

# Demand-Side Flexibility THE LEVERS TO EMERGE

Smart Energy Summit 2021

10<sup>TH</sup> MARCH 2021 (10:00 - 17:00)



## Smart Energy Summit 2021 Report

The 4th edition of the Smart Energy Summit organised by smartEn, the European business association integrating the consumer-driven solutions of the clean energy transition, was held on 10 March 2021 in an online format on the topic 'Demand-Side Flexibility: The Levers to Emerge'.

Gathering over 150 participants from the new energy business, the Summit invited attendees to visualise a reality in 2030 where every smart building, active industry and flexible electric vehicle have different opportunities to interact and support the more variable energy system. In a highly interactive format with breakout sessions, participants explored how to achieve this vision and exchanged on how to unlock demand-side flexibility potential and benefits.

In his welcoming remarks, Michael Villa, Executive Director of smartEn, recalled that the empowerment and active participation of energy users – businesses and citizens alike – is key to make the clean energy transition a reality and to support climate neutrality in a cost-effective way. At EU level, avoided investments at distribution level can be of the order of €5 billion per year up to 2030 thanks to demand-side flexibility.

In the context of the upcoming legislative proposals under the 'Fit for 55' Package, the Summit sends a strong signal to policy-makers on the need to boost demand-side flexibility in order to make our energy system more integrated and efficient.

### **Keynote speech: Engaging European consumers for a cost-effective clean energy transition**

Christian Zinglensen, Director of the European Union Agency for the Cooperation of Energy Regulators (ACER) stressed the crucial role of demand-side flexibility in the coming years. He highlighted that the need for security and stability remain a constant requirement that must be ensured under any energy system scenario. In this context, decentralisation, digitalisation and in particular demand-side flexibility are no-regret options.

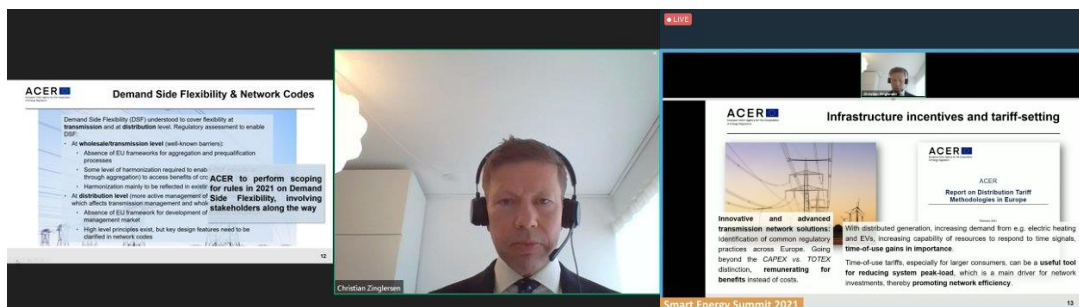
ACER is increasing its focus on flexibility at least in four areas in order to put demand-side flexibility on a level-playing field:

- The definition of an adequate resource adequacy assessment where demand side flexibility needs to be valorised as it can reduce the needs for investments in grid reinforcement or generation assets, while contributing to stability and security of the system.
- Monitoring barriers to market entry and participation for new entrants, including demand-response and aggregators and announced the publication of an



upcoming study to which smartEn contributed. ACER is measuring such barriers through indicators and monitors Member States performance as part of a market monitoring report.

- These barriers are expected to be addressed under the network code for demand-side flexibility in order to unlock its potential and for which the scoping is still ongoing (either a new network code or targeted amendments). ACER will further investigate on these development and submit its recommendation to the Commission in autumn.
- Innovative network solutions and tariff-setting based on identified regulatory best practices with remuneration based on benefits rather than costs.



## Vision 2030: how buildings, industries and vehicles would interact in a more variable energy system

Seven senior business representatives shared their visions towards 2030 on the energy system and the role of demand-side flexibility. They presented the innovative and various business solutions they offer towards a more flexible energy system.

**Dr. Irene Di Martino, Head of Amp X**, stressed that, despite the undeniable benefits of behind the meter demand-side flexibility, its huge potential remains untapped. Less than 2% of the global potential is being utilised. In Europe, 200GW are the currently installed residential DERs and 20GW is the monetisable flexibility from the edge of the grid, but only 1.5GW is being used. The optimised mix of energy efficiency, storage, onsite generation and load flexibility enable a much flatter load profile: grid integrated commercial/residential buildings can become responsive assets: they can help accelerate decarbonisation and reduce supply-side investments.

Virtual power plants and optimisation of behind-the-meter consumption and assets are expected to grow significantly. This would allow consumers to benefit from reduced energy bills and to be remunerated for the flexibility they provide. To do so, device interoperability and smart assets management are key to enable the integration of distributed energy resources and control at scale.



**Cyrille Brisson, Vice-President Sales, Services and Marketing at Eaton**, highlighted the strong contribution of buildings, industries and data centres to the decarbonisation objective through sector coupling. This will be achieved by reducing their emissions through direct electrification, renewables and energy efficiency, but also – and significantly - by offering services to the grid. It is therefore crucial to have the right incentives in place for consumers to participate in demand-side flexibility schemes. Finally, he identified stability, transparency, standardisation of product design and tradability of products as the necessary requirements for making the market for flexibility viable, taking inspiration from Nordic countries.

**Daniele Andreoli, Head of Demand-response Solutions at Enel X**, reminded that demand-response is far more efficient than curtailing renewables and the number of potential assets that can provide services to the grids will dramatically increase in the coming decade. Virtual Power Plants will be a cost-effective solution to provide grid services by managing the complexity of numerous assets in the future. Inspired by US developments, he highlighted that in the US there is 59GW of distributed flexibility and in 2030 it is expected to be a potential of 200GW leading to \$15bn/year benefits by 2030. He called Europe to aim for the same objectives.

**Sarah Jane Jucker, Co-Founder and Managing Partner at EPQ**, envisages that by 2050 there will be 10 times more flexibility assets in Europe and identified three market levers to unlock their potential. The first one is to have dynamic market structure with fair market access for active customers and aggregators, increased DSO-TSO cooperation, adequate price signals reflecting the value of flexibility and recognition of the role of demand-side flexibility for system integration. The second one is about ensuring digital innovation and solutions (AI, blockchain, machine learning) and the third one is about technological innovation to support cost reduction of low carbon technologies such as storage batteries and renewable and low-carbon hydrogen.

**Bjørn Utgård, Vice-President Global Industry Segments at EVBox**, presented the rapid and exponential deployment of electric vehicles with 10 million EVs at the end of 2020 in Europe, compared to 2 million in 2018. By 2025, 30 million EVs are expected on the road. He stressed that with EVs, the annual consumption of residential consumers could double thus calling for the deployment of smart charging as the only way forward to unlock the flexibility potential of EVs. He forecasted a scenario in Norway in 2030 where, even if all vehicles are electric, energy demand would only increase by 3.5% thanks to smart charging. He explained that smart charging solutions should focus on consumer needs: no hassle experience, no impact on car availability and being transparent so that the consumer is informed about the obtained cost reductions. Smart charging, a low hanging fruit for the clean energy transition, should be based on an open marketplace





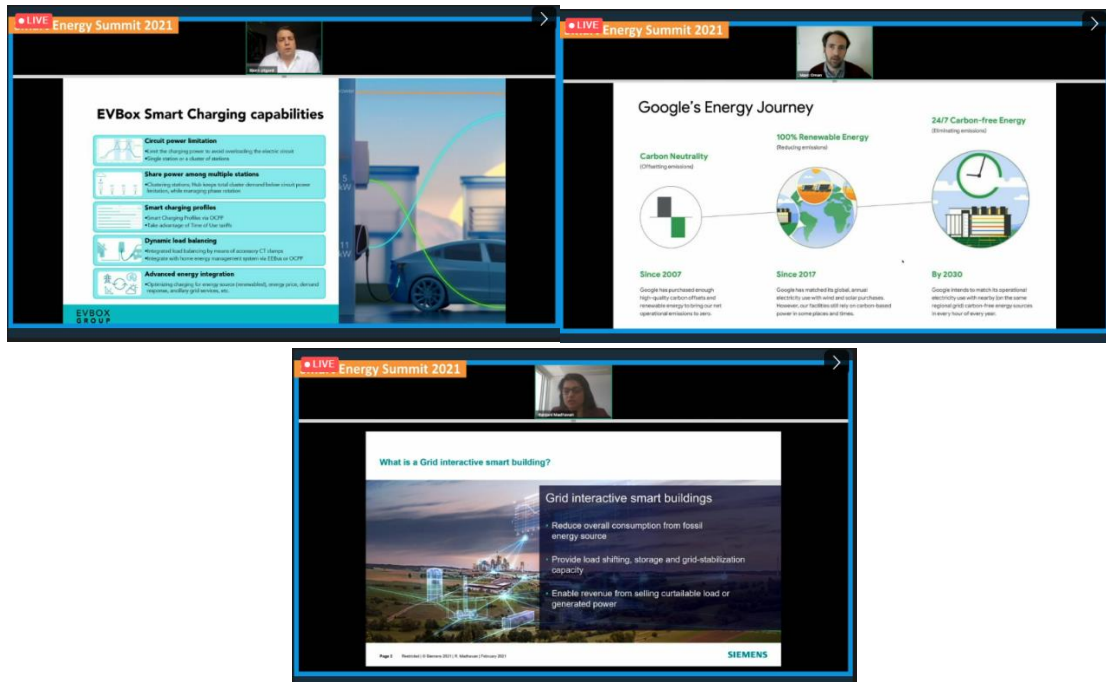
approach with clear price signals to stakeholders and standardised communication protocols.

**Marc Oman, Senior Lead Energy & Infrastructure at Google**, presented Google’s energy journey aiming to match by 2030 its operational electricity use with nearby carbon-free energy sources in every hour of every year. According to this strategy, data centres should move to an hourly matching of loads and procure carbon-free energy from the regional grid. Demand-response in data centres is a necessary solution to achieve optimisation of decarbonised consumption while providing flexibility services to the variable energy system.

**Ranjani Madhavan, Global Strategic Marketing Manager at Siemens**, presented the benefits of grid interactive smart buildings to reduce overall consumption, provide flexibility to the grid by reducing peak demand and generate revenue from it. To do so, grid interactive smart buildings need to be able to manage their energy flow, produce and store renewable energy and to participate as prosumers. This requires optimised digital and physical infrastructure to allow for interoperability.

During a **Sli.do poll**, over 60% of the participants agree with smartEn vision that every company, car and building have opportunities to support a more variable energy system by 2030, while recognising that this might however be difficult for some sectors.

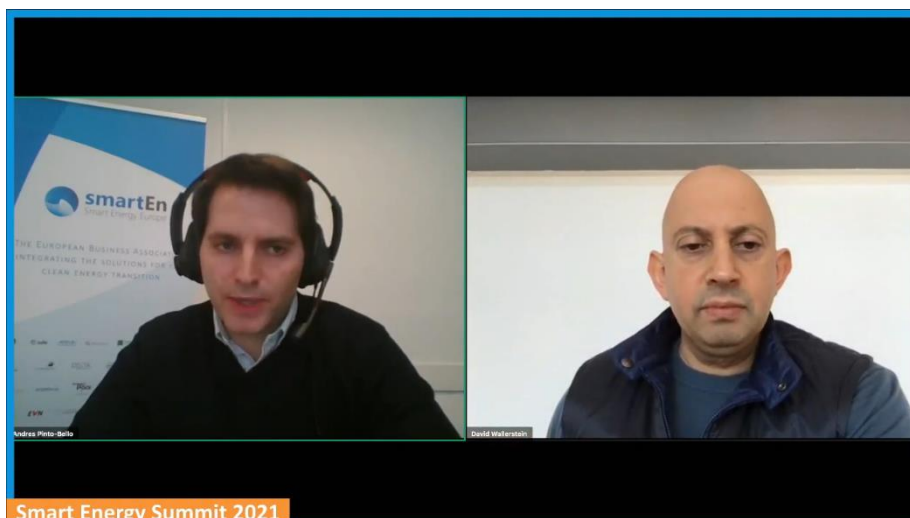




**Inspirational speaker: Scaling up innovation for consumer empowerment**

**David Wallerstein, Chief Exploration Officer at Tencent**, provided insights on the role digitalisation, data and software could play to optimise the energy system, support carbon neutrality and the uptake of innovative technologies.

Amid the energy transition, identifying the challenges is the first key step to start developing and testing innovative solutions. He called for strong political leadership supporting testing of innovative solutions through pilot projects at small scale first (city or island level) before scaling them up. This will also support the local ecosystem of start-ups within Europe. In addition, he stressed the importance of having an execution-oriented culture in Europe to implement and deploy these innovative solutions once tested and demonstrated.



### Breakout Groups on the 3 levers for demand-side flexibility: Targets, Modeling Scenarios, Revenue Streams

In a highly interactive exercise, participants were divided in different breakout groups to exchange views on what is needed to achieve a 2030 reality where the demand-side flexibility potential is fully activated.

Three potential levers were discussed:

1. a target for demand-side flexibility;
2. the modelling scenarios on how to identify and valorise demand-side flexibility for both end-users and the system;
3. revenue streams on how to reward and remunerate the active consumer participation to the clean energy transition, from both flexibility providers and active customers' perspectives

Discussions during the breakout groups were moderated by Megan Richards, former Director, Energy Policy, European Commission (targets); Alberto Pototschnig, Professor, Florence School of Regulation and Director, DFC-Economics (modelling scenarios); Laurent Schmitt, Founder & CEO, Digital4Grids (modelling scenarios); Monique Goyens, Director General, BEUC (revenue streams); Peter Hermans, former CTO, Stedin (revenue streams) and Philip Lewis, Founder & CEO, VaasaETT (revenue streams).

The **breakout group on targets** concluded that the current targets for greenhouse gas emission reduction, energy efficiency and renewable energy were not sufficient to unlock the full potential of demand-side flexibility. Enabling consumers to provide flexibility by transforming their assets into flexible ones and participate in markets on a level-playing field were discussed as important elements. A target for demand-side flexibility would send a strong signal and would allow for measuring the progress. The development of local flexibility markets could also be used as a measuring indicator. Discussions on this topic should be continued in particular on the level of the target, how it should be applied and to whom (e.g. individual consumer, type of flexibility assets) and whether this should be at regional, national or EU level.

The **breakout groups on modelling scenarios** concluded on the need to have adequate modelling scenarios to reduce system costs, optimise investments, avoid stranded assets, reduce congestion and allow for system efficiency. The reason why no accurate modelling scenario has been identified yet is due to the multitude of distributed flexibility assets, difficulty to collect data and obstacles to interoperability. Agreement was found on adopting a more bottom-up approach for identification of flexibility potential based on transparent and real time data. Pilot projects and regulatory



sandboxes could help improving the valorisation of distributed flexibility in modelling scenarios.

The **breakout groups on revenue streams** stressed the need of simple, transparent and clear rewards for consumers to activate their distributed flexibility. It was agreed that barriers still need to be addressed to allow consumers to react and engage in the transition, e.g. real time pricing via smart meters. The need to shift the mindset from a centralised generation model to a decentralised and consumer-centric model was also identified as a significant barrier. Once eliminated, multiple revenue streams could result from load shifting to other time frames, energy sharing through (virtual) communities, frequency response services and support to congestion management at distribution level.

In order to mitigate the upfront costs of smart appliances and flexibility assets, public support or leasing contracts could be introduced. However, revenue streams should be realised through adequate market mechanisms and not subsidies, but for a transition period asymmetric regulation might be necessary as enabling just a level playing field may not be enough to accommodate the valorisation of demand-side resources. There is a need for a win-win strategy where demand-side flexibility rewards both participating end-users and market parties.





### Interview with EU policymakers: System efficiency First - the role of active energy consumers

**Eero Ailio, Head of Unit DG ENER B.1, European Commission** and **Nicolás González Casares, Member of the European Parliament** exchanged on the importance of active customer participation to increase system efficiency. They agreed on the European Green Deal being the growth strategy of the EU and on the need to act now to address climate change and implement the Paris Agreement. They also raised the important role played by demand-side solutions for supporting the road toward a more variable and decarbonised energy system.

Both agreed with a dynamic, time-dependant and system-wide concept of energy efficiency and called for full implementation of the electricity market design to activate demand-side flexibility. Regarding setting a target for demand-side flexibility, albeit the political signal that this would entail towards system efficiency, Eero Ailio welcomed the idea but indicated that modelling such target would be difficult without playing with market rules. He indicated that for now, market-based rules to procure flexibility should be the preferred approach. MEP Nicolás González Casares also welcomed the idea and indicated that he would first look at the impact assessment prepared by the European Commission to see if such target could be included.

Finally, the Commission informed about the upcoming 'Fit for 55' package to implement the European Green Deal, in line with the Energy System Integration Strategy and the Renovation Wave. This package will be cross-sectorial covering inter alia energy, climate, mobility and competition policies. The European Parliament is currently negotiating the Climate Law and has adopted its position towards a 60% emission reduction target by 2030.



### Summit conclusion

**Andreas Flamm, Chair of the smartEn Board of Directors**, closed the Summit thanking all panellists and participants, stressing that climate neutrality cannot be achieved in a cost-effective way without activating consumers. A shift of mindset putting consumers at the centre is crucially needed. A binding national demand-side flexibility target of at least 10% peak demand by 2030 would support such shift by sending a strong political signal. It will allow to boost demand-side flexibility for which all participants agreed it is huge and untapped.



Please find the Smart Energy Summit 2021's recordings, presentations and additional materials under <https://smarten.eu/smart-energy-summit-2021/>



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### About smartEn - Smart Energy Europe

smartEn is the European business association integrating the consumer-driven solutions of the clean energy transition. We create opportunities for every company, building and car to support an increasingly renewable energy system. Our membership consists of the following companies:





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