

Webinar Panelists

Janusz Bialek	Durham Energy Chair of Renewable Energy, Durham Univ.
Matthieu Craye	Policy Officer, European Commission of Energy
Rémy Garaude Verdier	Project Coordinator, Grid4EU Project
Lilia Consiglio	Technical Director, Grid4EU

This Transcript Because this transcript was created using transcription software, the content it contains might not represent precisely the audio content of the webinar. If you have questions about the content of the transcript, please [contact us](#) or refer to the actual webinar recording.

Sean Esterly Hello everyone. I'm Sean Esterly of National Renewable Energy Laboratory and welcome to today's webinar hosted by the Clean Energy Solutions Center and the International Smart Grid Action Network. We're very fortunate to have Janusz Bialek, Rémy Garaude Verdier, Lilia Consiglio, and Matthieu Craye joining us today. This great group of panelists will be discussing the Grid4EU Project. Now one important note of mention before we begin our presentation is that Clean Energy Solutions Center does not endorse or recommend specific products or services. Information provided in this webinar is featured in the Clean Energy Solutions Center's resource library as one of many best practices, resources reviewed and selected by technical analysts.

Now before we begin, I just want to go over some of the webinar features. You have two options for audio today. You may either listen through your computer or over your telephone. If you choose to listen through your computer, please select the "mic" and speakers option in the audio pane. Doing this will just eliminate the possibility of feedback and echo. And, if you select the telephone option, a box on the right side will display the telephone number and audio pin you should use to dial in. And panelists, we ask that you please mute your audio device while you are not presenting. And if you have technical difficulties with the webinar, you may contact the GoToWebinar's helpdesk at (888) 259-3826 for assistance. And we encourage all audience members to ask any questions that might arise throughout the webinar. You may submit your questions through the question pane in the GoToWebinar window, and those will be presented to the panelists during the Q&A sessions. If anyone's having difficulty viewing the materials through the webinar portal, you will find PDF copies of the presentations at cleanenergysolutions.org/training. If they are not currently posted there, they will be posted in the next day or two and then you'll be able to follow on. Also, the audio recording of the

presentations will be posted to the Solution Center Training page within a day or two.

So we have a great agenda prepared for you today that is focused on the Grid4EU Project, which lays the groundwork for the development of tomorrow's electricity grids. And before we begin, our speakers begin their presentations, I'll provide a short informative overview of the Clean Energy Solutions Center initiative, and then following the presentation, we will have a question-and-answer session, or a final question-and-answer session, closing remarks, and a survey.

Now this slide provides a bit of background in terms of how the Solution Center came to be. The Solution Center is an initiative of the Clean Energy Ministerial and is supported through a partnership with UNE. It was launched in April 2011 and is primarily led by Australia, the United States and other CEM partners. The outcomes of this unique partnership includes support of developing countries to enhance the resources and policies relating to energy access, known context for policy assistance and peer-to-peer learning and training tools such as the webinar you're attending today.

And there are four primary goals for the Solution Center. It serves as a clearinghouse of clean energy policy resources; also serves to share policy best practices, data and analysis tools specific to clean energy policies and programs; and the Solution Center delivers dynamic services that enables expert assistance, learning and peer-to-peer sharing of experiences; and then lastly, center fosters dialogue on emerging policy issues and innovation around the globe. And our primary audience is energy policymakers and analysts from government and technical organizations in all countries, but then we do also strive to engage with the private sector, NGOs and civil society. And this slide shows little bit of our Ask an Expert feature which is one of the marked key services offered through the Solution Center, but we have established a broad team of over 30 experts from around the globe who are available to provide remote policy advice and analysis history and at zero cost. So for example, in the area of demand and policy evaluation, we are very pleased have Bruno Lapillonne, the Vice President and Co-Founder of Enerdata, serving as our expert. So if you have a need for policy assistance on demand and policy evaluation or any other clean energy sector, we encourage you to use this useful service. Again, it is provided free of charge to the requester. So to request assistance, simply submit your request by registering to our Ask an Expert feature at cleanenergysolutions.org/expert. We also invite you to spread the word about this service to those in your networks and organizations. So in summary, we encourage you to explore and take advantage of the Solution Center resources and services including the expert policy assistance, subscribe to our newsletter, which will inform you of webinars like these, and then participate in any future webinars.

And so now, I'd like to introduce the moderator for today's webinar and that is Janusz Bialek of the Durham Energy Chair of Renewable Energy at Durham University, and previously held the chair of Electrical Engineering at the University of Edinburg. So Janusz will be introducing the rest of today's panelists and also moderating that question-and-answer session that we got. So please join me at this point of welcoming Janusz to the webinar.

Janusz Bialek

Thank you, Sean. So I'd like to present— to introduce the next speakers in this session. So the first is Rémy Garaude Verdier, who is Smart Grid's Project Manager, Électricité Réseau Distribution France. And he's the overall project coordinator of the Grid4EU Project.

The next speaker is Lilia Consiglio who is Smart Grids expert within the ENEL Distribuzione Network Technologies and she's Grid4EU Technical Director.

And the last panelist is Matthieu Craye, who is Policy Officer for the European Commission for the—he's the Directorate-General for Energy and he deals with renewable energy and Smart Grids Technologies. So over to Sean to conduct the next rest of the webinar.

Sean Esterly

Yes, and at this point, we'll hand it over to Rémy to begin the presentation. So Rémy, take it away.

Rémy G. Verdier

Okay, thank you. I'm very glad to be with you today and will start with some background on under Grid4EU Project. So this is a global agenda of today and we are here at the Grid4EU Project presentation and I will try my best to make it clear. Back in 2009, the European Commission issued a Call for Proposal for its main funding research ability in order to set up a large-scale demonstration of distribution networks with distributed generation and active customer participation. And other result of ERDF initiative, and for the first time, six major European distribution system operators (DSOs) made the important decision to pool the expertise in response to that European ambition. That's ČEZ Distribuce in the Czech Republic; ENEL, in Italy; ERDF in France; IBERDROLA in Spain; RWE in Germany; and VATTENFALL in Sweden, came together to propose a common solution to the European Union. This year's, our Grid4EU was born and becoming one of the largest Smart Grid Project every funded by the European commission. With a total budget of €55 million, nearly \$17 million for 51 months period, this project is financed up to 50% by the European commission.

The project consists of the six different demonstrators set up under real operating condition in the six different countries. As you can see on the map, there is project Demo in Spain; a Demo in Italy; a Demo in the Czech Republic; a Demo in Sweden; a Demo in Germany; and a Demo in France.

Grid4EU objective is to showcase current Smart Grid technologies and techniques to Europe and to the world by the end of the 51 months project. Of course, as you can imagine, to ensure the success of Grid4EU, this unique collaboration of leader DSO's also needed to benefit from other expertise coming from other partners such as universities, equipment manufacturer, research center. That's, as you can see, in addition of the DSO's, the project also bring together 27 different partners and more than 25 sales partners because at the end and as all, we are working—we are 60 working together in the Grid4EU Project at the European Level. This is a very, very big and used concession.

I have mentioned before the objective of the project and now I would like to go further into details. Project objectives are multiple. They can be divided in two categories: objective of research of—and implementation of innovative technologie—and objective regarding business and societal goal. In terms of what the demonstrators will actually be testing, you have here a sample of the innovative technology or topics address. So we will deal with each in the Grid4EU Project with active agreement with renewable integration into medium-voltage and low-voltage network. We will try securing energy supply and to improve network reliability. We will also try to do some automatization on the medium-voltage and low-voltage network. We will improve the peak load management, thanks to the customer engagement. What we did with storage, islanding and Microgrid's operation, and of course, with electric, there it goes.

In terms of businesses and societal goals, and is a key point considering the huge investment, we tried to set up the Smart Grid infrastructure project. We felt that linking together multiple DSOs network operator and partners would allow and speed up the sharing of the results among us. And we also eased the assessments of reputation and scalability potential in Europe as well as the cost-benefits analysis. This is the ambitious objectives of Grid4EU.

With regard to the objectives I have mentioned previously and in order to keep consistency and ease or knowledge sharing, we have gathered our ambition in six work streams. We have a work stream dedicated to [inaudible] [00:12:43]. There was a one dedicated to renewable integration; one regarding medium-voltage innovation; one for islanding operation; one for the storage; and one for the low-voltage innovation. And as you can see, each Demo is testing several streams. So you will have more detail later in the presentation by Lilia, but to make it short, EVELIN Germany is working on the improvement of the medium-voltage grid, thanks to multi-agent system. VATTENFALL in Sweden is working with it low-voltage automation based on the smart meter infrastructure. ERDF in in France is working with the integration the theory on the low-voltage grid using some storage and flexible load. IBERDROLA in Spain is working on MV and LV network automation and we have tried to involve the customers in the local electricity market. Enel in Italy is

increasing the hosting capacity of renewable under medium voltage network; and ČEZ Distribuce in the Czech Republic are working on LV and MV grid automation including the electric vehicles management and islanding operation. So you see what we are doing in the Grid4EU Project.

All the six demonstrators will test, this the solution at a large scale using different boundary condition. So as you can see here, thanks to this organization, even if we are testing the same thing in two different places, we try to avoid effort overlapping. For example, islanding will test—oh sorry, islanding will be tested in two different demonstrators with two different approaches. The French Demo is testing islanding operation based on the lithium ion storage and PV generation. In the meantime, in the Czech Republic, ČEZ Distribuce is testing islanding operation with a CHD unit. So the same topic with two different situation and boundary conditions. In the same way, activity men be tested in three different demonstrators with several innovative approaches and technologies. French Demo will mainly—with mainly LV customers with the help of aggregators. The Italian Demo with large industrial and MV customers—and the Spanish Demo with an In Ohm display for LV-residential customers. Once again, same topic, same stream, but very different boundary condition.

Of course, to help deliver the objective I mentioned earlier and to showcase through Smart Grid technologies and techniques, the project also includes common general work packages. These things coordinate the project, define standards for the tested technologies, assess scalability and replicability potential of these technologies, and last but not least, identify business for Smart Grid's smooth cost-benefit analysis.

But more than technologies in themselves, the innovation or beauty brought by Grid4EU lies in the fact that all the partners, we work together, and all the results may be confront and fit the common work package like scalability and repeatability assessment for this big launch. All in all, all partners will mutually benefit for all demonstrators results. As you can see here, we are underway in the third year of the project. So what has been achieved so far, and am very proud to say that each of the six Grid4EU demonstrators has completed Year 1 and Year 2 objectives and to deliverables which include definition of the used cases, key performance indicators and detailed specification. So, so far, 33 deliverables, from which 21 are public, have been submitted to the European commission, paving the way for technical implementation of the demonstrators. Now, test networks have already started to try a range of technology that once validated, will be deployed on a large scale in the different countries involved like Czech Republic, France, Germany, Italy, Spain and Sweden.

Now, if you have any questions regarding this overview of Grid4EU, I would be glad to answer. And Lilia will, just after this Q&A session, Lilia will present in all the Demo, and what is really going on in each Demo with a lot of interesting details.

Janusz Bialek Yes. Hello, this is Janusz speaking as the moderator of the Q&A session. So so far, I have one question from Paul Dewar. To what extent can this project be replicated in other countries—in other continents, sorry.

Rémy G. Verdier I think that some of the solution—the solution we are testing in the Grid4EU, in the Demo, for example, could used in another country or in another part of the world. This is one of the main—it will be one of the main feedback from that replicability the scalability analysis, but I'm quite confident that we will be able to say that the technology and the solution tested in the Grid4EU Demo are all profitable for different—for all the distributors in other parts of the world.

Janusz Bialek Okay, thank you. And there's a general question. What are the main challenges who is—project has so far encountered?

Rémy G. Verdier As the coordinator, I will say that the main challenge for me is to coordinate more than 60 different partners such as distributors, equipment manufacturers, universities, research centers, so many the different type or kind of partners. It's quite an intense work make them work together and to maintaining, let's say, to keep the collaborative spirit under in the project.

Janusz Bialek Okay. Thank you, but obviously, you haven't been successful, have you?

Rémy G. Verdier Thank you. I try my very best to ensure that.

Janusz Bialek Okay. Well, so far I see no other questions so maybe I'll put it over back to Sean to share the remaining of the session.

Sean Esterly Yes, and just before we move on to Lilia to present, just want to remind the audience that they can submit question through the question feed. So Lilia, go ahead.

Lilia Consiglio Okay, thank you Sean at good morning to everybody. I will try to give you an idea over our six Demo all around Europe that Rémy already introduced [sic] to us. So let's start with the German Demo. AWE is the distribution system operator in that area, and with the partner ,ABB at the University of Dortmund, the German Demo is otherwise seen the development of a system dealing with the medium-voltage network that as a—it's objective is to find new way to recover full to after good failures. And two other overloads over the network. And they also try to develop solution to integrate increase in number of distributed energy resources over the medium-voltage network and also on the low-voltage network. And this Demo is also otherwise seeing the problem of the needs of monitoring and control over the medium-voltage network. So they want to demonstrate that these medium-voltage networks can use a new concept that is the autonomous self-organizing model to solve both DSO problems, network problems and to increase the quality of services for the customers.

Let's go to the Demo 2. That is in place in the Swedish area. Rémy, can you please change, please? Okay, this written Demo is the VATTENFALL Demo. They are the DSO in that area, and ABB, eMeter, University KTH and TELVENT are the partner in this Demo; and the location of the Demo is the city of Uppsala in Sweden. And the main objectives are to demonstrate, to validate that the low-voltage network control can be done using—by using the automatic meter management system fostering the existing Smart Meter infrastructure in that country. And that intelligent equipment in the low-voltage network can allow the hosting of a more distributed generation over the network, also improving the power quality for the customer. So our Smart Meters infrastructure can enable also active Demo and energy efficiency ambition. The goal is to validate that automatic meter reading infrastructure can now pass better operator than a low-voltage network.

Demo 3 is the Spanish Demo and you saw in that area dealing with this Demo is IBERDROLA. And with its partner, CURRENT, Itron, Landis + Gyr, ORMAZABAL, SIEMENS and ZIV. The location of this Demo is in the area of Castellón, and the main objective of Demo are the usage of the Smart Meter, again, to gain better knowledge of the network status. So that means immediate awareness of outages. And through more—or to gain information coming from the network such as power quality information and different value of voltage current and so on. And the goal is to monitor these low-voltage lines from the substation to evaluate overloads, imbalances on the network and so on. And to evaluate also losses, both technical and non-technical, for example, comparing the total amount of the energy, the power at substation level and to check whether a surge is coming from the smart meters.

There is also a huge involvement of customer in this Demo, because the customer will benefit from better information on their consumption and they will be informed about the network situation, for example, about disturbances or fault in place. So the main goal is really to enhance the observability and control of both low-voltage and medium low-voltage distribution network, thanks to the, first, the smart meter implementation.

Let's go to Demo 3—Demo 4, sorry. That is the Italian Demo. In charge of Enel Distribuzione as a DSO, with its partners that Cisco, SELTA, SIEMENS and RSE. This Demo is located in the area of Forli in Emilia-Romagna region. And the main objectives are to implement an active control of decentralized energy resources in place over the medium-voltage network, using them as resources to be controllable to increase the hosting capacity of the network. And this could help the medium voltage network to become more flexible, thanks to new advanced network operation solution and energy management capabilities. And it is also a first trial on a medium-large scale over this solution under real operating conditions. And the goal is to increase the medium-voltage hosting capacity of the medium-voltage network for the distributed energy resources, particularly solar, that are really increasing in that area.

Demo 5 is the Czech Demo, and the major player is ČEZ Distribuce. And the other partner involved are ABB, Cisco, CURRENT and SIEMENS. The city in which this Demo is located is Vrchlabí, and the goal is to demonstrate that also exists in distribution network can—huge benefit from the Smart Meter application. And there is also an interesting application that want to test islanding operation over a small portion of medium-voltage network, thanks to a CHP unit that has been upgraded to allow for these islanding operation. Thanks to full Smart Meter deployment, there will be also an improvement on network monitoring and then control, and there will be put in place new automation over the existing medium voltage or low-voltage grade. And the main goal is that the demonstrate that also existing distribution networks, thanks to Smart Metering solution and infrastructure can be upgraded; and to demonstrate our traditional solutions such as CHP, you can be upgraded to allow automatic islanding operation.

Demo 6 is the French Demo. So ERDF is driving this Demo with ALSTOM, Grid, with ARMINES and eDF. This Demo is located in the city of Carros near Nice, and is well known as Nice grid, Nice grid project in France. And the objectives of this Demo are to design a Smart Grid in the district in which there is this nice level of solar generation penetration. And thanks to electricity storage system and load management capabilities, they will test the different solutions such as for instance, also, islanding operation over a small portion of low-voltage network. An important goal is also the study of the customer behavior and trying to address the problems they're dealing with. How can customer become really active if they can adapt their consumption, if they want to adapt their consumption, in order to include them as an active participant in the operation of the network?

And there is also a test in place, as we said, to validate the usage of small electricity storage in household and the medium-electricity storage in the network to test islanding operation condition. These are just a few highlights of these six Demos but for sure, you can find a lot of interesting details going to our website, for instance, or our material that is available in the network.

So let's have a look on the general work packages activities. As Rémy said, we are six Demo. Yes, for sure, but we work together trying to address and solve problems in a common way with a common approach. That's why at the beginning of the project in the first year, we all adopt the same way to describe our use cases. We collect the main use case that we are, otherwise, in the six Demo. So creating sort of synced catalog that can be useful also for other stakeholders all over the world. So we collect the main use cases for each Demo. And if we go to the next slide, please. We did also a huge effort to create a common work, a common bases between all the six Demo. So all these use cases have been described with the same methodologies trying to tress the commonality and the differences between us; and we also find—try to find a common

way to measure our performances, our results. So we define a suite of key performance indicators that could be useful for—to the address all the next analysis—the future analysis that we will have in doing this project. For instance, the analysis related to scalability and the replicability of the six Demo solution. There is also huge effort to guarantee an overall technical growth coordination. What does it mean? It means that we want to maximize the added value to be, being a unique project. So to finally impact that could really used at the European level, with also a proactive identification of variance that all the Demos face in their own country, trying to propose a common solution.

And there is also an effort to build a common knowledge. So there is a process that allow us to peer review all the deliverable coming from six Demo. So there are—the Demo across review, peer review, all the deliverables coming from the other that's a way to foster really knowledge sharing common work and to have an active proposal and comment and suggestion from the other Demos that are addressing the same problem or that addressed this problem in the past, or trying to share new ideas that would be useful for all of us in the future. There is also sort of involvement of—a huge involvement of Grid4EU Project in the building of a common European methodology. For instance, we are cooperating with Grid+ with rest of today's KPI, definition for sponsor, and please go to the next slide. And we adapt also common methodology that have been set up at European level. So for instance, according to the European mandate from the '90, we adapt today common and shared methodology to describe the use cases. So we model it, our demonstrators, using this Smart Grid architecture model that have been provided by the working group or reference architecture to European level. And this is the way you really adapt to this methodology provided by this different working group that have been addressed by—that had been fostered by the European mandate. And there is also a neutral help between us and this working group. That means, for instance, to adapt in this methodology, we encountered some problems putting in place that methodology in the real world. So we come back to the—this working with comment, with the feedback, rated these methodologies and I think that this is also a good result. Just for a moment. Okay. Two important goals of the project are also to address common replicability and scalability analysis, thanks to this organization of six Demo in terms of common use case, common KPIs, we will do our best to find also the possibility to replicate our Demo. Replicate means our system solution can be duplicated in another location or in another time. And address—addressing problems in terms of scalability analysis. That means the scalability is the ability of a system to encourage its size or its scope or its range in order to meet a broad demand in that area. And then, we are also dealing with the older problems, we can say, that—it's with the cost-benefit analysis. We will—we are now analyzing cost and benefit of our solution, adapting the joint—and see the joint research front per methodology. And also, in this case, we will report

to the European commission, the difficulties identified implementing these guidelines, this JRC guidelines in to real—the most real problem. And also, in this case, I think that there is an added value because we are really adopting these methodologies that could be sometimes absurd in concrete projects. This is just an overview of our work packages. And another important goal of our common work is to try to adopt the standard and to give also, in this case, a common point-of-view sharing experience in the implementation of standards, how we are facing problems, for instance, in terms of lack of standards, how the standard can be put in place in the real field. And also, in this case, our goal is to give feedback and [inaudible] [00:40:27] to the standardization bodies. And we also, in this case, are adopting all the standard compliance methods to analyze the adaptation of standard, and we are trying to define the most appropriate standard for the different demonstrations. I think that you now have an idea at very, very eye-level of our work but I hope that you are curious now and that you can learn more in the future about us. So Rémy, the floor is yours.

Rémy G. Verdier

Thank you Lilia. Before going to the Q&A session, I will give you some—an overview of the dissemination activities in the Grid good for you. So to ensure project outcome, this is disseminated as widely as possible. We, in the project, are involved in several initiatives like ISGAN. So in ISGAN, Grid4EU is providing a contribution we have been involved in the first Indian—next to Casebook regarding the EMI. And of course, you can download this casebook on the ISGAN website. And now, we are managing the certain Casebook about activity now. So we are the coordinator for this second Casebook. And we are also contributor as the French Demo presented by Lilia a few minutes ago, is one of the case explained in the ISGAN case. And of course, if you check on the ISGAN website, you will be able to see the details and the progress of the Casebook standardization. We are also in work with different European initiatives. For example, we are working closely with EEGI, the European Electricity Grid Initiative, and in this EEGI Association, the project, the Grid4EU Project has been labeled as a core project. It means that the objective of the project are perfectly consistent with the EEGI functional objective. We are also working very closely with a EcoGrid EU Project, which is a kind of a twin project for us. We are, both of them are involved in the ISGAN activities and we have the same European Commission Project Manager, and we are both members of other projects Advisory Board. So it means that I have the chance to have seat and EcoGrid EU Advisory Board and the Coordinator, EcoGrid EU is part of the Grid4EU Advisory Board. And regarding Grid4EU Advisory Board, their last meeting was at the beginning of December in Stockholm. We had the chance to gather nearly 36 members from 10 different countries, and those advisers provided to us very, very important and interesting feedbacks about how we are managing and dealing with the Grid4EU Project as an objective. So we try, with the dissemination activity, as be much visible as possible on the worldwide scale. And we are also involving in more technical workshop and Casebook like the ISGAN one.

And now, we have some questions regarding the media presentation about the [inaudible] [00:44:37] or a question about the dissemination activity, we will be glad to answer.

- Janusz Bialek Okay. Thank you. This is Janusz speaking again as the question-and-answer session moderator. So we have a number of questions. Actually, the first question, which arrived at the end of the first Q&A session but I didn't manage to ask you, is actually Pirelli. Are you looking at incorporating currently installed renewable energy into micro-grid, or focusing on installing renewable energy especially for any microgrid that you build?
- Rémy G. Verdier Sorry, Janusz. The sound was a bit poor on my side. I wasn't able to get the question.
- Janusz Bialek Okay, I'll repeat the question. Can you hear me now?
- Rémy G. Verdier Yes, it's a bit better.
- Janusz Bialek Are you looking at incorporating currently installed renewable energy into the microgrids, or focusing on installing renewable energy especially for any micro-grid that you build?
- Rémy G. Verdier For example, in the Demo, and Lilia, please feel free to jump in if you want. For the—in the French Demo, we are using renewables, and the solar panel to manage the balance, to better balance the production and consumption in the—in a local microgrid. But we need to elaborate on the renewable to be able to operate at night in this part of the south of France.
- Janusz Bialek Okay, thank you.
- Lilia Consiglio The challenge.
- Janusz Bialek Okay, go ahead, Lilia.
- Lilia Consiglio Just to detail—additional detail, the challenges out or existing plants or renewable plants or existing distributed energy plants can be adapt, can participate to these new solution, to these new way to apply the network. For instance, also, in Czech's Demo, there is the CHP unit that has been upgraded in some way to help to the construction of the islanding operation. So the goal is not to install new additional plants, but to enhance the capabilities, the functionalities, the way these existing power plants can—in order to let them participate to this new way to operate the network.
- Janusz Bialek Okay, thank you. The next question coming from Paul Dewar is a specific question about Demo 4. What is the storage in Demo four used for?
- Lilia Consiglio Yes. The storage in Demo 4 is one of the thing that will be used to, for instance, to control the voltage along the medium voltage network, the

medium voltage feeder. The main goal of that area, in which the Demo 4 has looked this. There's a huge increase of medium-voltage distributed energy resources and the major problem in that network is the voltage deviation, along with the medium-voltage feeder. And the goal of the Demo is to find a new way to control this—the voltage—the range voltage on the network. And the storage will help to do this work. For instance, using the active and reactive power coming from the storage and also using the reactive power coming from the distributed energy resources as an opportunity to control the motor.

- Janusz Bialek Okay, thank you. We have a number of questions from Paul so I will encourage others to ask questions too. So the next question is again to Lilia. As a Technical Director, what are the main risks you perceive in Grid4EU?
- Lilia Consiglio The main risk is that Demo—could be that the Demo worker, alone, we can say. So that's why we've built a real common envelope that pass to avoid these. So we are fostering the knowledge sharing. We are trying to address the problem in different way with different solution but explaining each other how we are addressing the same problems, for instance. So that's the main risk we are trying to address.
- Janusz Bialek Okay, thank you very much. The next question is—I'm not sure whether to Lilia or to Rémy is, what are the challenges that you have met in customer recruitment and in DR, demands response?
- Lilia Consiglio Okay, customers are important, very, very important. Customer participation is very important in several Demos. For instance, we need to cast involvement of the customer in the French Demo because we want them to participate to the islanding operation and we needed the flexibility in terms of load, for instance. And there is a huge activities of customer recruitment in that area. And I think that Rémy could also pass to—go with some more detail about the this. So Rémy, if you want to highlight something about this, the French Demo.
- Rémy G. Verdier I can try. What I can share with you regarding customer recruitment is first, learning from the developed French Demo is that one of the—what surprised us is that all the industrial customers we asked to be part of the demand response or flexibility aspect of the Demo, so all the industrial customers accepted to be part of the Demo. It was not the same with the residential customers. It probably means that, at least in France, the residential customers are less aware of what is flexibly, what is customer engagement, what does activity meant. So this is clearly one of the first key learning from the French Demo. It's easier for us as DSO to win more professional and just legal customers than to win more of residential customers.
- Janusz Bialek Yes, thank you. Well, the customer engagement is always a problem in all Smart Grid's projects so I'm not surprised that people ask that question

and it is a bit of a challenge. Okay, thank you. So the next question is, well, it's a very typical question for any demonstration project and it is about scalability and replication. So the question is what is the map that's used for the scalability and replication?

Lilia Consiglio

Okay, I can try to answer. First of all, our approach was from the beginning, to spend a lot of effort to address these two important topics, and that's why we have a special general package that is at Guam. That these—with these problems, with these topics, so coming back to the methodology, the methodology that now we are trying to set up comes from previous experience, from previous projects, from previous study that address the same topics, also in different areas of industry. For instance, coming to previous ICT experiences. For instance, in terms of scalability, this is one of the main issue that ICT people found in the last years. So starting from their experience, we are trying to also to build a new methodology for our work, that is energy work. And we are also trying to start from university studies. That's why we're having this work package also in several universities that work with us trying to address the problem. The first work done in this last second year was to start with the definition of the methodology. That is now available as a starting point. And the main goal of the next year will be the fine-tune of these approach, of this methodology because the main goal, the main issue is to put really in place this methodology on the six Demo. So the effort, main effort would be not just to write maps of methodology, map to adapt to them this methodology of real demonstrators. So I now cannot explain to you in detail but I'm sure that you can find some more details on our website, in which we have some material of about these topics.

Janusz Bialek

Okay, thank you very much. And the next question is the next difficult topic with this kind of demonstration project. It is about cost-benefit analysis, and the question is again from Conor Casey to Lilia. Are you looking to develop software to simulate the cost-benefit analysis of microgrids similar to software packages such as HOMER, created by NREL in the United States or use another software?

Lilia Consiglio

Okay. No, there is no software development in the project. There is just a fine-tune of the JRC methodology, trying to really adapt to this methodology to real project, to real demonstrators. So no software, but an application of these tools.

Janusz Bialek

Okay. Thank you. Now is a question from someone else, Ian Shiver and the question is, "What are the sizes of the 2 microgrid islanding areas, generally cross load megawatt for each area?" I'm not sure which Demo does it refer to, it doesn't say in the question.

Lilia Consiglio

Okay, the Demo that deals with the islanding operation microgrid, the French Demo, in which the islanding operation is over a low-voltage network and perhaps, our French colleague can give us more details. And the second one is Czech's Demo in which the islanding operation will be

done at medium-voltage level and this is an area that comprehend, if I remember well, six or seven medium-volt—patch low-voltage substations, and the area of the Vrchlabí is an area that comprehend a hospital, and I don't remember exactly now how much is the load in that area but and I can check and give you this detail on the website in the next few days. Yes?

Rémy G. Verdier I have something in the Czech Republic. The capacity of the consumption involved in the islanding is 1.5 MW of consumption and 1.6 MW of projection base in the CHP unit—1.5 regarding the consumption and 1.6 regarding projection.

Lilia Consiglio Okay. Thank you, perfect..

Janusz Bialek Okay, thank you very much.

Rémy G. Verdier And then, just to add something in France, in French Demo, we are involving 2 MW of projection. It's all up under the roof of the buildings and 1.1 MW of storage of lithium battery and so far, I don't remember the exact amount of consumption but we will check that.

Janusz Bialek Okay, thank you. I don't see any other questions so over to, I'm not sure, is it Sean who is taking over now?

Sean Esterly Sure, yes. And at this point, we will actually be handing it over to Matthieu who will do the last presentation and we'll follow that with the last question-and-answer session. So Matthieu should be getting the capabilities shortly here, and you can take it away. I'll let you know when we can see your slides.

Matthieu Craye So I've been made the presenter now, I see. And can you tell me exactly what, again, what I have to do now to run the slides?

Sean Esterly You have to accept the slides first from that little box that pops up.

Matthieu Craye Okay. Is it there now?

Sean Esterly Yup. And then just down in the bottom right, you want to do the slide presentation view. Yup, right to the left where it said 78% down there. Or a slide show, you can click up there. In the – went all the way from current slide. Although it's second from the left.

Matthieu Craye Okay. Is that okay like this, yeah?

Sean Esterly Yeah, perfect.

Matthieu Craye Okay, fine. Okay, good morning to you all. The goal of my presentation will be to sketch a bit the context in which the European Institutions or

European Commissions supports a project like a Grid4EU. So I'm at the European Commission, a Director General for Energy. And I deal there with support to Grid's and Twin's technology projects.

In the first slide, I gave it up an overview of the electricity network system in Europe. It gives you an impression of the dimensions of it. Now for me, I use this also to explain a bit what, in fact, are the initiatives or actions taken at the European level compared also to actions and initiatives taken at national level. Because if we talk about some European projects in an international context, sometimes it is confusing or where it's now – is it now in French or a German project or what is the EU doing in there and so on.

Now the fact that we have in the energy and electricity field a system of, let's say, shared competence between the European level, the European institutions and the national level. And through the treaties on the European Union, say the power, the right to initiatives mainly in creating an internal electricity markets and in taking initiatives for dealing with, let's say also, the climate's impact of the energy system have been given to European level and what we are doing, in fact, is making or taking initiatives and making legislative frameworks which then in a later stage have to be translated into national legislation. So a lot of initiatives find, let's say, their origin at the European level and then or translate it to the national level.

That's also the case for smart grids. Of course, nothing prevents EU member's states to go further, to already roll out smart meters faster than is required by certain European legislation to have more ambitious goals on distributed renewables generation and integrate them into networks and so on. So the legislative framework at the European level sets, let's say, minimum requirements, minimum standards, minimum obligations for all the member states.

A second introductory slide, I put here the definition that is used at the EU level of a smart grid and fundamental in there is that it's very much seen as a multi-way flow of information and that it's super post to let's say the flow of electricity. And very fundamental in here is that it should integrate all users, generators, consumers and those that do both.

Now to understand what we're doing to support smart grids, in fact, all initiatives in the last five or six years that are taken at the European level in support of energy policy find their origin in this triple objectives that you see here. So energy policy should contribute to sustainable energy system, very much thought of in terms of reducing greenhouse gas emissions. And it should contribute to competitiveness, understood in two ways in the sense that our energy system has to deliver electricity at a price, at a cost and at a price which is affordable to consumers, but also allows business to compete also at the international level. But also

contributing to an energy sector and energy technology sector which is flourishing and which is very innovative and so on.

Third, energy security, so securing the supply of energy to both consumers and industrial companies. Okay, I'll skip that slide and I'll talk about yeah, what is now really, if I try to synthesize, what are now really the main drivers more in detail for actions on smart grids. It's a transition towards low-carbon economy. In 2009, we had set a precise targets for 2020. They're called the 2020 20 Targets meaning we need 20% renewables or energy from renewable sources in our energy mix. We need to reduce greenhouse gas emissions with 20% and we need to be 20% more energy-efficient compared to 1990. And so these goals that are legally – well, part of them are legally binding goals in the European Union. There are main driver also to speed up the development and deployment of Smart Grids.

The second one, guaranteeing high security quality and economic efficiency of supply in a market environment. I put there in red the market environment because in Europe, the evolution towards smart grids is also very much linked with what we call creating an internal market for electricity. Internal market for electricity means interconnecting national markets but also means creating more open and dynamic distribution and retail markets. So also having more competition there. And the technological, let's say, the technological basics for enabling such market reform, also at a distribution and the retail level are, let's say delivered by smarter grids.

If I look a bit at the evolution of the attention given to the different drivers, I would say that until three, four years ago, it was – well, very much focused on this distributed renewables energy generation and those 2020 20 targets. And in the last two years, we have, let's say, given more and more attention to the role of smart grids in consumer empowerment.

So consumers, there's a lot of PV panels installed in Europe which makes that certain consumers have become producers. There's also the goal of having more engaged consumers. There's also the need of consumers getting more aware of what influences also their energy use and how they can arrive at energy savings to become, let's say, masters of their own electricity bill. And so this is very much a driver, let's say, the last two years and still until today for policy action on smart grids.

An important point in time for the EU initiatives on smart grids was a communication that was published in 2011, but also before that communication, we had already hints to smart meter development, smart grid development, smart meter rollout in several legislative packages, some of them that I listed here. Following that communication, which I will say more in the next slides, there has been some initiatives to support rollout of smart meters and smart grids as recommendations at the EC level on CBA for a smart grid and for smart meter rollout, recommendations on the functionalities that should be provided by smart

meter. Also activities initiated at EU level mandates given to the European standardization bodies.

Another legal framework in those support measures, they are complemented with funding instruments. Two – or very important, we have a research and development framework program which until this year – or no, until 2013 was called Framework Program 7 and now from this year on, it's a new program that has started and which is called Horizon 2020. And the other important funding instrument is the connecting Europe facility, which is not so much linked to demonstration, but rather to infrastructure, investments and a quite important brands that can be given at European level to electricity and infrastructure, energy infrastructure with a European added value.

This is from the communication that we issued in 2011 where we identified some of the services that smart grid should deliver. I won't go into detail on this. The end of communication, five challenges were identified for further deployment of smart grid. So very much – very important the engagement of the consumer, what can be done to have the consumer really involve privacy. Data handling is one, is a very important aspect in there. The standards and interoperability is an important challenge, an important field of action for rolling out smart grids, not only at an international level, but also within Europe. We have very different typologies of distribution networks. We have the goal to have a system in which quite some or a lot of suppliers of smart grid applications could be active and so you need a high level of interoperability to achieve this.

Infrastructure on rollout supporting a regulations or supporting regulation role or other challenges and the rollout, I think, an important element there is the business case issue, so how can regulations be consist that gets better incentives to roll out smart grids is an important question there.

The communication identified five actions. The one that I will focus on here is stimulating innovation. That's we're talking about demonstration projects, unless you just got a detailed presentation on a major demonstration project.

Now for stimulating innovation, I think Remy or Lilia also already referred to the European Electricity Grid initiative. They stimulate and still that innovation at European level. We have this common research development and demonstration agenda or program which is developed by the European Electricity Grid Initiative. The major goals of the European Electricity Grid Initiative which gathers the network operators in Europe, but also manufacturers of electrical equipment and then representing strong from the different European member states. The main activities and goals is to arrive at a high level of knowledge sharing between projects initiated at national level, but also between European projects on smart grids. The labeling that was mentioned in the previous presentation is part of that.

Also, to arrive at a joint assessment of outcomes of projects through a system of key performance indicators to facilitate up-scaling and replication of projects, also work on cost benefit analysis as part of that. And also to give, let's say, guidance to further research and demonstration programs both at European and at national level. And to this end, the EGI developed, let's say, categorization of projects which should facilitate the thinking and the communication to which objectives projects contribute which then would also ease their assessment, the assessment of their outcomes, the assessment of their relevance for other context in Europe.

An important tool to arrive at knowledge exchange is the inventory of smart grid projects in Europe, which is carried out by colleagues of mine who work in the European Commission's Joint Research Center. That's like the in-house scientific, technical, competence center of the European Commission. They have – they do a yearly update on smart grid projects. That is, let's say, there's a wide variety of projects that are commented upon in their survey. They range from research to demonstration to deployments. A wide scope can be smart meter rollout but it can also be precise demonstration for instant demand response.

We see also there that there is more and more projects that deal with consumer engagement. From now, let's say, from 2012 on the reports based on the survey also takes or there's still some lessons learned from the survey. And what we see there is that many of the barriers that are mentioned to further up-scaling and replication of those projects are more policy-related or social or regulatory, not so much technical. Perhaps that's also something on which the people from grid for you could comment.

Now within the frame of that European Electricity Grid Initiative, we strive to have better knowledge sharing between national projects, but we also want to support some large-scale demonstration projects directly from the European level as the one that has been presented now, Grid4EU. The reason is that we – with such demonstration projects, we search a large impact in the sector. We want to have some lighthouse projects which are also meaningful then if or towards which, let's say, other national projects than they can position themselves.

They have important budgets, EUR 15 million, EUR 30 million is put here as the amount of grant that they received from European Commission. We're really want to have industry in the lead role there because it's demonstration projects [indiscernible 1:16:50] because we want to arrive at deployment of smart grids. The technologies have to be implemented in real life environment. And those demonstration projects, they need to have also strategies for replication for exploitation. So it's not just technical work. They also have to study the context in which the demonstration takes place. See what barriers there would be for replicating and exploiting results.

I told you that one of the funding instruments is our RTD Framework Program and from this year on, this is Horizon 2020. And I made some publicity here for a call that is now open in that Horizon 2020 program where we have currently again a distribution grid, smart distribution grid topic that is open. I guess participants in this webinar will have access to the presentation, so you'll find here a link to where you can find more information on this.

Many of the impacts that we seek with that topic that is now open, it recall some facts what I came to tell until now of what our aim is with the supporting demonstration projects. This integrated approach not only technology, but business models, plans for market uptake. All these should be a part, it's already part now of Grid4EU, but also for new projects that we want to support. This should be all in.

Grid4EU, you had a quite detailed presentation. Now there's also another European important project in smart distribution grids that we have funded in our previous program, FP7, that's Ecogrid EU, when in the previous presentation, we talked about the contribution to the ISGAN casebook. Ecogrid EU was already briefly mentioned. It's in a project that gets 13 million of European support and it takes place in the Danish Island of Bornholm. It will be also describe in that ISGAN case book on active demand management. So if you want to have more information, it would be good to read the active demands casebook. You'll also find the internet web link here.

Ecogrid EU is not a collection of several smart grid demonstrations, smart grids for you. It concentrates on one particular geographical location and one particular application that is demonstrated. And it is, in fact, about a real time market concept where customers and producers of distributed generations will get real time price signals and will react to those price signals. And the goal is to arrive in this way to a balance of supply and demand and to also to deliver or to supply certain system flexibility services to the transmission level. So in the figure, you see different, let's say, different market functionings here depending on the time scale of the market interventions. The Ecogrid EU concept aims to have a real time market to achieve real time balancing. Here is some characteristics of this Island of Bornholm where you have really a very high penetration of renewables. It's over 50% of electricity consumption that is covered by renewables.

Finally, a few words on the contributions that we support to the ISGAN network, the International Smart Grid Action Network, as this webinar is a joint organization of the Clean Energy Solutions Center with ISGAN. Remy and Lilia already talked about the contribution of grid for you to the Annex 2 of ISGAN, the case studies, where they are producing now this global casebook on active demand management. And we are particularly satisfied that we have a good global coverage in that case book with also

cases from colleagues in Japan, in India, South Africa, United States, Canada. So it's really a good sample of projects on smart grids worldwide.

My colleagues in the joint research center, they contribute based on their inventory activities to the global ISGAN inventory of smart grids projects and also to ISGAN work on cost benefit methodologies. And now another, let's say a second major contribution next to the global case book on active demand management is now that European Network of smart grid lapsed [indiscernible 1:22:29] will be the coordinator of a fifth annex in ISGAN which is the Smart Grids International Research Facilities Network, which is a network between research centers on smart grids.

The final thing that we'll initiate in the next months is a contribution to the power transmission and distribution annex, that's Annex 6, where we have a project starting focusing that's more on a transmission level HVC, high voltage diode current. And this project will seek to get involved in ISGAN Annex 6.

So that's the end of my presentation. As with the other speakers, I'm also available to answer some questions.

Janusz Bialek Okay, thank you very much. So [indiscernible 1:23:26] moderating questions and answers, now not any questions which I perceived and we are nearly at the end of the webinar. So this is just for me one question to Matthew. When we're moving forward the Horizon 2020 as oppose to Framework 7, the previous one, so is this support for smart grid's bigger, smaller in percentage time on the Horizon 2020? What kind of numbers we are talking about?

Matthieu Craye I think, in general, it's bigger because in each of the calls of Horizon 2020, we will have 100 million for topics on grid and storage. Whereas when I follow quite in detail the last calls in FP7 and there for a research and demonstration projects together, we arrive like typically each year at about 50 or 55 million. If you see now for grid and storage, the first two calls of Horizon 2020, we have each year 100 million available. So it's nearly doubling the efforts given to smart grids and storage.

Janusz Bialek Excellent, thank you very much. As I said, I see no other questions from the audience so over to Sean to take over please.

Sean Esterly Yeah, thank you to both of you. And I believe that [indiscernible 1:25:02] wanted – they have one more slide they wanted to show. Heather, if you could – or I'm sorry, Maureen, if you could just hand the capabilities off to them one more time.

Maureen Yes, please, hello.

Janusz Bialek Okay, just some additional information. If you want to stay connected and in touch with the Grid4EU project, you have the opportunity to subscribe

to the Grid4EU via annual newsletter and of course, on the Grid4EU website, you are able to download the previous newsletters. We got also followers on social media. You can follow us on Twitter and you can join the LinkedIn Grid4EU group. And if you visit the Grid4EU website, you will be able to download all the thing you want [indiscernible 1:25:54] the new variables in order to know a lot all. And nearly everything about what we have done so far in the project. And of course, in the website, you can find a lot of details about the coming events, the agenda of the project and how the demos are doing, and some update about the Grid4EU project. So if we – and you are fully welcome to visit the Grid4EU.eu website. Thank you very much.

Sean Esterly

Yes, and thank you again to the panelists for the great presentations and thank you to the audience for the nice question and answer session. We do have – just ask that the audience participate in a very quick survey that we have to help us evaluate the webinar and just gather some feedback. It's only three short questions and you can answer those in the go to webinar channel. So Maureen, if you could please display the first question. And that question is did webinar content provided me with useful information and insight? Great. And the next question please, Maureen. And that is the webinar's presenters were effective. And then the last question, please. And that is overall, the webinar met my expectations.

Janusz Bialek

Sean, there's one question which is asking quite important drive as if I could ask in the meantime. And this is to you, I think, and all – well, not to you, I think. It's to Remy. It's about languages in which the material will be available. So I presume the question is whether all the materials are available only in English or they will be available in other languages too.

Janusz Bialek

All the deliverables are in English. So the official language of the Grid4EU project is English and that's on the deliverables and especially the public one on the website are in English.

Sean Esterly

Great. Yeah, thank you and thank you to the audience for answering our survey. And on behalf of the Clean Energy Solution Center, again, I just like to thank the extra panelists who are putting on this webinar for us and also for our attendees in participating today's webinar. We thank the audience and very much appreciate the time you took out of your schedule to join us. And I do invite our attendees to check the Solution Center website over the next day or two. We'll be posting the slides, as well as an audio recording of this webinar. Also, please feel free to share this information with those colleagues in your networks and organizations, as well as other solution center resources and services included in the no-cost policy support. So I hope everyone has a great rest of your day and we hope to see you again at future Clean Energy Solution Center events. And this concludes our webinar.