

## Strengthening Education for Sustainable Energy Transition and Digitalization – EDDIE Project Summary and Statements – Keynote Speeches and Conference Highlights

25th of November 2020, Marta STURZEANU & Carina ZIDARU

**THE ROMANIAN ENERGY CENTER - CRE and the Partners of the European Consortium which implements the EDDIE Project - Education for Digitalization of Energy, organized on Tuesday, 17th November 2020, the first International Online Conference, dedicated to the role of Strengthening Education for Sustainable Energy Transition and Digitalization. The addressed topics like the role of education in the new age of digitalization and the development of synergies with innovation projects funded by the European Commission (EC) through the Horizon2020 program - EDGEFLEX and PHOENIX, projects in which CRE is partner, contribute to decisions in the process of digitization of the European energy sector.**

Opening the EDDIE International Online Conference, **Mihai PAUN, Vice President of Romanian Energy Center**, pointed out the aim of the open conference of bringing together industry representatives, policy and decision makers, researchers, practitioners as well as key representatives from the education sector to discuss challenges relating to digitalization, education and their role for the future of the Energy Sector. *“Building out a digital world – Digitalisation – will in due course affect, and likely transform, all levels of society.”* highlighted Mihai PAUN. *“It must be stressed that Digitalisation comes hand-in-hand with the expectation of, and growing demand for, immediacy: the need for “now”. That means shorter response times, faster transaction completion and payment. Speed matters most. Meeting such expectation and demand has, and will continue to have, a deep impact far beyond the systems and firms striving to provide always on, real-time results. In parallel, Digitalisation – mainly due to the spread of mobile devices – boosts participation by all, both at political and economic levels. That means people are more connected, engaged in the world around them – from expressing their choice at election time to what services and products they will buy. CRE promotes exploiting Synergies amongst the Telecoms, Energy and Transport sectors in terms of ICT, digitalization and infrastructures.”* the Vice President continued.



*„We encourage Close Collaboration amongst these sectors in order to use resources efficiently and effectively.”*

Moreover, the Vice President, underlined that *“The Role of Innovation is key for CyberSecurity Solutions and it represents a way towards Digitalizing the Power Sector. Because civilization is dependent on the energy system, greater attention must be paid to cybersecurity & flexibility, two other key topics addressed in this event.”*

The Introduction Session and Keynote Speeches on Energy and Digitalization was moderated by **Cristian COLTEANU, Director Strategy and International Affairs at CRE**, who mentioned that *„the EDDIE project will create an innovative approach for the Education system in relation with the Energy sector (at an EU level) as an industry-driven movement, where the skills emerge as a need of the real application instead of the classic approach that starts from fundamentals to reach application.”*



### Introduction Session and Keynote Speeches on Energy and Digitalisation



**H.E. Luminita ODOBESCU - Ambassador Extraordinary and Plenipotentiary, Permanent Representative of Romania to the European Union** expressed her views on the education and training topics in the process of digitalization of energy area. According to the Ambassador the pandemic put at risk not only the health sector but also the whole economy and energy sector as well. Luminita ODOBESCU invited us to see the current situation as an opportunity. *„Romania has a huge opportunity to modernize its energy sector by adopting measures to boost green & digital transitions. EU provides necessary financial tools, but strong involvement of authorities, business and citizens is needed.”*, said the Permanent Representative of Romania to the EU.

Further on, **Manuel SANCHEZ JIMENEZ - Team Leader Smart Grids - European Commission DG Energy**, recalled the previous words of Luminita ODOBESCU by mentioning once again the importance of the green and digital objectives for a green and carbon neutral continent. One important aspect, he said, is to train the people in achieving the right skills for the right objectives. Therefore, „the EU is expecting from EDDIE and projects like EDDIE to find out these right skills”.

Manuel SANCHEZ underlined that „The reconciliation with our planet starts with the reconciliation with our country, with our continent.”



**Sabin SARMAS - President - The Authority for the Digitalization of Romania - ADR**

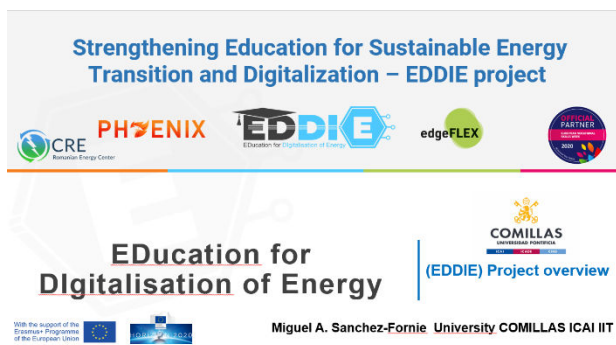
pointed out that “The transition towards a highly connected and digital society is a complex process.” According to Sabin SARMAS the most important lesson of this year is that digitalization saves lives and the economy. Furthermore, the citizens must be prepared for the future with basic and advanced digital skills and high-level education. Upskilling and reskilling should be daily words for all of us, the president said while referring to the Pact for skills of the EU. ADR aims to become the fastest growing digital economy in the EU.

**Roberto ZANGRANDI - Secretary General - E.DSO for Smart Grids** recalled the words of Dr. Mihai PAUN, “Data is the new oil, but the also the new plutonium.” and mentioned that one important aspect in the digitalization of the energy sector is the possibility to transfer professions and human resources among the sectors, up and down, across the countries. „This is impossible without a shared basic set of competences.”, said ZANGRANDI. In conclusion, the Secretary General highlighted that such a drastic energy transition cannot happen without education sector.



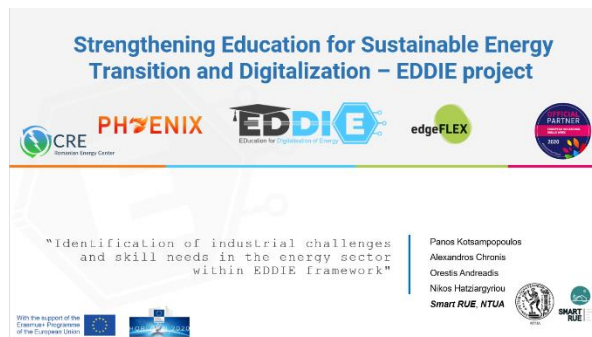
## Session 1 - EDucation for Digitalisation of Energy

The moderator of the first session of the event, **Mihai MLADIN** – Projects Manager and Advisor at CRE, presented the speakers and led the panel discussion.



**Miguel Angel SANCHEZ FORNIE - EDDIE Consortium Coordinator, Comillas University** presented the EDDIE Project, an initiative of the EC that will ensure the collaboration between all the stakeholders, through a Sectorial Skill Alliance. The final objective is to develop a long-driven Blueprint for the digitalization of the European energy sector to enable the matching between the current and future demand of skills necessary for the digitalization of the energy sector and the supply of the improved vocational Education and Training systems and beyond. “It will be a way to ensure the replicability and scalability for the EU.”, said the coordinator.

**Panos KOTSAMPOPOULOS - Senior Researcher, National Technical University of Athens**, presented the identification and industrial challenges and skill needs in the energy sector within EDDIE framework. Panos KOTSAMPOPOULOS presented the main challenges of sectors related to digitalization of energy: technology integration; IT security issues; and lack of adequate skills from employees and data management. The economic, organizational, social challenges are business models adaptation, privacy concerns, and acceptance of new technologies. One of its conclusions was that “Power” sector showcases the biggest skill gaps.



## Panel Discussion on the identification of industrial challenges and skill needs in the energy sector



### Session 1 – Panel Discussion

**Alexandre JUNCKER – Technology Manager, ALPIQ Switzerland** specified that the industrial company he is representing is interested in skilled developers and skilled technicians. In terms of challenges, the company will want to have people prepared to contribute to solving the issues for meeting the green objectives. In the context of making the energy more green, Alexandre Juncker mentioned that the two main ways in which the energy sector objectives can be address are by limiting the consumption of energy and by decarbonizing, the former not being achievable by renewables. *“The solution can be found in nuclear power”*, said the manager. Further on **Lorenzo PERETTO – Professor, University of Bologna** mentioned that nowadays there is a need to optimize students’ academic schedule to face an increasingly volume of information. The educational institutions need to present the RIGHT information and the continuous daily contact with the industry helps identifying what is relevant and what is no. Another topic address by the professor is the safety concepts of energy sector and the fact that the students should learn also new safety skills. **Mihai SANDULEAC – Professor, University Politehnica of Bucharest**, mentioned that in UPB university the professors are working for more modern, future oriented teaching courses. According to him it is a challenge because the students need to understand more IT knowledge or cross-university types of knowledge which lead to a selection problem. Mihai SANDULEAC concluded that collaboration is the key on this complex road for finding the right solutions. At the end of the debate, **Adrian FLOREA – Managing Partner at Trend Consult, VET Provider** starting by asking *“Where is the leadership in this discussion?”* and by mentioning that many times, in the context of digitalization, people end up by accepting that this is a cultural problem, therefore a matter of habits. From his point of view *„Many organizations accept the fact that they need to change, to embrace digitalization, but their habits remain the same. If the leaders of the organizations are not willing to accept new habits all is equal with zero. So, the management must change for the organization to change as well”*, ended Adrian FLOREA.

## Session 2 - Synergies with H2020 research projects on the digitalization of energy

### Session 2.1 - EdgeFLEX Project - Providing flexibility to the grid by enabling VPPs to offer fast dynamics control services

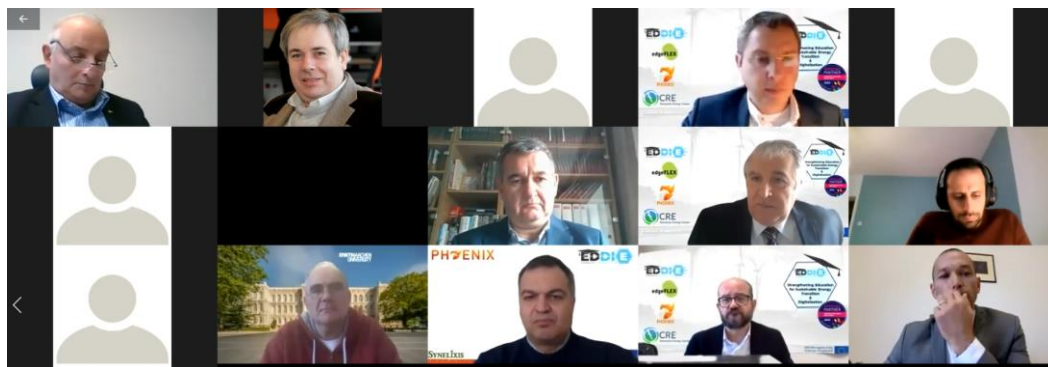
The moderator of the session 2.1 was **Dan PREOTESCU – Projects Manager and Advisor at CRE**, who introduced the speakers and led the panel discussion.

**Gianluca LIPARI – Postdoctoral Research Associate, RWTH Aachen University** presented the findings of EdgeFLEX Project in the context of the distributed generation. EdgeFLEX aims at involving Virtual Power Plants and Energy Communities in the grid management helping the DSOs. In terms of implementing the approach proposed by the project, Gianluca LIPARI enumerated the following skillset for the young professionals: measurement techniques, skills on the cloud, connection with new generation wireless communication (5G), understanding and vision of the market and energy trading.





## Panel discussion: Synergies with EDDIE project, flexibility, and regulatory framework assessment



### Session 2.1 EdgeFLEX Panel Discussion

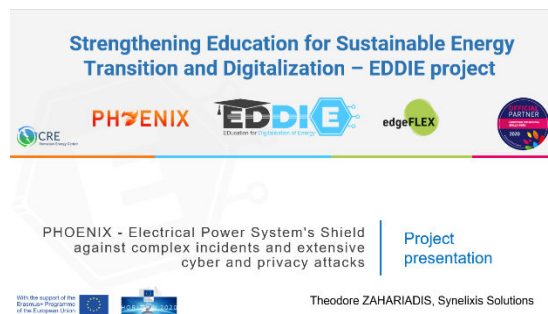
**Antonello MONTI** – Professor and Institute Director, RWTH Aachen University gave EdgeFLEX as an example of what the complexity of digitalization means and what are the new requirements in terms of education. According to him the original interpretation of digitalization as combining energy with ICT it is a very incomplete and unclear definition. In the basic level digitalization means power electronics but increasing the level we are founding platforms, business models and the main market. So, *“the challenge of education is particularly high”*, said Professor MONTI. Further on **Ronnie BELMANS** – CEO of EnergyVille, full professor at the KULEven, and Chairman of the board of directors of the Flemish regulator VREG mentioned that the TSOs and DSOs will need a common platform. In his view the digitalization will bring a huge amount of data, and in this context, the professor raised a set of questions: *“Who will regulate that data from energy? Energy regulators or communication regulation? How to follow the data and its source? How to get the correct green level of that data? How to bring the data together in the platform for using it as part of the service?”* Then, **Mirela DIMA** – Director Regulatory Affairs, CEZ Romania mentioned the need for skilled people. The director shared her own gaps identified: between new graduates and experienced people; between the people involved in the daily operations and the people in the research; between what companies are doing by introducing digitalization and what the consumer and the public understands from their effort. *“The consumer and the public must know why we are taking certain decision and making certain efforts and their benefits.”* concluded the director. After this, **Valeriu BINIG** – Regulatory Director, ENEL Romania mentioned that we must identify the responsible or the most appropriate entity for each action before demanding solutions from the education institutions. *„In the context of EdgeFLEX we needed VPP applications for the energy communities and a very effective solution would be through Robotic Process Automation and the role of the regulator should not be necessarily on facilitating it, but on taking care of minimizing the risks which may occur in the process of data handling”*, concluded Valeriu BINIG. **Zoltan NAGY-BEGE** – Vice-president of Romanian Energy Regulatory Authority ANRE added that the initially required step on the way to Flexibility is the support towards digitalization on the DSOs side. According to him in 2020 it was updated the secondary legislation on VPP, and it was specifically defined the Aggregator as a key actor in the process of supporting Flexibility. The Vice-President said that *“it is expected a huge impact on the Balancing market as well, aiming to eliminate any measures and having a single price rule”*. Further on, **Laurent SCHMITT** – Secretary General, ENTSO-E mentioned that the need of flexibility at the end of the system is crucial. ENTSO.E is focusing not on a perspective based on technology, but on a perspective of use-cases and the use of flexibility at the end of the system is appearing in company’ various flagships. The Secretary General expressed the need for all the researchers and the community to think for one consistent interconnected system – system of systems, that will expend in ICT. In the higher levels, *“DSOs and TSOs, should work together for new models”*, concluded Laurent SCHMITT. At the end of the conversation, **Adrian GOICEA** – Chair of the Supervisory Board, TRANSELECTRICA reassured the audience that the Romanian transport and system operator is very much dedicated to implementing the mechanisms of the European Green Deal, considered to be the backbone of the energy sector’s development. Furthermore, TRANSELECTRICA’s vision is to become the technical and operational authority of the regional power system, together with achieving balancing through storage.

## Session 2 - Synergies with H2020 research projects on the digitalization of energy

### Session 2.2 - PHOENIX Project - Electrical Power System's Shield against complex incidents and extensive cyber and privacy attacks

The moderator of the session 2.2 was **Emiliano MARQUESINI** – EU Projects Coordinator at CRE, who presented the speakers and led the panel discussion.

**Theodore ZAHARIADIS** – Chief technical Officer, Synelxis Solutions introduced the PHOENIX Project, who aims to provide a cyber-shield armour to European EPES infrastructure enabling it to detect and survive large scale, combined cyber-human security and privacy incidents, for the continuity of operations and minimization of cascading effects in the infrastructure, the environment, the citizens at reasonable costs, so „data need to be protected”.



### Panel discussion: Synergies with EDDIE project and cybersecurity across EPES



### Session 2.2 PHOENIX Panel Discussion

**Kirsten GLENNUNG** – Projects Director, European Distribution System Operators for Smart Grids underlined the importance of trust in this context. Director GLENNUNG, said that EDSO is very focused on innovation and that it is obvious that we get smarter, but also vulnerable in a new way. „We need to be able to convey TRUST to the stakeholders and to show to the end-users that we can protect their data”, concluded Kirsten GLENNUNG. Further on, **Monica FLOREA** – Head of Unit European Funds (UEF), SIMAVI presented the ENERGYSHIELD project and its strategies. According to her, the EC strategy for the next period set the priorities for the up-coming Research and Innovation of Horizon 2020, Green Deal calls, where cybersecurity is a key topic, especially in Cluster 3 – Civil Security for Society, as well as energy in Cluster 5 – Climate, Energy and Mobility. „The involvement of all stakeholders from EPES sector in the research and innovation activities would be of key importance to prepare the ground for adopting coordinated actions”, said the Head of UEF. After this, **Bas KRUIJMER** - Business Director Intelligent Networks & Communication, DNV-GL Netherlands, underlined the importance of security & safety, because it is a good thing to have technology and pilot projects, but cultivating the culture of safety & security it is equally important. Full coordination and cooperation between the main market players is fundamental, and „we must be mature in dealing with cyber threats”, concluded Bas KRUIJMER. Further on, **Massimo CRESTA** – Director at ASM Terni SpA - Production Unit Terni Electric Distribution (TDE) pointed out that each electrical power & energy system has two elements: systems (software & hardware equipment) and the staff. According to Massimo CRESTA, the EPES Cybersecurity must take into account both. 'Human Factor' as a potential Cyberthreat vector is critical. „Overall, the digitalisation of EPES increase the possible cyber-attacks and, therefore, the collaboration between the valuable European countries must promote development of a new cybersecurity culture. To conclude, we must foster the creating of new 'cybersecurity' skills to enable safe digitalization and reduce vulnerabilities”, said the ASM Director. **Rodica LUPU** – CEO, Loop Operations mentioned that the company is working together with CRE and currently are training more than 300 people from energy sector, specifically on cyber security and data protection skills. Rodica LUPU explained the concept of cyber diplomacy and pointed out that, in this strategic industry which is fully linked with state security, that managers and decision makers have to be political aware within the cybersecurity context. „Educating the personnel is critical. Managers and decision makers need to have the ability to prevent, identify and solve issues, with

*suible solutions, together”, concluded Rodica LUPU. Cezar RUJAN – CEO, CEREBRO thinks that within Cybersecurity, penetration tests are critical and must be regularly used, so to be able to learn from it. Cezar RUJAN also mentioned that managers need to be very aware of the technology that they are adopting. The CEO added: „One skill that I recommend to managers and decision makers is to understand the technology that they are adopting, i.e. machine learning, which is critical in the long-term operations of smart grids”. Tiberiu HIDI – General Director, AEM Timisoara raised a few challenges regarding the meter industry where attention is focused on cyber security. The General Director said that the software is tested by different authorities only for functional standpoint, and not also for security aspects. He believes that „the key challenge in the meter industry, is to find a way to validate the software which are embedded on the meters”. Marius HARATAU – Digital and Data Privacy Consultant, CEO Factory 4.0 underlined the importance of digitalization tools within the context of cybersecurity, data privacy, physical and psychological health - he recommends such tools to be used and promoted within the European Framework. According to Marius HARATAU, the maturity index is a mandatory tool for the evaluation and transformation of a company. The consultant said that data protection by design approach is a must when we start a new initiative: „We need appropriate skills for leaders so that they will be able to identify the fundamental digital skills to be pursued in an organization”.*

### Conclusions and Final Remarks

From Session 1, the moderator Mihai MLADIN, highlighted that the digitalisation of the energy sector is a fact and that the preliminary results in EDDIE confirmed what the speakers presented. According with Mihai MLADIN, *„the synergies between the academia and the industry are working. We need to further look for opinions from the vocational educational trainers, because their perspective is not completely aligned with today’ findings”.*

Session 2.1 moderator, Dan PREOTESCU, pointed out the regulatory area is moving forward and that there is a need for better cooperation between TSOs and DSOs. *„For sure, there is a gap among the academia and the industry, so we should adapt our teaching system to the reality, and to the digital reality of today”, concluded Dan PREOTESCU.*

The moderator of the last session - Session 2.2., Emiliano MARQUESINI, highlighted the importance of cooperation, awareness and coordination across all the actor; focusing on education skills for digitalisation of the energy sector; actively promoting trust across the main actors, and also the demand for demonstrating to the end users that the energy system is ready to protect their data.

In his final remarks, CRE’s Vice President, Mihai PAUN recalled the previous words of Miguel Angel SANCHEZ FORNIE and mentioned that *„Energy Transition is a must”*. *„Education and training are keys for the involvement of the energy sector”, he continued. According to Mihai PAUN, „Challenges like including technology, integration of the new technology, IT security issues, could be easily transformed in opportunities. Digitalisation is increasingly adopted in the energy sector, by Member States and there is place for improvements, for more dedicated education and training.” said the CRE’s Vice President. In conclusion, Mihai PAUN added: "We are looking forward to continue our cooperation with all of you. We are looking forward to consolidating the role of the digitalisation, the role of innovation in the power sector. I want to thank all the speakers and panelists for their contribution, and to all participants for their interest and patience."*

