. Good morning—good afternoon or maybe good evening to you wherever you may be. As it highlighted by the previous speakers—and you need information. You need information just to, to know where you are and where you are heading.

And there’s also—there’s also a lot of well, it could calls information to back it’s out there because it sometimes, it can, it can release you the forest with the trees anymore. See the trees in the forest anymore.

So, I would like to go to the next slide. And as Arvind already highlighted, there is the first thing you need to know is, “Where we are?” And we can, we need to do two things for that—we need to monitor these hours of consumption and throughout the production—and we can use benchmarking.

And benchmarking can be a key to understand how we stand relative to, to our competitors. And then when you know where you are, the next question is of course, “where can I go?” So, what are the opportunities out there and how can I find out what’s, what can we done? How can I evaluate the opportunities? And, that’s where the book about my presentation about today is to see—what kind of information is out there on energy efficiency opportunities.

But, before we go there, I would like to uh, the first and spend little bit more time on to know where we are. Next slide please, so the first course is we need together and track data. So, which don't measure your can minutes and this is so true for so many operations. And you will be surprised of how many companies that do not have really clear understanding of how energy is used within their own premises.

And this is a get up for a small and [inaudible 00:40:54] enterprises but it's also build for large enterprises. I know, many, many anecdotes of really interesting, interesting situations where basically the company didn't really know what was going on. They do not know how energy was consumed. So, that was really important fist thing to do is where you also slid back in ISO 50,001 or other standard things management. The first thing is to measure and to develop a metric through a standard in a lot of inefficiency. And benchmarking is one way to develop into metric.

You can do benchmarking of course, over time for your own enterprise. But, especially benchmarking is important to know where you stand relative to your competitors, relative to your peers uhm, because uh, in my experience that I found out that many companies.

They, they have the perception that they are already high energy inefficient even though they may not be—and because they don't have the tools to know that. And that's where benchmarking comes in.

It can test perception but you need and accept methodology works and that's often a challenge to develop one of those. But, for some sectors and shop are related—these tools are out there and it will be very good to use to them. For some other sectors, there maybe have more simplistic to this being developed.

But if you knew benchmarking, it can relate, it can help to improve understanding of your process and where energy is consumed. And the debt, you can really start looking at the opportunities. But like I've said, I also like Arvind already express earlier—there's nothing really a clear definition what is benchmarking is.

So, there's a possible wealth of so called "Benchmarking tools" out there—but it doesn't mean that they initially give you a good answer. I want to highlight that "a benchmark really accounts for the specific conditions of your plant." And that means specific conditions seems of what kind of product did you make out of what raw materials or what kind of flee stocks.

So, if you use intermediate materials—that should be account for in the benchmark. And so that means, you are not comparing energy intensities because that may actually comparing apples to oranges—if somebody else's make me something, make the same product but out of a different fee stock.

But, on the other hand it also means, you should influence putting an infinite number of correction factors because some things should be recognized as inefficiencies.

For example, we had discussions with the pulp and paper mills here in Europe on benchmarking. And some middle proposed to each of the boiler as a correction factor. And that is not a correct correction factor because if you haven't ace an old boiler, yes—it's going to be more inefficient and that's actually what the benchmark should show to you.

You should not hide it in correction fact. But for some sectors, with all of these things out there—uh, yeah I wouldn't hesitate to use them. But, there also more and more are being developed. And next slide please.

So, if you know where you are and for benchmarking of course you can also—uh, identify uh, what are the best practices in your sector in your line of business. Then you can start looking, “Okay, what can I do to improve?” So, what are those best practices? Where do I find information?

And from a number of service and this are kind of dated surface I have to say. So, the internet wasn't that big of a force—what surface would have done? At Survey.net—people have get there most of their data from is trade literature — The suppliers as quickly as work is, trades shows, exhibitions—you don't have them. — The association itself, often sometimes it's loosing information — Especially important where of colleagues so people that you know in the industry or you meet regularly because you, you trust them. — And then there were consultants, there were less important but they, they can still supply the information. Uh, uh, across, from different sectors to other sectors — And finally, more like trade seminars in fact which a training sessions.

So all the sources that were used and then they do play a role and of course, it will vary for you what the most important uh, information service are. And of course, all the sources—they have their own pros and-cons. And, I walk through the field of the important ones—uh, and, uh so I would like to go to the next slide.

So, first of all—in especially in the 1990's and the 1980's, as the consequence of the how enterprises in the mid 1990's there were a lot of public programs that supported demonstration of new energy efficient technologies and introduction technologies.

Those demonstrating projects were always very well documented and the information was made accessible for public databases. But most of, in many of those support problems may have disappeared unfortunately and with that, also the information source. And that is unfortunate.

So, it's hard, it's now harder from an unfitted source and there are uhm, a more light in my source to get information. There's still a few programs in a number of countries that, that do and these are a few of examples uhm but for example, in the United States—the energy star program of the US protection agency may not Energy Star from your computer monitor.

In the United States—you can buy refrigerators, another equipment that is marked within star label. Energy Star is also available for industry uhm, and you can go to the website of Energy Star of and get information there.

And for Energy Star program have developed a number of focus sector for those focus sectors—a whole range of tools are made available including benchmarking tools. Also the so called energy guides which is a description of a dated commercial available and efficiency technologies.

And thus, available few charts that have been reviewed by the industries—so there are reliable source. In Canada, CIPEC also uh, regularly nice reports—a number of reports, also includes benchmarking studies but also energy efficient equipments analysis. And they can lead excess to the website here from CIPEC. And there's many more focus on Energy Star imported in Canada.

And then finally also, IIP—the Institute for host, role of a called the house this today's meeting. They are developing a website where you can also access information and Murat Mirata will tell more about it in the next slides webinar about that.

So what are the advantage of these sources is that there are unbiased, they are vetted or reviewed like the story guides. So, there are reliable in the star guides will not only give you data on a waste of this or technology but they also gives you examples of what has been it implemented. So, actually if you recognize your colleague, you can access them to get more information—and it gives you kind of a real world experience.

It is advantage of these guides I already said that it maybe a number of years old. Some of these guides are actually in a CIPEC program are more than 10 years old. Some new technology may have come up or more experienced has been realized the technos so you may use these sources as basis if you will look—had to look behind it. Next slide please.

Another source of information—are your suppliers. Of course they have limits to them but it may be important to work with suppliers because they know what type of technologies are out there. But they will also need from you—you need to know from you—what they, you know what your information needs are. Because generally, for example—when you—the motors is very important for example. If you don't know what motor you're using, you were not having a mode of mention plan in place. There's suppliers will not know from you what kind of motors you are going to need in the future where you are looking for a more industry efficient alternative and occurred motor feels.

And they will just sell you stuff that you were asking for and working with the supplier can help you identify opportunities that can save you energy.

For example—for motors that is really important because the supplier can stuck the energy efficient alternatives to the current motors. So, when the motor fails—they right away have it for you otherwise, you're most likely to buy same motor of it that has been build and it's not that sufficient anymore.

So, the advantage of these are there easy access, uh, it's a two way information street. The number of suppliers are actively getting involved in discussion so companies like, like, Rexell and Schneider which supply from a lot of sources for supply and technologies are actively getting more involved in industry efficiency fields.

And therefore will be very good in helping to play a role. It has to be always be good—be careful with what suppliers tell you. They may overrate the performance or if you work with the small local worker supplier—the information will be limit to a few brands of motors for an instance and, you may not have to the key portfolio of options before you. The next slide please.

And then, a very, very important role of information as a sort of information is you never be forgotten is, “colleagues.” These are colleagues within your own company. These are colleagues outside of your company in like regional networks of uh, of industry people.

There's informal exchange that are always more formalized forms of exchange information. So you seem programs or like in the stop program for assemble in United States would be assume some programs here in Europe. These were directly many networking needs around a topic for a specific sector. But also in company events and Jean Francois already related to for instance the Kaizen.

Kaizen was originally developed by Toyota and it comes from the Japanese change for the better. It can be applied for many more things than just energy. But Kaizen event or treasure hunt is called in some companies in other companies called the “golden deep dive”—it is actually a way to organize the information which is available at different places in your company.

And, the role of companies—another example is Nat'l Sunoco an oil company in the United States and more parts of the world. They organize this Kaizen events from people of corporate and from different plans and from different parts of India planet is being visited and being investigated are working together as a team.

And bringing these different experience together actually helps to identify opportunities evaluate a much quicker and within a, uhm, joint these

assessments take a week which is for refineries. It's a long, it's a big investment but at the same time—the refinery is in huge energy user.

They come up with multiple opportunities and in typically saving up to 10-15% which is—these are our big dollars. They over company are electronic systems so they're a lot of examples of engineers is to Kaizen Database of Toyota. So, especially for large companies are important but also sectoral basis this are also provide off can be found associations.

It's taken to the example of Toyota. Toyota has a, a Kaizen Database or any energy efficiency protect of any of their plants all around the world is Hendrix. So, if they, [inaudible 00:54:00] at a certain event in the painted line—people, energy energies from all the plants in the world can access that information and can use that to evaluate the options for their own plants.

Also, failures are document there because it's also good to know—what went wrong. What can you learn from that? And these are databases are really, really good example of providing information and disseminating information in a very quick way. Then there are also regional network. And these are especially reporting for small mini-sized enterprises.

And that's a very successful program which were first started in Switzerland and it's now also running in some parts of Germany where you basically have local SMEs. They meet on the theme of energy efficiency regularly like a, a [inaudible 00:54:55]. So, they actually, sometimes they meet even in private to discuss energy.

These are often up competitors and so these people are willing to help each other because that, that will build a strong original economy. And for as SMEs—these networks are extremely efficient distributing information of energy efficiency opportunities.

And so they could, these are success and they're now looking also to expand this kind of approach to Beijing, China. Where China, for example the large enterprising—a lot of policy attention of the small enterprise do not. And that's where we can still find large opportunities energy efficient programs. And of course, then there are programs like Energy Star which I already mentioned which also provide this kind of support and the some of the programs and benevolence in UK and in any places.

The advantages of data is, “They actually build in the experience of actual experience uhm, you know—there are a trusted source because these are people that you not know. But, also there are disadvantages—because you're most likely to meet people within your own industry.

And so, the, the transfer of information from one industry to the other maybe more difficult—and then, of course there are also this, this urban myths that keep going around from many years—that some technology did

not work or may have worked a miracle. It may not have work but the technology has been already 10 years old or even may not be true.

And technology maybe improved terribly since then and actually it's performing very well now. But still, I mean never a mess makes your, your own network and work or develop a network if you're local. And local entrepreneurs are local people as well.

So, that's one of the, the key source that I want to highlight for today because I think now, Murat will tell more about IIP uh, the website where a lot of these is gets more de-vetted and unbiased information can be found. So, thank you for your attention and I'm looking forward to discuss this through.

Murat Mirata

Thank you Ernst. Thank you to all the other speakers. I just would like to say a couple of words about Institute for Industrial Productivity. The value of information is really substantial wrong. Actually, our mission is to help improve industrial energy efficiency by providing key decision makers with information base respect.

So, basically one of the key things that we do is, "We compile the best practices from around the globe and then we'll just match up with the needs of governments and industries and religions that work in formulating customers solutions that will be implemented.

So, information and the prodigy of best practice is the key activity in IIP. Uh, the, industry division is to take a close in the database there because some treating on is uh, one of the elements of the IIP's and best practices and database package.

We also have similar databases giving the information from energy efficiency policies, energy efficiency finance opportunities and good practices in the supply chain that can help improve industry energy efficiency.

The technology database that I would be specifically be talking about uh, has the main objective of assisting decision makers in first identifying energy efficiency options that are applicable to today's contexts than performing an initial screening of feasibilities of identified options.

And then easily accessing additional direct information that can help them with their decisions—and then they try to do that by providing as discussed—relevant and credible information in an easily accessible form.

The target audience of the database is primarily decision makers and the industry but they also think that the information that would target would be useful for policymakers, decision makers in financial institutions, in industrial institutions and other organizations like in the industry are there and some institutions.

I will actually not spend too much time on the slide because I would like to take you to the database and give you a live show. But basically the content that we have on the database is obviously less on the information on the best technologies and measures that can help reduce energy efficiency and some details about these.

But, we also try to compile and communicate information on the benchmarks on some key data for different investor sectors, organizations and programs that might be of relevance for the energy efficient and additional resources.

The database right now, it is an evolving product are committed at offers more than 500 technologies and measures that are able to the industries that we are covered. And there are more than 1,300 best resources I will come and tell you a bit more about the details when we find resources.

I think it is important to tell you a little bit about how the database is compiled or populated. What we did is IIP is the first engaged a set of experts that we now have a, now have a front of the land formation from different industry sectors and theses organizations helped us compile the first of the information.

For example, they launched back in the national energy group in company information on cement industry from a front offer for IMS steel industry. It, our resort for the glass industry, we were self-[inaudible 01:00:51] systems. And we are all able to attract a list of company information in Ammonia.

Once the set of information must compiled they download with other experts will help us to reveal the information and confirm its reliability but also help us customize the information for the geographies that we are targeting mainly in China and India and, and North America—and giving addition from our mission about to applicable of information that we had or better the measures that we are putting for in the impediments on it.

So let me just go quickly—I'll give you an overview of the database and if you follow the link that is provided to you—you will arrive on the landing page of the database. Right now, they offer information on four key industry sectors. Cement, IMS, Steel and glass. [Inaudible 01:00:51] is almost to be completed and in a couple of weeks, the information would also be available on German Industry as well.

There's a cross fitting area—they follow up; they provide information on other systems and most specific pumping compressed energy and fan systems.

So, if a user knows he or she's looking for—they can directly go and putting a search item—and if the database includes an entry, there will be taken to the findings. At the moment, the search item, the search function is experiencing problems. They're not going to show you on that one.

You can also tentatively go to different sectors. For example, it can go to—you can jump to the cement industry and then using the uh, the image map that we provide there—we can quickly jump through some of the selected uh, inverted and well-known measures and can learn about these.

Alternatively you can, move to the process for which energy efficiency options would be applicable—or follow the rinks of also selective range of energy efficiency options.

Once you go to a energy efficient to take nurture the measure page—you will find first a description of what the measure implies—then you will be provided with three key pieces of information. That will include the expected energy saving potential of the technology. If the information is available, you will learn about the expected solutions.

You will initially button potential technology which obviously can context specific. And then you would find the information about the cost and the cost preference of technology. There will be a schematic of applicable; there will be a list of additional resources where you can find more information about these particular technologies.

In certain places, if a specific technology has some uh, limitations or has a bit of applicable potential in certain context—we will highlight them with some information saying that these technology has a very helpful application attention and meet in China or maybe less in North America type of thing.

In much larger set of, in much larger list of technologies and measures can be found if you go to individual process things. For example, if I go to the clinker making part of the cement production then I will see the full list of energy efficiency technologies and measures that are reported to be applicable to their process. And this will be provided with a summary of their energy [inaudible 01:04:42-43] and by following the links—you can get more detail or information about that.

And what I also would like to show you is that when you go to a, a sector page—you will also able to find some other information related to industry. For example, benchmarks that have been reported in the, in the literature for the, for the, to uh, for the best attainable performance levels.

There will be some information on key data about the main producers and production moment of sector. Equally importantly, you will be able to find information about organizations and programs which do both related to energy efficiency in the particular sector in different geographic context. As well as programs that are running better than energy efficiency in their particular of sectors.

So, I would like also to tell you a bit about what is the different corner in the database about the future plans and ambitions. We have been working on launching the Chinese version of the database—and hopefully, the

work will be completed sometime in July and latest in August we expect to have the Chinese version of the technology database on that.

We have also been working on expanding the scope. As mentioned, that work will be soon completed and we'll include the information about the Ammonia Industry sometime in June. And there are also, they're also considering to expand the scope by including additional cross sector information.

For example on core-generation and two generation. They also would like to receive this as a very good starting point in putting up relevant and reliable information. But, we also acknowledge that there are still shortcomings on the information can both the quality and the accessibility of the information can referred to being crude.

So, for this we're constantly looking for partners to help us make the database better and more accessible and-and input that we may six from the partners, it would be a—a new technology that we have missed or it could be new information that about to take notice and measures that we have over listed or any kind of information that we have all ready included in the databases.

It can be providing case studies; it can be providing updated information about different measures and such uh. As mentioned earlier, I think many of the speakers touched upon that. They realized that the following information by chosen literature is not uh, most efficient way and doesn't provide the most up-to-date information.

So, we are also looking into opportunities of help formulate social networks of practitioners who can achieve more and provide more up-to-date and perhaps also a contextually coded information.

And, and natural idea that the contemplate is to use the information that we have that we all that put together to setup the database is the initial step of a potential Wiki- structures. When a controlled manner, perhaps we can tap into the unique information that we have in to practitioners and make it available to a much worthy event of decision makers.

In a sense way, we can look up on this as a scaling up of what Ernst was mentioning about some of the social networks in-in specific geographies. These was I wanted to tell about the database. I just taken notes from our colleagues to help us moderate the webinar.

We are hoping to run it and call it the stage to end or ask our audience, "What is the database as it presented here would be useful for their own purposes?" In this way and what kind of improvements they would like to see. But, I think they would like—we will continue that program after the webinar by, by, by reaching out to our audience—via e-mail or by all means. Okay, and back to you Heather.

Vickie Healey So, hi. This is Vickie Healey and thank you to all of our great presenters. And Murat, did you uh say, “You would like to skip the polling questions as it’s time and continue on perhaps an e-mail afterwards?” I just want to make sure I caught that correctly.

Murat Mirata That’s what I understood.

Vickie Healey Okay.

Murat Mirata And if you are able to run the poll, we should. I understand that we have some difficulties moving forward. Are we able to run the poll questions now or?

Vickie Healey I believe that—Heather, are we able to run the poling question?

Heather The poling question would need to be a feedback that they need to be send by e-mail.

Vickie Healey I understand. Okay, yeah—I apologize

Heather We do have questions that we’ll run at very end but they are already setup with other questions.

Vickie Healey Great, thank you.

Heather But at the time of the panel question—finally?

Vickie Healey Yeah.

Heather It’s time for the panelist question? Okay, I’ll move to that slide. Thank you.

Vickie Healey So, again—thank you to all of our presenters and I’m excited that we’re doing something a little bit different today and that were the panelist have already all agreed to have a bit of panel discussion amongst themselves.

And with that—we’ll get started with the first question. Very good. Okay, so, apologies for that delay. So, on the first question—I would like to ask first Jeff regarding financial institution and if you could discuss a little bit about the value of uhm, best practice information and then benchmark for the financial community?

And then Ernst—if you could adjust the industry association and Arvind, if you could uh, also address this session context of policymakers. We’ll start with –excuse me with Jeff. Thank you.

Jeff Sautin Okay, thank you. There’s a—I think that and I’ve been working with Murat and the quest of some on different issues. Very interestingly, when we need to communicate was the financial institutions, basically the follow the engineers but they need to understand what is the “beyond the feasibilities—and what is our dreams in terms of technical issues.

So, there's a great effort that has been made by IIP to try to present uh, technical results to uh, financial uh, people in a matter of that is most uh, rigorous and yet not to technical—because they're not really going to be interested in the in and out to taking people explanations beyond the solutions.

So, basically –there is, there is a need to, to zoom quickly on what are the gains that can be uh, expected—how much does it cost? What will it bring back? What is the reliability of the solution? And you know is it innovative and risky? Or is it uh, too many issue-hard type of solutions? Murat—do you want to add to that? What happens? He's not responding?

Murat Mirata

Sorry, I was on mute. No, eh, I said some things to myself and—and I think I just echoed what about Jeff Sautin has said, “That we're just trying to turn this technology information into a digestible form so that financial institutions connect and use it for their own purposes or [inaudible 01:13:38] issues or credit lands or want jobs, things like that.

Vickie Healey

Thank you. Okay—and Arvind would you like to put this into the context of policymakers?

Arvind Thekdi

Yes. Yes, yes, thanks—yeah. The information that policymakers use is very vital. The accuracy needs to be verified and the best example that I can discuss is the issues of the man-site reduction that uhm, that reform in the state of California in the United States help me to attend for many, many, many years.

And a lot of these people who make policies are not—even if there are semi technical people or not technical people, one of them are politically appointed people. And explaining to them the importance of benchmarking and the proper use of benchmarking and—setting the policy becomes very important because as far as the industries have been some.

There are several issues that they have to do and three years are very important. The energy, the environmental issues, the economic issue—all three of them, they need to look at it and make sure that they are balance.

In case of California which I haven't missed the last 10 years or so—I said that this would be a good example because they have tried to, to work in all different areas of making sure that the energy reduction takes place at our making efficient we have some pool.

Environmental things can be taken care of and the same time gain rewards and economic benefit to the people who comply with some of these regulations or so. So, in my opinion—the benchmarking and explaining to these people in different terms in saying, “This is how much the energy is going to be an energy efficiency or it's gonna be in terms of some benchmarking number.”

And at the same time, relating here to the environmental issues uh becomes very important also. We could lot of times—there's a conflicting resource going from energy to environment and we're all trying to make sure that their conflict is dissolved upfront.

Then the finally, lots of these policies make us the laws which would either give them tax benefits or some sort of x-write ups and those kind of things and those are based on the truth improvements. Or the kind people would come and say, "This is how it's they have saved." By making sure that those values are approximately into comparatively beneficial effect—because we're important.

So, having a good benchmarking every day would relate to comparison. Not only in terms of energy but I think it uh, and please be with the good picture of saying we're gonna look at the energy benefits of Greenhouse gas reduction also and any commandment benefits.

So, having a good benchmarking opting all of these to you yet—to help policymakers because right now, a lot of these people who are in the position of making policy—of making recommendations for policy do not have, uh, a clear understanding of what's going on in the benchmarking would help them.

Jeff Sautin

If I may intervene, I have one point on this. For example, when cement industry embarked on the measurement of CO₂, it was very important that we have clear definitions and very you know clear procedures for measurements of the calling the continental the truth and these set of things are gonna like the carbon content of the mixtures to mix it in.

And the regular agencies are very keen on having systems that can be audited by total independent uh, ex, more people who are external to the industry who can come in and rely on this set of definitions of do the job of auditing and give their re-assurance to the regulatory agencies that the sector is very straight in its measurements.

Vickie Healey

Alright, and thank you. And who was that just speaking—I'm sorry.

Jeff Sautin

This was Jeff Sautin, I'm sorry.

Vickie Healey

That's all right. Thank you. And Ernst Worrell, could you please take this as to the context of industry association.

Ernst Worrell

Yes, magnifically. The associations do play a role, a very important role of disseminating information. But what each association would do—would really depend on basically, how the association operates because we have uh, these people are known to be blunt.

And so I'm going to be blunt here in the sense that many associations are S-conserved or its if the most as the most conservative member and that

will mean that some associations will not know very actively in energy efficiency or and most [inaudible 01:19:14]

But on the other hand, there are also a number of associations and examples of associations that show tremendous and very important role comes from the steel industry. The global cement industry is basically come together in the world businesses accounted for sustainment of development—to develop the cement system.

They developed and wielding initiative. They've developed a benchmarking approach and they distribute the information on opportunities.

So, there—is one example of the global association and it will discussed in to them of course in the organization for pushing the envelope. But well, in the smallest scale—they're also examples in the—for example, they put in the paper industry in Europe and the trade organization is happy. And the association is really trying to, to keep the European paper industry competitive from a global effort.

And one way to do that is to reduce energy cost. Cost is the number two factor in most countries really now. So, it's more important than labor cost system—and the number one was the raw materials. So, to keep the proper paper industry competitive—the way they're pushing the aggressive agenda on uh, energy efficiency improvement and reduction of enough gas because they see that as a competitive advantage of the pulp and paper mills.

And they are really now to come to main source of information, if you wish have all the [inaudible 01:20:47] key companies in Europe are collaborating in it. They're really pushing the agenda on identifying technologies now even with a- what we called the two team projects which is trying to identify new break-through technologies. So, what can the industry do to make these technologies happen?

So, that's why you see an extremely active role of the association—not only industry good information but also [inaudible 01:21:15-16] identifying the next generation of opportunities. Those examples I think we need to cherish and try to disseminate.

And some examples can be found in any countries like uhm, in like developing countries as well like India and China were also the associations were distributing information uhm, about energy efficiency improvement but not yet is in the agenda of uh, already disseminating the information. That's it thank you.

Vickie Healey

Thank you, excellent.

Murat Mirata

If I may, if I may quickly add to what Ernst just said—actually IIP was working very closely with the cement manufactures association in India

and helping expanding relations and decisions of alternative fuel and raw materials which I can also is a very good example of how business associations can also help preventing efficiency in their context.

Ernst Worrell

Very good.

Vickie Healey

Great, thank you. Go ahead, I'm sorry.

Ernst Worrell

Oh nothing. It's just very good—very good to hear.

Vickie Healey

Oh yes, terrific thank you so much Ernst. Okay, I know we're running a little short of time but I would like to get to this next panel of question. I think it's really interesting which is—if you could discuss a little bit the role of networks of practitioners and experts and improving the quality and the accessibility of information?

Murat Mirata

I would just like to actually start there because I—uh, I really believe that the network's social networks and the tools of social network tools as a big role to play because uh, I think the most reliable and most up-to-date information always lies with some practitioners, somewhere in the world.

And I will continue this question with asking another question to- to the rest of the panelists. As I've said, the main challenge—of one of the two main challenges. The first one, “How do we get these people who have these information to share it with the rest?”

And then the second information, the second question which I think can be solved is to critical elements of people because people can produce on whatever just like they're doing in Wikipedia today, “How to quality ensured information that is being said?” But the question to Ernst and Arvind and to Jeff would be—“How can we go about actually giving incentives to people this slightly believe information can be shared with the rest?”

Jeff Sautin

Hello, this is Jeff. Maybe I can hop into debate on that. There's one issue that, that hasn't put in the table with these sort of issues which is confidentiality, protecting the interests of your own company and making sure that you're not uhm, you know giving elements which either uh, you know, get such advantage to your competitors that it's something to be made off from a business stand point.

Or contrary, run into areas which we'll have to with competition roll. There's no simple answer to that, I think that all the players have to play a role. I think that NGOs has a unique structure to push the envelope and encourage the more timid players to open up on things which are you know, very, very close to tell public knowledge and therefore, their experience are valuable.

And you know, they can share that fully without creating a competitive issue for themselves or, or, or you know at large. And, and I think that this

is—it's an area where uh, industrial associations, regulatory agencies, NGO's—all the people who sees the bigger picture and not tot immersed in the business considerations can encourage and facilitate uh, going beyond this mental barrier that operators will have which is, "What should I share? What's in it for me to share with the rest of the world?"

Arvind Thekdi

This is Arvind Thekdi. I know we got on a little more minutes now. Basically, I agree with Jeff. The association are hesitating also -- certainly the United States and the competitive laws and with what the laws are? So, they are very hesitant in doing so.

The only way I think one can do is to work with the policymakers and say, "All right, you sit in the parliament—make sure that we're going to discuss which is not against—which is not going to be strict to competitively. But it actually held the industry stay competitive compare to the—and then the national practices." And national issues coming in the picture.

But, there are organizations; there are associations which are trying to break this barrier. I know I ask which is the streaming with the association. They turn and come up with methods saying, "How would the benchmark the processes."

So, that we do not—we do not engage into competitive information and yet have some, some uhm, what we call the "non-dimensional parameters which could be used as benchmarking. I think our time is, is uhm, coming up. So, I'll stop at this point. There are things which could be done.

Vickie Healey

Great, thank you so much. And I know, we only have a couple whoa, one or two minutes left. I think it's important that we do uhm, see the IIP Industrial Efficiency Technology database.

Would you like to take one or two minutes to discuss that and then this is a question to all of the panelist—we have several questions come in, some terrific questions from the audience but due to our time constraint our I was wondering if I would be able to send these questions to you by e-mail and then have you respond to those questions directly to the requester.

Jeff Sautin

Sure, if that's the only thing that we could do.

Vickie Healey

Okay, so, apologies to the audience, it's just have been such a dynamic discussion and I apologize that we ran out of time for our Q and A. But however, I would definitely make sure that your questions get to the panelist and that we—and they would be happy to respond to you in these questions. Did you—gentleman, would you just take a moment to talk a little bit about the IIP Database?

Murat Mirata

Well, what a good question. I'm not gonna answer it because I think I already spoken to and I already spoken to the database in detailed with all

it's time to play. But, I actually believe that the other speakers have mentioned what we were trying to do.

We have basically trying to act as a filter uhm, reaching out to the information out there and trying to published them and become assure the credibility in a way is easily accessible so that users trying to go and search over this information out there. And they can reach to and credit information to the database.

So, actually if the other speaker do not have anything to add to that one and if we still have time—we could perhaps we can have one of the questions from the audience if not time.

Vickie Healey

Okay.

Jeff Sautin

Because this is very brief comment on and I'd be more interested. I think the audience was still about 30 people online. We should get their feedback on the database itself, any feedback that they care to share with Murat will be very useful in, in driving the database to its greater efficiencies.

Ernst Worrell

Thank you Jeff, this is an excellent call I mean as I've mentioned earlier—this is, this is working progress. It, it is involved in and IIP is very keen and very open and receiving feedback from anybody's interaction to the database and if you have any ideas on how we can make it better—uh, we will be very happy to hear from you.

Vickie Healey

Murat Mirata, would it be easier for the audience to send feedback, is there any one in particular that they should e-mail the information to, their feedback to—would it be you? Or I would be happy to accept it and compile it all and then send it to you if that's easier?

Murat Mirata

There is a link on the bottom of every page on the database where they can send an e-mail they, they could use the database. They can e-mail me, it's perfect if I can share my e-mail address. Or they can send it to you and you can send it to us—so which is which.

Vickie Healey

Okay, all right—it sounds great. Thank you. With that, if you have—maybe five minutes and you would love to take a couple of questions. I'm happy to send a couple over to you now. If, if you.

Murat Mirata

Sure.

Vickie Healey

If you have an extra five minutes?

Murat Mirata

As far as I know, Ernst needed to go—but uh.

Ernst Worrell

Uh, yeah, I have a few minutes. It's all right.

Heather Okay, well Ernst and I will present these questions to you and this question came in. Which is, “Is there definitive demonstrating the energy cost saving benefits associated with the benchmarking?”

Ernst Worrell Well, there is not a definitive answer. But we have—a couple of years ago, we did this—a benchmarking study for the Canadian Cement Industry Association. Uhm, and what we did there was not just benchmarking and energy efficiency but we also benchmarked the approaches to energy management. As well the uptake of energy efficient technologies.

And what we found is that the most energy efficient companies uhm, uh, are also the ones that have the best energy management or well in place. And they have implemented the most efficient technologies.

And so, those come were performing also are included also in the CSI initiative for example—for global benchmarking. So, we see that those companies are more active and, and therefore, become energy efficient and save more money and energy cost. And there are more anecdotal examples from different companies you know, that have to do benchmarking and use that actively in your, in the program.

But we’re also have companies that do participate in administering also benchmarking programs that do not have a well-run organization behind to basically take the result of the benchmarking and integrate that in their energy strategy. Because they basically lack either a good air management system or they lack uh, a real personal, champion that has driving the program.

And while they’re participating for benchmarks for petroleum refining, yet, their basically say, “Okay, yeah, we know we score bet” and then it’s back to business as usual.

So, I think that is the lessoned learned in the Canadian example—we see in the companies there have a good energy management system are also the ones that become more energy efficient—and technology better. And they actively—they lose resource of benchmarking to learn.

Jeff Sautin If I may add, I can say that this is Jeff. In the group of Lafarge, we’re totally convinced that benchmarking is up to really tremendous economic savings. Every time you have a new entrance, to like acquisition—or some changes in the parameter in the group.

The basis of benchmark of the group has always been extremely useful in accelerating the progress in trying to some people that a lot of thing they’re very well—they’re not in the top of what could be done. And they would never go back on our benchmarking industry.

Heather Terrific, thank you. And one more question before we close out the webinar. This question came in asking, “Can energy benchmarking replace a comprehensive engineering assessment of a factory?”

Or is it more of just you know not just, so is it a more first initial step to get a first idea of the energy usage and make it comparable to other factory of some more step inside?"

Ernst Worrell

Okay, this is Ernst, if I can take it—first and then maybe Arvind doors can step in. No, I don't think it can take the place of an audit. I mean I see benchmarking, it is a, a professional signal—know way you stand. Because we all think we are the best, and of course—we can't all be above average.

So, it provides a clear signal and in the next step it could help depending how detail the benchmarking system is set up. So, that it can then help you to identify where are your key losses compare to the other peers or committed the benchmark.

So, it could then help you to pinpoint those areas where those biggest gains can be found and can be made. And then, you then take the next step to identify and what are those best practices and that goes beyond benchmarking and how can I implement them. So, Arvind or Jeff—anything to add?

Arvind Thekdi

This is Arvind Thekdi; I think I agree with the over-all assessment of factory. Now, again, the question is, "What do you mean by assessment? And if we see only energy assessment or energy audit if you want to call it—and that gives you some idea but I don't think it's gonna be able to replace the benchmarking.

The other caught in the outside in approach saying that, "What good our factories are doing?" But, comparing it doesn't give you much of a result unless you go inside. Either what we call the production cell label or even uh, more insiders saying, "Either the label or equipment performance label, that were the benchmarking just really going to help because that's where the real actions can be taken."

Just now that the factories are using so much energy for need of production—doesn't do so much information. Unless we go back into the details of processes, production processes or the equipment performance—those kind of things. So, there are good related but there are not you know, there are one worst than the other.

Jeff Sautin

This is Jeff. Let's take it as learning an aircraft. You know, at first—you try to find the runway. The benchmark is-is you're so pretty high in the air and you're trying to find your way. As you get closer to the project, "How to refine things was you know, most serious audited [inaudible 01:37:57-58].

And then subsequent to that, you're really get into a project is becoming more and more precise and more and more constrain but I think the benchmark is a good entry point into your uh, into your innovative approach or-or reduction project.

Vickie Healey All right, thank you. I mean excellent answers. Very much appreciated. So, considering the time—thank you for staying extra longer to answer a couple of questions from the audience. We'll send the rest of those questions that we didn't have time to answer uhm, after all of you.

And thank you for again providing these slide presentation. So, with that—I would like to go to our quick survey to get audience feedback on how we did and again, we have three very short questions.

For the audience—and we really appreciate your feedbacks. So, it allows us to know uhm, what not what only what we're doing right and where we might be able to improve on future events.

So, with that—Heather, could you post the first question?

Heather And the first question is the webinar content provided me with useful information and insight? All right, thank you next question please.

Second question, “The webinar’s presenters were effective?” Thank you and with that we'll move to our final question which is, “Overall, the webinar met my expectations.” Vicki, this we have a job here,

Vickie Healey We have a jump in. We have two more poll questions when you're done with that.

Heather Oh, okay. I'm sorry.

Vickie Healey Okay, that's okay. So, with that we'll move to the fourth. I'm sorry my apology.

Heather The fourth question, “Do you think that the information in the IIP Industrial Efficiency Technology Database could be useful to your organization?”

So, and gee I've said some final. Uhm, and our final question is, “Would you consider attending another IIP webinar?”

Great, we'll be seeing another IIP again. We did really well on the question. Okay, so with that—I would like to say on behalf of the Clean Energy Solutions Center—I would like to extend a hearty due to all our expert panelists. And to Arvind Thekdi for participating in today's webinar. You've been a great audience, we have a lot of great questions come in and I promise we'll get the answer for you.

And I would also like—post seen that these presentations in PDF format to the Clean Energy Solutions Center—add some link provided to these particular slide. We'll also add an audio recording of this event within the next few weeks.

And also, we invite you to come back to uh, future upcoming webinars. And we're gonna invite you to inform your colleagues in those of your network about the Solutions Center and our resources and services—that Heather mentioned in the first presentation.

And I would also like to add that we're very fortunate to have a Julia Reynolds from IIP as our expert on industrial efficiency policies and programs.

So, with that I would just like to say, "Thank you." I wish everyone to have a good rest of your day and we have to see you again at future Clean Energy Solutions Center Events.

With that, let's close our webinar. Thank you.