Preparing a future EU strategy on energy sector integration

IFIEC Europe

Final Contribution

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Introduction

IFIEC welcomes the opportunity provided by the European Commission, DG ENER, to provide input on the foreseen strategy for smart sector integration. Cooperation between policy makers, the industry and energy sectors is necessary to investigate a regulatory and market framework that delivers an increasing availability for carbon neutral, secure and globally competitive energy. Energy supply and demand will change over the next decade, as a result of declining fossil fuels and a growing share of intermittent renewable electricity production, as well as other new energy carriers (e.g. synthetic fuels, hydrogen, ammonia). Manufacturing industry must be able to be competitive in a secure and efficient climate neutral energy market and able and encouraged to deliver flexibility to energy markets.

Summary

IFIEC suggests different policy actions or measures that the Commission should take. Please find a summary below:

- We call for an EU strategy including an assessment of the total indicated system cost for end-consumers deriving from the energy transition, cost allocation, security of supply effects and a cost comparison between flexibility options.
- Indicative EED and RED targets are needed in order to support central GHG-target and stimulate GHG-reduction technologies.
- Innovation support for all forms of low carbon energy solutions is needed. The potential use of all (new) energy carriers should equally be assessed, including import of energy.
- An appropriate balance between incentivising consumers to participate in demand response and incentivising all system parties to use it is needed. Legislation must recognise that providing demand response impacts energy efficiency; any penalties for such inefficiency must be removed.
- A consistent EU-accounting framework will be required to adequately support innovation for CCU feedstock and fuels.
- Biomass should be recognized in the EU ETS scheme as an important decarbonization route, whatever the way it is produced and supported.
- To ensure security of hydrogen supply, a proper European hydrogen transport infrastructure is necessary, including interconnection with third-party countries, cost-efficient infrastructure adaption and a rational allocation of costs.

What would be the main features of a truly integrated energy system to enable a climate neutral future? Where do you see benefits or synergies? Where do you see the biggest energy efficiency and cost-efficiency potential through system integration?

Innovation support for all forms of low carbon energy solutions is needed. Abundant and affordable low carbon energy plays a crucial role in the transition towards climate neutrality. Cross-sectoral cooperation, not only between the gas and electricity supply, but also between the industry and energy sector, as well as process innovation (e.g. high temperature electrified heat and CO_2- chemistry) and product innovation (electrolysers, e.g.) are major parts of the solution. This requires strong coordination and coherence with the EU Industrial Strategy to ensure active participation of industry in the transition process while maintaining the necessary conditions for competitiveness.

Competitiveness of industry should be safeguarded by optimal flexibility selection and cost allocation. System costs are forecasted to continue to rise more as a result of the growing share of low carbon electricity and changing energy production locations. New infrastructure impacts industrial consumers in terms of cost-allocation, affordability, flexibility and security of supply. These issues have to be addressed through a clear and predictable EU strategy, including a transparent assessment of the total system cost for end-consumers; taking full account of the energy transition, cost allocation between classes of consumer, and a cost comparison between flexibility options. This should include how the energy needed in Europe can be made available by production or import at an affordable level in a global context, including storage and flexibility options, and with the use of the most cost efficient energy carriers. New infrastructures for gas- electricity- heat, CCS and CCU require cross-border cooperation on energy exchange between member states and with third countries to find the most effective and efficient solutions.

Optimised back-up capacity (storage, backup, flexibility) is necessary to balance intermittency. Because we will face more and more periods of over- and undersupply of electricity, solutions are necessary for storage and backup. The availability of enough flexibility via storages at competitive cost is a key success factor for carbon neutral transition and a precondition for a successful interlinkage between the energy and industry sectors. Industrial flexible consumers can contribute to a more stable energy supply system via demand response. An appropriate balance between incentivising consumers to participate in demand response and incentivising all system parties to use it is needed. Interlinking energy markets between the energy and industrial sectors (producers, consumers and prosumers, aggregators) can offer solutions to balance the system.

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

Overall, the challenge of decarbonising of energy demand remains huge. In 2017 only 26,5% of total European energy consumption is renewable or low carbon (13,9% renewable and 12,6% nuclear)[1].

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[1]source:https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview#Final_energy_consumption

We will address the specific barriers related to decarbonizing energy demand in the specific questions.

GHG-reduction technologies are hindered by limitations on energy demand and low-carbon energy forms. Implementing energy efficiency measures remains important to save energy and reduce greenhouse gas (GHG) emissions. However, this will not be sufficient to reach climate neutrality by 2050 since energy will always be needed for production, transport and heating purposes. New, disruptive and innovative technologies can be energy intensive. Energy efficiency -and not energy reduction- should be pursued in the Energy Efficiency Directive (EED). Therefore, the central target of the EED should be indicative, allowing industry to implement the (energy intensive) technologies needed to reduce their GHG emissions, i.e. the ultimate goal, without being hindered by limitations on the energy demand. The EED articles, requiring a linear reduction of the final energy use, cannot be maintained in the current format. Similarly, an increased share of cost effective renewable energy is needed to reduce GHG emissions. Nevertheless, all climate neutral energy, also synthetic fuels and nuclear energy, will help to achieve the EU ambition of climate neutrality. Therefore, the RED target must also be indicative. If the EED and RED targets would still be distributed across member states, cost efficiency should be the basis of the effort sharing.

Demand response is not straightforward when looking at some of the energy intensive industry's core processes. Energy intensive industrial processes are mostly continuous ones, and operate most efficiently at fairly high loadings. Lower production rates mean deteriorating energy efficiency levels, so EED energy efficiency legislation should be adapted so it does not penalise organisations which are supporting the system in other ways. Other hurdles include: safety risk (some companies have to manage high risk processes/products and will never adopt demand-response, whatever the benefit), costs related to the manufacturing process and production losses (especially if production is continuous), risk that a sudden and unforeseeable shutdown of an equipment can create in relation to production processes (e.g. restarting production) on product quality and equipment and trade-offs between energy efficiency and demand response.

Specific questions

- ***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?***

All cost-effective forms of low carbon electricity should be supported and implemented. In the current energy supply system, electricity as an energy carrier represents no more than 20 percent of the overall energy demand.[2] Industry also strives to use biomass based, recycled carbon and hydrogen. Electrification is not always possible due to technical limitations and will not always be the most energy efficient solution. Therefore electricity should not be the only energy carrier considered to reduce emissions in the production of heat or other processes. Other, new low carbon energy carriers could be more energy- and cost-efficient. For some sectors or processes electrification will be the most effective solution to reduce emissions. The challenge of decarbonising electricity supply

[2] The rest is molecules coming from oil, coal and natural gas.

will further increase and therefore, all cost-effective forms of low carbon electricity from EU production or import should be supported and implemented.

- ***What role should renewable gases play in the integrated energy system? What measures should be taken to promote decarbonised gases?***

Renewable gas (bio-methane, biogas, hydrogen) and low carbon gases are solutions for decarbonizing production processes for which electrification is not possible. Renewable and low carbon gas should play a role in the integrated energy system. The flexibility of gas as an energy carrier is much more significant than electricity. The availability of enough flexibility via storages at competitive cost is a key success factor for carbon neutral transition and a precondition for a successful interlinkage between the energy and industry sectors. DG CLIMA intends not to allow a zero CO_2 emission factor for biomass consumed by installations covered by ETS, if the bio-mass has benefited from a financial support for its production. This criterion that has no legal basis either in the Energy Efficiency Directive or in the Emission Trading Scheme Directive could be hurdle for the decarbonation of some activities of EU industry. Thus, this criterion should be removed.

The issue of non-availability of low carbon gas via grid infrastructure should be addressed. Not every company has direct access via the grid to renewable or low carbon gasses and is able to reduce GHG-emissions in its processes. Therefore, Certificates of Origin on gas can be introduced for GHG-emissions accounting purposes by industrial energy consumers.

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

Hydrogen is an important building block for fuels and products. The production of hydrogen could become a major enabler for the cross sector coupling of gas and electricity. IFIEC supports a technology-neutral approach that treats all energy carriers equally. A balanced use of low carbon gas and low carbon electricity has been shown to be the most cost-effective way to realize the energy transition, compared to an energy system that relies on electrification alone. Low carbon hydrogen may well be produced via large scale on-site electrochemical conversion (e.g. electrolysis), fuelled by low carbon electricity, by methane pyrolysis or steam reforming with CCS. However, these technologies, are not yet competitive in comparison to conventional hydrogen production from SMRs.

To ensure security of hydrogen supply, a proper cost-effective hydrogen transport infrastructure is necessary, facilitating transmission and distribution within the European Union as well as connecting the European hydrogen grid with third-party countries**.** Such a network would serve as a backbone for a European market for hydrogen, allowing for competitive sourcing by consumers. In developing such a grid, essential building blocks are the conversion of existing gas pipelines into hydrogen pipelines to minimize investment costs, strict observation of gas quality aspects when blending hydrogen in gas grids, and creating a proper regulatory framework based on the established principles of unbundling, third-party access and cost-efficiency. It is important that the EU's existing gas infrastructure is retrofitted for transporting and storing low carbon gases. Therefore we support sector coupling, as this enables the integration of a greater share of low carbon electricity in the electricity grid through power-to-gas and hydrogen storage. The benefit of a pure hydrogen grid is that pure hydrogen can be used directly as feedstock in different production processes.

To accelerate uptake of hydrogen (or energy carriers based on H_2) as energy carrier or feedstock no extra restrictions on origin of hydrogen should be imposed on the user. This would lead to even more expensive hydrogen prices and would hamper further developments of hydrogen.
Competitive prices for industrial consumers using hydrogen will be needed to ensure that the competitiveness is safeguarded during the transition**.**

- ***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?***

A framework to allow consistent accounting is needed to adequately support innovation for CCU feedstock and fuels and integration of (waste) heat. In an integrated system transition, raw materials such as carbon, hydrogen, ammonia, etc. have a crucial role for industry. The dual use of energy and materials is integrated in the industrial sector. Carbon is – and will be - a major building block in many consumer goods. These elements are also intermediate products of circular and bio-based industries. Moreover, large volumes of climate-neutral energy will be needed in order to move to alternative feedstock sources. On the long term, CO_2 should no longer be qualified as waste, but as a valuable raw material (CCU). Carbon may be harvested via CO_2 in the atmosphere or sourced from production processes and ambient air. CCU feedstock and fuels can be part of the solution towards climate neutrality and a framework to allow consistent accounting is needed to adequately support innovation for CCU.

Moreover, industry has long experience of integrating its processes so that waste heat is minimised, however the effectiveness of this can depend on plant loadings within a site; in a number of industrial complexes a secondary market has emerged for heat, where neighbouring companies trade heat in a cost and energy-efficient manner. In the most forward-looking examples, the low-grade energy suitable for space heating is also traded with residential and municipal users. This integration needs to become the norm.

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

The successful implementation of a competitive and well-functioning electricity market that guarantees non-discriminatory cross border access, proper remuneration of flexibility and a level playing field among different sources is a prerequisite for a more integrated energy system. It is crucial that clear short- (balancing) and long-term (adequacy) responsibilities for market parties should be integrated in energy market. Innovation and responsibility in the market to honour contracts for delivery for suppliers using intermittent energy are necessary complements and leverages for flexibility are necessary to create a future proof and integrated energy system.

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

More visibility for market actors on the amount of flexibility available at specific times and its location (via digital infrastructures, i.e. smart grids and smart meters) and protocols for sharing information are welcome to stimulate flexibility in the system.

About IFIEC Europe

IFIEC Europe represents 13 national European associations that comprise - on a cross-sectoral level - those industrial sectors for which energy is a significant component of production costs. IFIEC´s membership represents a diverse set of industries including: aluminium, automobile, brewing, cement, chemical, copper, fertilizer, food, glass, industrial gases, metals, paper, pharmaceutical, plastics and steel.

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