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Mr. Dominique RISTORI
Director-General for Energy
European Commission
Rue Demot 24
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BELGIUM

Paris La Défense, March 14 , 2018.

Dear Director General,

Energy companies are facing deep transformations driven by public policies as much as by technologies and economics, aiming to fight against climate change and to decarbonise the European economy. As you know, ENGIE is willing to be at the forefront of this energy revolution, pushed ahead by the "3 Ds": Decarbonisation, Digitalisation and Decentralisation.

The Group is convinced that the European economy and the European citizens can reap the benefits of these transformations: more growth, employment, wellbeing for citizens and value for industries can emerge, if certain conditions are met and regulation is adapted accordingly:

- The first is to provide the right long term signals that the energy sector needs to invest and to channel resources towards energy efficiency and green technologies, being the two pillars of a successful energy transition.

- The second of them is to enable a robust, stable and visible regulatory framework, which requires more integrated and coordinated policies at European level.

ENGIE is therefore an unequivocal supporter of the Energy Union program and of the underlying legislative pieces, be it the Clean Energy Package, the Clean Mobility Package or the reform of the EU-ETS. The Group welcomes the European Commission's efforts to accelerate these negotiations in order to finalize them before the end of its mandate.

Going forward, ENGIE is pleased to share the enclosed paper, which provides inputs for the upcoming communication on energy and climate priorities for 2025, expected in June. Strengthening the European energy policies and providing adequate tools will be key to make further EU climate commitments

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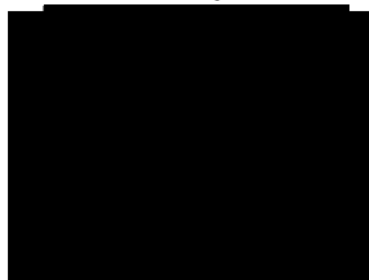
credible. In addition, future energy and climate priorities should aim at reconciling the objectives of market liberalisation with a far-reaching industrial ambition that will foster green investments and energy efficiency.

This document covers five major themes:

- **Keeping energy efficiency first**, being a major driver for the EU energy transition and a source of growth, jobs, competitiveness and well-being for consumers;
- **Developing renewables**, making them prominent in the field of electricity generation, heating and cooling, transport, and **driving the related energy market adaptations** in order to materialise security of supply and market integration;
- **Accelerating the decarbonisation** of all sectors of the EU economy, as ENGIE believes that fighting climate change, and changing our ways to produce and to consume, are the main challenge of our time;
- **Fully recognising natural gas** as part of a balanced and cost-effective energy transition, and **green gases and hydrogen** as long-term energy resources fit for a decarbonized economy;
- Fostering EU competitiveness and consumer welfare through **innovation and digitalisation** in the whole value chain while **enforcing cybersecurity**.

ENGIE has developed a strong expertise close to its consumers and the day-to-day realities of the EU energy markets. Thanks to this asset, the Group is committed to act as a responsible industrial actor and to deliver an harmonious growth. It is also willing to share its expertise through a fruitful dialogue with the European policymakers on these crucial topics.

Yours sincerely,



**A Climate and Energy Policies Framework for 2025
Fit For The Energy Revolution: Policy Recommendations**

Foreword and Executive Summary

The energy sector is facing major challenges, shifts in technologies and business models, organizational adaptations as well as a profound change of cultural mindset in a customer-oriented environment. All in all, **the energy transition is more than an adaptation, but rather a genuine shift of paradigm.**

This shift must be smoothly accompanied by policymakers and regulators, in order to **preserve the existing industrial basis, knowledge and assets** in the EU energy sector, and at the same time to **meet the massive needs of fresh investments** required to make this energy revolution happen.

Besides, it is ENGIE's conviction that **the fight against climate change will continue to drive the evolutions the sector is undertaking and will call upon the economic actors to step up their efforts.** Adapting the energy system now rather than in a distant future will **prevent additional social and economic costs, as well as missed industrial opportunities** that must be seized in the global competition now.

In this context, ENGIE expressed an **unreserved support to the "Energy Union" program** constituting the Juncker's Commission political framework for energy and climate policies, **and to the Clean Energy Package** as its major legislative building block.

Indeed, these initiatives address many concerns that ENGIE expressed in the past years, as regards overlaps between European and national policies, inconsistencies between EU objectives and the still burning lack of long term signals that are vital for economic actors to invest in the energy transition. This latter issue remains absolutely key to deliver the energy transition, in particular by **materializing the paramount share of private investments that will be needed over the next decade - up to 177 billion euros of investments per year, both private and public**, that could generate up to a 1% increase in GDP and create 900.000 new jobs.

The Clean Energy Package, as the masterpiece of the Energy Union, is seen by ENGIE as a pertinent regulatory piece to support the EU energy transition, in particular through the **emphasis put on energy efficiency.** The best energy is the one that is not consumed. Reducing consumptions and producing "NegaWatts" will not only provide benefits for consumers, along with better control on their energy bills, but also upgrade the potential of growth and jobs in all European countries.

ENGIE is already a major industrial actor in energy efficiency, relying on the competences of 2/3 of our employees working in energy services worldwide. Energy services represent a

massive potential of development, especially in European countries, provided that policymakers reassert their commitment in making "energy efficiency first".

If energy efficiency comes first, ENGIE's second priority is committing to **making the remaining energy green and decarbonised**. Achieving this requires **to adapt the electricity and gas market designs accordingly**. The Group fully supports the actions undertaken by the European authorities to make the energy markets more integrated, interconnected, efficient, and fit for a growing share of renewable energies. But greening energy adopting the most cost-effective technologies must also be a **widespread ambition across all sectors, including transport, heating and cooling**.

Greening and decarbonising the energy systems in a sustainable way requires a **combination of solutions that brings along electricity, green gases, hydrogen and a variety of renewables**. **Full electrification could put the energy transition in harm's way** if it translates into massive overinvestments in infrastructures, new imbalances for system adequacy and hence additional costs for consumers and lower quality of service and security of supply.

Keeping the energy transition sustainable through a particular vigilance on energy costs will be key to its success.

Through decentralisation and digitalisation, **the new world of energy will be driven more prominently by consumers**. ENGIE welcomes this evolution towards a more customer-centric energy system for greater benefits of all consumers (households, industries, public bodies and territories). Additional value for the society as a whole can be captured by offering them new services and empowering them with new tools to produce locally the energy they consume, to proactively manage and value their consumption.

* * *

Through the following policy recommendations, **ENGIE would like to provide the European Commission with its views on the priorities for a political and legislative agenda for 2025**, as inputs for the communication the European Commission will release in spring. The Group would like to stress them in order to go beyond the legislative improvements under discussion with the Clean Energy Package and other related texts, and to adapt further the energy industry and markets.

Five priorities are covered:

1. **Keeping energy efficiency first**, being a major driver for the EU energy transition and a source of growth, jobs, competitiveness and well-being for consumers;
2. **Developing renewables**, making them prominent in the field of electricity generation, heating and cooling, transport, **and driving the related energy market adaptations** in order to materialize security of supply and market integration;
3. **Accelerating the decarbonisation of all sectors of the EU economy**, as ENGIE believes that fighting climate change, and changing our ways to produce and to consume accordingly, are the main challenges of our time;

4. **Fully recognizing natural gas as part of a balanced, efficient and cost-effective energy transition, and green gases and hydrogen as long-term energy resources fit for a decarbonized economy;**
5. **Fostering EU competitiveness and consumer welfare through innovation and digitalisation in the whole value chain while enforcing cybersecurity.**

Besides the points discussed in this paper, ENGIE would also like to recall **further elements that should play a major role in a future working program** for the EU Commission, namely:

- **keep channelling massive investments related to the energy transition** (renewables and low-carbon projects, energy efficiency programs, infrastructures), increasing the volume of EU funding and financial supports (Juncker Plan and EU funding), improving blending mechanisms to better articulate public and private investments, and by ironing out regulatory hurdles at national level;
- **Setting the framework for a renewed European industrial policy**, that will be able to secure access and retain leadership on key enabling technologies for the future of the EU transition.

The Group is convinced that a **confident dialogue between the private sector and European policymakers will provide the EU with even smarter regulations and make them act as boosters for growth and competitiveness**. ENGIE is fully committed to participate in such a dialogue and hope that this document will bring a useful input into the European Commission's reflection on the future of the energy and climate policies.

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1 Keeping Energy efficiency first

"Energy efficiency first" is one of the most cost-effective ways to support the transition to a low carbon economy while creating growth, employment, investment opportunities and at the same time reducing the EU energy dependence. This lever is also key to support EU's long term industrial competitiveness.

Referring to various national energy and climate frameworks, ENGIE thinks that **the European Union could go beyond the target of 30 % of energy efficiency by 2030** currently discussed in the Clean Energy Package and **secure its binding nature at national level**. In France the Energy transition Act for Green Growth of August 2015 (*Loi relative à la transition énergétique pour la croissance verte*) sets a target that is equivalent to 35 % at EU level by 2030. Adopting a similar target at European level could send the signal that it is only by scaling up efforts and not pursuing incremental approaches that the EU will be on track to meet its climate commitments. Besides, such an ambition will enable the EU economy to reap additional benefits in terms of job creation and local development.

ENGIE welcomes the emphasis given by the EU Commission on building renovation, and calls on the European Commission to retain a **pragmatic approach that integrate all the available energy savings solutions: renovation of buildings and insulation works, improvement of the management, renewal and upgrading of the heating and cooling systems in buildings**. To achieve important energy savings, policies should seek to optimize the choice of the right heating system according to the energy situation considered (electricity, gas, heating networks or RES) and the replacement of obsolete and very inefficient energy installations. In addition to energy savings, other very important concerns like improvement of the air quality within buildings, deserve also to be integrated to the new buildings policy.

Consumers will also benefit from proactive policies in the field of energy efficiency, which have a direct impact on lowering the energy bill and contribute to address social imbalances in the energy access. As the European Commission intends to focus more on energy poverty, **an EU wide initiative could be launched to reduce the number of very inefficient buildings**, which very often penalize the poorest part of the population. This could be done through quantitative national objectives and a more efficient channelling of public and private financial resources.

To further boost the development of the energy efficiency services and mobilize private investment, **the priorities of a future legislative agenda could also embed the following actions:**

- **promoting energy performance contracts**, in particular with the public authorities;
- **giving more prominence to energy efficiency projects within the framework of EU financial instruments**, which should be reflected in the priorities of the future multi-annual financial framework post-2020;
- **monitoring the transposition of the EU legislation by the Member States**, making sure that this happens in due time and in a complete manner.

2 Accelerating the decarbonisation and the greening of the EU economy

2.1 Ensuring that Europe stays on track to meet its 2030 and 2050 decarbonisation targets

Climate change is the major challenge of our time. Reaching the Paris Agreement goals (*"holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels"*) will require a substantial effort by all stakeholders at all levels. As a large international company active in energy and energy services, **ENGIE supports a strong carbon market, with a robust and stable price, to provide visibility on investments and ensure regulatory stability.**

In the European Union, some elements of the recently concluded EU ETS negotiations are going in the desired direction such as the increase in the Linear Reduction Factor, which could have been higher, the doubling of the injection rate of allowances into the market stability reserve, the cancellation of allowances due to power plants closures and the annulation of allowances in the MSR.

To ensure the role of the EU ETS as the main tool to reduce emissions in the industrial and power sectors, **policy overlaps should be taken into account** when fixing the emission cap or reviewing the functioning of the carbon market. Enshrining this principle in the current Clean Energy Package negotiation, and especially the Governance Regulation, is a major issue for ENGIE.

2.2 Fostering a meaningful carbon price signal and managing the phase out of coal

Despite the real progress made over the past months negotiations, it is likely that the EU ETS reform will not achieve a short-term carbon price signal commensurate with the decarbonisation needs of electricity generation.

EU-ETS prices are currently still very low (around 9-10 €/t) and very unstable. As a consequence, old coal plants are running baseload whereas much newer, more efficient and less polluting gas plants are running at much lower load factors. This also contributes to keep support costs of low carbon generation higher than they need to be.

ENGIE supports the establishment of a carbon floor price for the power sector, inspired by the UK experience. Ideally, this should be implemented at the EU level, but the political feasibility of a European floor price is probably not realistic at this stage. **A coalition of willing Member States could lead the way**, starting with France and Germany, followed by further enlargement to other Member States, such as the Netherlands, which announced a minimum carbon price in its government agreement, the United Kingdom, Belgium, Luxembourg, Italy, Spain, etc.

In a well-interconnected market, it is highly counterproductive for a single Member State to establish a carbon floor price on its own. The case of the United Kingdom is different as it has currently relatively little interconnection with other Member States in Continental Europe.

Following up UK's initiative, these willing countries could agree to **experiment carbon price floors on emissions from power system installations by introducing temporally coordinated**

national top up taxes added to the EU-ETS price, up to the level of the desired carbon floor price. A target between 25 to 30 euros is necessary to trigger the switch from coal to gas in the power generation. These taxes would be temporary, as the ETS price is expected to increase in the coming years, and target the whole of power production.

2.3 Stepping up efforts in the field of renewable energies

Renewables play a key role to decarbonize the energy mix. Europe has strong ambitions for the development of renewables aiming at global leadership in this field. These ambitions should be translated into a higher European target than the 27 % pushed forward by the European Commission in 2016. As acknowledged by a recent report of the International Renewable Energy Agency, the dramatic decrease in costs would enable the EU to reach higher targets, up to 34%, in a cost-effective manner. **ENGIE believes that a level of at least 30% renewables in total energy consumption by 2030, which is expected to lead to a share of more than 50% renewables in the power sector, is within reach.** Member States should define adequate contributions to this European target including interim milestones in order to provide predictability for investors.

The iterative governance process between EU Commission and Member States should strive to avoid any gaps between EU target and Member States from the start, while encouraging voluntary cooperation across Member States. The EU Commission should support high ambitions of Member States, including through EU funds that could be used to allow Member States with low GDP or financial difficulties to tap their full renewable potential. Moreover **the 2030 target should not distract from the fact that 2020 targets are binding at national level:** they must be achieved on time and maintained also after 2020. A strengthened carbon price signal should play a key role to drive investment in renewables. Where this is not sufficient, **technology-specific support schemes should remain allowed as long as they are competitive and market-based.**

As renewables move towards market integration and as support schemes in some cases are completely phased out, renewables are increasingly facing merchant risks. These risks need to be managed and longer-term visibility needs to be ensured in order to attract investors and keep the cost of capital under control. One way to do so are **long-term power purchase agreements (PPAs)** between renewable producers and (corporate) offtakers which should be facilitated by an appropriate regulatory framework (e.g. possibility to combine support schemes/incentives with PPAs, adequate rules related to Guarantees of Origin, etc.). Hence, **it is important that the upcoming revision of the Guidelines on State aid for environmental protection and energy provide a secure legal framework to their development.**

Increasing share of wind and solar requires flexible back-up capacities such as natural gas fired power plants which are likely to operate only a limited number of hours per year and will strongly depend on scarcity revenues. This creates an urgent need for stabilization of revenues for these assets through an appropriate market design, as described in section 3.2 below.

Beyond 2020, a large part of existing renewable installations (mainly wind farms) will reach the end of their operational life. **Repowering these installations will be crucial to achieve the 2030 target and should be enabled via facilitated permitting regimes.**

Moreover, **onsite investment in renewables by final customers and third parties** will grow in importance. This development should not be hindered by undue barriers and disproportionate burden. At the same time, **competitive distortions between onsite renewables and renewable electricity supplied through the network should be avoided.**

Europe needs a business-friendly environment not only for investors in renewable energies but also in other technologies that help integrating renewables into the system and markets (storage, smart solutions, etc.) and **enhance sector coupling through use of renewable electricity to produce e.g. green hydrogen or renewable methane.**

2.4 Decarbonising transport

Transport is a key economic sector in Europe generating almost 5% of the EU's GDP and creating employment for more than 11 million people in the EU. However, transport is also a major contributor to climate change, accounting for around 25% of the EU's greenhouse gas emissions, and a significant source of air pollution and noise in densely populated areas. Other countries like the United States or China are moving ahead very quickly to tackle these challenges and Europe's transport industry must keep track of this modernisation process.

Alternative transport fuels with significantly less greenhouse gases, air pollutant and noise emissions will play a crucial role in this transition. **A combination of different solutions including vehicles running on natural gas, biomethane and hydrogen as well as electric vehicles can make transport cleaner and help the EU automotive industry to maintain its technological leadership and competitiveness.** Car and component manufacturers but also investors in alternative transport fuel infrastructure need **visibility through long term targets and roadmaps.** Moreover a **technology-neutral approach is key** to properly compare and take into account the environmental and climate impact of different fuels **not only at the tailpipe but along the entire fuel value chain.** **Natural gas (CNG, LNG) and biogases can significantly help reduce CO2 emissions, in particular in the field of maritime transport and for heavy duty vehicle.** They are complementary to, not competitor of, battery-powered electric vehicles (BEVs) or fuel-cell-powered electric vehicles (FCEVs).

3 Making energy markets fit for an increasing share of renewables while ensuring security of supply

Following the ongoing energy transition, **a structural change of the energy markets and their design should take place.** This change should aim at **adapting the markets to an increasing share of renewable generation and at integrating more efficiently the European dimension in their operations.** In addition to implementing the long-term decarbonisation target, the aim should be **to ensure secure energy supply in a cost-efficient way** for the consumers and enabling economic operators to steer their investments according robust long term price signals.

3.1 Improving the internal energy market for electricity to make it fit for additional intermittent RES generation

Regarding the electricity market design, improving the short-term electricity markets is a necessary, but insufficient, remedy to cope with the challenges of the energy transition. With

the energy transition resulting in an expected share of around 50% in Europe's electricity mix by 2030, renewable energies will become a cornerstone of the electricity market. **ENGIE therefore considers indispensable that renewable capacity is fully integrated in the market.** This means taking on market responsibilities (e.g. exposure to balancing risks, absence of priority dispatch...) and getting access to all relevant markets on the basis of a level playing field.

However ENGIE believes that **the current proposal in the Clean Energy Package fails to acknowledge the structural issues, addressing only the short-term component of the energy market.** The following statement of the European Commission illustrates well the issue for new investments: *"Investors factor in all these sources of uncertainty when making their investment decisions. Different authors give different weight to each of these factors, but they all contribute to increase risk for investors. If investors demand larger risk premiums, energy-only markets may not be able to generate sufficient incentives to invest even with high scarcity prices"*¹. In other words, even if price spikes are allowed to materialise in an energy-only market environment, investors might consider the underlying price signal as too risky to trigger investments in power plants, storage or demand response over the longer term. Transforming these risky and rare price spikes into more predictable revenues is hence of great importance for operators and investors.

Well-designed market-based capacity mechanisms should transform this risky scarcity premium of an energy-only market into a more stable and predictable stream of revenue and hence reduce cost of capital and attract capacity at lower costs. In addition, long-term contracts for providing reliable capacity, could also be one of the appropriate tools to give sufficient signals to investors, in particular for capital-intensive front-loaded investments like CCGT, hydro, pumped-storage or nuclear.

3.2 Ensuring security of electricity supply via capacity mechanisms

The energy transition will only be a success for the European consumers if security of electricity supply can be ensured at the same time. This requires to **properly value three complementary products (energy, ancillary services and capacity)** in the electricity market design. The absence of adequate remuneration has to lead to the mothballing of units (in a first stage) or their definitive closure, which could put security of supply at risk.

Capacity mechanisms should be designed on a competitive basis to complement the energy market revenues for market participants (generation, demand response, storage) so that they cover the difference between their energy market revenues (based on marginal cost pricing) and their fixed costs (including investment costs when additional capacity is needed). Market-based capacity mechanisms should be key to ensure a competitive setting and the absence of undue remuneration (e.g. only capacity needed to ensure security of supply should be rewarded at a fair price). In the long-term additional investments in power generation will ultimately be needed to further progress with the energy transition. These investments will require that enough visibility is provided on the market environment, including the presence of capacity mechanisms and of long-term contracts.

¹ Staff Working Document (2016)385, page 38

The Clean Energy Package and future legislative developments should **focus on enabling a market design that allows an adequate functioning of the electricity markets, both from a short-term perspective (market efficiency) and from a long-term perspective (system adequacy)**, in the context of the on-going energy transition to a low-carbon economy. Failing to acknowledge the visibility needs of operators and investors while keeping in mind the benefits to the consumers (in terms of security of supply and cost effectiveness) would require to reopen the discussions in a few years.

3.3 Improving the use of the European electricity network

In a highly meshed European electricity network, **national measures create important externalities and prove to be an important brake on the integration of the electricity market**. The results are external constraints on the ability of market participants to trade electricity and optimize resources across borders. Current national responsibility for system operations hampers cross-border cooperation and is falling behind the progress made on side of market integration. Such constraints can only be overcome by moving some system operation tasks away from a national focus towards an integrated approach. Against this background, ENGIE believes that **a better use of the existing European electricity network by integrating some tasks at regional levels should be considered at least on the same footing as the addition of new network lines**.

4 Reasserting the prominent role of natural gas as a key driver of the EU competitiveness

4.1 Contributing to the energy transition to a low-carbon economy

Natural gas is essential to meet the challenges of global warming and to massively and immediately reduce CO₂ emissions, by replacing coal (in electricity generation) and diesel (in terms of mobility: maritime, road, urban public, taxis, private individuals, etc.). In all the scenarios, all experts agree that, by 2040, gas will represent a quarter of the total energy mix, all uses combined.

Gas responds to public health challenges and is improving air quality, particularly in cities (fine particulate matter, SO_x, NO_x, etc.). **Gas is also the ideal, indispensable partner to large-scale development of solar and wind power** by ensuring balance in the electrical system, in particular by guaranteeing heating in winter, but also meeting electricity needs everywhere, all the time.

For the transport sector, ENGIE believes that alternative transport fuels with significantly less greenhouse gases, air pollutants and noise emissions will play a crucial role in this transition (cf. 2.4). **A combination of different solutions including vehicles running on natural gas, bio-methane and hydrogen as well as electric vehicles can make transport cleaner** and help the EU automotive industry to maintain its technological leadership and competitiveness.

4.2 Moving towards a 100% green gas in the mid-century

The progressive increase of the share of renewable gas in Europe's energy mix will reduce the energy dependence on third countries. Today, natural gas is already 100% green in some transport and urban heating applications. As the production of electricity is becoming more

and more renewable, natural gas will also become totally renewable. **We expect that after 2050 all European gas consumption will be renewable, due to the massive use of new technologies for the production of biogas, bio-methane and hydrogen.**

Renewable gas is a necessity for Europe: **an energy system based entirely on intermittent electrical power sources such as wind and photovoltaic is not economically viable nor able to guarantee sufficient security of supply for citizens.** The need for investments in electricity transmission infrastructures which are necessary to integrate intermittent renewable sources, to cope with concentrated demand peaks induced by excessive electrification, as well as the enormous network balancing needs, would sharply increase unit system costs, making them socially unacceptable. Thanks to renewable gas, a flexible energy source par excellence, and to the use of the most efficient gas infrastructure system in the world, Europe will be able to achieve its climate targets successfully and at much lower costs.

But to do so, **the existing gas infrastructure system (which has been paid for and is largely amortised) needs to be preserved.** New investments shall be well balanced with respect to the future needs of a an increasingly decentralized and evolving energy system (the production of renewable gas will in fact be distributed throughout Europe, generating value for local business and rural economies) and the integration of the gas and electricity systems shall be further enabled.

Moreover a new set of rules shall be established to foster the accommodation into the system of renewable gas (biogas, synthetic methane as well as hydrogen, cf. 4.3.) and to reinforce the support of new technologies, such as power to gas, necessary to accelerate their large scale development. **ENGIE believes that EU binding targets for green gas (injection of green gas into the grids) represent a key market design upgrade able to foster the deployment of green gas technologies in Europe.** To reach the targets, **Member States shall be allowed to define subsidy schemes for green gas producers, consisting in Contracts for Differences based on competitive and technology specific tender procedures.** Taking into account the benefits (direct and indirect) of the deployment of green gas technologies (economic, social, environment), **the funding of the subsidy schemes shall rely on a wide perimeter of contributors, not be limited to the gas sector and include all the beneficiaries.**

4.3 Investing in the massive potential of hydrogen

Green hydrogen has an essential role to properly decarbonise the industry, transport, and residential needs. It also solves the problem of intermittency of renewable energies, by offering a solution of storage and flexibility (cf. 5.3).

This technology benefits from an historical conjunction of two phenomena. First, the **drastic decrease of renewable total costs** allows for massive deployment of renewables. Second, the **technological improvements on the hydrogen value chain** (such as electrolysis costs reductions and end uses technologies) pave the way to the development of increasingly competitive hydrogen solutions. **ENGIE has the ambition to become a prominent actor in hydrogen solutions, through a new Business Unit dedicated to renewable hydrogen.** This new structure aims at developing utility scale renewable production capacities in geographies with important and competitive renewable potential, transporting it to relevant markets and retailing it to final markets.

Although costs of generating renewable energies have been severely cut down, the cost of infrastructure (electrolysers, storage) of renewable hydrogen is not yet competitive in industrial uses compared to hydrogen from the reforming. On the transport sector, the cost of investments in new fleets of vehicles and in recharging stations is a hindrance to its development. **Supporting the production and use of green hydrogen will allow the costs to fall in proportions close to what we have experienced for other renewable energies. It is therefore necessary to accompany financially the development of uses as has been done in the past for other renewable energies** which have now reached industrial maturity (electricity derived from wind or PV technologies for example).

ENGIE firmly believes that **the EU has the means to build a global leadership in hydrogen solutions and become a first class actor at global level**, by bringing existing technologies to competitiveness, developing infrastructures and supporting innovation. In particular green hydrogen, produced on a large scale, by electrolysis, at competitive levels, can be a significant game changer, provided that policymakers send the signals that the EU is ready to massively develop this technology, as it is happening in several countries or regions thanks to a bold political support (cf. Japan, South Korea, California).

To that end EU policies should help to develop:

- **the production of renewable hydrogen, through well-designed support schemes;**
- **the infrastructures (cf. charging points for mobility) and adapt existing ones to the transit of hydrogen;**
- **demand in uses of hydrogen (industry, mobility, energy).**

4.4 Revising the market design framework for gas

The European Commission's initiative to update the current gas market design represents an excellent opportunity to solve some current structural problems and accompany the transition towards a zero-carbon energy system.

As far as the gas market design is concerned, ENGIE considers that a **"2020 Gas Package"** **would be an excellent opportunity to fix several issues of the current market design**, as the growing market power of producers is putting under pressure European midstreamers and decreasing overall welfare of European citizens and companies. Moreover, internal market barriers are reducing liquidity and generating price spreads across different European areas.

Evolutions of the regulatory framework deriving from the market design exercise shall be implemented in a way to :

- (i) **ensure the resiliency of the gas system and the efficient use of infrastructure,**
- (ii) **ensure the integration of renewable gas** (biogas, renewable hydrogen and synthetic methane),
- (iii) **support new technologies, such as power to gas**, in order to develop them at a large scale,
- (iv) **acknowledge the key role of gas in the future energy mix and recognise the non-feasibility of an all-electric energy system**, which would be too expensive to be socially acceptable and would not ensure adequate security of supply.

Regarding the gas regulatory framework, **ENGIE fully supports the general approach of the Commission regarding the "Quo Vadis" study**. This study correctly identifies a central risk that

the gas market will face in the coming years, notably the “pancaking” of the European market resulting from the piling up of transmission tariffs. The “Quo Vadis” study pushes forward interesting solutions. Nevertheless some inconsistent and questionable modelling assumptions seriously undermine the relevance of the quantitative results, that should not be used to draw any conclusions. **The study is silent on the storage situation and incorrect on LNG.** Some proposals should be made to ensure an adequate amount of gas storage capacities is kept in a sustainable way. Moreover, **it should take into account that existing LNG sites and gas storage assets may offer an efficient and flexible alternative to pipeline projects.**

ENGIE considers that it is essential to address the risk of pancaking and to **continue the work on solutions aiming at reducing or removing cross-border transmission tariffs, in order to identify the most efficient options.** ENGIE supports further studies to better define the solutions to address these issues.

5 Strengthening EU long-term competitiveness and consumer welfare through innovation

5.1 Scaling up innovation through EU financial support

EU research & innovation funding programmes matter for companies because they contribute to make Europe a leader in disruptive technologies, which is important owing to the competition from USA and Asian countries in that field, and having in mind the need to support long term growth in the EU.

The next EU Research and Innovation framework programme, called FP9, will begin in 2021. It will build upon the current “Horizon 2020” programme (FP8) and will set objectives, priorities and the aid financial package for seven years. **This new framework programme must be an opportunity to push for a higher EU budget on R&I.** Besides, **programmes should focus on fields where the European industry is most present and contribute to addressing the societal challenges facing the EU, such as secure, clean and efficient energy, providing more support in storage, green gases and hydrogen; smart, green and integrated transport; resource efficiency.**

In order to further boost the efficiency of the future FP9 and mobilize private investment, ENGIE recommends:

- (i) **to ensure the participation of large enterprises like ENGIE in the definition of promising R&I programmes** due to their key role in this field;
- (ii) **to keep on a grant-based basis the major part of the R&D actions**, as loan-based programmes are not providing enough incentives for this sector.
- (iii) **to ensure that FP9 priorities are in line with the EU climate objectives** and favour a right transition towards a low carbon economy.

5.2 Making innovation happen in the retail sector through market based prices

Based on its experience in the retail markets in several European countries, it is ENGIE’s view that **market-based supply prices limit distortions, boost competition and lead to lower retail prices.** On the contrary, **regulated prices limit the awareness and the access of consumers to**

liberalised offers and constitute a distorting price reference for new entrants. As a consequence, new alternative suppliers are discouraged from entering the market and existing ones are not incentivised to compete in the market segment subject to regulated prices.

Furthermore, **the unequal application of electricity regulated tariffs across the EU Member States is detrimental of the level playing field** and the size and attractiveness of market opportunities between countries, depending on whether they are fully liberalised or not.

Consumers are empowered through several means such as the possibility to choose electricity products and type of contracts they need the most, certified comparison tools, easy switching procedure etc. In this respect **regulated tariffs act as a brake to innovation and diversification of offers, especially in countries where they constitute barriers to new entrants.**

Against this background **ENGIE supports the gradual phasing out of regulated tariffs**, by giving reasonable deadlines to Member states to steer this process in a smooth way and without creating hurdles for consumers. **EU benchmarks suggest that 5 or 6 years is a reasonable deadline to achieve the transition from regulated priced contracts to market based contracts.**

5.3 Securing the business model of storage and flexibility services as part of a "3D" energy system

Storage is called upon to play a prominent role in the future as part of a decarbonised, digitalised and decentralised energy world ("3Ds"). This will happen thanks to a combination of solutions. Batteries, pumped hydro and hydrogen storage will increasingly answer the needs from residential, commercial and industrial sectors as well as electric mobility in economies with shares of intermittent renewables. Besides ENGIE pays a particular attention to power to gas solutions as a means to strengthen and to optimize the coupling of gas, power and transport sectors. Green hydrogen and synthetic methane are fully adapted to tackle renewable intermittency (cf. 4.3.).

Concerning batteries, ENGIE is currently leading experiments for the provision of ancillary services, to maintain grid stability and security. **Batteries will also be key components to develop decentralised solutions to residential, industrial and tertiary consumers.** The acquisition by ENGIE in the beginning of the year of EPS (Electro Power Systems) is the latest symbol of the Group's strategy in its endeavour to develop decentralized energy solutions enabling the integration of renewable energy sources through micro-grids and energy storage.

In this context ENGIE welcomes the proposal of the Clean Energy Package to aim for market based pricing and solutions. The decarbonisation of the electricity (and energy) sector will create new needs at central and decentral level (growing fluctuations at shorter notice, voltage problems or local congestion issues), which today are not or not sufficiently addressed by markets. In a world of technological uncertainty and strong market/sector interactions, ENGIE believes that markets do provide the right incentives for finding efficient solutions. Hence, **rather than pre-defining the solution, regulators and system operators should define**

new products addressing new needs, by setting up the associated markets.² For storage technologies in particular, we believe that only such a market based approach ensures the full deployment of its potential. Consequently, grid operators shall not be allowed to build, operate or manage assets providing such services, but rather rely on the market. Derogations to that general principle shall be strictly subject to the identification of a market failure, and be temporary in nature.

The EU should also **consider taking further measures to create a level-playing field for storage** at the level of:

- **the grid charges design:** storage might be subject to grid charges when injecting (considered as generation) and when withdrawing (considered as consumption) from the grid, as it is currently happening in several Member States (cf. France, Belgium);
- **the consumption metering scheme:** annual netting schemes do not provide incentives to optimize household consumption and local PV generation, potentially hampering the development of small scale batteries;
- **the remuneration scheme of system operators:** system operators are often remunerated according to a regulated WACC, creating a bias towards CAPEX intensive solutions, i.e. building transmission lines. A TOTEX approach (including CAPEX and OPEX elements in the regulated asset base) would avoid this bias and create a level-playing field between reinforcing the grid or procuring a market-based service (provided by storage, amongst others).

5.4 Developing an energy-specific digital agenda and strengthening cybersecurity

Digitalisation offers new growth opportunities for energy utilities, enabling to diversify services to customers and deliver energy efficiency, whilst enhancing the comfort of customers. **Digitalisation is also key to “empower energy consumers”** and to make them actively participate through demand response, auto-consumption and production in the energy market. As smart meters are installed into more and more homes, further innovation will also become possible, with batteries which store locally-generated energy, demand-side response, and other products that help consumers automate their homes.

Furthermore, electric vehicles have a role to play in the electricity networks as they become an integrated part of the connected home and could be used for storage and/or injection when dynamically connected to the grid. The end of estimated billing is due to enhance customer experience, and connected homes can bring more comfort to consumers.

Smart industry requires smart regulation, i.e. regulation suitable to new technologies and business models. **ENGIE would like to avoid regulatory intervention slowing down or preventing the energy sector from reaping the full potential of this digital revolution, especially in the areas of data protection, health and safety, transport and liability.** In addition, there are risks of unintended consequences from ‘consumer’ style regulation being inappropriately applied to emerging ICT services vital for the digitalisation of industry.

² To take an example, today’s ancillary services markets are organized in a similar way: once the need is identified (frequency control), products are defined (FCR, FRR) and a market is set up where the TSO represents the demand side and the solutions (the supply) can be provided by different technologies.

As a matter of competition, GAFAs and other non-European tech companies are already strongly involved in the smart energy market. Energy suppliers need to value their energy expertise and their historical relationship with energy consumers. There is also a case for increase in European jobs, presence and a recognition of the utilities experience in a sector where US companies could end up taking a lead.

Cybersecurity is key to leveraging the potential of digitisation, ENGIE believes that **the emphasis should be laid on research in security and critical infrastructure, data confidentiality, smart grids and Internet of Things (IoT)**. The rise of IoT and connected objects shows that these tools need protection resources against potential cyber-attacks. **The protection of fundamental infrastructures is also paramount**, especially to protect the physical world from consequences of cyber-attacks. A priority should also to have large scale infrastructures for testing, investigating and optimizing the degraded system behaviour under various types and scenarios of cyber-attacks.

On risk identification, ENGIE sees industrial sabotage, extraction and fraudulent use of data, and divulgation of trade secrets as the most pressing risks for users. The emphasis should be laid on how to avoid the breakdown of critical infrastructures, and on the restoring processes. Moreover, the lack of training qualification and product identification for security services impedes a good preparedness of the various risks and threats.

ENGIE also underlines that at EU and global level, **the security of smart cities and upkeep of their security level is a pressing challenge**. Individual and industrial data need to be secured as industrial environment is becoming more and more digital and data dependent. The development of connected appliances, in number and in complexity, will generate a huge amount of data which will have to be protected and handled in a safe manner to avoid loopholes and abusive or criminal use.

On the European cybersecurity market, ENGIE's point of view is that services, products and systems lack of identification and regulatory framework. The EU market is competitive at global level, but too few companies are active in that sector. There is a need for uniformity in cybersecurity fields like training and certification schemes. **Standardisation in cybersecurity** should focus on specific sectors and critical infrastructures such as energy, Smart Cities and smart grids. Certification schemes could be useful if they prove themselves reliable and well-known by the public. **Research** in that subject should focus mainly on using R&I to bring products to the markets and to define common requirements for cybersecurity products and services at European level.