BRIEFING

March 2019

Response to the public consultation on the EIB energy lending policy

KEY INDUSTRY FIGURES

- Wind Energy meets 14% of Europe's power demand;
- 263,000 jobs, 82% of which are high-skilled;
- €36bn contribution to EU GDP (= 0.26% of EU GDP);
- €8bn of exports outside Europe;
- €27bn investments in 2018
- 4.9% of industry turnover invested in R&I;
- €5bn in fossil fuel imports saved.

Introduction

This document is summarises the response from the European Wind Energy industry to the consultation of the European Investment Bank (EIB) on its energy lending policy.

Wind energy is set to become the largest source of power generation in Europe in the next 8 years.

General

1. Do paragraphs 15-27 in the public consultation document provide a reasonable characterisation of the long-term energy transformation? Are there additional dimensions that the bank should consider when reviewing its Energy Lending Policy?

The Bank has rightly identified that meeting the Paris Agreement is the most crucial milestone to limiting the impacts of climate change for societies and ecosystems. For Europe this means becoming carbon neutral by 2050, at the latest. And this implies the complete phase-out of fossil fuels in energy uses in the absence of a sustainable, safe and long-term cost-effective means to use or store carbon.

This **transformation** of the energy system is feasible, affordable and desirable. WindEurope has estimated that reducing 90% of Greenhouse Gases (GHG) by 2050 from 1990 levels would cost only 0.5% more of Europe's GDP in 2050 than not taking action. And this would save 0.26% in climate change mitigation costs during the same period.

The direction of travel is therefore clear, but the path to get there is more uncertain. Governments have a role beyond setting targets, policies and incentives to achieve this transformation (paragraph 19). The visibility and stability of all these instruments during the energy **transition** is crucial. And that includes intervening when and where markets are not able to deliver the desirable outcomes at the least-cost pathway. The International Energy Agency (IEA) identified that governments will command

over 70% of global energy investments[1]. This shows the significant role that they have while functional markets are set in place for such an unprecedented **transformation**.

The Bank correctly identifies that large shares of variable renewable energy generation require more system flexibility (paragraph 21). But such flexibility goes beyond the short-term capabilities that current technologies (conventional generation, grids, interconnection and batteries) can provide. Medium and long-term flexibility are equally important for decarbonisation, cost-effective integration of renewables and energy security (paragraph 25).

Electrification and sector coupling could offer the flexibility needed across all timeframes in Europe (paragraph 24) while decarbonising energy use in buildings, transport and industrial processes. We estimate that up to 62% of final energy uses could be directly electrified by 2050. This could rise to 67% if indirect electrification (the use of green fuels, such as H_2) is accounted for[2]. This potential is line with the European Commission long-term decarbonisation strategy and other studies. Therefore the Bank should consider both, electrification and sector coupling as the best solution to decarbonisation the European economy.

2. The Bank believes it has a robust framework to ensure that energy projects being financed are compatible with long-term climate targets. Do you agree? Are there areas where the Bank can improve?

The Bank should align its framework towards projects that contribute to limiting temperature rises to 1.5 degrees Celsius. And it should ensure that its energy lending policy is adapted continuously to the developments in climate change policy. While accounting for the cost of externalities such as carbon price and other local pollutants is a right approach, **the energy-water nexus** should be mainstreamed in its lending criteria. 44% of the fresh water withdrawals globally are used in energy production with the most dominant share for cooling thermal power plants[3].

WindEurope believes that the bank should stop financing conventional power generation, even those using gas. Europe has an overcapacity of power generation in most markets. Reducing the average emissions of the power sector should be pursued through the extensive use of renewables. The risk is that Europe locks-in with gas power generation for more years than necessary.

The recast Electricity Directive has established stringent criteria for the use of capacity mechanisms by Member States as a means to addressing "missing money" from conventional generation or to justify national-driven approaches for generation adequacy. The Bank should take note of this and apply the principles from this regulation to conventional power generation. For example by keeping the application of the EPS criteria but also applying it as a last resort measure to financing gas power capacity that is used for stabilising the grid and/or as strategic reserves. Projects would have to demonstrate that Member States have performed regional adequacy assessment and demonstrate the capacity is really needed.

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1 International Energy Agency: World Energy Outlook 2018

2 WindEurope 2018, "Breaking New Ground. Wind Energy and the Electrification of Europe's Energy System"

3 Dahl Larsen, Drews, 2018, Water use in electricity generation for water-energy nexus analyses: The European case.

3. Within the broad areas of renewables, energy efficiency and energy grids, are there particular areas where you feel the Bank could have a higher impact?

The Bank should **target countries with a low track record on renewable energy investments**. Central Europe and some South Eastern countries. In 2018, 65% of gross wind energy capacity installed was concentrated in just 4 countries; Germany, the UK, France and Sweden. For financing of new projects in 2018, South East Europe accounted for under 4% of total investments. Traditionally the cost of capital in this region has been higher resulting from higher political uncertainty, a lack of infrastructure and less developed markets.

The Bank should continue to finance high-impact **PCIs for electricity grids**. Investment in grids is essential to allow higher penetration of renewable energy in the electricity mix. And it is important to invest in both new and existing grids. The EIB should cover more projects to improve the current grid infrastructure to be more suitable to the production profile of renewable technologies.

WindEurope believes that the EIB should create special instruments **targeting the buildout of the offshore grid** in the North Sea and a separate one for the uptake of offshore wind in the Baltic Sea through the Baltic Energy Market Interconnection Plan.

Also, the Bank could have a determinant role in the significant uptake of **floating offshore wind** in the Atlantic and Mediterranean Seas. See question 11.

Finally **islands offer a remarkable untapped opportunity** for decarbonisation through renewables. There are more than 2,200 inhabited islands in the EU. Despite having access to renewable sources of energy, such as wind and wave energy, many of them depend on expensive fossil fuel imports for their energy supply. Since Islands are mostly not connected to national grids, their energy production is very often based on diesel and therefore there is a large potential for upgrading island energy production to renewable power. The EIB should include criteria in its lending policy that favour the transition of islands to sustainable energy.

4. How can EIB reinforce its impact towards ensuring affordability, addressing social and regional disparities and support a just energy transformation?

The EIB should note the commitment of the European Commission to facilitate exchanges of experience in handling the energy transition across regions. The Bank should finance particularly projects for the energy transition in coal regions. The Commission has essentially used existing financing instruments (regional and cohesion funds), but the EIB could make available special funding instruments to mainstream this process and unlock further financing. This strategy is key to addressing the fact that a growing number of people are concerned about “climate action” and the impact it might have on their jobs in fossil fuel industries, or on their energy bills

The wind supply chain is present all over Europe and there is wind development in many regions that have been traditionally heavily dependent on coal. For example in Spain (Castilla y León, Asturias Germany (North Rhine-Westphalia, Brandenburg) but also in Poland (Slaskie, Łódzkie, Wielkopolskie)

and Romania (Vest). WindEurope calls the EIB to include lending criteria that favour wind energy projects in former regions of coal production.

Theme 1: Energy Efficiency First

5. In the case of public buildings, do you have an opinion on the proposed approach to support only buildings that go beyond the mandatory nZEB standard after 2021? What level of ambition should the Bank focus upon, inside and outside the EU?

WindEurope supports the approach of supporting only nZEB compliant buildings. Heating and cooling is the largest energy use in the EU and fossil energies account for almost 75% of its primary energy supply. Electricity has today a marginal role in the heating and cooling sector (13% of energy consumption on average with a few national exceptions e.g. France, Bulgaria). But the electrification of space and water heating in residential and service sector building would allow to abate a significant amount of CO2 emissions.

Compared to conventional heating systems, heat pumps are much more efficient. Air-source heat pumps typically produce 2 to 4 units of heat for each unit of electricity consumed, and ground-source heat pumps can even reach performance coefficient of 5. However, heat pumps represent only 2% of the final energy demand for heating and cooling today as upfront investment costs are still high. The EIB should further support their market uptake in less developed countries that have high ambition on wind and solar energy or areas that experience high penetration rates.

The introduction of smart and efficient heating and cooling solutions for residential buildings, such as heat pumps, would create the flexibilities to integrate large amounts of variable renewable electricity. Considering flexibility of the heat sector in Northern Europe for instance, a study has ranked the benefits of adding heat pumps and electric heat boilers or integrating heat storages to a district heating system close second behind building new transmission lines (Kiviluoma & al., IEEE magazine, 2017). They can help shift demand to different periods within the same day depending on the thermal inertia of the building – the better the insulation, the longer the period of shift. This means that building efficiency and flexibility go hand in hand.

The revised Energy Performance of Buildings Directive introduces a “smartness indicator” that is currently under development by the European Commission. This indicator would complement the existing Energy Performance Certificate, which focuses on the passive efficiency measures within a building, by assessing a building’s ability to actively connect and cooperate with both the electricity system and the occupants, and a building’s ability to actively manage its internal load, self-generation and/or storage for both heat and electricity. The measurement of a building’s flexibility would allow any prospective owner or occupant to immediately know how easy it would be for them to both save money on their electricity bills, and to earn money through selling their flexibility on the energy markets.[4]

[4] For more details please refer to this link https://windeurope.org/wp-content/uploads/files/policy/position-papers/20171115-Letter-on-smartness-indicator.pdf

Therefore, WindEurope calls on the EIB to include this forthcoming smartness indicator in its lending policy criteria on top of the nZEB standard.

6. The bank has developed a number of financial and technical assistance products to help promote energy efficiency in private and public buildings. Have you had any experience with these products? If so, do you have a comment or opinion as to how they can be further developed or improved?

The EIB can play a key role to unlock financing for Smart Buildings. Buildings are responsible for the largest share of European final energy consumption (40%) and represent enormous potential for flexibility and energy savings. But current investments to improve their energy performance is low and their demand-side flexibility potential remains almost entirely untapped. According to the Energy Efficiency Financial Institutions Group, reaching EU climate and energy objectives requires renovation rates to increase from 1% to 3% per year and investments to increase by an additional €100bn until 2030.

Increasing public subsidies and lending volume from financial institutions would not be enough to achieve this. More attention should be given to innovative private financing schemes that enable both commercial users as well as lower and middle-class consumers to finance smart and sustainable building investments e.g. Energy Performance Contracting (EPC), on-tax financing, on-bill programmes or crowd financing mechanisms for local projects and energy efficiency mortgages[5]. The EIB should further support their dissemination and use.

7. Do you have lessons learned to share in order to improve the financing of energy efficiency in SMEs? Is technical assistance an important dimension? If so, do you have any views on which type of technical assistance that is the most effective to provide?

Theme 2: Decarbonising power and heat

8. Declining costs and competitive auctions are transforming a number of renewable markets (e.g. onshore wind, utility-scale PV). How can the Bank best support these relatively mature technologies? In the context of increasing market integration, is there a need for financial instruments to help attract long-term private finance?

Yes, the EIB can play a significant role in providing financing solutions that address the lack of long-term revenue stabilisation that many wind energy projects still face. Whilst it should continue to provide non-recourse debt for mature commercial projects, we see general challenges that could be addressed with other structured finance solutions. These challenges are[6]:

[5] https://www.smarten.eu/wp-content/uploads/2018/10/Smart-Financing_final_with-date-1.pdf.

[6] WindEurope, 2018. Recommendations on an enabling investment framework for wind. https://windeurope.org/policy/position-papers/sustaining-a-cost-efficient-energy-transition-in-europe/

As technology matures, investors are taking on more risks that used to be socialised. From 2020 onwards, the phase-out of priority dispatch and balancing exemptions will expose new installations to higher volume and operational risks. And with the decline of Feed-in Tariffs, 50% of new wind capacity was already partly exposed to market price risk, via market-based premium or green certificates. Merchant risk is becoming more relevant to developers and investors and commercial banks are not ready to take on such risks.

Also, short-term spot market prices on their own do not provide a basis for investment. They are too low and volatile to provide adequate returns, and signals for recovery remain weak and uncertain. In the absence of policies aimed at addressing market failures, there would be no merchant investments in any power generation asset, including conventional technologies.

The bar for investment in wind energy assets is even harder to clear. They are upfront capital-intensive assets, and current hedging options are limited or not perceived as feasible. Hedging products targeting wind energy exist, but their liquidity has not picked up so far. Today there is no adequate option provided by the market for investors to hedge against this. Even in the most liquid European forward markets, contracts usually do not expand beyond 3-4 years whereas the operational life of assets extends significantly beyond that. Suitable hedging instruments would improve long-term predictability of revenue streams and bring financing costs much lower.

Under todays' market design, the market value of wind energy tends to decrease as its penetration rate increases: wind farms capture lower spot market prices than other market players. This revenue attrition of wind energy projects requires to complement, not substitute, their spot market revenues with a long-term revenue stabilisation mechanism until the power system provides a level playing field.

Tackling the following market failures is indispensable before merchant investments in wind energy can represent significant volumes:

- The uncoordinated introduction of Capacity Remuneration Mechanisms, and market exit barriers for existing assets, tend to extend the overcapacity of power generation in Europe to the detriment of consumers' bills. The Bank therefore should consider stop financing conventional power plants to this end.
- Bottlenecks exist due to inadequate grid infrastructure, within and across national boundaries. This hampers all the potential cost savings that a common power market could offer, including the smoothing out of variable power production by wind power generation. The EIB has a significant role in providing financing for grids through the PCIs, but not only. National transmission and distribution grids that alleviate congestion and enable larger penetration rate of variable renewable are very important to decrease risks from wind energy generators.

Repowering

WindEurope believes that the EIB could also have an instrumental role in financing sites prone to repowering in mature markets, but that are not prepared in regulation to make these projects fully merchant. The profile risk of these projects is lower from the operational side, as developers would

have gathered good information about generation output. However, the pre-construction and construction risks may still be significant.

In some cases, repowering projects might be more cumbersome to develop than green field projects. Environmental regulation is much stricter today than it was 20-30 years ago. Regulations limiting the minimum distance between wind turbines and house dwellings have also changed in the last years. These, and other aspects, lead to a complex permitting process that can delay repowering projects by several years. In Germany, around 40% of existing sites will not be eligible for repowering due to changes in regulation.

In Germany, about 35% of the installed fleet is older than 15 years; the same applies for 25% in Spain and 51% in Denmark. To put this in perspective, more than 15 GW of wind farms in Germany are over 15 years old, 2 GW of which more than 20 years old. In Denmark, more than half (around 2.7 GW) of the wind fleet is older than 15 years, while 18% are older than 20 years. In the next decade there will be a considerable number of wind farms reaching their end-of-life. A strong market will be needed: not just to replace the existing fleet, but to maintain a sustainable growth of the net installed capacity, progressively substituting fossil fuel-based generation.

Since most of those wind farms have been deployed in the areas with the best wind energy resource, it is clear that some developers would be looking into the possibility of repowering. The main drivers for deciding to repower or simply decommission the plant are: the performance of the wind turbines (cost of O&M) and the length of the support frameworks (generally 20 years). And although some wind farms are over 25 and even 30 years old, we consider that, generally, the operational lifetime of wind farms is somewhere between 20 to 25 years.

Corporate Power Purchase Agreements

WindEurope has submitted a response to this question as part of the **RE-Source** platform's response. The RE-Source platform is a joint venture founded by WindEurope, SolarPower Europe, RE100 and the WBCSD. We suggest the EIB creates a **PPA guarantee scheme** similar to that adopted by the Norwegian Guarantee Institute for Export Credits (GEIK). We believe that this would help unlock potential corporate buyers who are unable to provide bankable PPAs due to their credit risk.

With **support mechanisms** like e.g. first loss guarantees, EIB might help to establish a capital market financing for renewable energies. Another possibility could be that they offer platform to bundle smaller projects and bring them to the capital markets.

For developing countries in- and outside of the EU, EIB could offer a **dedicated refinancing program for RE loans** (comparable to the KfW program "Erneuerbare Energien"). This means that local banks can apply for a refinancing if they give a loan to a RE project at determined interest rates (including risk margin). This could help the local banks with either no or constraint access to EUR (and USD) funding to provide loans to RE projects.

9. Does the EPS for power generation remain an appropriate safeguard? Do you agree that adjustment should be made to support flexibility and adequacy? In light of recent developments in renewables, the Paris Agreement and the Sustainable Development Goals, would an exemption to the EPS for power plants in least developed countries continue to be justified?

The European Parliament and the Council have approved an Emission Performance Standard for capacity contracts as part of the Electricity Regulation. WindEurope welcomes this decision and reminds that regulatory intervention such as capacity remuneration mechanisms should always be a solution of last resort to ensure system adequacy. Market reforms should rather be prioritised to provide clean flexibility and capacity providers with long-term investment signals. WindEurope calls on the EIB to maintain an EPS of 550 gCO2/kWh in its lending policy.

The EIB should apply an additional criteria where countries demonstrate that renewable energy is not viable and therefore gas is needed.

Theme 3: New energy technologies and business models

10. Are there ways in which the Bank could provide more targeted support to distributed resources (demand response, small-scale generation and storage projects)? Are new business models or technologies emerging in this context, with specific financing needs? Is the Bank's portfolio of financial products and instruments adequate to support this technological transition?

See answer to question 11.

11. The Bank has developed a number of products – both financial and advisory- targeted to supporting innovative energy projects. Do you have a view on these instruments? Can the Bank improve or better target the financing needs of the energy demonstration sector?

The public financing of innovative and non-proven technologies is of vital importance to attracting private investment by setting precedents and helping un-proven technologies to develop into commercial propositions. The Bank should continue to support non-proven technologies with equity investment. For more projects closer to commercialisation, the Bank should continue supporting with non-recourse debt lending.

Particularly the EIB funding should focus on technologies such as **floating wind, hybrid cross-border project offshore wind projects, electrolysers and electro-mobility solutions**. All these technologies need to stack revenues from various markets and services in order to present a viable economic solution, and today they struggle to get financed due to the uncertainty on the evolution of the regulatory framework, and the interlink between the various markets and regulations. The EIB could help by covering some of the risk with risk sharing facilities and other mechanisms.

Floating Offshore Wind

Floating offshore wind has large potential in Europe. Over 80% of European waters are 60m and more depth, making them unsuitable for bottom-fixed offshore wind.

Europe has more than half of floating projects worldwide with a total of 20, including Hywind Scotland, the largest online floating project with a capacity of 30 MW. The US and Asia amount together to 15 projects. WindEurope estimates that there is around 2.1 GW capacity of floating offshore wind

projects to be installed by 2030. Spar-buoy and semi-submersible technologies have the most advanced technical readiness, but other concepts are very promising too.

As many upcoming floating offshore wind projects are in demonstration stage, they need **financing instruments to break into large-scale and commercialisation stages.** Achieving this is crucial for costs to come down. The current LCOE for floating technology is around 180-200 €/MWh and the target is to decrease this to 50-60 €/MWh by 2030. The biggest impact in reducing the cost of floating technology today comes from increasing the turbine size, expected to be from 8 MW to 12 MW for the period 2020-2030, this could reduce the LCOE by at least 15%. But design improvements for the support structure, blade materials and aerodynamics and mooring system could further reduce the LCOE by approximately 20%.

Offshore wind energy hybrid projects

Establishing future offshore **hybrid projects, meaning an offshore wind farm with interconnectors to one or more countries,** will require pilot projects to test issues related to, for example, permitting procedures, responsibility and liability for building and operating the offshore grid and priority of dispatch when feeding the wind energy in the electricity market.

Offshore wind hybrid projects would face higher risks than regular offshore wind projects connecting to land. However, they could be the base for further offshore wind development since they could reduce transmission costs and ensure that the grid develops to an integrated market.

The Bank could play an important role in the uptake of these projects by providing loans and taking on pre-development and development risks. Investors currently are deterred given the long-lead times for getting construction approval. For example, the Kriegers Flak Combined Grid Solution has been in development for over 10 years. This indicates the lengthy process of setting sufficiently robust regulatory framework, demonstration of new technologies and likely delays in grid expansion.

WindEurope believes that for hybrid projects to demonstrate real value to society, as opposed to regular offshore wind projects, ideally, more than one 'flagship' or 'headline' hybrid project at a large scale should come online in the short to medium term. The Bank could support these type of projects mandated by the European Commission and Member States. A special vehicle to finance such large infrastructure investment may be needed and it could involve the Bank guaranteeing loans from a wide variety of banks, and other investors willing to drive this forward.

Cross-border renewable energy projects

The EIB should also take the lead in financing **cross-border projects** as mandated by the Renewable Energy Directive to Member States. Cross-border auctions for these projects are being piloted in Germany and Denmark as part of mechanisms for regional cooperation.

Electrolysers

Over 95 % of hydrogen production today is fossil-fuel based. Only around 4% of global hydrogen supply is produced via electrolysis, a process that splits water into hydrogen and oxygen using electricity. With the deployment of large quantities of wind energy, electrolysers could be powered by clean electricity at a large scale. Such technology is well developed and commercially available. However, producing this "green hydrogen" with electrolysers costs roughly double than with fossil-fuels, which

is mostly carried out in a process called steam-methane reforming. The main challenge is to industrialise the use of electrolysers in order to reduce costs through economies of scale and improve their performance through targeted research and large projects. The EIB could take part in such projects by providing risk coverage to investors driving such projects.

In addition to supporting the takeoff of electrolysers for the supply of green hydrogen there is the need to incentivise the demand for it. Hydrogen is widely used as a feedstock in industry. The chemicals sector uses 65% of the global demand for the production of ammonia (needed for fertilisers), polymers and resins. The second largest use is for the refining of fuels (25%). But other large energy users such as iron, steel, glass, and cement industries use hydrogen. Their combined share of total global demand is small (around 10%), however in these sectors where direct electrification is the most difficult. The costs associated to increase the use of electricity are significant given the wide range of applications and retrofits needed to adapt for the use of electricity in heating applications. Green hydrogen offers an excellent alternative to these sectors to increase their electrification rate and decarbonise further their industrial processes. The Bank would have an important role in supporting industries willing to test and adopt green hydrogen. (See more in the answer of question 14)

Electro-mobility

The EIB should design products that target electro-mobility and the roll-out of charging stations. The current level of recharging points available in the EU is today sufficient for the number of electric vehicles (EVs) on the road – based upon the European Commission recommendation of 10 EVs for each recharging point. But this ratio might prove challenging with respect to the uptake of EVs sales. These would represent 4% of new car sales in 2020 and reach 63% of the new car sales in 2040 according to the Electro-mobility Platform.

A critical mass of EVs on the market will impact electricity consumption patterns and lead to an increase of overall electricity demand, particularly during peak times. As most of the charging is expected to occur at home, in parking lots at the office and in electro fuel-stations, a rapid increase in decentralized and local loads, if not managed properly, can challenge the current low-voltage distribution grids notably in residential or commercial areas4. Ultra-fast smart charging, which will increase the access to EVs by allowing long distance trips, anticipates challenges for Transmission System Operators (TSOs) and Distribution System Operators (DSOs).

In this regard, smart charging can help balance the grid in times of peak demand and facilitates the integration of more renewable energy into the system by avoiding curtailment. This also benefits households' electricity bills and EV user's total costs of ownership. They can obtain remuneration for the valuable flexibility services they provide to network operators. Their flexibility may also offset the need for additional grid reinforcements which could lead to lower network charges. WindEurope calls on the EIB to support the deployment of both public and private charging infrastructures that are equipped with the necessary technical and communication devices to manage the smart charging process.

Recycling composites from wind turbine blade waste

Most of the materials used in wind turbines are recycled but the blades. Around 89% of materials in wind turbine are metals (e.g. steel, iron, copper and aluminium) which are easily recycled. They are collected by specialised companies and brought to the corresponding recycling facilities. But around 8**%** of materials are **polymers** and **composite** materials that are used for the outer shell of the nacelle and the rotor blades. There are today only a few solutions to recycle composite materials at commercial scale. For example the "cement kiln route", where the wind turbine blades are recycled by recovering energy and material. Other commercial options exist that include mechanical recycling and pyrolysis, where the recyclates are used as fillers or reinforcements or as fuel for thermal waste processes. But most of these technologies face uncertainty over regulation and future volumes. The EIB could back up large scale facilities that take blade waste in the coming 5 to 10 years and unlock a market that today is not able to take-off.

Recommendations on the InnovFin EDP
InnovFin EDP is a useful instrument, but time to grant/awarding of finance is quite long. The processes are time-consuming and several wind companies failed to access the funds.

The Innovation criterion described in the EDP product is very vaguely defined and could lock out investments in wind (e.g. floating wind project wind float Atlantic was at first reading, in the end the project secured 60 million last year).

Projects would benefit more from the InnovFin Advisory support offered by the EIB, however information on these services is scarce. It is quite new so maybe that is why. InnovFin products should continue in the next MFF (under a different umbrella – InvestEU) but with clearer criteria with regard to innovation, demonstration readiness and replicability. There should be (ideally) a limit to the EIB decision time.

It should also incorporate synergies to other R&I funding programmes such as Horizon Europe and the ETS Innovation Fund. There should be a one-stop shop that offers R&I financial advisory services and project development assistance (similar to InnovFin Advisory).

12. Some renewable technologies or applications remain relatively expensive. Should the Bank continue to finance such projects, even in the absence of an innovative component?

Yes. The Bank could take the lead in seeking clarification from the European Commission on the interpretation of what is considered innovation. The key issue is a common definition of "innovative component". It seems like there isn't a solid definition of the concept and that projects are marked as innovative on an ad hoc basis. With a clear definition of innovation, demonstration readiness and replicability, the EIB should continue to support RES innovations even if they remain expensive. Projects should demonstrate scalability and cost reduction impacts when applying to EIB funds.

The EFSI regulation stipulates that the fund should target economically and technically viable investments, with a degree of risk typically higher than that of EIB normal operations. To this end, EFSI will address projects that have been subject to market failures and consequently sub-investment grading, but with a potential to maximise the mobilisation of private sector capital.

The EIB can support the build out of renewables by facilitating financing for new structures where commercial banks are not yet prepared to lend. This could e.g. include first PPA transactions in a country, where local banks are usually very cautious in the first transactions. EIB could act as a market opener for such transactions.

Theme 4: Securing the infrastructure needed during the transformation

13. In light of the long-term nature of the network development plans, which type of projects should the Bank focus upon? In addition to PCIs, should the Bank prioritise newer investment types, for instance in digital technologies?

Yes. Investing in innovative ways of operating the existing grid infrastructure is as important as extending the grid. The industry needs to develop technological solutions that help in maximising the use of the existing transmission capacity. Real-time data exchange and coordination between system operators on the use of balancing reserves and balancing activation is a key focus area. System operators will also need to invest on transforming their existing infrastructure. Dynamic line rating, smart substations, and other technologies that help improving the observability of the grid in real time will need to be adopted in the coming years.

A focus on grid integration projects (grid capacity, storage projects run by TSOs etc) seems very sensible and would help enable other EU wide goals and their focus on regional disparities (plus these projects may be perceived as carrying more risk in some circumstances).

14. What is your view on the investment needed in gas infrastructure to meet Europe's long-term climate and energy policy goals, while completing the internal energy market and ensuring security of supply? What approach could strike the right balance to prevent the economic risk of stranded assets?

WindEurope welcomes the increasing funding for electricity from the Connecting Europe Facility. We think that Europe's decarbonisation agenda, and consequently EIB lending policy, should focus on electrification of the most carbon-intensive energy use**.**

Both direct and indirect electrification have a role to play. The European Commission estimates in its 2050 climate strategy that clean hydrogen (based on electrolysis of water from renewable electricity) could contribute up to 12% to CO2 mitigation.

Hydrogen is generally very dense (because of the associated energy needs for compression and later decompression), which makes its storage and transportation in most cases expensive. Hydrogen can also be injected into the natural gas networks and be **stored** or transported over long distances, enabling its use in any gas application connected to the grid. The percentage of hydrogen that can be injected into these systems is dependent on various factors (such as the nearby applications of gas, the type of network, the minimum annual demand). The gas suppliers, distributor and equipment manufacturers need to work on gas quality standards (as well as regulation) that today influence injection limits of hydrogen into the natural gas grid, both at European and international level.

Hydrogen can also be blended with sequestered CO2 in a methanation process, producing synthetic methane (also called synthetic gas or syngas). This synthetic gas has the same characteristics as natural gas and can be used in the same way with the natural gas grids.

Hydrogen electrolysis is a proven technology that promises to enable a very large share of variable renewables, since it offers an excellent demand flexibility and storage alternative. In areas with high grid congestion and significant curtailment of wind, where the electrical grid expansion is not

happening as fast as it should, and where the gas grid infrastructure is available, electrolysers could become a competitive system solution. It is also a promising solution for use as a chemical feedstock in industrial processes where CO2 emissions prove hard to abate (e.g. chemical or steel industries).

However, achieving commercially viable business models for green hydrogen will remain a challenge in the short term. Innovative business models will need to be identified to ensure viability for hydrogen producers and long-term revenues stability for wind energy producer. Besides the necessary removal of regulatory barriers in national legislation, significant public and private funding will be required to upscale the capacity of electrolysers.

15. Should the Bank refrain from supporting hydrocarbon production, in addition to exploration? If so, should gas be treated the same as oil? Within and outside the EU?

Supporting transformation outside the EU

16. Where can the Bank most usefully focus its support – either financial or advisory – to meet the Sustainable Development Goals outside the EU and better support the scaling up of renewables, energy efficiency and electricity grids in a developing country context?