EER response to the

Consultation on the EU Strategy on Energy Sector Integration

15 May 2020

Targeted EC Stakeholder Consultation
Preparing a future EU strategy on energy sector integration

Abstract

According to the view of the *European Energy Retailers - Network of Independent Energy & Solution Providers asbl* (EER), sector integration brings huge potential for a more efficient and sustainable energy system. Energy markets can play a role as gates to the flexibility, provided they are fully developed in terms of participation. Energy retailers are eager to play the empowering role for prosumers and energy communities to get fully engaged in the energy transition.

According to our vision, the energy transition must lead us to a more competitive and consumer-oriented, more sustainable, and more integrated energy market.

The success of the energy transition and sector integration will rely on the following pillars:

1. Consumer-oriented demand and consumer empowerment
Energy consumers are becoming more active and empowered and they are increasingly demanding new products and services. To get an effective consumer engagement (through demand aggregation, demand-side management and flexibility, smart communities or self-generation among others), it is also needed to assure the maximum consumer awareness by improving transparency and simplicity and to guarantee open information access (neutral data hubs open to all the stakeholders and with close to real time data).

2. Competitive and integrated markets
Energy policies and regulations must ensure a level playing field for all energy players. To assure that, a real unbundling of the activities is a must. Regulatory measures are also required to assure the same market access conditions for all participants (facilitating demand participation in the wholesale and balancing markets, improving gas markets liquidity and competition, enabling cross-commodity transactions and trading).

3. More sustainable energy markets
We are immersed in a no-return process of decarbonization of the economy. To meet the ambitious European decarbonization goals, a smart combination of renewables, electrification, and renewables gases for specific sectors and industrial processes is needed.

Regulations should keep pace with the decarbonization trend by implementing measures for effective carbon pricing in all sectors and EU harmonized renewable gases guarantees of origin (RGGO).

1. What would be the main features of a truly integrated energy system to enable a climate neutral future?

A truly integrated energy system which enables a climate neutral future is competitive and consumer-oriented, flexible, digitalized, based on system efficiency and linking the gas and electricity sectors, heating and cooling. Transport and other end-user of energy are integrated and contribute to through the most efficient use of alternative, greener energy (electricity based on RES as well as renewable, decarbonized and low-carbon gases) and an effective carbon price. Increasing of use of electricity generated by RES even to produce E-fuels/Hydrogen, using the latter to stock energy at lower cost than electrochemical batteries should be a central element of the future energy system and a smart way to linking renewable electricity and gases.

Competition and customer orientation as basic principles

From our point of view, smart sector coupling works best with a competitive and consumer-oriented core concept. The customer or consumer is the focus and the regulatory framework ensures efficient, neutral networks and platforms. These are essential for new business models which solve old problems or satisfy new needs of the customer.

Effective carbon pricing in all sectors

Integration of electricity, gas, heating and mobility is not possible without an effective carbon price. The EU ETS needs strengthening with extension to uncovered sectors such as heat or transport and further empowerment of the strategic reserve, especially to cope with low demand periods. An effective carbon price combines market mechanisms and climate protection; it promotes investment security and makes the development of non-fossil solutions predictable and profitable. It ensures that heating and cooling as well as transport generate a demand for renewable electricity. Thus, renewable energy is given a price.

Flexibility of energy demand

Energy transition comes with various challenges for the existing electricity system: Despite fluctuating availability of solar and wind power, the demand for electricity must be covered anytime. In addition, the energy networks must be able to handle large quantities of renewable energy electricity at the same time. Therefore, the energy system based on renewable energies needs flexibility on the demand side. Within the limits of the network, consumers can react to an oversupply of wind and solar power and increase their consumption accordingly or reduce it if there is a shortage.

Part of the flexibility can be provided in the electricity sector. But the integration of electricity with other sectors **opens up new dimensions of flexibility** especially where there are limits to the use of renewable electricity, system or other limits. Instead of switching off renewable production, it can be used to provide heating and cooling or be converted into green hydrogen.

The conversion technologies allow for seasonal storage and enable **full integration of renewable energies**.

Furthermore, CCGTs, one of the elements linking gas and electricity (RES) today, also provide flexibility and in the future, they can be easily converted and fuelled with renewable gases, contributing further to decarbonisation of the energy system and providing needed flexibility. However, it must also be made clear that this technology can have a role in the future energy system only if it is flexible and operated with renewable energies or gases. **Without appropriate adaptation, they must not be given any more subsidies**.

Digitalization and interconnections

The expansion of electricity generation from renewable energies comes with a larger share from decentralized installations. Storage, flexibility and consumption are also decentralized. Under these circumstances, coordination between production and demand is only possible in a digitized energy system and with automation. Digitization enables data to be displayed down to every second. It is the basis for regional and local electricity trading.

Sector integration comes with a higher complexity and digitization helps to manage the requirements, to handle complexity and to reduce costs. The better availability of information and the possibility to react allows an expansion of renewable energies and their integration beyond electricity in other sectors. Digitization facilitates the optimization of the use of renewable electricity across the various sectors and thus increases cost-effectiveness.

System Efficiency instead of energy savings at any price

If we seriously aim at achieving greenhouse gas (GHG) emission reductions, a simple energy conservation focus doesn't do justice anymore to the complexity of the situation in an increasingly decentralized, digitized and decarbonized energy world. We need to assess the GHG emissions associated with various ways to power end uses, as opposed to simply count the number of kilowatt-hours consumed. To that end, "system efficiency" may be as or even more important than "energy efficiency" moving forward.

The traditional premise of saving energy without taking system efficiency into account made sense in an energy world that relied on a purely fossil fuel-based system (the same applies for nuclear) and on energy supply organized in a central way.

In times in which the energy system is developing fundamentally differently with the expansion of renewable energies, system efficiency should prevail. The necessary sector coupling requires a predominant electrification of the heating and transport sectors. This will result in a higher electricity demand in the long-run. System efficiency means every kWh generated (from renewable energies) and every investment therefore should be used optimally in the interests of the overall system. This new model should include the power, heating, and transport sectors. Linking these sectors intelligently, while unlocking flexibility and at the same time, enabling investment decisions and energy use under realistic conditions should be the model's primary goal. The model should also take local differences and regional location factors into account and, in addition to saving energy, create space and impetus for the expansion of renewable energies and further decarbonization options.

2. Where do you see benefits or synergies? Where do you see the biggest energy efficiency and cost-efficiency potential through system integration?

If, on the other hand, the principle *efficiency first* is maintained, this can make sector integration considerably more difficult. A practical example of this is heat pumps, which have been optimized for energy saving due to the high energy efficiency requirements, but which limit their use as flexible power consumers in the energy market.

Only the paradigm shift towards system efficiency will make the intended smart sector integration possible. The benefits of using renewable electricity and renewable and decarbonized gases, where appropriate, in other sectors can be fully harnessed and cost-effectiveness in GHG reduction in the overall system and for all stakeholders can be achieved.

The overall view in the integrated system offers the opportunity to take customer requirements into account in cost-benefit considerations and to review the assumptions made so far. It is not necessarily always the best and most expensive technology or measure to achieve the desired savings effect. For example, in the case of 'almost zero-energy buildings', it is hard to explain to consumers why they should spend a lot of money for a highly efficient technology, such as a heat pump for the extremely low remaining energy demand instead of a simple heating solution such as direct electricity heating with renewable energies. The absolute efficiency gains of the high-efficient technology are low, but the customer must pay the cost of the much more expensive system. Also, in the sense of acceptance of the measures, the efficiency specifications must be developed further accordingly.

Consumers expect solutions that completely solve their requirements when switching to a climate-neutral heating or cooling solution, fairly assess costs and obstacles and offer them more and different options.

The biggest challenge for intelligent sector integration will be: Rather than simply adding up the framework of existing sectors, the integrated system will have to be thought from a new perspective and designed simply. The aim should be to achieve more with fewer rules.

Furthermore, stranded costs and assets should be avoided. Potential use of already existing pipelines, infrastructures etc. should be used, avoiding costs from new electric grids/storages, etc.

3. What are the main barriers to energy system integration that would require to be addressed in your view?

- Lack of proper unbundling: It is important to avoid that grid operators get irrational advantages in the energy system integration. For example, gas TSO/DSOs should refrain from developing their own biogas, hydrogen (or Power-to-X) production facilities.
- In the sector of fuels distribution (other than through pipelines) new rules might be needed in order to facilitate the integration with electricity. Fuel retail facilities (as road service stations) should offer retail services to third parties in a non-discriminatory footing so to ease sales of locally manufactured electricity-powered hydrogen/e-fuels.

- Installation, operation and retail sale of gas to vehicles at service stations (gas charging station) by DSOs.
- Installation, operation and retail sale of electricity to the service station and to the recharging point on the highways, roads, streets or private or public premises, shopping centres or buildings, etc. by DSOs.
- Installation, operation and sale of electricity stored on a large scale by the DSO and TSO.
- Lack of liberalization of the installation and reading of measurement equipment. Ownership of measurement equipment by DSOs generates distortions in cases where they are incumbents and vertically integrated companies.
- The tariff structures have different costs, charges and taxes that distort the operation of the same retailer in different countries.
- Lack of capacity in international interconnections between countries prevents a single market. To this are added discriminatory tariffs depending on the direction of import - export of energy, as well as the pancaking effect.

Further barriers include

- Conflicting incentives
- Unequal burden and opportunity sharing
- Unattainably high efficiency requirements
- Restrictions on the use of renewable electricity
- Environmentally harmful subsidies to energy consumption

4. More specifically:

- **How could electricity drive increased decarbonisation in other sectors? In which other sectors do you see a key role for electricity use? What role should electrification play in the integrated energy system?**

The expansion of renewable energies in the heating and transport sectors has so far made very slow progress. At this rate, the climate targets in these sectors would be nowhere near achievable by 2050. By using renewable electricity in these sectors and in industry, the reduction of CO2 emissions can be accelerated considerably by replacing fossil fuels with renewable electricity or converting it into heat (power-to-heat) or hydrogen (power-to-gas, power-to-liquid).

It is important to electrify on the basis of renewable energies. The use of electricity from nuclear or fossil fuels (even with CCS) is neither target-oriented nor sustainable. If this is not met, it can have a negative impact on the acceptance of electrification.

Urban areas are key playgrounds for electrification. We are seeing with Covid-19 what potential of air quality we have in cities and we need to maintain it even after the full restart of the economy. Electrification of heating uses, but also of mobility solutions in urban areas, needs to be eased as fast as possible, at it requires:

- Regulatory empowerment of electricity retailers as aggregators of balancing services (including from residential homes) to be delivered to the energy or balancing markets, so to add value to electric-power heating appliances.

- **What role should renewable gases play in the integrated energy system?**

Both electrification and Power-to-X, for example, is hindered by tax/paratax subsidies to fossil energies, which need to be quickly phased out. The review of the Energy Taxation Directive should focus on this but the Strategy on Energy System Integration should already address these issues as well.

Green hydrogen, i.e. hydrogen produced with electrolysers (power-to-gas) from renewable electricity, can contribute significantly to the solution of the energy transition. It is true that every conversion of renewable electricity means energy losses that have to be compensated by higher renewable electricity production and thus also generation plants. It is therefore important to keep the conversion steps as small as possible. Nevertheless, power-to-gas alone has so far enabled the seasonal storage of renewable energies and has provided an important backup function for the energy system, which is increasingly based on renewable energies. In addition, some sectors and applications can only be decarbonised with green hydrogen, for example, which needs it because of its higher energy concentration than electricity. Last but not least, power-to-gas has the potential to fully exploit power generation from renewable energies - especially where bottlenecks in transport and grid expansion are currently blocking this.

- **What measures should be taken to promote decarbonised gases?**

A decarbonization pathway based exclusively on using renewables in electricity is unrealistic as there are many processes that cannot be fully electrified (industrial processes requiring high temperature, heating, etc.). Therefore, a smart combination of renewable gas (mainly biomethane and hydrogen) and electricity will be the optimal and cost-efficient way to decarbonize the EU energy economy, with the system becoming fully renewable.

In that sense, the European Green Deal states that the decarbonization of the gas sector has to be facilitated, including via enhancing support for the development of decarbonized gases, via a forward-looking design for a competitive decarbonized gas market, and by addressing the issue of energy-related methane emissions.

Biomethane has proven its potential to deliver clean energy to a wide array of end users (electricity, heating and cooling and transportation). It can also be the bridge until the hydrogen economy unleashes its full potential.

Nevertheless, a basic distinction must be made between renewable and decarbonised gases. The latter also include those technologies where gas has been produced with nuclear power or from fossil natural gas by capturing the CO2 or separating the carbon.

The use of fossil natural gas with CCS is already possible today, but often fails due to the acceptance of CCS. This will not change if it is now called decarbonised gas. Even if the acceptance problem can be solved, for example by storing CO2 offshore, the storage capacities

for CO2 are limited. Under these circumstances, promotion for decarbonised gases is not sustainable; instead, promotion should focus on renewable gases and on and low-carbon gases in the short to mid-term (blend of natural gas with renewable gases).

- **What role should hydrogen play and how its development and deployment could be supported by the EU?**

Power-to-gas, hydrogen and green gas have so far played a subordinate role, because their use in the energy market often encounters restrictions (e.g. recognition as a renewable energy source for heat supply, recognition as a long-term energy storage instead of devaluation due to efficiency losses in production) or is considerably disadvantaged by other regulation (e.g. levies). This must first be corrected in the legal and regulatory framework.

Power-to-gas technology for the supply of green hydrogen has already proven itself in a large number of projects. However, in order to be competitive in the markets, the production costs of green hydrogen (and possibly synthetic methane) must be reduced. This is to be expected especially for larger production volumes in larger power-to-gas plants and their serial production.

Despite attractive opportunities, the market development for green hydrogen is not a self-runner. A suitable framework for a green hydrogen market has yet to be created, in which producers and suppliers as well as potential customers from industry and other sectors can participate. This includes
- A highly automated process
- Standard products from short to long term for trading
- Mapping of supply and demand by a pricing mechanism
- Sufficient price stability for buying and selling hydrogen for 2 years.

Hydrogen can be a key vehicle for energy storage. Rules should ease the development of local small hydrogen storages and use of fuel cells to convert it back into electricity when needed. This might avoid huge investments in the local electricity networks. Based on that, economic support to local-scale hydrogen projects might be socially efficient.

Last but not least, the decision as to how much power-to-gas or hydrogen is to be integrated into the gas system and when must under no circumstances be left to the TSOs or DSOs. On the other hand, the development of an own hydrogen network at an industrial site, can be implemented without regulatory requirements and without grid tariffs.

- **How could circular economy and the use of waste heat and other waste resources play a greater role in the integrated energy system? What concrete actions would you suggest to achieve this?**

The idea of circular economy is good. However, the concept must not be misused to turn waste above it into gold (green and carbon free) and produce more waste than before. Waste avoidance must be more important than its (energy) re-use.

- **How can energy markets contribute to a more integrated energy system?**

Electricity markets are the most advanced in the energy sector but they need to be fully empowered in terms of participation. Energy retailers are eager to play the empowering role for prosumers and energy communities to be fully engaged in the energy challenge. There is evidence of an increasing energy-awareness by the public: full engagement is the next step.

- A competitive market design is essential in order to incentivize investments and innovation. Therefore, energy retailers, and service providers need to have non-discriminatory access to day ahead, balancing and electricity markets , facilitating competition.
- Local energy communities should enable cross-commodity transactions (i.e. within local hydrogen microgrid) so to ease integration.
- We need fostering demand side participation into the day ahead and balancing markets, avoiding disproportionate technical requirements by TSOs which mean, in fact, a barrier to the demand
- We need to foster demand side participation: This is best done by enabling service providers to access consumer data.
- Index national regulated tariffs to the electricity and natural gas pool prices.
- Review national regulations to release electricity storage plants from access to the grid expiration deadlines and other authorisation constraints which are not compatible with un-develop technologies (in particular, pumped-storage needs to be achieved through major works leading to the need of support in all phases and must not be coerced by expiration of access rights). Dispense self-consumption plants under 2 MW of access to the grid request procedure seems also appropriate (also, dispense these plants of the connection request procedure).

- **How can cost-efficient use and development of energy infrastructure and digitalisation enable an integration of the energy system?**

See our answers to previous questions.

1. Are there any best practices or concrete projects for an integrated energy system you would like to highlight?

Looking at best practices - it is of crucial importance, particularly in the context of sector integration, not to mix up market roles that have to be separated. Otherwise, the negative effects will affect several markets at once.

Specifically, it is about the clearly defined role of electricity and gas network operators: they provide transport infrastructure and related services. According to the fundamental unbundling principle for the competitive energy market, network operators are prohibited from generating, storing and selling energy. Anything else would distort competition in several markets at once, and the resulting consequential costs are always ultimately borne by energy customers.

When network operators operate energy storage facilities and power-to-gas plants, electricity and gas customers finance the development, construction and operation of the plants through network charges. However, by financing the plants via network fees, network operators do not bear any business risk and thus have an unacceptable competitive advantage over market-based plant operators. The latter must refinance their investment in plants from market revenues. Regulated players have no place on the market. Effective unbundling is essential if the market is to find solutions for sector coupling. This is a task for market players and must not be allowed to migrate into the regulated sector.

2. What policy actions and legislative measures could the Commission take to foster an integration of the energy system?

See our answers to previous questions.

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