



## Event Report

### Road to Net Zero: Standards for the All-Electric Society

#### Background Information

On 2023-12-05, CEN and CENELEC, together with DKE, hosted a hybrid stakeholder workshop in Brussels to discuss the impacts on products and systems to generate, store, and use 100% carbon-free electricity and the broader consequences of the expansion of electrical energy. About 200 participants joined the event.

The workshop was divided into a high-level keynote speech and round table as well as two stakeholder panels and two technical sessions. In a nutshell the event provided:

- Exchanges with representatives of the EC (DG GROW and CNECT), universities, consumers (ANEC), industry representatives (TSO, DSO, SMEs, manufacturers, standardizers, etc.).
- Insights into needs and expectations of specific actors (consumers and industry) and fields (sector coupling & energy management and data communication).
- Raised the need for mapping the landscape, defining /gaps, and developing a roadmap to achieve the vision of the All-Electric Society.

More details are provided within the present event report.

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## 1 Introduction

Electricity plays a key role to achieve climate neutrality and the Green Deal objectives. In 2023, with Industry 4.0 and new forms of mobility, infrastructure, energy storage, and smart buildings, we are facing the largest electrification effort since the introduction of the electrical grid over 130 years ago. However, what does it mean for products and systems to generate, store, and use 100% carbon-free electricity and how can we absorb the consequences of this expansion?

On 5 December 2023, CEN and CENELEC, together with DKE, hosted a hybrid stakeholder workshop to discuss:

- What is the current European landscape of the All-Electric Society?
- How can European, consensus-oriented processes contribute to a broader acceptance of the All-Electric Society?
- Why are interoperable solutions and technical concepts essential to meet societal objectives such as decarbonization and greater energy independence?
- Where can standardization support political initiatives such as the Digital Product Passport, the Data Spaces, Smart Contracts, and the Net-Zero Industry Act?

Similar events had been organised by the [IEC](#) in China in June and the [DKE](#) in Germany in July with several articles published on the topic (by the [VDE](#), [DKE](#), [IEC](#), etc.). The global high profile and importance to European Green Deal objectives pushed the topic to the European level with CEN and CENELEC.

The goal of the workshop was to gather stakeholders of the All-Electric Society. European industry is developing and improving products and services in support of net-zero objectives. CEN and CENELEC together with the DKE aspire to increasingly connect these 'green dots' to make the vision reality.

This event report incorporates event outcomes before describing the sessions.

## 2 Outcomes of the workshop

The following elements may be understood as high-level outputs of the stakeholder workshop:

1. **Identification of the current landscape:** General insights into the current global and European landscape of the All-Electric Society, including an understanding of ongoing initiatives, challenges, and opportunities shaped by the speaker line-up and audience interactions.
2. **Consensus-oriented processes:** Discussion and identification of topics and issues that can contribute to a broader acceptance of the All-Electric Society, which is needed to implement new solutions and adapt, e.g., user behaviour correspondingly. This involves identifying areas of agreement and potential collaboration among stakeholders, starting within the Steering Committee, participants of the workshop, up to the circulation of this report.
3. **Importance of interoperable solutions:** Recognition of the need for innovation, the significance of interoperable solutions and technical concepts as described within CEN and CENELEC deliverables in achieving societal objectives such as decarbonization and greater energy independence.
4. **Standardization for political initiatives:** Exploration of how standardization can contribute to the success of political initiatives, including the Net-Zero Industry Act. Dissemination of knowledge regarding electrification efforts and related topics, contributing to increased awareness among stakeholders.

In contrast, technical outcomes are more specific and hint at the need for crucial change to ensure the success of the energy transition. These action points are deducted from all event sessions:

- **Consumer-centric approach:** Recognizing consumers as central stakeholders in the energy transition, the discussions emphasized the importance of acknowledging their diversity in age, gender, and economic status in the development of regulations and standardization.
- **Need for clear definitions:** Highlighting the necessity of definitions on the European level, the discussions stressed the significance of establishing common vocabulary and structures. Clearly high-level concepts such as "flexibility" and "sector" require common definitions, but also common semantics are required on a technical level to facilitate effective cross-system communication.
- **Role of DSO grids and technologies:** Identifying Distribution System Operator (DSO) grids and connected technologies as both bottlenecks and backbones of the current energy transition, the discussions highlighted the

fragmented energy system. Implementing Network Codes and related standards, including open standards, is seen as essential to overcoming challenges.

- **Demand for system and service standards:** Recognizing the need for more system and service standards, the discussions underscored the importance of achieving hard- and software interoperability as well as smooth data flows across sectors and fields. This should extend from electricity generation to grids, homes, and appliances.
- **Strategic long-term planning:** Emphasizing the necessity for strategic long-term planning across sectors, the participants advocated for roadmaps as useful implementation tools. This strategic approach is seen as fundamental for navigating the complexities of the energy transition.

In conclusion, the listed outcomes not only confirm a consumer-centric, democratic, and standardized approach to tackle challenges in the energy transition — particularly emphasizing DSO grids, interoperability, and strategic planning across sectors — but also contribute significantly to improving understanding, trust, and collaboration among cross-sectoral stakeholders in the journey towards an All-Electric Society.

The outcomes further align with the goals of the European Green Deal and net-zero objectives, serving as a catalyst for more exploration and streamlining of standardization efforts in the pursuit of a more sustainable and interconnected energy landscape.

### 3 Event sessions

The following sections of this document report on each session of the event and are followed by additional information.

The event was moderated by **Katrina Sichel** and supplemented with audience polls and interventions.

#### 3.1 Opening Remarks

The full-day event commenced with a welcoming address from **Wolfgang Niedziella**, President of CENELEC. In his opening speech, Mr. Niedziella provided a historical perspective on the role of electricity in shaping the world. He emphasized the event's importance in delivering essential insights into creating optimal standards for the All-Electric Society.

**Mr. Niedziella** noted that this stakeholder workshop is a follow-up to the CleanTech Workshop in June 2023 ([here](#)), as another element within the broader strategy. The integration of the All-Electric Society was identified as essential to creating a greener, more integrated, and resilient market. Notably, the strategy emphasized inclusivity by insisting that no energy carrier should be excluded, highlighting the importance of a balanced approach.



Figure 1. Wolfgang Niedziella



**Mr. Niedziella** recognised that energy consumption is increasingly decoupled from economic growth, emphasizing sustainability and the imperative to meet energy needs with renewable sources.

Participants were encouraged to identify and address topics and needs within the evolving energy landscape where electricity is taking the centre stage. The opening remarks ended with a call to action, urging collaboration and innovation as the driving forces to establish standards that effectively support the green and digital transition.

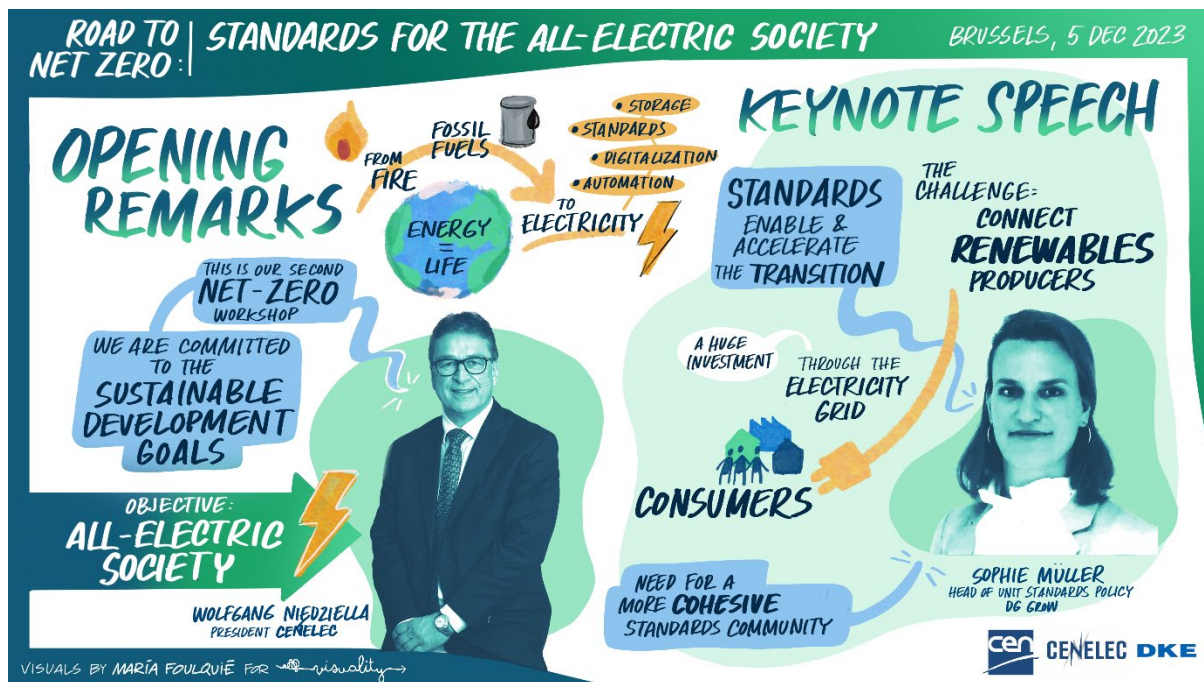


Figure 2. Visualization of the event opening.

### 3.2 Keynote Speech

The Green Deal Industrial Plan is the latest milestone to foster green and digital technologies, a strong manufacturing base, and the entire value chain that underpins the Single Market. How did we arrive at this point, and what is next on this journey towards an all-electric society?

**Sophie Müller**, Head of Unit Standards Policy at the European Commission's DG GROW, delivered a keynote speech that contextualized the event. She delved into the political landscape, shedding light on the impact of the Russian war on Ukraine and the European energy-supply crisis. **Ms. Müller** highlighted the EU Grid Action Plan, emphasizing how standards play a crucial role in facilitating investments and fostering innovation.

The event was timely considering global developments, particularly the COP28 in Dubai, UAE, where resilience issues appeared strong following the war and gas

crisis. The presentation of the latest paper by the European Commission, the Grid Action Plan, underscored the comprehensive approach taken to address the entire value chain.

Acknowledging the financial constraints and upcoming discussions on the Multiannual Financial Framework (MFF), the significance of standards in navigating these challenges was emphasized.

**Ms. Müller** stressed that standardization is not only a proof of concept but also a tool to attract investments. Standards create the foundation for current and future markets, presenting opportunities even in financially constrained times. The commitment to building a first-class standardization system was reaffirmed, signalling a positive trajectory toward achieving the goals set forth in the Green Deal Industrial Plan.



Figure 3. Sophie Müller

### 3.3 High-level Roundtable – Delivering a Net-Zero Energy Generation: How can Standardization contribute?

The adoption of renewable energy has had a transformative impact on the energy value chain in recent history. What is new about the vision of the all-electric society? What are the main challenges of developing technologies and standardization while we move to a net-zero future?



**Ms. Müller's** keynote speech was followed by a high-level roundtable discussion, in which she was joined by **Peter Vermaat**, Secretary General of EU DSO Entity, and **Johannes Stein**, Senior Principal Expert at DKE. The panellists touched on the impact of the All-Electric Society in the wider green and digital transition towards a net-zero future and examined how standards can support its deployment.

**Mr. Stein** emphasized the rapid evolution of technology, particularly within automation and digitalisation, highlighting the need for corresponding advancements in standards to limit risks and build trust for industry and investors. The concept of electrification in all sectors and fields, using energy directly without conversion, was stressed by **Mr. Stein** who emphasized the need for data exchange to facilitate automation and digitalization through effective standardization.



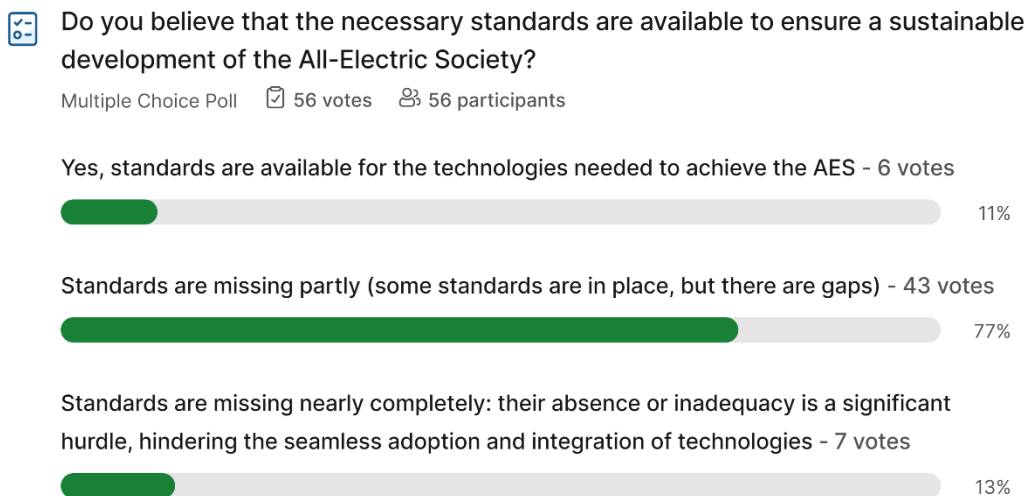
Figure 4. *Katrina Sichel, Sophie Müller, Peter Vermaat, Johannes Stein*

**Peter Vermaat** highlighted the complexity of the energy system, advocating for drastic systematic changes and asserting that standardization acts as an invisible enabler for distribution grids as well as the energy transition overall. 70% of renewable energy is connected to DSO grids, requiring more investments and smarter grids to anticipate demand and supply. The panel agreed on the high-level objectives but acknowledged that the devil is in the details, with **Mr. Vermaat** calling for optimism despite the challenges.

Concerns were raised about the slow maintenance and development of Network Codes, e.g., on demand response, as well as the possibility that standards are slowing innovation. The pace of change and the need for an adaptive approach to facilitate work on future-proof conditions, and national implementations was discussed. The need to avoid moving too quickly while driving innovation was emphasized. Similarly, the discussion touched upon the abundance of standards and the difficulty in determining priorities for upcoming technical deliverables.

**Ms. Müller** emphasized the voluntary nature of standards and the need to continually question the necessity and usability of standards to improve them. While the EU and USA align on standards in many areas, like heavy duty vehicles, the 'New Legislative Framework' offers advantages in comparison to systems in other regions (such as the USA).

The panel recognized the global trend towards economic feasibility in the ongoing energy transition. The All-Electric Society with all its aspects, starting from raw materials up to consumers, needs to create a return on investment rather than exist as a vision only. Standards have a central role in achieving these objectives but also facilitate predictability of operations.



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Figure 5. Audience poll – standards availability

Questions were posed regarding the demographic composition of standardization, with **Ms. Müller** explaining the process and underlining its democratic nature. The importance of investing in skills for the generational shift and diversifying the energy supply through domestic production and imports were reiterated.

A short intervention by **Elena Santiago Cid**, Secretary General of CEN and CENELEC, emphasised the Strategy 2030 and reflections on the ongoing transformation, the importance of education on standards, and the need for bold and ambitious steps to connect the dots and avoid individual actions.

The session closed with a reminder by **Mr. Vermaat** that we are just at the beginning of the transformation; today “not everyone can be a prosumer, but everyone can be active”. We need to be bold, ambitious, and proactive in tackling the challenges of sector coupling, automation, and the overall transformation towards an all-electric and sustainable future.

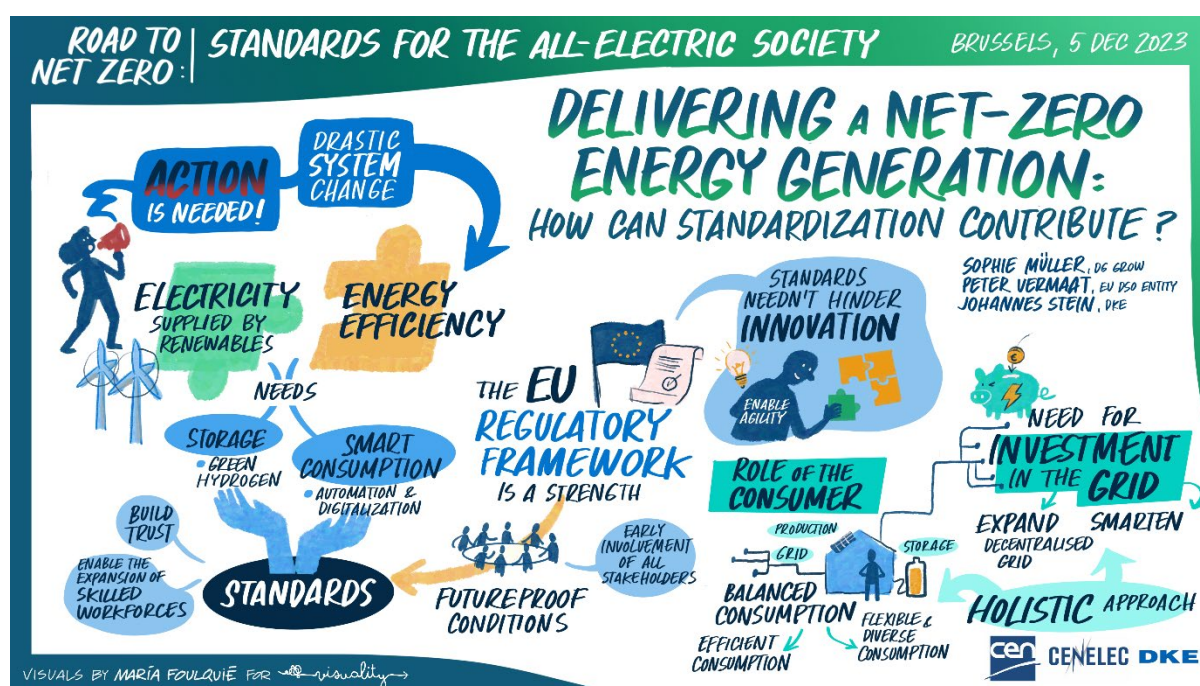


Figure 6. Visualization of the high-level roundtable.

### 3.4 Stakeholder Focus – Unlocking Future Standardization Work: Spotlight on Consumers

The landscape of energy consumption is undergoing substantial changes across various sectors, impacting all stakeholders and introducing new dynamics. From appliances and installations to mobility, infrastructure, and the evolving roles and responsibilities, the panel discussion delved into the role of standardization in addressing the diverse needs of everyone in this shifting landscape.


The panellists included **Christiane Mann**, Vice President, Head of Industry Affairs at Siemens Smart Infrastructure; **Chiara Giovannini**, Deputy Director-General at ANEC; and **Luise Christmann**, Officer for Energy and Performance at Miele and Secretary of IEC/TC 59 'Performance of household and similar electrical appliances.'

**Ms. Mann** emphasized the centrality of data and expressed concerns about the loss of control over it. She highlighted the diversity of consumers, ranging from landlords to tenants and various age groups. She further stressed the importance of empowering consumers in the processes, ensuring that technology benefits them in multifaceted ways.

The focus on affordability, prices, energy and system efficiency, and life cycle considerations was emphasized. Interoperability to seamlessly connect sectors was deemed essential, with standards playing a crucial role as quality indicators.

**Ms. Giovannini** added that best efficiency is achieved when energy is not wasted and called for standards to be more consumer centric. She highlighted challenges related to privacy and security of consumption data, mentioning smart meter roll-out issues in some countries. **Ms. Mann** stressed the need to ensure functionality of appliances, especially regarding grid conditions and the responsiveness. Standards to verify these aspects need to be developed. Questions expanded the discussion to explore alternative approaches to smart meters. The panel reflected on a convergence of legislation, products, and market elements, emphasizing the need for a stronger focus on individual behaviour change. **Ms. Giovannini** suggested a shift of narrative at the regulatory level, particularly focusing on use cases for tenants rather than landlords, and advocating for one-stop shops for consumers, such as with solar panels. She pointed out that the burden should not solely rest on consumers, given the challenges related to infrastructure ownership.

**Ms. Christmann** pointed out that standardization can facilitate testing and measurement for the eventual benefit of consumers. However, she highlighted the missing connections between various points, urging alignment between high-level regulations and technical working group efforts. She clarified that standards follow innovation, complementing regulatory efforts - and vice versa. The challenge lies in visualising the energy system of the future, which is the task of the regulator, while working on technical standards to guide the transition.

 In 3 words maximum, what is the main risk for consumers in the journey to Net-Zero that standardization needs to tackle?

Wordcloud Poll  58 responses  38 participants



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Figure 7. Audience poll - risks for consumers

Questions from the audience focused on the availability of standards for measuring consumption and improving communication of advantages. **Ms. Giovannini** addressed challenges with heat pumps, emphasizing the role of national regulations for the European industry. **Ms. Christmann** emphasized the need for interoperability within those frameworks and with manufacturers as just one of many stakeholders.

Another question emerged about the potential lack of service standards. **Ms. Mann** hinted at a shift towards more digital labour and the necessity of harmonization of products to make tools more effective, while **Ms. Giovannini** highlighted the impact of energy poverty and the potential of energy communities. The panellists stressed the need for incentives for consumers and acknowledged the slow progress in realizing the potential of grid digitalization. The session concluded with a recognition of the evolving role of consumers as active participants and the ongoing efforts towards achieving a sustainable and consumer-centric energy future.





Figure 8. Katrina Sichel, Luise Christmann, Chiara Giovannini

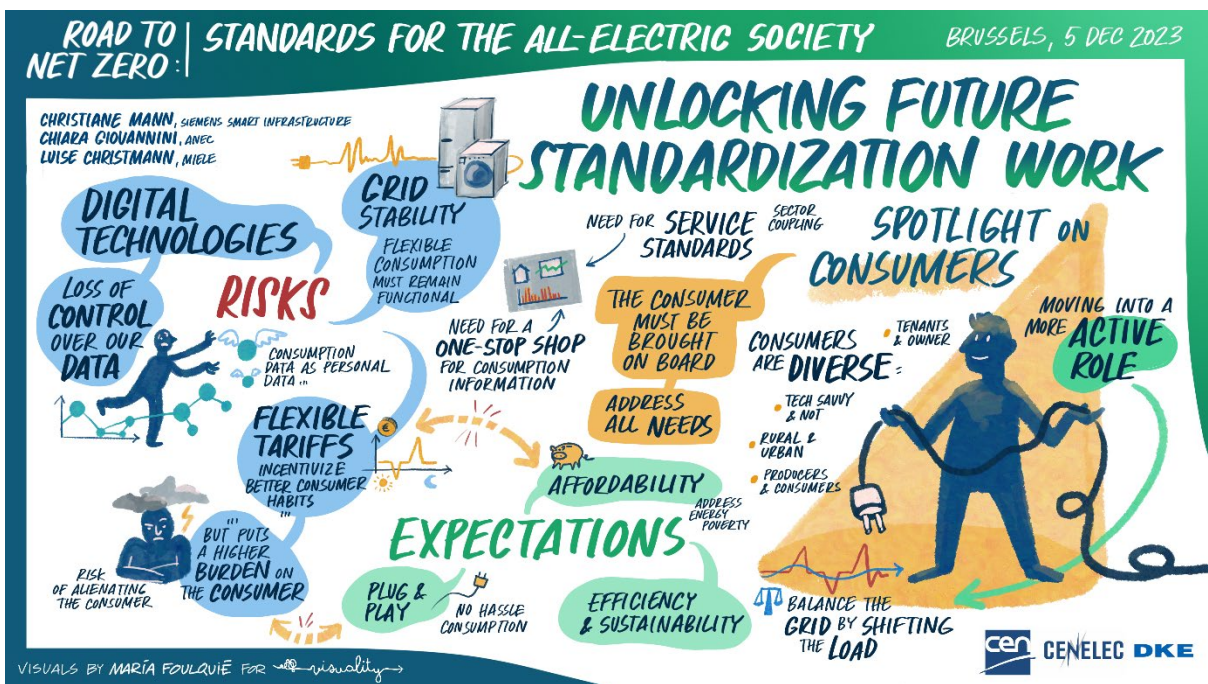


Figure 9. Visualization of the consumer session.

### 3.5 Stakeholder Focus – Unlocking Future Standardization Work: Spotlight on Industry

The electrification of sectors presents unique challenges to the energy system and introduces innovative energy services that enhance grid flexibility. The discussion focused on how standardization can streamline sector coordination and consider the implications for established business models.

In this context, the panel, featuring **Yann Fromont**, Deputy President of T&D Europe and Chair of CEN and CENELEC Industry Advisory Forum and **Pascal Terrien**, Chief Standardization Officer at Électricité de France and Member of the Standardization Management Board at IEC explored the role of standardization in streamlining sector coordination and its implications for established business models.

Kicking-off the discussion, **Petter Isaksson**, CEO of Ahlins I Habo AB, shared insights in a video, illustrating how excess heat can be efficiently reused within the system, leading to significant energy bill savings for an energy-intensive factory.

**Mr. Fromont** emphasized potential challenges arising from data and digitalization in managing water, heat, and electricity systems. He highlighted the need for the full sector to undergo digitalization, transitioning from product-based standards to system and digital service standards, which must create trust rather than appear like experiments.

**Mr. Terrien** complemented these remarks by highlighting the importance of interoperability across the entire energy spectrum, from generation to appliances. He pointed out the need for innovation, emphasizing that all efforts should contribute to energy savings.



Figure 10. Katrina Sichel, Pascal Terrien, Yann Fromont

The panel addressed audience questions, covering topics such as the tension between decarbonization and the fossil fuel industry, concerns about experimental approaches eroding trust, the security of software controlled by third parties, and the need for common definitions such as 'flexibility' and 'sector'. **Mr. Fromont** noted that digital acts aim to mitigate risks, involving geopolitics and political decisions, with DG CNECT increasingly engaged. **Mr. Terrien** emphasized the need for innovation, especially in the sector coupling of hydrogen.

**Mr. Fromont** highlighted the importance of agility and reactivity in international standards, given the global landscape with a stronger presence of non-European stakeholders. **Mr. Terrien** added that DSOs are both the bottleneck and backbone of the energy transition. Like them with infrastructure planning over decades, we must work with visions like the All-Electric Society and roadmaps to get there.

The discussion concluded with a focus on the role of small and medium-sized enterprises (SMEs), with **Mr. Fromont** advocating for their participation in standardization actions. **Mr. Terrien** echoed this sentiment, emphasizing the need to standardize such approaches for cost reduction and mutual benefit among SMEs. Both speakers also underscored the importance of involving young professionals in the field, recognizing the need for a collective and consensus-building approach to address the evolving energy landscape.



In 3 words maximum, where can standardization help industry in their Net-Zero electrification needs?

Wordcloud Poll 55 responses 29 participants



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Figure 11. Audience poll - industry needs

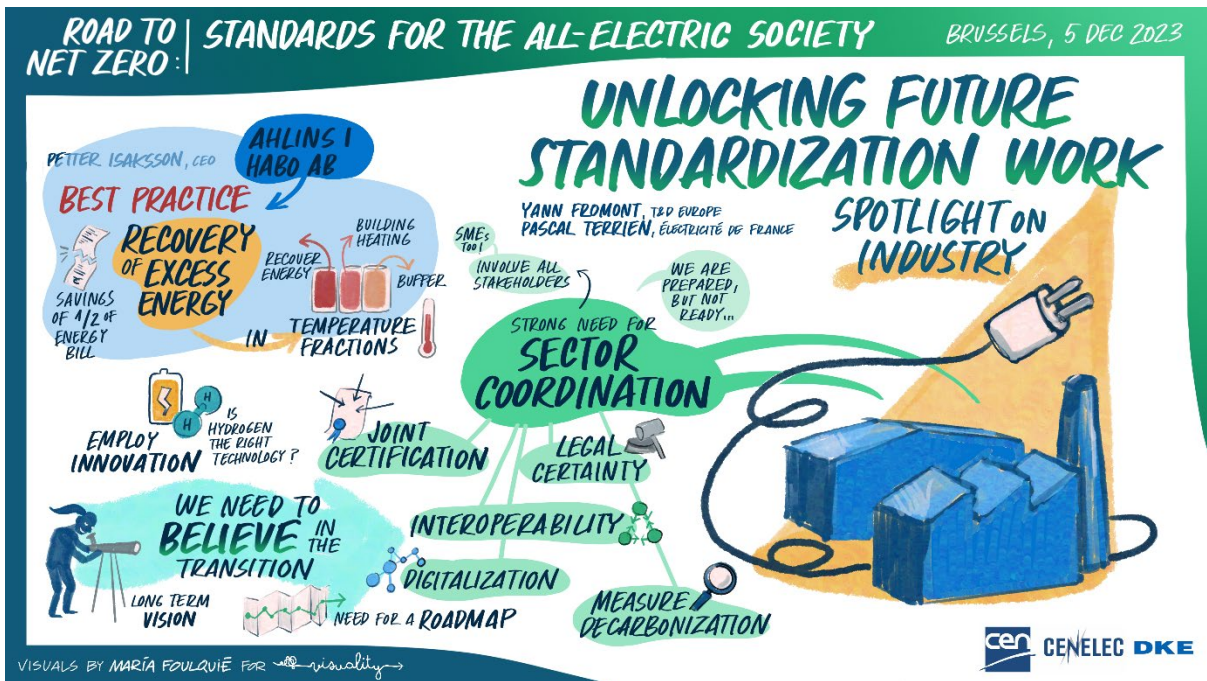


Figure 12. Visualization of the industry session.

### 3.6 In Practice – Envisioning a Sustainable Electrified Future

While the development of technologies and regulations is essential, what would the future look like in practice? This session examined first-hand experiences and real-life examples, offering a tangible vision of a sustainable electrification future.

**Frank Possel-Dölken**, Chief Digital Officer at Phoenix Contact, emphasized the need to move beyond theoretical frameworks and explore real-life examples. The discussion compared top-down and bottom-up approaches to the All-Electric Society, highlighting two successful real-world labs in Germany that generate more energy than they consume.

**Mr. Possel-Dölken** stressed the crucial role of standards as enablers in sustainable electrification, facilitating decentralized energy networks, seamless communication, DC grids, and secure data flows. He critiqued smart meters as not smart enough and advocated for advanced communication methods to enhance their capabilities.

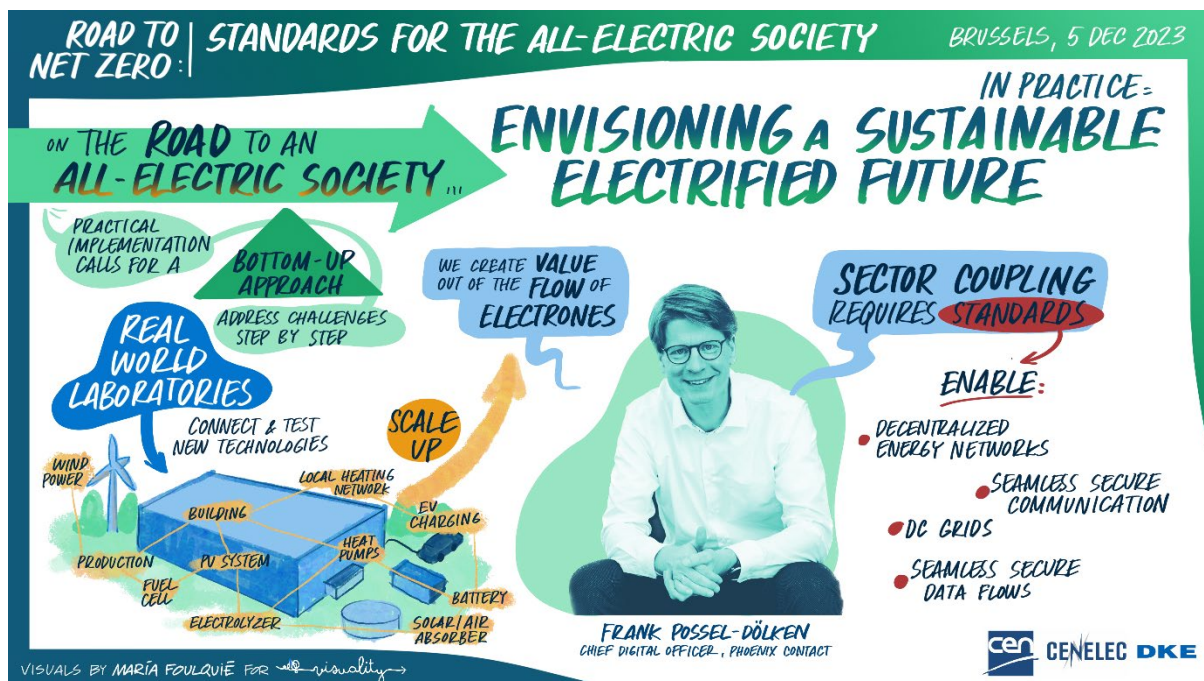


Figure 13. Visualization of the practice session.

To realise the two lighthouse projects, combination of in-house development and collaboration with national research projects was necessary. This demonstrated the importance of both internal expertise and external partnerships in achieving sustainable electrification.

In conclusion, **Mr. Possel-Dölken** provided a pragmatic exploration of the challenges and opportunities in sustainable electrification, offering insights into the practical implementation of the AES concept.



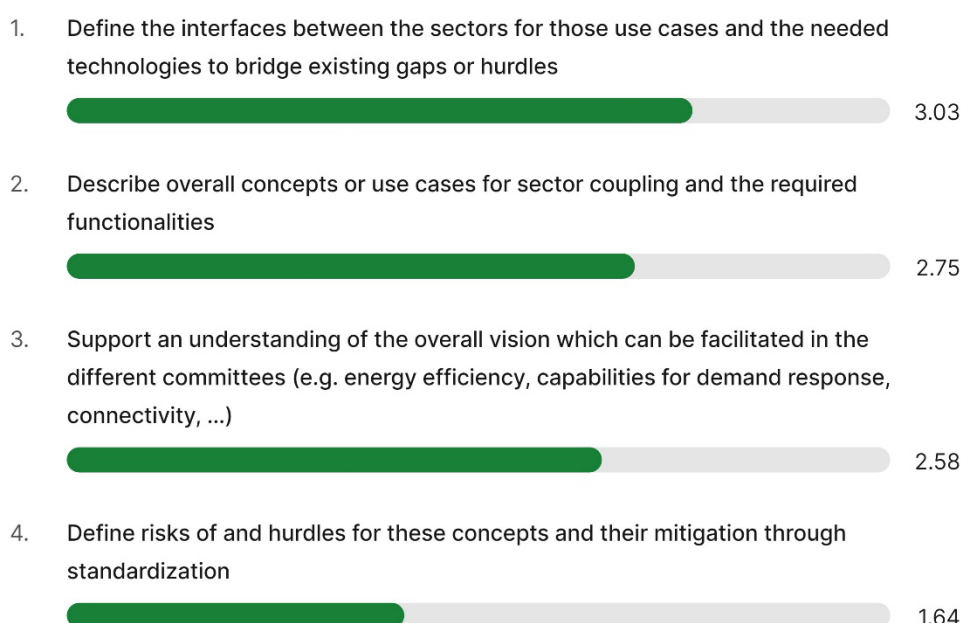
### 3.7 Technology Chat – Sector Coupling & Energy Management

The interconnection of sectors, the evolving landscape of energy generation and consumption demand innovative, standardized approaches to energy management. What are the tools in development that are facilitating the crossover of traditional domains and sectors? Is today's energy management prepared for these changes?

This session convened experts to deliberate on the dynamic landscape of energy generation and consumption, emphasizing the critical need for innovative and standardized approaches to energy management. The panel included **Gabriel Bareux**, Director of R&D and Innovation at Réseau de Transport d'Electricité France (RTE); **Geert Deconinck**, Professor and Head of the research group ELECTA at KU Leuven; and **Luka De Bruyckere**, Senior Programme Manager at ECOS.

#### What do you expect European standardizers to do in priority - please rank by order of priority

Ranking Poll  36 votes  36 participants



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Figure 14. Audience poll - priorities

**Ms. De Bruyckere** emphasized the diversity of standards for residential devices, advocating for the streamlining of communication protocols. The growing prominence of Electric Vehicles (EVs) and heat pumps was acknowledged, underscoring the necessity for effective communication within homes and the need for these technologies to coordinate locally before interacting with the grid. Agreeing with this complexity, **Mr. Bareux** highlighted the transition from unbundling back to collaboration and stressed the importance of making standards work together.

**Mr. Deconinck** underscored the importance of controllability and the need for incentives for consumers. A multi-level optimization approach was suggested, based on price incentives, sufficiency of energy, digital services and grid components to drive consumer participation.

To address the fragmented energy system, **Mr. Bareux** emphasized the need for open data and standards. A common vocabulary and structure were deemed essential for effective communication across the system, fostering interoperability and coherence.



Figure 15. Katrina Sichel, Luka De Bruyckere, Gabriel Bareux, Geert Deconinck

Adding to this, **Mr. Deconinck** stressed the need for behavioural change and breaking down silos. Community-based smart metering and a shift from energy efficiency to sufficiency were proposed as transformative concepts, emphasizing a communal approach to energy management.

**Ms. De Bruyckere** highlighted the importance of regulatory support for standards adoption, especially for residential buildings. **Mr. Bareux** urged the European Commission to be bolder in enforcing mandatory standards, particularly in areas like EV chargers, to ensure widespread adherence. **Mr. Bareux** further mentioned the work of the High-Level Forum in aligning stakeholders and managing the geopolitical landscape. He also emphasized the importance of open standards for DSOs and Transmission System Operators (TSOs). The complexity of the system and the associated risks during transformations were acknowledged.

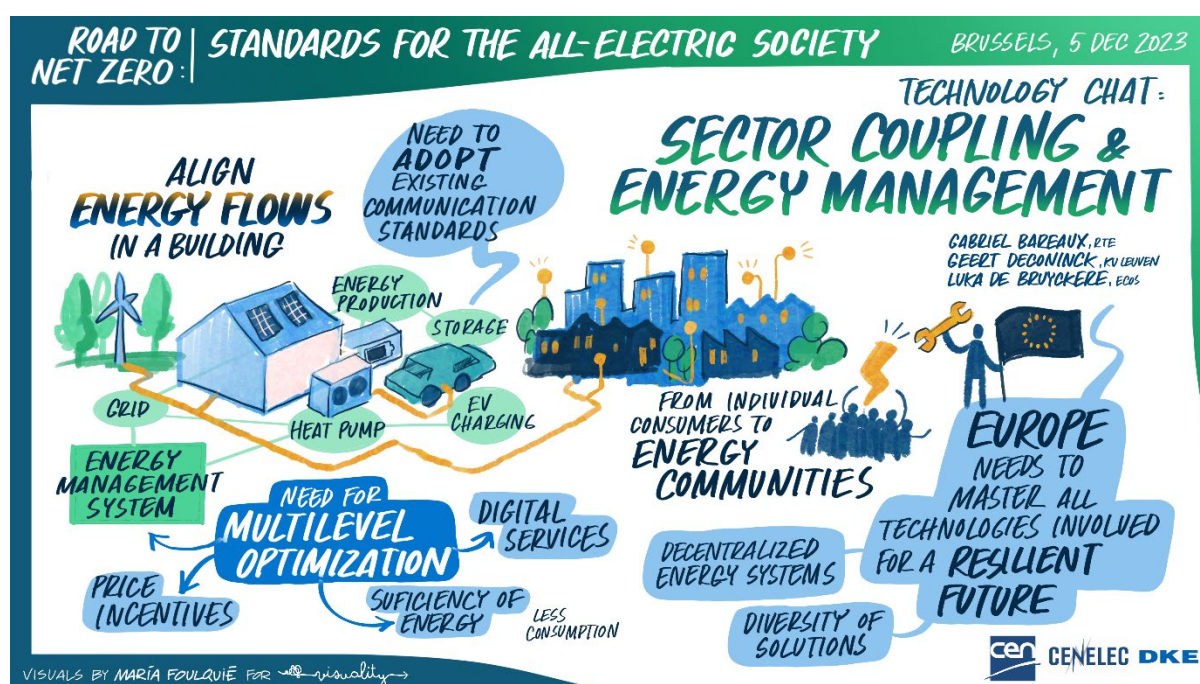


Figure 16. Visualization of the first technology chat.

For increasing resilience, providing flexibility, and accommodating diverse energy carriers, **Mr. Deconinck** emphasized the core role of decentralized systems. **Mr. Bareux** supported the idea of decentralization but additionally noted the need for different solutions to increase system resilience.

**Mr. Deconinck** advocated for a combination of energy carriers and services, highlighting the importance of hydrogen as an alternative energy carrier. The need for defossilization rather than simple decarbonization was emphasized - because carbon is needed for some technologies - and policy changes, including a CO2 taxation, were identified as critical drivers for sustainable energy practices.

The session provided a new understanding for practical challenges and opportunities in energy management, emphasizing collaboration, standardization, and innovative approaches. The discussions covered a spectrum



of topics, from communication protocols to behavioural change, underlining the necessity for a comprehensive and adaptive approach to achieve sustainable energy management in our evolving energy landscape.

### 3.8 Technology Chat – Data Communication

Digitalization enables seamless information exchange within and between sectors. What is the role of standardized, interoperable solutions in this context? Are concepts like Data Spaces, Digital Twins, and the Digital Product Passport sufficient to bridge today's gaps?


The event brought together experts to explore the role of standardized, interoperable solutions in facilitating seamless information exchange within and between sectors. The panel featured **Frank Possel-Dölken**, Chief Digital Officer at Phoenix Contact; **Antonello Monti**, Professor and Director of the Institute for Automation of Complex Power Systems at RWTH Aachen University; and **Svetoslav Mihaylov**, Policy Officer in the IoT Unit at DG CONNECT (EC).



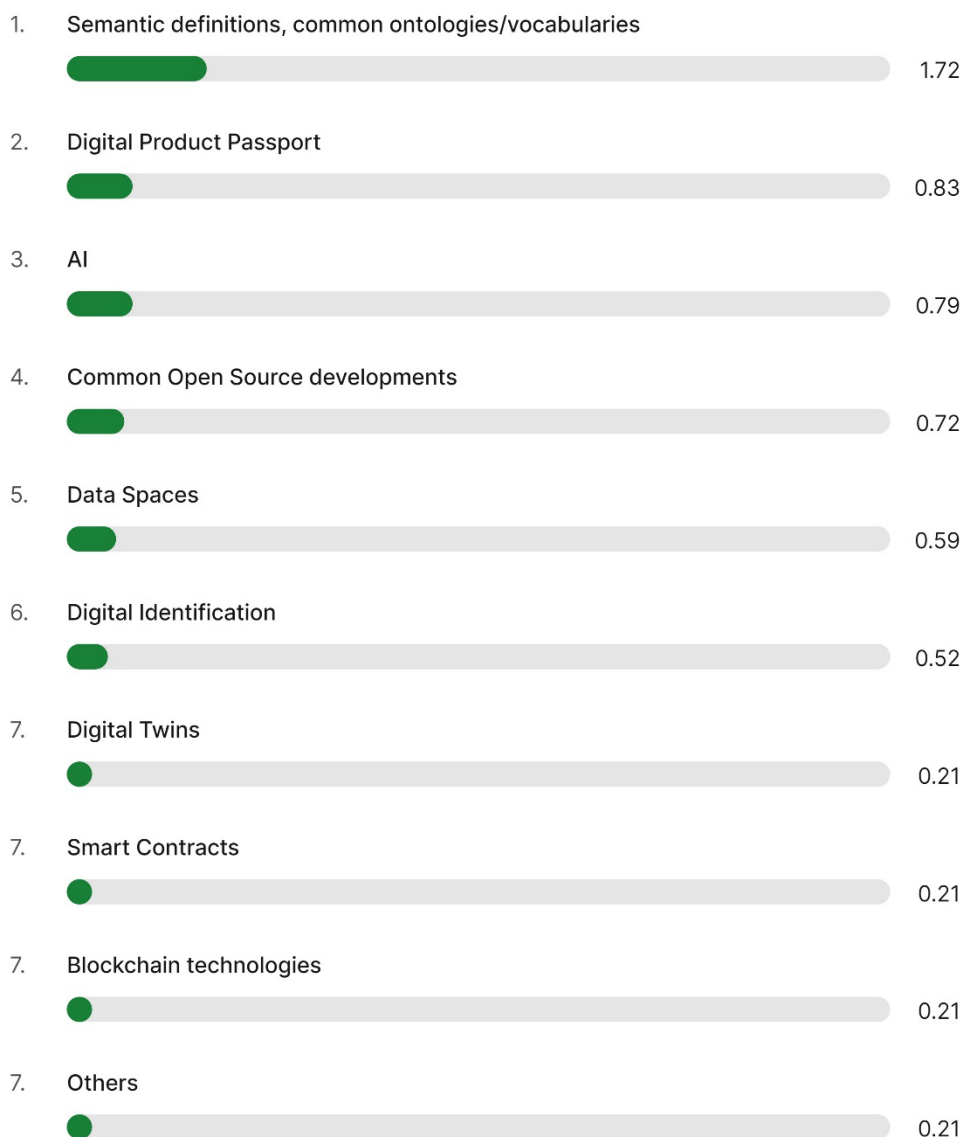
Figure 17. Antonello Monti, Svetoslav Mihaylov

**Mr. Mihaylov** initiated the discussion by characterizing the ongoing digital transformation as a complex and evolutionary process. He highlighted the need for a change in mentality to adapt to the application of IT principles in the energy sector. **Mr. Monti** added challenges arising from data silos, emphasizing

that solving issues at the individual level is more complex in practice. He noted that customers often have limited control over their data, indicating the need for solutions that bridge data gaps.

 Which of the following digital technologies will be essential for the further development of the AES and sector coupling? Please select three in order of relevance

Ranking Poll  29 votes  29 participants



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Figure 18. Audience poll - digital technologies

**Mr. Possel-Dölken** shed light on the practical issues in creating data flows, underscoring the importance of addressing this challenge for effective digitalization. The panel discussed semantic issues and the importance of linking



vertical sectors and domains. **Mr. Monti** highlighted the need for bridges between sectors. He emphasized the expansion of IEC standards beyond traditional utility domains to foster connected data ecosystems.

**Mr. Mihaylov** addressed the legislative aspect, expressing the need for a more adaptive approach. He mentioned the Data Act as an enabling factor for third parties and emphasized the importance of swift implementation following legislative developments.

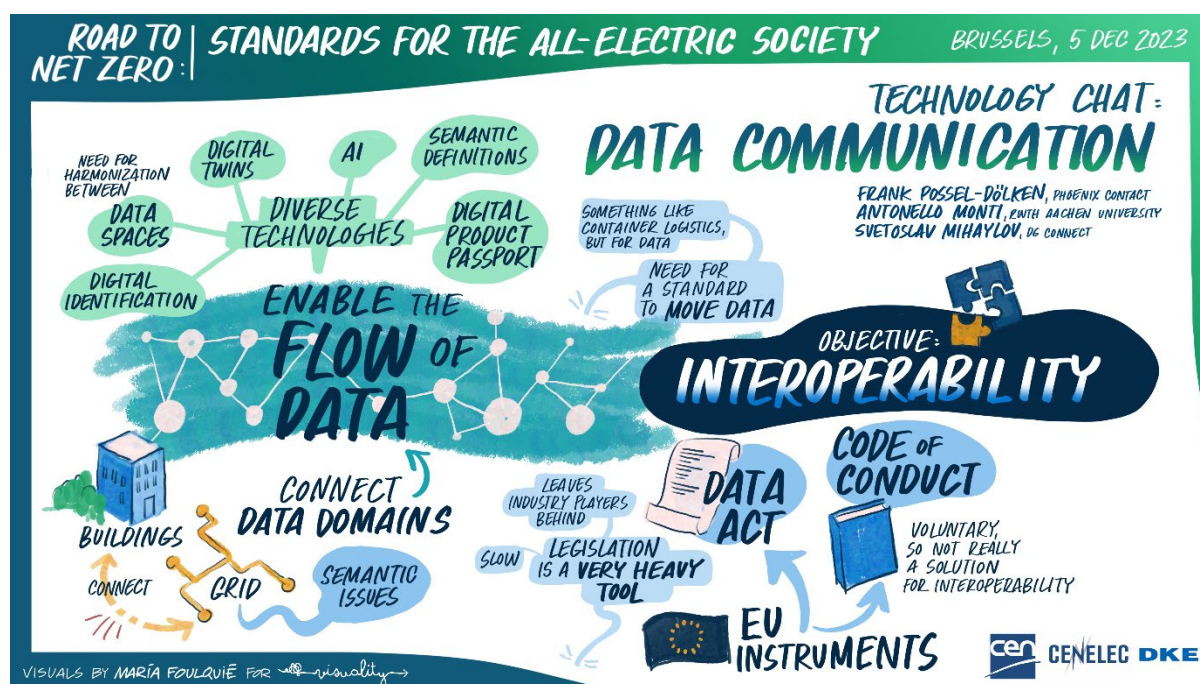


Figure 19. Visualization of the second technology chat.

**Mr. Possel-Dölken** provided insights into the limitations of the Digital Product Passport (DPP) in easing communication, pointing out that it primarily focuses on identified products. He presented the concept of the Asset Administration Shell as a digital container with standardized boxes, highlighting its role in the broader digitalization puzzle. Data Spaces were metaphorically referred to as harbours for these digital containers. **Mr. Monti** introduced the concept of Data Space connectors with standards from the International Data Spaces Association (IDSA), acknowledging that while there are many connectors, efforts are underway to align them for more efficient interoperability.

**Mr. Mihaylov** outlined the European Commission's efforts to promote common data spaces, emphasizing the goal of making sectors interoperable and posing questions about the classification of entities like ambulances as either mobility or health related.

In interactions with the audience, the discussion touched on the role of legislation in promoting voluntary communication, with **Mr. Mihaylov** pointing

out that legislation often takes time. **Mr. Monti** highlighted Europe's role in driving the global transition and emphasized the collaborative mechanisms that exist within Europe compared to the United States.


Regarding a question on the dominance of digital topics, **Mr. Monti** acknowledged the pressure to address digital challenges quickly, emphasizing the prevalence of discussions on artificial intelligence (AI) in various settings. He noted the importance of addressing less audible but equally significant topics and avoiding the oversight of analogue communication.

The discussions highlighted the importance of standards, interoperability, and adaptive legislative approaches to foster seamless information exchange, with experts shedding light on evolving concepts like Digital Product Passport, Data Spaces, and the Asset Administration Shell. The need for a holistic and interconnected approach to address semantic issues and bridge data ecosystems was a recurring theme throughout the panel discussion.

### 3.9 Main Takeaways and Outlook

**Frederic Vaillant**, Vice-President Technical of CENELEC, provided an analysis of the key insights gained from the event and proposed a strategic path forward for standardization in the energy sector.

**Mr. Vaillant** opened his remarks by emphasizing the vitality of energy. He underscored the fundamental importance of energy, particularly electrical energy, touching on its universal relevance to individuals and societies. Acknowledging the ongoing efforts in energy efficiency, **Mr. Vaillant** highlighted that there is still work to be done in maximizing energy efficiency across sectors. He emphasized the virtues of electricity, noting its safety, reliability, and potential for decarbonization. He advocated for a concerted push towards increasing the use of electricity.

 In one word, what is your number one takeaway of the day?

Wordcloud Poll  29 responses  29 participants



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Figure 20. Audience poll - takeaways

The metaphorical image of everyone bringing a piece of the puzzle was presented to convey the collaborative nature of addressing energy challenges. **Mr. Vaillant** acknowledged the increasing complexity of the energy landscape, emphasizing the need for effective management. In this context, he highlighted the crucial role played by standards in simplifying complexity.

Cost considerations were a recurring theme in the discussions, with **Mr. Vaillant** pointing out that prices can serve as incentives. He encouraged manufacturers and utilities to innovate their business models, recognizing the pivotal role they play in shaping the energy landscape.

**Mr. Vaillant** emphasized the need for system operators to focus on establishing a strong link between electricity and data. Recognizing the diverse challenges, he stressed that there will not be a one-size-fits-all solution but advocated for showcasing the interconnectedness of different approaches.

**Mr. Vaillant** questioned why, despite knowing what needs to be done, the necessary actions are not being taken. He urged for a collective commitment and concrete steps to move from knowledge to implementation.



Figure 21. Katrina Sichel, Frederic Vaillant

Highlighting the inclusive nature of European Standardization Organizations (ESOs), **Mr. Vaillant** welcomed everyone to actively participate. He suggested that these critical energy issues should be more seamlessly integrated into strategic planning. He acknowledged the time-consuming nature of building consensus but emphasized its strength once achieved. He further highlighted the participatory nature of standards development, where diverse opinions are valued, making it an attractive and effective process.

In conclusion, **Mr. Vaillant** provided a reflection on the event's discussions, encapsulating the complexity of the energy landscape, the role of standards, and the imperative for collaborative action to address the challenges and opportunities in the evolving energy sector.

#### Closing Remarks

**Elena Santiago Cid**, Director General of CEN and CENELEC, shared her reflections on the event, highlighting the significance of the All-Electric Society vision for European ambitions.

**Ms. Santiago Cid** underscored the strategic role of the AES vision in aligning with Europe's broader energy ambitions, providing a guiding framework for sustainable energy development. She emphasized the AES's capacity to break



silos, promoting collaboration across diverse sectors. Cross-disciplinary expertise is crucial for comprehensive solutions in the evolving energy landscape.

Acknowledging the complexity of energy challenges, **Ms. Santiago Cid** stressed the importance of learning from each other and leveraging expertise from various sectors to inform decision-making. She highlighted the advantage of ESOs in bringing together representatives from DG ENER, CNECT, and GROW. This intersectoral representation ensures a comprehensive perspective, contributing to consistency and coherence.

Consistency emerged as a central principle in **Ms. Santiago Cid's** reflections. The collaborative efforts facilitated by ESOs ensure alignment with overarching objectives and contribute to the AES vision. This collaborative spirit, cross-sectoral engagement, and consistent approach, which could be manifested within a roadmap, is necessary for shaping the future of energy in Europe.

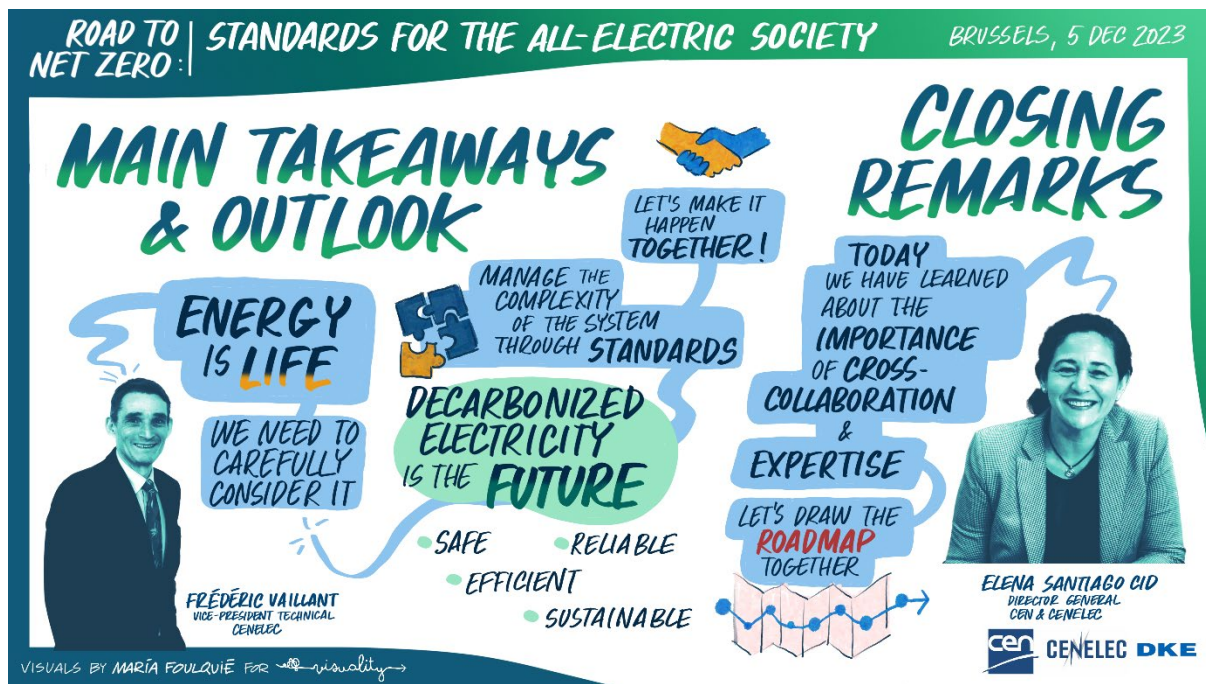


Figure 22. Visualization of the closing sessions.

#### 4 Additional information

- About CEN and CENELEC: [CEN-CENELEC - CEN-CENELEC \(cencenelec.eu\)](http://cencenelec.eu)
- Event website: [Road to Net Zero: Standards for the All-Electric Society - CEN-CENELEC \(cencenelec.eu\)](http://cencenelec.eu)
- Event Programme: [823f20124fd24b56901a2afe0de15580.pdf \(cvent.com\)](http://cvent.com)
- Event Press Release: [How standards drive Europe's transition towards Net-Zero - CEN-CENELEC \(cencenelec.eu\)](http://cencenelec.eu)
- Post-event report (GER): [Europas Klimaneutralität rückt in greifbare Nähe – durch intelligente Energienetze, CO2-freie Stromerzeugung und der Verzahnung von Normung mit allen Stakeholdern \(dke.de\)](http://dke.de)