



# **Engie Renewables Investor Seminar**

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## **Welcome**

Gary Leibowitz

*Finance Director for Global Business Lines and Investor Relations, Engie SA*

All right, good afternoon here in London to everyone at the Four Seasons and good afternoon or good morning to everyone who has joined us on the webcast at engie.com. I'm Gary Leibowitz from Engie, Finance Director for Global Business Lines and Investor Relations. I am very pleased to kick off today's event. It's an important moment for Engie for a couple of reasons. First of all, we have said through the course of this year, starting at our capital markets day, that we wanted to innovate with new formats of engagement with investors and analysts, giving a chance for people in more informal settings to go deeper into the operating models of the business, the financial algorithms that support our money-making and our different business lines and to give you a sense to meet a deeper array of the management team, both from corporate centre and from our various units around the world.

And so, this is the first event in what is now going to be the Engie quarterly investor seminar series. As I say, it is meant to be more of an informal gathering here over lunch or sort of virtually for those of you who are joining us online.

We have a range of great speakers, which will be led by Gwenaëlle Avice-Huet, who leads our Renewables global business line and Thierry Kalfon, who is the Managing Director of the business line but we have business leaders also from Brazil, North America, France and also our lead for Offshore Wind. So I'll let Gwenaëlle introduce the speakers in more detail but suffice to say this is a chance to go under the hood, as we say here, or under the bonnet and a chance for you to ask more detailed questions into how these models are actually going to work. I think you'll agree that the content of this presentation goes down a couple of notches in terms of the detail. So, we're inviting more transparency and a better sense of how to model expectations and the assumptions on which they are predicated going forward.

And secondly, just for Renewables itself, it's one out of the two major growth engines that we see for Engie going forward in enabling this global zero-carbon energy transition. We will talk on client solutions, the downstream component, in a few months but today we will talk about the lead that we have in some parts of upstream renewable, green supply and our acceleration in some other exciting areas in the solar and wind parts of the business.

So, without more ado, I will turn it over to Gwenaëlle and I will return to moderate the Q&A at the end of the day. Thanks.

## **Introduction to Engie Renewables**

Gwenaëlle Avice-Huet

*Executive Vice President responsible for Global Renewable Business Line, Engie SA*

### **Agenda**

Thank you, all of you. I would like first to introduce you to the team, to the speakers that are here today. Thierry Kalfon is our Managing Director for the Renewable global business lines. Eduardo Sattamini, who is on visual, so you will probably see him in a minute, or later on, is

in fact our Chief Executive Officer of Engie Brasil Energia and he will talk about Hydro. Jean-Claude Perdigues, who is here: our Head of Engie Green, our wind and solar subsidiary in France; Andre Cangucu, our Chief Business Development Officer for the business unit North America and Grzeg Gorski, our Director of Offshore Wind and future Chief Operating Officer for the JV with EDP on Offshore.

### **Objective of the seminar**

So, the objective of this presentation, it is to give you some colours around renewables. I will present you the business as of today, the market dynamics, I think that's important to see the trends and finally, our ambition. And our different speakers here, they will go more in depth. They will do deep dives on Hydro, on Wind and Solar, on Offshore Wind and we will provide you with a financial outlook. So, this is the purpose of today's seminar and at the end of the day, of course, we are available to respond to all the questions that you may have.

### **Engie Renewables today**

So, first element, about Engie Renewables as of today. What's the situation for Renewables within the portfolio of Engie today? First element: in 2018 – end 2018, we count for 24.4GW of installed capacity in Renewables, among which 16GW for Hydro and 7.5GW for Wind and Solar. So, the message here is that we've got a very solid foundation already, a very solid foundation. Now the question is in terms of geographies; how does it translate in terms of geographies? We've got a very strong position, especially in France and Brazil, for Hydro, as you can see on the map but we have also very leadership positions in France, Brazil, in Wind and Solar and we are developing more positions across the world in various geographies, especially in North America and Latin America. And this is also a trend that we see asking – clients asking for more complex offerings, more complex solutions and our intention is to respond to this trend and especially in North America, as you will see later on.

Now, in terms of financing, the global business line accounts for 22% of the group COI as of end of 2018, which accounts for €1.1 billion. And it significantly contributes to the value creation of the group. For example, the ROCEp is around 9.6% at the end of 2018. So, this is the situation as of today and you ask all the time how does it translate in terms of equity share?

### **24.4GW of renewable capacity of which around 18GW consolidated**

So, this is the next slide, you will have more granularity around our capacity at 100% but also at consolidation share. I know that this is important for modelling purposes, so that's why we wanted to share with you this element. So, what you have to get in mind is that we've got 24GW of installed capacities and this translates into 17.5GW after this deconsolidation, so, all in all, in consolidation.

So, we'll get back to that with the financing model, the financing impacts with Thierry Kalfon later on.

So, I suggest now to go to the market's dynamic, just to give you a sense of the big trends of this market, numbers of trends that I think it's important for you to share with you this market dynamic.

**Skyrocketing new renewable capacities**

The first market dynamic that we see today is a huge growth, huge growth, of renewables and at the same time, massive investments. This is the first trend for renewables. So, how does it translate in terms of figures? Renewables account today for 2,500GW of renewable capacities across the world and 34% of the capacities already existing in the world in electricity generation. And where is it located? 70% in China, in Europe and in North America. This is the situation as of today.

What is also interesting is that new capacities, almost 64%, are coming from renewables. All those new capacities, 64% are coming from renewables, so this means around €300 billion that are invested per year, €300 billion, so the growth is there. Now how does it look like in terms of future, in terms of projection?

And so, on the right-hand side of the slide, you can see the projection coming from the International Energy Agency. You will see that the growth for solar is impressive. It will be impressive. It is already but it will be in the future. For example, in 2018 100GW installed just in a year and wind is the same story: huge growth, in the past, in the future and already we've got, in 2018, 50GW installed. So, the dynamic of the market is there: big dynamic, big investments.

**Rapidly decreasing costs**

The second market trend is around the costs: many questions around the costs. We have seen the past – in the past ten years the dramatic costs of wind but also of solar energy. Let's take the example of solar: 90% decrease of costs in ten years since 2009. For wind, 50% reduction of costs, so there is a huge trend of decreasing cost. Is it good news? Yes, it is good news because then that means that all those technologies are becoming more and more accessible to everybody.

The second element I wish to share here is that we shouldn't – we should be careful with inappropriate comparisons. Renewables is sometimes intermittent, there is no sun all the time and wind the same, so now we want to work on complex solutions mixing the different profiles of production: wind, solar, storage in order to have 100% dispatchable renewables, available all the time, which is not the case today. So, this is the future and when we compare costs, we should compare on the basis of all the impacts in the network. So, this is an element that I will come back on because our clients, they want reliability. They don't want only renewable, but they want reliable renewable. So, this is the second trend.

**Energy management capabilities key to manage market exposure**

The third trend is the evolution of the business model. Renewable, it started with big plans coming from the states, subsidised, massive subsidies into the renewable sector and this is changing progressively. That does not mean that this is over but there is a new trend. So, there is a broad spectrum today of power purchase agreements coming from renewables subsidised but at the same time very downstream PPAs, meaning like corporate and cities PPAs. This is an evolution that is progressing and when you say that, you say that renewables will be much more market-driven.

So, this element is a new trend that started in the US but it's progressively expanding: US, Mexico and now in Europe. So, this trend of corporate and cities PPA.

So, is it good news? I would say this is good news for us. Why is that? Because within our company we've got energy management capabilities, and this is a must-have to be able to generate energy management capabilities within the system. This is not only easy to develop renewables; we need to be able to manage the energy on the market. So, we've got, internally, a dedicated entity for energy management. And so that's why this paradigm, this evolution of the market, we see that as a very positive move. So, this is the third trend, about evolution – progressive evolution of the business model of renewables.

### **More complex contractual arrangements as an opportunity to differentiate**

And maybe one illustration is the evolution of the PPA as corporate and cities PPA. This is the projection that we – what we've seen in the past years and you see this is quite impressive. It started in one country and now it's developing across the world progressively and this is completely aligned with our ambition to become a world leader in the zero-carbon transition as a service because it responds to requests from our clients to be green, to have green electricity. They don't want only green electricity; they want more now. They want 24/7 green electricity. That means they want 100% electricity, zero carbon, 24 hours and seven days a week and I will go back to that because this is a tricky question, in fact. And especially Andre will review very good examples.

### **Low profitability of commoditised renewables**

The fourth trend now: the fourth trend is that, as I said before, there is a strong growth, lots of investors wanting to look at this market and the risk profile of these activities have attracted many investors with low returns on capital – with low returns expectations. So, part of the renewable has become more commoditised. This is a trend; we see already that. So, we should not be misleading. This is a trend but at the same time we see also complex development, complex offerings, complex technologies, as I've said: PPAs for example, or offshore wind as a complex technology. So, we see both in parallel: commoditised renewables still in the market and at the same time complex development, complex renewables in the market. How we can make the difference in a commoditised environment? We can make the difference in our business model. We always adjust our business model according to the competitive environment. The objective for Engie is to maximise the value for Engie and I will get back to that again. I think that is an important point. We don't have one business model, but we adjust our business model according to the circumstances of the tenders to maximise the value for Engie. We can make also the difference because we are integrating across the value chain. We have volume effect and we have these energy management skills that I have presented earlier.

### **Summary of market dynamics**

So, to conclude, on these four trends, I would say this market is very dynamic. Continuous investment in this market: hundreds of billions of dollars invested a year, so this is a very big market. But it is evolving also. It's not that easy anymore, it's turning to be more professionalised, more complex and now it's starting with the requirements for the clients to be green and to have green energy, like PPAs development and available 24/7, so it's a matter of complexity. And I would say that Engie has the right skill to succeed in this new environment. So, when we say that, what's our ambition and what are our differentiator factors?

**Engie differentiating success factors**

First, on the differentiator factors: the whole value chain. I mentioned it already: we are present across the whole value chain and I would say that, for each component of this value chain, we target both scalability and industrialisation, both at the same time. There are numbers of examples, maybe I can take one or two. For example, in France, we have negotiated a massive supply agreement with Vestas to have access to big volumes of wind turbines which – we extended it in Europe and you know with the scalability effect, with these volume effects, we decrease the cost for the turbines, so it's an important point of volume and scalability.

The second element is that we've developed an internal digital platform to optimise the performance of our asset and to develop predictive maintenance. This is also an important point to gain performance with our assets.

**Engie portfolio combines the strengths of two main activities to maximise value creation**

So, all in all, what's the strength of our portfolio? What's the key strengths of our portfolio? I would say that we've got a very, very solid portfolio that combines two major elements. The first element is our Hydro platform. This is the largest contributor of our earnings in 2018. It represents roughly 64% of our COI, so it was driven by Hydro and historically there is a long-run trajectory that shows very stable, very impressive long-stream historical performance on the long run. So, this is a steady part of our Renewable platform.

The second element is Wind and Solar and this is our development platform, development because we have announced this objective of nine additional gigawatts by 2021. So, we combine those two platforms: Hydro platform, which is the existing one, stable revenues, recurring streams of revenues and at the same time a platform for development with Wind and Solar.

**Pragmatic approach to maximise value creation**

How does it translate in terms of CAPEX? How does it translate in terms of business model? First, CAPEX: to achieve this ambition we have announced that we will mobilise around €9 billion over the coming three years to achieve this 9GW to be installed in three years, so €9 billion growth CAPEX to be mobilised for this trajectory. So, it translates into €2.5 billion net DBSO CAPEX, it means after sell-down, so €2.5 billion after sell-down. So, this is the volume of CAPEX that will be invested in this development platform.

In addition to that, I think that it's important to share with you the different business model and how does it translate for this CAPEX investment? Basically, my message is that, for Wind and Solar, we've got 30% of our CAPEX that will be focused on develop, build, own and operate. That means we keep the asset on the balance sheet, so 30% of the CAPEX for Wind and Solar will be on projects that will keep on the balance sheet. The rest of it, the 70%, will be under the model DBSO, so we sell down before or after construction.

And all in all, if we look at all the technologies of our portfolio, including Hydro, 43% of our CAPEX will be dedicated to DBOO on the balance sheet. So, we see 43% on the balance sheet and 57% that will be sell-down on the DBSO. So, the message here is that we have an equilibrium between the two different business models.

**Engie Renewable ambitions**

So, to summarise our ambition: three elements. Faster growth: we want to accelerate. As we mentioned earlier, we want to achieve this 9GW objective by 2021. Second element is higher value, to try to attract more value for Engie, especially with corporate PPAs, for example and especially with sophisticated technologies. And lastly: better impact because we want to improve our client's zero-carbon roadmap, so this is also a link with the Client Solutions business line.

**Faster growth**

Let's go just a few minutes on faster growth. I have something important to share with you because, on faster growth, we are very proud to announce that we are on track to deliver this 9GW that we have announced a few months ago. We have announced this 9GW by 2021 and I can already tell you that we have 8.5GW already installed, or under construction, or secured. So, when I say secured, I mean that we have signed a contract with an off taker, having won an option or signed a PPA with a corporate, so 8.5GW out of the 9GW that we have announced, so this is impressive.

And you will ask me: so, what about the 0.5GW remaining? I can tell you also that we've got 2.8GW of pipeline already, so six times more that is necessary to achieve this 9GW, so I am very confident that we will reach this target. This is a very important message we wanted to communicate.

And last time, at the Capital Markets Day, you were asking more granularity around the projects, the pipeline, which projects exactly, what are you talking about? So, in the slides, we wanted to share with you our precise pipeline, just to give you the order of magnitude of this work and this development machine and I hope that you will appreciate that. Thierry Kalfon will go back to that more in details in the financial outlook.

And so, if you allow me to give you some perspective from the past to the future, in the past years, in an annual average capacity, we were developing like 0.5GW a year. And now, in the coming three years, starting 1<sup>st</sup> January 2019 we'll develop 3GW a year. So, it's an impressive move. Yes, it is an impressive move. And after deconsolidation, it's the same. I think that this graph shows it perfectly. We will more than double our annual development pace in the deconsolidation rate: we were developing each year around 0.4GW and now we will develop around 1GW. So, this will be translated in the competitive landscape because, with this 3GW a year, we will be able to be in the next tier one over the three coming years, so this is a new position that we are taking. The message here is that we've built a development platform.

Maybe one point that I didn't mention yet: you will ask me, 'How much did you build in the first half of the year?' We've already built 1.3GW, so you see this is already happening and this is an important message because it builds credibility of the whole pipeline.

**Higher value**

Now, on the higher value, there are, I would say, two different dimensions. When we say we want to focus on higher value development, that means first higher value in terms of technologies, with more complex technologies, such as offshore, for example and we will go back to that but also on hydrogen, on storage, on complex elements. The second part is around PPAs, as I developed earlier and especially the corporate and the cities PPA. And this is a point that is important because we will go back later on. When we say that we are

developing corporate PPAs, we are starting to do a corporate PPA as produced, so that means that we were selling to our client the electricity as it was produced by the wind farm, for example. And there is not always wind blowing, so the clients were saying, 'I don't want that anymore. I want much more. I want a corporate PPA as consumed, so that means it should fit my perfect profile of consumption.' So, to do that, how can we achieve that?

Well, we mix technologies: we do wind plus solar plus storage and we do energy management. This is a more complex solution and this evolution is already happening, from corporate PPA as produced to corporate PPA as consumed. And you see here where the added value is and where Engie has a perfect skill to match with this new trend.

So, the momentum is there. In the first half year we already took position on complex technologies. Two examples: on biomethane we took a strong position in France and we have now reached leadership position in biomethane production. At the same time, we also took position on offshore, with the announcement of the clear acceleration on offshore, together with EDP and Grzeg will come back to that. And finally, on corporate PPAs, we've signed 1.2GW of corporate PPAs since – in a year, so 1.2GW.

So, if you allow me, I would like to give now the floor to Thierry and Eduardo to present the Hydro component of this platform and then we will go, later on, to Wind and Solar.

## **Hydro**

Thierry Kalfon

*Managing Director, Engie Renewables, Engie SA*

Thanks, Gwenaëlle and good afternoon everyone. So, let me now describe one of the two pillars of our business, which is our Hydro business. We'll focus on two main geographies. I will present France and Eduardo will present Brazil.

### **Three main operating models under concession regime**

So, Engie operates hydro plants under two types of model: first, reservoir power plants for peak generation and run-of-river plants for base load generation. There's a specificity in Brazil, where dispatch is centralised and under the sole responsibility of the national operator of the electric system: ONS. The ONS takes stock of the different hydrological regimes in Brazil and optimises the use for water for energy generation. Eduardo will give more explanation on Hydro in Brazil in a few minutes.

The legal framework is, as you know, the same for all our Hydro assets which fall under the concession regime. Concession regimes are characterised by two features: Engie doesn't own the assets but pays a concession fee to operate the assets over a long period and in return Engie gets the benefit of all the power sold on the market. So, the main challenges in the Hydro business are first to operate and manage effectively and efficiently, both to save costs and to be available when prices are high on the market and to sell the generated power at the best price on the market.

### **Engie French Hydro: second hydro generator**

So, our French assets: in France our hydro plants are managed by two companies of different sizes. The biggest one, as you know is CNR, Compagnie Nationale du Rhône, which operates



19 run-of-river power plants on the Rhône river for a capacity of more than 3GW for more than 14TW of base load power produced per year. We have 99.97% of the stake of this company, which is fully consolidated in our accounts.

Then we have SHEM, Société Hydro-Électrique du Midi, which manages mostly reservoir power plants in the Pyrenean mountains for a capacity which is less than 800MW and less than 2TW of peak power, that is per year. So, SHEM is much smaller than CNR.

So, worth mentioning then that both assets are merchant assets. So, I will hand over to Eduardo for Brazil.

## **Hydro in Brazil**

Eduardo Sattamini

*Chief Executive Officer, Engie Brasil Energia, Engie SA*

Hello everybody, happy to be here with you. As you know, in Brazil we are the largest independent power producer in the country, with currently around 10GW of owned capacity, although we operate almost 12GW of capacity in hydro. We have built this position over the last 20 years, since the privatisation of the south generation assets of Eletrobras and we grew 100% along these 20 years.

On the table on the right-hand side you will see our hydro capacity and indicating the offtakers. So, we have a mix of captive, which are the distribution companies and the corporate off takers and those offtakers are on corporate PPAs, like Gwenaëlle has said. We do have around 95% of our hydro capacity commercialised and 5% we normally have it's a hydro reserve to cope with hydro shortfalls. The hydro shortfalls are well known today in Brazil for the name GSF, which means generation-scaling factor. And the generation-scaling factor is basically the commercial capacity of the generation, the actual generation of the hydro plants, compared to the commercial capacity of the hydro plants.

### **Operating model, GSF and Engie Brasil Energia performance**

If you go to slide 26, I will go a little bit deeper on this concept. In Brazil we have four sub-markets: north, northeast, southeast/centre-west and south and they are connected to the connection system – the grid system. As the operator, which centralised the dispatch, has to optimise the hydro resources in the country they created a system which we call the MRE. And the MRE is a hydro pool which all single hydro plants is part of it. And despite where you are located and despite your dispatch – actual dispatch, you spread the risk, the hydro risk around all players. That works as a – to the operator as a guarantee that they can dispatch without being pressured because everybody takes the same portion. There is a conversation between the generators, and they sell and buy energy from each other to balance their participation at a very small variable cost in order to be fair with everybody and to share the hydrological risk between them.

Over the last six years we have had, as you see in the graph in the middle, very bad hydrology and for that reason we have seen a deficit of hydro generation which has been affecting the hydro generators. But although we have seen that, we have adapted ourselves very quickly and as you see on the graph on the right-hand side, you will see that our results,

EBITDA and net results, have been consistently going up, although of course suffering from the GSF.

It's important also to mention that we have an agreement with the government from back in 2015 and we are able to buy an insurance from the government to protect 40% of our hydro capacity from the GSF, from the deficit effects.

### **Jaguara and Miranda hydro power plants case**

Going to the slide 27, we have brought to you a successful case that we had back in 2017. We have also – we have acquired two hydro power plants in the re-auction of hydro assets and these assets are 70% protected by the shortfall of hydro generation in the contract system that we have with the distribution companies. 30% will remain unprotected but we are managing that by keeping part of the capacity installed. This was a very interesting factor because we are able to acquire an asset with cash generation as from the first day. We have been able to collect all the synergies with our own portfolio and protect ourselves from the submarket risk because most of our clients are located in the southeast and most of our capacity was located in the south of the country, so we were, at some points during the year, exposed to potential differences in prices around the submarkets. So, it was interesting for us in order to cover and to mitigate our submarket risks.

This acquisition was possible on our own because – well, not only because we presented the best proposal but because also, we had designed a very interesting financing structure that we were able to put together based on our balance sheet. So, in 2018, because of that acquisition, we were able to increase our EBITDA and net income by around 12%.

### **Medium and long-term challenges and outlook**

Regarding the local long-term challenges in slide 28, it is worth mentioning that we are finalising a negotiation with the government which ended in a new deal passed into congress for the generation of out of merit order, which is called GFOM and that will, in a certain way, mitigate future risk of the hydrological debts because before the term of dispatch out of merit order, energy imports and delays in transmission lines were affecting the hydro generators. And after this bill, we have assurance that those elements will no longer affect our capacity – commercial capacity and we will not be exposed to the hydro risk and the stock price risk.

Also, we have been borne into a very interesting time which we are discussing new regulations for the sector, introducing hourly prices, which will value attributes of our power plants, especially the hydro power plants, which have flexibility on dispatch and can store energy and by having this new system we will be able to generate during a phase of the day, which will increase the value of our assets.

Also, we will see, in the new regulations, a gradual reduction in subsidies, so being more equalised prices in a more liberalised market. We will also have breakdown between capacity and energy markets. We will create a new dynamic in the market, which we believe that we will be able to capture value by managing our portfolio in the proper way. So, those are the elements that we are facing, and we are looking very optimistically to the future of the Brazilian market and especially in our position locally.

## Wind & Solar

Thierry Kalfon

*Managing Director, Engie Renewables, Engie SA*

Okay, thanks Eduardo, I'm back. So, let's talk about, now, our Wind & Solar business and let's start by the different business models. We have understood that, during the CMD, you would like to have more colour on the different business models that we are using and how we choose between them.

### **Wide range of Wind & Solar business models**

So, as you know, there's a wide array of – yes, there's a wide array of different business models used in Renewables. Each of them has advantages and drawbacks. These models vary according, basically, to two questions. The first question is: do we wish to sell part of the equity to an investor or not? If not, we are in the first business model, which is DBOO – develop, build, own and operate. The equity is not sold and is fully owned by Engie during its full lifetime. In the three others: SDBO, DSBO and DBSO, the equity is indeed shared with an investor. The second question is: if we do decide to farm down, at which stage of the value chain do we wish to sell part of the equity to the investors? Of course, depending on the answer to those two questions, the universe of buyers is not the same and the price and the risks are also very different.

So, if the investor enters before development, this is the SDBO, it's used when development is costly and risky, typically for instance for offshore wind. If the investor enters after development but before construction, this is the DSBO, when the investor accepts to take the construction risk but does not want to take the development risk, often when he considers that development takes too long. Then the investor pays us a fee: this is what we have been doing in Belgium with farming down our parks to local governments.

Then the third one, after construction – if the investor enters after construction, this is the DBSO: the investor doesn't want to bear either the development or the construction risks, which very often means that we have here a financial investor, paying us development and a construction fee at the time of the sell-down.

Basically, as you can see it, those business models differ according to the position of the 'S' in the acronym between the letters 'D', 'B' and 'O'.

So, with regards to the advantages and drawbacks of each model, briefly put: DBOO, so 100% equity-owned, DBOO is simpler, it's easier to model, it's more predictable but it's more risky and weighs heavily on the balance sheet. On the contrary, this is symmetrical, DBSO, so sell-down of the construction, makes it possible for us to put together – to put a very competitive bid even with high profitability requirements thanks to the front-loaded sell-down margin and basically, in essence, we use cheap equity money from financial investors.

DBSO is less capital intensive, of course, due to debt deconsolidation, sell-down margin and limited equity injection. DBSO allows us to preserve our industrial role because we maintain EPC, O&M and energy management. However – and these are the drawbacks of this model – DBSO is less recurring, it's more difficult to model for you and it requires a strong pipeline.

So, among all those models, our position is to be pragmatic by mixing all of them depending on criteria I will talk about later on.

So, we understand that all our competitors do DBOO. Some of them are doing only DBOO, like Iberdrola but on the limited geographic scope, as US, Brazil, Europe or Mexico but most of our competitors, with a few exceptions, implement also sell-down strategies in a form or another, like EDPR or ORSTED.

### **Engie has put in place a pragmatic approach**

So, as I was saying it, Engie has put in place a very pragmatic approach based on value creation to choose between those models and this choice takes into account four factors. So, the first one is the availability of equity money in our geography, with equity return expectations from investors which are lower than ours. The second factor is the availability of deep and liquid project finance. The third one is our exposure to merchant risk and the last one is intensity of competition, which would compel us to bid with a lower – or with low tariffs.

So, the more intense the pressure coming from these factors is, the more we go for DBSO, rather than DBOO. This is the case for our projects in Mexico, Belgium, the Netherlands, India, the US, Australia, part of France and Spain.

On the contrary, the less intense the pressure coming from those factors is, the more we choose to maintain full ownership of the assets, like in Brazil or Chile for instance. In any case, it's a very important point: we always keep an equity stake in the project between 20% and 50%. Why is that? Because we want to have a significant influence on operations. We want to commercialise the power output and we want, at the end of the day, to be able to refinance and repower.

### **DBSO model: capital recycling, upfront value creation**

So, this is the difficult slide, which is a bit busy. So, in this page, we have pictured a real case, showing cash to equity and net recurring income stemming from a 10MW wind or solar bid won in a European competitive tender. So, we are showing two cases, so the first one is DBOO, so full ownership. So, the park is fully maintained on balance sheet during lifetime. The profitability here is assumed to be at WACC-WACC+1% and the SPV is leveraged to 75% through project finance. The second case is DBSO, so sell down after construction, with the same assumptions as before except that 50% of the SPV equity is sold after construction to an investor whose target return is expected to equal our cost of equity. So, the results are represented in the chart on the right-hand side of the slide. Grey bars show the 100% ownership case and the blue bars show the DBSO case.

So, the main learnings of this analysis are the following. First, of course, DBSO is much less capital intensive because debt is deconsolidated, equity injection is limited to 50% of construction CAPEX. This is the difference between the big negative grey bar in 2020 and the small positive blue bar the same year in the cash chart at – on the upper right corner of the slide. Actually, there is a multiplying factor of ten times between net debt impact of DBOO and net debt impact of DBSO.

The second learning is that, in DBSO, earnings are front-loaded and DBSOs generate a very quick return. Value is crystallised up front and almost full EBITDA is booked right after COD

and it's booked when 50% of the equity is sold. On the contrary, DBOO earnings are spread over the full project lifetime. This is what is shown by the big positive blue bar in 2020 in the net income chart and after the reduction of the net income.

The last learning of this analysis is competitiveness. Competitiveness is much higher in DBSO, as bidding with a profitability at cost of equity plus 4% would have meant for us to increase the price of the bid by €2 per megawatt hour, with the risk, of course, of losing the project.

So, this slide is for your models. So, this slide describes for wind and solar and in Europe in megawatts the impact of sell-downs on net income and then the recurring income booked over the asset lifetime, the asset contracted period. Typically, depending on geographies, real DBSO margins range from €50,000 per megawatt to €400,000 per megawatt. €50,000 is very conservative and €400,000 belongs to a renewable age which is now a bit past. Net recurring result ranges from €5,000 to €15,000 per megawatt per year, depending on the geographies as well. So, with this, I guess you have the ratios you need to model our business and we will show you later on the timing of the CODs and the timing of the sell-downs until 2023. So, with those ratios and with the timing, I think you have everything to model the business.

## **Wind & Solar in France**

Jean-Claude Perdigues

*Managing Director of Engie Green, Engie SA*

Many thanks Thierry. So, Jean-Claude Perdigues, I'm Managing Director of Engie Green. And so, the first slide I wanted to show you is just a glimpse of what our share of the market in France is currently.

### **Engie leader in the French market**

So, both in solar and in onshore wind, we are the market leader with a 14% market share out of this market. Altogether, we have installed and we are currently operating 3GW of installed capacity across the country. This market, basically, in France, I mean is a fast-growing market and is currently supported and sustained by a strong willingness from the state to really move forward very strongly into the energy transition. And so, for the next future, what is at stake here is to basically more than double the installed capacity of renewables in France altogether, from 49GW to more than 100GW. Out of which, that means that for solar more than 3GW will be installed per year in the next ten years, from 2018 to 2028 and for wind it's going to be 2GW. I'm not even mentioning offshore, in offshore wind and Grzeg is going to deep-dive into that, there is also – we are starting from zero at the time being of installed capacity but still I mean having some awarded capacity, up to 5GW installed capacity in 2028 and 10GW globally awarded at that stage. But Grzeg will allude to that, so I'm focusing, concentrating on just PV and onshore wind.

### **Stable and predictable regulation with attractive growth perspectives**

So, when you look at where the model is in France at the moment, it's mostly driven by public tendering, both for onshore wind and for solar. For onshore wind it's 500MW which are being tendered currently and for solar it's 850MW, twice a year. And so when you look at the picture and the figure I told you about, 3GW per year in the next future, PV and 2GW for wind, you will immediately figure out that there is going to be a steep increase in what is

going to be tendered but also going more and more into a private-led element – segment of the market which we are also going to be able to tap into.

### **Engie is well positioned to capture the French market opportunities**

So, the chart on the right tells you, basically the basics of the current system, which basically tells you when you've got a strike price, basically and as an operator you get a strike price. What is also quite interesting to look at is where we are heading to and why, as Engie, we believe and we know that we are going to be the big winner of that very stark increase in the French market.

First, we have a strong track record. The picture on the right shows you, in the past two years, the success we had in public tendering for solar. So, we've got this track record but also on wind opportunities and we will further leverage upon that.

The second element is that I mean we have also leveraged upon selected growth opportunities in the market last year. I mean we bought two companies which we are currently fully integrating into the system and we – these acquisitions are highly accretive to the value because I mean we select opportunities where the portfolio is more at the development stage, where we believe that we can add that element of value throughout the whole value chain. We also are an early mover into the French PPA market. It's a burgeoning market, for the time being, compared with what Andre is going to tell you about in the US, it is nothing. But we believe that, step by step, there is going to be a very growing market in France, and we are currently having our first options in that market.

We have, altogether, very strong origination capabilities in-house but also through selected strategic partnerships. One of the examples I wanted to tell you about is a partnership we have currently with Suez in order to tap into a lot of their land in order to build together and to build a very large and interesting power plant solar PV. We've got competencies along the whole value-added chain. Of course, the development stage but also definitely EPC capabilities, especially through Engie Solar, in – which is also a subsidiary of the group in PV but also strong O&M capabilities. So, as I tell you, we are currently operating 3GW and further growing that stake. Last but not least, we have the strategic partnerships in place with investors on the DBSO model. We have a strong knowledge of how it works. It works very well on the French market considering, as Thierry was saying, the framework and the characteristics of the French market. So, these strategic partnerships help us being, at the same time, more profitable and more competitive in the market that I just give you a glimpse upon. I will be happy also to answer your questions during the last section of our afternoon together. Maybe I can hand over to Thierry again? If I'm – no, sorry, it's Andre. Sorry, Andre. Yes, of course, Brazil is your home turf, if I may say so. Andre, the floor is yours.

## **Solar & Wind in Brazil**

Andre Cangucu

*Chief Business Development Officer for North America, Engie SA*

So, good afternoon everyone. I'm very pleased to be here. Before we go in detail into the US market and what Engie has been doing over there, I will finish with Brazil. I used to be CFO of Latin America and Brazil and I'm Brazilian, so I think I qualify for that last slide.

**Engie Wind and Solar in Brazil is growing rapidly**

So, this is to show what we've been doing in renewables – what we call in Brazil non-conventional renewables in the last years. So, through Engie Brasil Energia, Engie has been developing a lot, traditional greenfield development, so in the last five years we built 1.2GW of mostly wind but also a bit of solar and we have strong growth perspectives. We have 300MW under construction and approximately 1.6GW in a pipe that we can develop in the future, like when I was saying continuing to deploy growth in the near future.

How are we doing this? We're contracting with free customers, operating in the free market. Free market, free customers in Brazil is the local wording for corporations, so large consumers, large corporations but also contracting with utilities in the regulated market. Our development tries to use synergies in terms of where you locate those projects to have clusters of development around some geographies in Brazil to benefit from cost of development, benefit from synergies of deployment when we're delivering projects and also to ensure consistency, budget, COD. So that's the last message that I have for you in relation to Brazil and our renewable development over there.

**Solar & Wind in the United States**

Andre Cangucu

*Chief Business Development Officer for North America, Engie SA*

Starting with the US. So, we have been very active in the US in the last three years. I'd like to start with a brief overview of the market. The renewables market in the US has been developing and evolving since the early 2000s. It started with wind, then solar, primarily selling to utilities on very long PPAs and since 2015 the primary customer, or big change, it's 50/50 but the new actor is the corporation.

**Corporate PPAs in the US: why do corporations buy renewable power?**

Why companies or large corporations are buying renewable or consuming renewable in the US? Basic two elements. It's cool and it's cheap. What I mean by that is sustainability goals. Most of the large corporations, they have sustainability goals to have a certain percentage of their total consumption in renewables were 100%, and it's almost priced economic-driven because of price.

Another change in the marketplace, the tenure for corporate PPAs are generally shorter than for utilities. In the past, I mentioned like 20 years, or longer than 20 years, the corporate PPA is 10 to 15 on average. The traditional buyer for those corporate PPAs started as large corporations, tech companies, the Apples, the Googles, the Facebooks. Buying large chunks of power, large contracts. On average, larger than 100 megawatts. And lately, it has changed. And because those large corporations, they force their supply chain participants to also consume renewable power. To demonstrate sustainability of their products, the new entrants have been coming to the market, smaller players that are signing smaller PPAs, 20, 50, 75 megawatts, but certainly below 100. And those are non-traditional players.

There are non-traditional players. We signed a PPA with the Boston University, so it's a corporate PPA to a university at the end of the day. Another important element about the market; Gwenaëlle mentioned at the very beginning that renewables are getting to grid

parity. That's absolutely true in the US. We demonstrate here two markets, ERCOT - first of all, the US is a bunch of markets. It's not one market, one country and one market. There are several different markets in the US and different regulatory framework, different local idiosyncrasies, some better for solar, some better for wind, some you can play both technologies. I show here ERCOT, that you can do wind and solar. And I show also PJM, you can do wind and solar. And you say that, if not today, both technologies at the grid parity, they're going to be in the near future as prices continue to come down. So, that's an important element because a lot of people believe that in the US renewables are not going to be comparative in the future once tax incentives disappear. That's completely wrong. And they will continue to be competitive. They're competitive today.

Last, but not least, to mention growth in the deployment of renewables in the US in the future, we're showing here between wind and solar the expectation is 120 gigawatts, more or less, in the next five years. That, to put into perspective, the installed capacity in Brazil is 160 megawatts. So, in the next five or six years in the US, we're going to have 80% of the installed capacity in Brazil just in terms of renewables. It's more or less 50/50 wind and solar. Depending here, we're using a Bloomberg new energy finance data. If you use different providers, it could be slightly different, but it's more or less 50/50.

### **Engie's Competitive Advantage in North America**

So, what is our competitive advantage in the US? And it's very nice to be here. I've been doing business development in the US since beginning of 2016. If I were to show this map of projects and assets that we have in the US three years ago, it was empty. And you'll see all the dots there being blue or orange or yellow, they are either projects or assets that we have in operation today. Why we're able to do this, and why we are able to continue to deploy megawatts in the US - because we have a very deep portfolio of projects. We have today, more or less, 10 gigawatts of solar and wind projects that we can continue to harvest in the future. We will continue to enhance the portfolio, but this is a fundamental, almost a *sine qua non* condition for you to be competitive in renewables in the US.

Another condition is to have a strong team. We have a team for solar, a team for wind dedicated in the different development phases: origination, development, implementation. Another important condition, we leverage on commercial relationships, the ecosystem of solutions that we can offer to customers. Why is that? To be able to commercialize, sign PPAs with corporations. We leverage on the customer business line, so we're going to see an example later of Target. We're going to see another example of 24/7 that Gwenaëlle mentioned that is a function of leveraging on those commercial relationships to be able to sell PPAs.

Last, but not least, DBSO business model, so we're using DBSO in the US. We're selling after construction. Why we do that? It helps us to be competitive. We retain a participation in these companies because we want to operate, we're an operator. We want to do the asset management, that means commercialization. Very important after the PPA period to be able to have the portfolio, to be able to commercialize where we sell this energy to other customers in the future.

### **Cross Sell and Up Sell**



One of the examples of leveraging on those customer relationships, what we call cross-sell, upsell. Target, we have different relationships with Target. I can start with the renewables, the one at the bottom. Currently, we have 200 megawatts of PPAs with Target, wind and solar, but the relationship didn't start with that. It started on the first element with the ENGIE Insights doing billing management for Target. And then distributed solar, doing rooftop, we are also present in the solar market in the US. So, doing CNI, rooftop, ground mount. And Target was a customer. They're also a customer of our retail arm, energy resources, delivering physical power to different target sites across the country. So, this is a good example that the relationship started in one element. We don't want to be a one stop shop over there, but we want to be able to offer different solutions to customer and cross-sell and upsell once the relationship is established.

The second renewable PPA that I mentioned here, the first one was wind, and the second one was a function of exactly that. We had a good relationship on distributed solar that created the opportunity for large scale solar PPA with them. This is a bit of a complicated slide, but what we are trying to show here is there are different alternatives for a customer to consume renewable power. They can simply go and buy RECs, renewable energy certificate or credit, which is simply a paper saying that this megawatt has been produced by a renewable wind farm or solar farm, and then they're complying with their sustainability goals. They can also sign a corporate PPA, which is not the physical delivery instrument, it's more like a financial instrument, but thereby megawatts that were generated from this renewable power plant.

Then, a lot of people in the market are doing the RECs and a lot of people in the market are doing the corporate PPAs. The ENGIE difference starts on the physical green supply or the customer structured solutions. Customer structured solutions, I'm going to talk on the next slide. It's the example of the 24/7. But the physical green is something that not all actors in the market can do because they don't have retail. For you to deliver physical power to a customer, you need to be a retailer. To do the last mile to deliver power to this customer. So, if you have a company or a competitor that is just operating in the development space in building power plants, they cannot do the physical green, so they need to use a retailer to do that. We have all this in house, so it creates differences in ability for us to offer a comprehensive product to different customers.

### **Renewable Energy "As a Service"**

Now, why they would choose RECs or corporate PPAs or physical green, it depends on some of the requirements that they have or preferences that they have. In terms of complexity, in terms of tenure of the agreement, in terms of additionality is a concept very important for some participants and consumers in the US. They want to be able to point that they bought this megawatt from that power plant that is over there, and show that to their customers. So, depending on where they are in the market and what are the requirements that they have, they choose one of those solutions. We operate in all of this and we are constantly developing new products that we can go to customers and offer.

One good example is the 24/7. So, the 24/7 is what Gwenaëlle mentioned, moving from "as produced" to "as consumed". So, we're taking a solar project, we're taking a wind project plus our wholesale activities to transform two load shapes – the solar, you see is the yellow one or the orange one. It's like a bell-shaped curve, and then you have the wind, which is kind of the opposite one in green. Those are not offering a 24/7 solution to our customer. They can sign

PPAs with this, but there is still a balance that they're going to be over contracted or under contracted. What we do with GEM, our wholesale arm, is to balance the power and transform the two curves "as produced" into a 24/7 PPA "as consumed". This is not the fictitious example. It's a real case example that we can sell to customers with a flat load. Who has a load like this? Data centres, for example. Research facilities that need to operate 24/7 and consume power 24/7. Industrial manufacturing facilities that produce throughout the day, so they're all potential customers for a solution like this.

So, what we've done since the beginning of 2016, today, we have secured and under construction in the US roughly 2.6 gigawatts. This is 2,000 megawatts of wind, 500 or 600 of solar. The average life of those PPAs are 13 years. We are present in most of the markets of the US; ERCOT, PJM, MISO, SPP, so the portfolio's diversified. It's also diversified in terms of the counterparty sector. So, we have retail, Target is an example. We have higher education, Boston University. We have Tech companies; we have traditional utilities. So, it's a diversified portfolio from a customer sector as well. Most of those customers are investment grade, important element for financing. What else to mention? And 81% is "as produced". This is changing with the solution that I just showed, the 24/7 and you're going to start to see more "as consumed", less "as produced".

### **Corporate PPA in the US: Typical P/L**

The last slide is traditional P&L. This is replicating a wind project of \$100 million of investment. Imagine more or less 100 megawatts of installed capacity and assuming a sell down of 75%. So, on the left side, you have the P&L of the SPV, so it's 100% project level. On the right side, you have the ENGIE P&L, also taking into account that we are doing O&M in asset management. So, starting line by line. Revenues, this is the result of the megawatts you're producing, you're selling to the market or selling under a long-term contract, so there's no science fiction there. EBITDA is going to be the revenues net of the cost to produce and the cost to operate the power plant. I think the slight difference that you have in the US is this tax equity income.

And in the US, because of the tax benefits that you have, PTC, ITC, production tax credit, investment tax credit, you need to have a tax equity investor in order to monetize those credits. And they come into the project as an equity investor, a class B equity investor, that will receive their dividend or the payment back in the form of tax credits. When you need to account this, under IFRS, you need to account using the effective interest method. And because there's no cash payment, the interest rate is negative, and because the interest rate is negative, it creates this frontloading effect throughout the time in which the tax equity is present in the investment. After they receive their money back through the credits, they leave the investment and this affect disappears. That's why you see on the average from year one to five, it's a higher number, and then after year six it decreases. And this will disappear typically, depending wind and solar, in a period between 7 to 12 years. On the right side, the only additional piece on top of the 25% pick up of the net income from the project level is the margin that we make on the O&M in asset management. And I think this is it. Back to Grzeg.

## Offshore Wind

Grzegorz Gorski

*Executive Vice President of Innovation, Marketing & New Business, ENGIE*

Thank you, Andre. So, offshore wind a bit different than the others because the other technologies are delivering now. Offshore wind will start a little bit later. So, first big assets in operation will be only in 2021. So, I will start with some from fundamentals. So, offshore wind is just about to take off. It seems everybody in this room agrees, and we see new and new forecasts coming in almost each day which are more and more bullish. I am using usually, like my colleagues, BNEF because they have proven to be the most credible forecaster. Congrats. And so, but even BNEF, also what I observe is that each six months, they are also more and more bullish. So, we are waiting for the new forecast.

### Offshore Wind Market Expected to Grow

But using the last available, global offshore capacity should be 154 gigawatts in 2030. Roughly half of Europe and outside Europe. So, what it means for Europe is that it will grow from around 20 today to 80, so roughly 6 gigawatts per year addition during the next decade. To put that again into perspective, when we see the different scenario of European commission for 2050, the installed capacity in Europe will be between 250 to 450, which means that the annual addition growth rate is 10 to 20 gigawatt a year. So, double or triple. So, the future is bright, and why so? Because this technology has proven a very strong learning curve and became really competitive, especially in Europe. So, the costs today of LCOE without connection in Europe is below 50 euro per megawatt hour.

And this drive in LCOE reduction is mostly economy of scale. So, everything gets bigger. The turbines are getting bigger and bigger. The turbines which we can contract now is a dozen gigawatt, which is 220 meters. So, just to allow you to imagine, one blade is longer than the length of a football field. So, just to see these things in perspective, so it's big. Also, the parks are bigger and bigger, and the reason, each time you double the size of the park with the same technology, LCOE goes down by 15%. So, there is incentive to do everything bigger. So, it's a complex technology which requires both ability to manage technical complexity and a strong balance sheet. So, it's a play not for everyone, like solar PV, but for certainly fewer players.

All with happening in offshore wind today is based on the mature fixed technology. When the foundations are in the bottom connected with the bottom, the new frontier in offshore wind will be also floating offshore wind, which we among different runners, which will open new, vast resources because we will be no longer constrained by the depths. We can go to best resource places, and also because you go to deeper places, there is less conflict or discussion with other users of the sea, especially fishermen.

### Engie and EDP JV

So, you know that ENGIE decided to team up with EDP. So, somehow it was very natural partner because we worked together for six years, so when the CEOs met in Davos, they said what we can do more, and they asked us what we can do more. Quickly, we came to the conclusion that we can just combine. And in a few months, we have agreed this. The MOU we signed on the 21<sup>st</sup> of May here in London. During the signatures of the MOU, we presented

also the targets which you can see here. We are not yet increasing these targets for the time being they are the same.

So, basically, we have the same philosophies. The teams are working very well together. We share the same DBSO business model, which will allow here capital rotation. So, the entity will be co-controlled entity with a short and balanced governance. So, ENGIE will have non-executive chairman, and myself, I will be the COO. Mr. Martinez from EDPR will be the CEO and we rotate after three years. The teams are being built as we speak. Everything is on track for closing the transaction in Q4. And the new company, I cannot tell you yet the name because we don't yet have it, but we will have it by Q4. We already have the location. The company will be based in Madrid.

### **Engie/EDPR Key Success Factors**

So, on this slide, I tried to pre-empt your question being provoked by Gary that we are, yes, I agree, we are latecomers both with our Portuguese friends we are latecomers, so what makes us believe that we can succeed, we can compete with those like ORSTED and others. So, three answers basically. First is the market is so big there is space for everyone that can do it because, as I said earlier, not everyone can do it. It's just a few players, and we see consolidation in the supply chain. I think consolidation, like what we are doing, among the operators is probably unavoidable. So, the opportunity is big. There is enough room and there will be certainly new entrants, so the Big Oil companies especially in Europe and Big Oil is already there. We can have probably other Big Oil, but because the prospects are so big, it should not hit into margins as the margins are quite well protected because of complexity.

Second, we are already competitive today, so by combination we will just increase the competitiveness. We are competitive because we have already portfolios, which we were able to build, which we were able to win, so we will only improve this competitiveness by combination. And then we also have the skills. We can tap to skills which exist in both companies to fuel the growth. We will not be constrained by lack of skills. And why so? Why we have this rise to win? Because of our global presence and agility of our business development teams globally including the new markets for offshore wind like US or the far east. Because also of the skills which exist in both companies in our onshore wind businesses. Just as curiosity, of course, we have no intention whatsoever to combine the onshore wind businesses, here we will stay competitors with EDP, but combined portfolios of these companies would be the biggest in the world, and many of the expertise we needed in offshore wind are the same as the onshore wind. So, we will be able to tap to these resources for business development, for O&M also.

But also, already mentioned by my colleagues, especially by Andre, the corporate PPAs. This ability, which is quite unique among our peers in offshore wind, gives us good opportunities to participate in so-called zero subsidy auctions like Netherlands, Germany or Belgium because the only way to guarantee the contract's cash flow is to go with corporate PPAs. Then, OEM relationship, so procurement, we will increase the scale and we're already buying billions from these suppliers. So, we have ways to leverage the relationship. Then, ENGIE for the last three decades was big independent power producers, so in project finance, we already have the project finance proven and relationship with lenders.

And last, but not least, maybe not commonly known, but ENGIE still has contractual access to people working today in Neptune. They have access, these people, to our HR system and they can apply for jobs being published there and they do. So, these people from the old E&P business of ENGIE are still coming back to ENGIE from Neptune now to work on our offshore wind project. On my last slide, it's just portfolio of our current projects. As you see, it's a nice geographic spread and is growing almost each day, and also in projects in various stage and if there is any question about the impact of the project, I will be happy to answer. And now, I give the floor to Thierry to talk about numbers.

## **Financial Outlook**

Thierry Kalfon

*Managing Director of Renewables Global Business Line, ENGIE*

Okay. Thanks, Gzreg. Coming back for the third time and maybe last time, so the financial outlook of our renewable global business line.

### **Balanced Portfolio of Projects Over 2019-2021**

So, let's start with our project portfolio. So, this is straightforward. As mentioned by Gwenaëlle at the start of our presentation, 8.5 gigawatts out of our 9 gigawatts ambition are already commissioned or under construction or secured. Geographically, the portfolio is very well balanced. One third in Europe, one third in the US, and one third in LatAm and the rest of the world. In terms of technology, onshore wind, as you can see it on the chart, still accounts for around 60% of the total. Solar for 30%, and the rest of it is coming from offshore, Seamaed in Belgium by 2021 and biogas.

### **Growth CAPEX Net of DBSO Over 2019-2021**

Then, moving to growth CAPEX for the three years to come; renewable development, as you know, is based on a 2.3 - 2.8 CAPEX spent range with a little more than half of it, 57%, dedicated to the DBSO model and a little less than half, 43%, for projects kept at 100% including hydro. In terms of technologies, so one the right side of the slide, solar CAPEX will remain small due in particular to high sell-downs. Onshore wind will account for 70% of the total envelope. What is worth mentioning is out of the 2.5 billion euros, two billion euros will yield earnings over the projection period, which is '19 to '21.

### **Current Portfolio to Support Long-Term Earning Growth**

So, what about going beyond 2021, our long-term earning growth? Life will not stop in '21, and our existing pipeline will support our long-term earnings. Based on our secured pipeline, we already know that we'll commission at least one gigawatt in 2022 and 2023, and most probably much more than that since our secured pipe will keep developing between now and the end of 2021. With regard to DBSO, we'll partially sell a little more than seven gigawatts over the '19 to '21 period including a little less than one gigawatts in India. Based on our existing commitments, we will sell 3.5 gigawatts in '22 and '23, and probably much more than this as our sell down capacities will increase when we approach the end of the '19, '21 period.

### **Strong Ambition for the Renewables Business Lines**

Then, last slide before your question, to conclude, focus on COI growth by 2021, renewables will grow between 8 and 11% as indicated during our capital markets day. Every technology and operating model will be growing at a double digits CAGR except the other segment due to high positive one-offs booked in 2018. In particular, wind and solar is expected to increase by 10 to 13%, mainly driven by consolidated assets and DBSO margins. With regards to the latter, so the DBSO margins, DBSO margins should add less than 100 million euros by 2021, as '18, this is an important point, recorded an extraordinary gain from the sale of old French assets.

Hydro will grow on average by 8 to 11% per year with normative hydro resources. Obviously, there will be variations around hydrology and weather normative patterns intra-year and inter-year. This is a fact of life. For instance, I'm afraid that weather in France in the first half of the year was not as good as last year, which was outstanding. And you heard from Eduardo in Brazil, Eduardo's comment on GSF seasonality. That's it for the numbers. Gwenaëlle, if you want to share your concluding remarks.

## Conclusion

Gwenaëlle Avice-Huet

*Executive Vice President & CEO, ENGIE*

So, thank you very much. We tried to cover all the different topics that you raised following the capital markets day, but maybe one last comment about the key messages that we wanted to deliver. The first one is the huge growth potential of this area, of this activity. The second one is our positioning, as we're positioning to capture all the different growth areas and deliver value. And the last point is the momentum. We had this capital markets day in February, and we wanted to share with you the momentum in which we are right of today.

So, I propose that we open the floor now to your questions and we will be all available for that. Thank you.

## Q&A

**Gary Leibowitz:** Okay, guys. We will start with questions in the room here and then we will also be open to questions – for those of you on the webcast, there's a field where you can type your questions, and if they're received, then Arnaud from the team here will read them out. There are some of you that are also participating on the live conference line, and you can feel free to ask the operator. So, while we're waiting for those to be queued up, I'm also interested in your feedback afterwards because we'll all leave probably quite abruptly. But on the content and the format for this, I hope you're impressed by the level of market insight as well as the thoughtful rationale behind our choice of models. The DBSO model has attracted a lot of questions and even scepticism by some, but I think you hopefully will agree that the rationale is thoughtful and it's presented reasonably comprehensively, as well as, of course, the numbers that Thierry provided, which I think are pretty specific in terms of enabling assumptions and modelling. So, that said, we'll start here in the room.

**Question:** Hi. Vincent Ayrat from JP Morgan. Thank you for the additional information on these divisions. Quite important for us, especially want to model ENGIE. I would have a

couple of questions regarding that. I don't see the CODs plan just for the main ones, however, if you want more, this would be good. You've got a nice pack with a list of all the power plants. It'd be great if we can get the CODs for all watts under construction on the renewables. Is it something you plan to do? That would be greatly appreciated.

And another question, it's regarding the cost of balancing power. So, you've shown renewable as consumed, which is great. We always see these parity statements everywhere in renewables. We never see the full cost of renewables. Here, you show a chart. You offer the service, how much does it cost to get a profile on top of your renewable production? That would be very interesting. And talking about a couple of slides before, you showed the LCOE charts for solar and wind versus grid in the states, two charts of them. We see a bump in 2023, is it TEI, you know, your tax thing in the states, what is happening over there? Just to understand a bit more specifics on the US markets. And finally, it's pretty much the last slide, plenty of high one-off in 2018. Could you give colour, and especially, could you give numbers for that please? Thank you.

**Gwenaëlle Avice-Huet:** On your first question about the COD per plants, well we could consider it, so we will get back to you on this point. Regarding the cost of balancing power, we will look at it also. I'm not sure we will be able to respond to you right now. On the LCOE and the bump in 2023, I suggest that, Andre, you comment on that.

**Andre Cangucu:** Yeah, and maybe I can add some on the balancing power. Unfortunately, there is no easy answer for that because it really depends on the production profile of the wind project that we're using, the solar project that we're using and the market that we're going to be at. We can provide big ranges using typical profiles for one market, for example, but it's going to depend heavily on that. It's also going to depend on the tenure of the PPA, liquidity of that market, so it needs to be taken with a bit of care whatever we can provide.

On the LCOE, I would say, it also depends on the different markets of the US, but I would say without any affecting tax benefit, the range for solar is in the 25 to 40 dollars. It will vary if that is in Texas or California or Virginia, but that is the range, I would say, 35 to 45. And for wind, also depending heavily on the market, but it's probably going to be around 30 to 40 dollars without any effect of tax incentives.

**Thierry Kalfon:** Just before we answer this question, your question about the one-offs in 2018. So, there are two big one-offs. The first one that we sold in 2018, historic wind parks of La Compagnie du Vent when La Compagnie du Vent has been merged into ENGIE green. So, these were old parks that we have sold, and for this, we have had big DBSO margin. So, it's roughly 100 million euros for this. And the other one is a development fee that we got in '18 for Moray East offshore wind park.

**Andre Cangucu:** If I may go back to the bump in 2023, so the two charts that I showed, they are taking into account tax benefits. So, PTC for wind, ITC for solar. And the bump in the solar is just the phasing out of the ITC, so the additional cost, because you no longer have the benefit, but then you see it continues to deep because of cost to build decline over time.

**Grzeg Gorski:** If I can add also on balancing, and especially deeper offshore wind, so it also depends what you call balancing. If balancing is a classical, technical definition, it's the difference between what you scheduled a day ahead and what you actually produced. And here, it's for offshore wind very low because the day ahead predictability is very high. Here,

it's really diverged from other renewables. If you call the balancing how much it would cost to convert offshore wind production profile into day's load, in northwest Europe, it costs around seven euro per megawatt hour.

**Gary Leibowitz:** Okay, next, in the back there.

**Elchin Mamadov (Bloomberg Intelligence):** Hi there. Elchin Mamadov from Bloomberg Intelligence. I have a few questions. The first one is on biomethane, you haven't really spoken about it much today. Can you talk a bit more about how do you see the future? Is it profitable at this stage or could it be potentially in the future? The second question is on hydro, which still accounts for the largest share of your renewable output, I haven't heard anything about the opening up of hydro concessions in France recently. What is the latest situation there, and is there any risk going forward?

The other one is on renewables. Again, I mean, how does Electrabel fits into that with all the nukes and whatnot? You've sold a bunch of your coal plants and thermal power plants, but what's your plan for Electrabel given that renewables are your main focus now? Finally, if I can squeeze in the last question on EDPJV, how do you tackle decision making, like for example, when you bid for projects, who decides whether IRR thresholds are, et cetera, and how can you address this?

**Gwenaëlle Avice-Huet:** On biomethane, this is a very important point you're right. We truly believe in the decarbonization of the natural gas, so we're investing in two areas. The first one is biomethane, the other one is hydrogen. We clearly see a very short-term future for biomethane. This is already happening, especially in Europe, and we have taken positions. So, for example, in France, there is discussion right now about a 10% objective of biomethane by 2030, and we are pushing for this target and we are investing ourselves in this biomethane. Now, the question is, how to industrialize to make the cost decrease such as we've seen in other areas. And we believe that it can work, and so our work is to define industrialization process scalability just to make sure that we are in the path towards decrease of costs.

So, we have in our portfolio right now 80 projects in France and we are committed to invest 800 million over the next five years before any sell down and we will implement the sell down process also for methanization in France. So, there is a bright future for biomethane. We're investing in it, but also there is a bright future for hydrogen. It's more for the long-term, but we are also investing in these new technologies.

Now, regarding hydro, you know this is a long story and it's been many years that we're discussing, about the idle concession in France and the potential to open up this concession, there is this requirement from the European Commission to open up the concession process in France. There is discussion, we don't know yet in which direction it will go, but in any case, we will be looking for new concession if it opens. So, the position of ENGIE will be to look in this market if it opens.

Now, the situation regarding Electrabel in Belgium, there is no topic today about Electrabel, but what I can say is that our development is also in Europe, and Belgium is part of it. And we are developing renewable also in Belgium. Now, regarding the JV -

**Grzeg Gorski:** Yes, I can take it. So, so far, without JV, we never had problems to agree. I would say, we have the same business model. We have similar investment criteria. You know



ours, I would not discuss EDP investment criteria, but they are similar, so we never had problems to agree. And the teams are working together and proposing finally it's being approved simultaneously by the proper governance body, so the two companies. As we speak, we are preparing to bid together with Moray West in the forthcoming CfD auction. We got formally prequalified today. And the year also, it's really technical optimizing the project, optimizing the business plan together. We never had an issue with this, so similar business model, similar investment criteria is the answer. And good work, good collaboration.

**Thierry Kalfon:** Okay, you asked a question about renewables in Belgium. So, we have in Belgium around 400 megawatts in wind. And we develop in Belgium through a DSBO model through which we sell down after development and before construction to local governments.

**Gary Leibowitz:** Okay, next question.

**James Brand (Deutsche Bank):** This is James Brand from Deutsche Bank. Three questions please. You mentioned some of the kind of issues around the French concessions potentially being opened up. But I was wondering whether you could comment on the Brazilian concessions and what the average life is for those concessions? Secondly, you discussed a bit the different types of PPAs customers are looking for, but I was wondering whether you could comment on whether there was a favourite type of PPA? Do most corporate customers look for the offtake from a particular wind farm, or do they look for kind of more baseload with balancing?

And thirdly, in the pipeline for offshore wind you had quite a lot of floating storage projects in that diagram. I was just wondering whether you thought that you actually got to the point now where floating storage (offshore) was something you could actually go ahead with? Has it reached commercialization stage and how do the attractions of floating offshore compare with fixed offshore at the moment? Thanks.

**Gwenaëlle Avice-Huet:** So, on the French concession in France for hydro, in order – within these concessions, part of them are already expired. This is the situation for our competitor, EDF, and part of them has been renewed. So, that's why in the process of opening up this concession, it can apply to our competitor, but also to ourselves because within SDEM, we have part of these concessions that were expired. Now, the question is, when and how it will happen. And we have no visibility around that. We have another concession which is CNR that we mentioned previously. This concession is ending end-2023 and there is a process right now to prolong this concession for 18 years. So, this is a discussion that is ongoing with the European Commission. There is a general consultation going on and this prolongation is made public on the website for this consultation process, but it's based on 18 years.

On the PPA and the evolution of the PPAs, I would say that it started as we mentioned earlier as – first of all, it was green certificate, in fact. People were asking only to have green certificate – like a paper – showing that they were consuming energy. The second step is that they wanted more. They wanted what we say, additionality. So that means a new asset built to supply their energy. And to do that, it started as produced. So, all the electricity sold was directly connected. So, it can be solar for self-consumption or it can be wind for this – as the produced consumption. It started like that.

The emergence of as-consumed product is very new. This is something new, but this is something that is happening in the US. And our best estimate is the fact that this will expand,

because when you start to develop base load products based on renewable, then everybody will ask the same.

So, now it's – how is it available? Is it available everywhere? You need to have a mix – a combination of different technologies. So, this is something very important, and at the same time, it needs to be competitive. So, as soon as there will be still decrease of the competitiveness of – increase of the competitiveness of these technologies and penetration of storage, then it will become more and more popular, I would say.

**Andre Cangucu:** Maybe to complement Gwenaëlle, the example that I gave on Boston University. So, Boston University is located in Boston - so, you know, east coast. They signed a PPA with a project that we have in South Dakota. South Dakota is very far from Boston, and there in the middle of the United States. Why they chose a project that is located in South Dakota? Because they analysed all the different markets in the US and they identified that South Dakota is located in SPP, which is the most carbon-intensive market in the US.

So, because of this concept of additionality, they want to locate the project or to make the project viable in the market that it was going to displace the largest amount of CO<sub>2</sub>. Because SPP is heavily dependent, still, on coal generation. So, that's why they chose the project in South Dakota. They wanted to say, 'I signed this PPA with Engie. They are going to build this project in South Dakota, and because of that we're displacing x tons of carbon.'

So, it depends on the philosophy of the customer in terms of what they want to achieve with that specific agreement. And, what is important, like Gwenaëlle was saying, is to be able to deliver on the different categories to be able to be the most active player in the market for those potential customers. That's why it's important, the RECS, the corporate PPAs, the physical green, the as-consumed, or the custom bespoke-type of solutions. That is the difference in the market today.

**Gwenaëlle Avice-Huet:** Maybe two remaining topics – Brazilian concessions and pipeline for offshore. So, Brazilian concessions – maybe Eduardo...

**Eduardo Sattamini:** Yeah, we do have 2.7GW of installed capacity that is expiring in 2028. That is the reason why we are looking for the new concessions, just like Jaguar and Miranda it under to extend our portfolio. And, we will probably – will be disputing our own concessions in the auction that will take place close to the expiration date.

**Grzeg Gorski:** For floating offshore wind. Yes, it's – we have a lot and as I said earlier, we are very bullish on this. In fact, here we tried to do what ORSTED, DONG at that time, did: to work with the whole supply chain to optimise the total system and not the components, to have the total LCOE as low as possible.

Some other facts: first, megawatts in operation will be floating wind and so this year, in Portugal, we will have 25MW (3 x 8.4MW turbines). And, our long-term view is that floating offshore will have the same LCOE as fixed. I would say between 2025 and 2030. I would even see that probably in future jackets foundations will disappear, and you will have monopiles price and floating, and say up to 50%-meter monopiles, about 50% floating. So, that's our long-term view.

And there are many geographies, like Japan, when we see that they should go directly to floating and abandon the very small, fixed projects in the places which have very bad wind.

**Gary Leibowitz:** Okay. Let's go there – in the back table. Let's go to the back and then up here.

**Tancrède Fullop (Morningstar):** I have just one question. You mentioned your – you target to maintain the return on capital employed of 9.6% through 2021. What makes you so confident to maintain it given increasing competition? And maybe in terms of underlying drivers, I guess you will be helped by increasing achieved power prices in hydro – for hydro dams in France. But, regarding wind and solar, could you maybe give us an average IRR that you target? Thank you.

**Thierry Kalfon:** Okay. So, what we have said in – what we have taken the CMD is that we will go above the 2018 ROCEp that we showed at this time. We cannot be more specific than this. What makes us confident about our capacity to meet this target, as you know, we have a development model for a part of our assets which is light CAPEX – which is CAPEX light. So, this will not weigh too much on our capital employed. And with regards to NOPAT or the numerator of the ratio, as you know DBSO makes it possible for us to crystallise value through EBITDA, so NOPAT at – on the – at the very beginning of the lifetime of the asset. So, this makes us confident to meet this ROCEp target.

**Andre Cangucu:** I think, Thierry, if I may. One thing that I hope we were able to show through the examples of North America – the US. We're trying to de-commoditise something that became a commodity by developing those bespoke solutions in different products and leveraging on the internal capabilities – the ecosystem that we have. So, this is a differentiating factor. Not all players in the market can compete providing the span of solutions that we're showing here. So, that's one element that allows you for some additional return.

But you need to continue to innovate and continue to create new things, because competition catches up and are able to do some of this. So, it's a catch play type of game and you always need to be ahead of the curve.

**Gary Leibowitz:** Okay. All right. This one here now.

**Aymeric Parodi (UBS):** Thank you very much for the presentation. I've got two questions. The first one is on hydro. The first quarter was not very good compared to last year. The second quarter doesn't seem to be amazing either. What makes you so confident you can reach your target for the year in renewables? And the second question is probably more for Grzeg. On Dunkirk, if you could share some details around the bid because EDF won. But what are the lessons learned for the other auctions to come? Thank you.

**Gary Leibowitz:** Yes. I'll just comment on the first question. We are trying to be helpful by acknowledging the challenging hydrology this year. Maybe some improvements. I mean, it was particularly challenging in Brazil in the first quarter. Eduardo may want to comment on that. But that was – we acknowledged that. Second quarter may not be so challenging. But in France, certainly still challenging and I think Thierry acknowledged quite a tough comp from last year.

As far as the specifics on the impact of first half on the full-year outlook, you'll have to wait until the 29<sup>th</sup>. So, on the other part of the question...

**Grzeg Gorski:** I think it's still a bit early to answer. We're still analysing. We are still also – we requested a detailed evaluation of our offer, and we don't have it yet. So, we have to finish this for this to have the full conclusions. I would say like immediate conclusion is what is – I think everybody was happy with the level of bids, which has proven the competitiveness of the industry which is partially due to the supply chain which was developed due to previous rounds in France. I hope it will soon start to build these previous rounds. Not only continue to develop and spend time in tribunals. So, the positive point is that this already led the French government to double their target. And, so this is a positive. So, I think here the cake also will be much bigger than we thought a few months ago, which is good news for everyone. Because there should be also, like I said before, a place for everyone.

So, this is conclusion for the time being. I don't know, Gwenaëlle, whether you had something, because it was – she made the bid - when Gwenaëlle was in charge of our Sterco with partners, and because here was have also EON as a partner for.

**Gwenaëlle Avice-Huet:** No. I can say that we made a very good bid – very, very competitive bid – very important bid. And we've learned a lot. And so, now we are prepared for the full potential of this market, because it is huge. This is not just one bid story. There will be so many to come. So, for us, that was very important to prepare properly this bid to be able to expand in all the geographies, because we have numbers of pipeline to deliver now.

**Grzeg Gorski:** So now, we wait for the 1GW/year in France to be bidden, and also for floating. We try to convince the government that they should go for not 200MW size but 500MW size. Because, as I told you, each time we double, LCOE 15% down. So, we have some strong economic arguments for this also. So, okay, it was, well, not as good as we hoped for. But I think long term it's a good story also for the whole industry and there will be more in future.

**Gary Leibowitz:** Okay. I think we have time for two more. Right. There's two.

**Keggan Kruger (Macquarie):** Grzeg, this question is for you regarding your competitiveness in offshore wind. We've seen in New York and obviously in tomorrow's Holland Kust auction, experience does count in offshore wind. It's a bit of a chicken before the egg scenario, because in order to get capacity allocated to you, you're going to have to have that experience. And currently, you don't have that experience. How are you going to get that experience if you can't win? Are you doing to take a haircut on your IRRs? Are you going to try to get some market share just to be able to say, 'Look, we've built this project to go forward?'

**Grzeg Gorski:** It's – we will see HKZ tomorrow at 18:00. Hopefully, we will see it at 17:30, because the winner will be informed at 17:30. We have big hopes in HKZ. We have fulfilled all the conditions, including the operator's experience, because part of our construction is Northland power. I think we have also a strong card in the Netherlands, which is citizen participation. Close to 10% of the project will be owned by Dutch citizens, with funds collected by specialised fund.

**Gwenaëlle Avice-Huet:** Greg, just maybe to clarify, we already have some experience. We've won some bids – and very competitive bids. We've won in Moray through EDPR. We've won in Belgium with Seamade. We've won in France two projects. So, this is not the first bid,

and we already have a track record. Now the competitiveness is moving around, but we have a very good player in place with this JV because, all in all, we had different markets where we had a footprint. We were present in France as Engie in France and in Netherlands – in Belgium, with this project, Seamade Noirmoutier, Dieppe Le Tréport power, and at the same time, EDPR was developing projects and won the bids in the US but also in the UK.

So, putting all the competencies together, it's much stronger. So, we already won bids, and this is the beginning of the story. I cannot let say that we have not a track record in winning bids, because it's obviously already the case.

**Grzeg Gorski:** But sometimes formally, this is requested. So, like in HKZ, it was requested that the consortium has a certain operation, and we have now some power things – a consortium with us in operation in Germany and Netherlands. So, formally, we need these conditions. So, I don't think this is any issue. And the JV at inception will have – if I combine the corporate team in Madrid – small teams in – origination teams in countries plus the teams in SPDs, we will have 300 people at inception. And we have still, I would say 700 in both companies to tap from for growth in various working areas. Don't forget in Engie, for example, we have Tractebel engineering, with today about more than 300 people working in offshore wind for various clients. So, I don't think we have any issues of resources to grow.

**Gary Leibowitz:** Okay. Last one, back there.

**Vincent Ayrat (JP Morgan):** Hi, Vincent Ayrat from JP Morgan, again. I'll finish with a comment on the CMD. Your CEO, Madame Kocher, said that she was expecting a financial partnership with a very large fund. Developing renewables with a cheap capital provider is clearly an advantage, and I think it's a great idea. It was expected in coming months. I just wanted to know if we had any updates on this specific topic. Thank you.

**Gwenaëlle Avice-Huet:** So, maybe on this topic, we can go through the financing platforms that we've already developed and that we're working on currently.

**Thierry Kalfon:** Okay. So, as you know, we have several partnerships in renewables throughout the world. In Canada, we have a partnership with Mitsui and Fiera Axium. In Mexico, we are developing a partnership with Tokyo Gas. In France, you all know about our partnership with Predica, Mirova, CDC Infrastructure. We have partnerships in the UK with Equitix. We have the partnerships I was mentioning in Belgium with the local governments and port authority of Zeebrugge. And we have a big partnership in Portugal with Marubeni.

So, we are very much into developing our partnerships, and we could even envisage, as was stated in the CMD, global partnerships. And, I mean, the thinking is still underway on the financing platform to be implemented globally within the group.

Just another issue I would be very sorry not to mention that because somebody asked about the ROCEp target, and we would – we should have stated the obvious. Why we are so confident in ROCEp target because, I mean, our investments are very selective and as you know, we invest at cost of equity plus four which is instrumental in reaching our ROCEp target.

**Gary Leibowitz:** Okay. I think with that – all right. We'll squeeze one last one in, and then we're going to have to close.

**Sam Arie** (UBS): Hi, thanks for squeezing in one more question. I'm Sam Arie from UBS. I just wanted to take the chance to ask you guys about this. I was in Italy recently, and I met with the management team from Engie EPS, who were very impressive. And if I have understood really what they're saying, it sounds like they're not far away from offering corporate microgrids on a sort of solar and storage basis at almost no premium to a market price or conventional power contract. So, if that's true, it's almost mind blowing, and it's got very large potential. But can you just tell us, how close is that really? And what are your thoughts on the potential there?

**Thierry Kalfon:** Okay. These – there's obviously strong interest in solar utility-scale plus storage. There's going to be a number of tenders auctions about this. It's not really fully the case yet. But this is one of the reasons why Engie, as a group, bought EPS because we think that they have a technology which would be helpful to us to participate effectively in those auctions. And, as you saw, EPS now has a very clear agenda focusing on three things. First thing is off-grid mini-grids. The second thing is ancillary services to the grids. And then the third thing is to be able to put together an offering combining utilities-scale solar with the storage.

**Gary Leibowitz:** Okay. We will have to draw a line under it there. Thank you very much. As I said, feedback would be welcome on this format. The next seminar in this quarterly series will be for our Client Solutions business line in early October – three months from now. Thanks for staying longer. We were about 45 minutes over, but we couldn't really trim the content further. I hope it was valuable. And we'll talk to you next, I think it's 29 July for the H1 results.