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# FINAL TRANSCRIPT

Q3 2018 Vattenfall AB Earnings Call

EVENT DATE/TIME: OCTOBER 30, 2018 / 8:30AM GMT

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**Anna Borg** *Vattenfall AB - CFO*

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**Marius Lorentzen** *E24*

**Philip Akoto** *Energate - Analyst*

**Michael Charlton** *Banco Santander – Analyst*

**Jakob Magnussen** *Danske Bank - Analyst*

**Jose Lopez** *Millennium Management LLC – Analyst*

**Ida Grieg Riisnæs** *Dagens Næringsliv*

## PRESENTATION

**Karin Lepasoon** *Vattenfall AB - Head of Communications*

Welcome to this presentation of Vattenfall's Q3 Report, [2018] (corrected by company after the call). My name is Karin Lepasoon; I'm heading communications at Vattenfall.

In a moment, we will hear from our CEO, Magnus Hall, and our CFO, Anna Borg, and afterwards we'll open up for questions. And as usual, this is a combined live meeting here in Solna with a webcast and a telephone conference.

With that, Magnus, I leave it over to you.

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**Magnus Hall** *Vattenfall AB - CEO*

We are presenting the first nine months of this year, 2018; the results for Vattenfall. And we are doing that in an atmosphere of quite volatile markets, big swings for fuels, big swings for CO<sub>2</sub>, big swings for electricity prices, and at the same time, we are delivering events and developments which are clearly in line with the strategic development of the Company to be fossil free within one generation.

If you look to the earnings performance, it's quite stable. The underlying result is SEK15.3 billion, and that's a reduction from last year with SEK0.7 billion. And the reason is really a one-off in terms of subsidies in the German heat market, so the group results are in line with last year's.

We can see higher costs of fuels, of CO<sub>2</sub> reflecting that the decrease in results in heat, but at the same time, we have increases in the wind side where we have increased now production and increased prices, so we can see an increased result leveling out to make the whole result stable for the first nine months. We can see increased electricity sales and also gas sales to our customers.

We have a lower tax rate in Sweden and also reevaluation of the holdings that we have in the Swedish nuclear waste fund, which means that the profit for the period increased by SEK2.2 billion to SEK8.9 billion.

We have also one important event, which is after the quarterly results, it is a decision by the Hamburg city to reacquire the heat operations in Hamburg, to 74.9% owned by Vattenfall. I'll come back to that, of course and also to other parts. And we also have a new regulation for the Swedish distribution business that was announced in the beginning of August, and I would like to comment on that as well as we go further.

This picture is a little bit busy picture. Just to look at the increase in net sales is roughly 12%, that's backed on currency effects, but also increased prices and increased volumes. A good development in that side resulting in the profits being SEK15.3 billion for the first nine months as underlying profit.

We can see that we have good customer sales. You can see down to the left here, increase in electricity, gas was roughly a little bit increased and heat roughly unchanged. And we had electricity production also going up to the right, mainly based on our nuclear operation being more stable than last year where we had one of the reactors out of operation during parts of the year. You can see total increase from 92.2 TWh to 94.4 TWh.

Let's go through the business areas. And we start with customers and solutions where we can see a strong sales development and we are also doing market expansions in this area where we believe that there is a good opportunity for Vattenfall to grow. Net sales increased and back of course on increased prices and also increased volumes.

We had a slight decrease in the underlying profit mainly because we had some extra costs entering new markets, and we are also putting quite a lot of efforts into new business which is consuming part of the costs where we see there are growth opportunities around the corner. But costs are increasing in the beginning of these businesses.

We are entering the French retail market, which we believe is an interesting market for us to step-wise go into. We already have a bit business to business sales there. We're now entering also the consumer sales and the French market will be deregulated as time goes and we see there is a growth opportunity for entrants coming into that market.

We have also made new agreements with several other customers, long term agreements with big customers like the Novo Nordisk in Denmark. And we continue to do partnerships in the e-mobility, where you can see on the upper right hand side that we are growing now in charging points and where we have made agreements with one of the Swedish real estate companies for installing charging points, and then we are also doing that in the Netherlands together with McDonald's where we will do fast charging at the restaurants in the Netherlands.

One important issue here is also the net promoter score, which means that how are we relating to our competitors in terms of the customer's view. And we can see that we deteriorated a little bit. We're still better but this is something where we would work quite heavily on to improve going forward.

Power generation, which is the generation in Sweden, hydro and nuclear and also the pump storage hydro power in Germany and also the decommissioning that we have. We have nuclear plants which are being decommissioned in Germany, and we are now preparing also for the decommissioning and closure of Ringhals 1 and Ringhals 2 in Sweden.

And here of course, I'd like to draw your attention to the middle graph to the right, where you can see how prices have developed. This is in the Nordic market, and you can see the system prices have gone up quite heavily. And of course, that would be benefiting the business we have because we are a big producer, but we have also hedged those volumes as we run a one year rolling hedge to stabilize our pricing situation. We haven't had those effects at all more or less.

A little bit of that effect because of higher volumes, but not really to any big extent if you look to the development of the market. But we increased the result a little bit. Good, strong, nuclear availability as I mentioned earlier is one part of that development.

And then if you would like to look at the far right, you can also see the price development for various markets on the electricity side. And where we can see that this has constantly been going up now for some time but we had a correction now just recently.

Prices for coal have been going up, for gas have been going up, and for CO2 have been going up. But we now see reductions in CO2 prices then also affecting the pricing situation. And in Sweden we can also see the hydrological balance, that means the amount of water that we have in the system has actually increased much more than anybody could foresee. And we are now in a balance situation that's also putting pressure on the Nordic prices.

Yes, we'd also like to draw your attention to that we are developing in this area, which is also not only production of electricity, but also the market access and trading operations, where we have made a long-term power price agreement for renewable wind power with a Swedish wind farm called Kråktorpet up in the north. And where we will also serve them with balancing services, which means that that's their way to participate in the electricity system.

Wind, as I mentioned earlier is strategically a very important part of the development where we put a lot of our growth capital in the Company. We can see a very good development here in underlying operating profit going from 0.75 billion to 1.9 billion. And that's of course on the back of high capacity -- more spinning capacity that we have had during the year. Better production and then also better prices.

And so, we're very happy with this development here. We inaugurated the European Offshore Wind

Deployment Centre, that's a long word for something which is very important to us. It's a place where we can test lots of new things when it comes to offshore wind power just outside Aberdeen in Scotland.

And that's what you can see on this picture here where we have deployed so called suction buckets. That's a different way of mounting the wind turbines in the ground, which has been very successful in this project. And here we have the biggest commercially spinning wind turbines, 8.8 megawatts that are around for the moment.

We're also continuing to increase our pipeline with both the wind power opportunity project in Sweden, Klevberget. And we're also looking to opportunities to increase our solar projects, where we had two solar projects being acquired during the period in the Netherlands.

Heat is currently the problem that we are experiencing. As I mentioned earlier, one of the reasons for why we're having pressure on our results in general is the heat development. You can very clearly see that on the underlying operating profit going considerably down from the first nine months last year versus the nine months this year from 2.4 billion to 0.3 billion roughly.

And there is a one-off in there which is subsidies that we didn't get that were paid out during last year that we didn't get this year. And then also, we have due to increased costs on coal and CO2, not the ability to really push that through to our customers in a short-term. In the long-term, we will be able to do that. And that is also putting a lot of pressure on the situation for the heat business.

We have a very clear target to reduce CO2. The main part of our CO2 exposure in the Company now since we sold the lignite business is in heat. And there you can also see we have a very clear path towards decarbonization and here we just reached our CO2 target in the Berlin area three years ahead earlier than agreed with the city which we are quite proud of.

And then we have one issue here which is not that fun for our development in the sense that the city of Hamburg had an option to buy out the majority share that Vattenfall holds in the heat business in Hamburg. And they've decided to do so. The contracted price is a total value of EUR950 million, but they already bought a share for EUR325 million so they will pay the remaining EUR625 million; that's the agreed contracted price by January 1.

And this dates back to effect when in 2013, they had a referendum in the city and we agreed that they would have a possibility to buy this back and now they're exercising it. We previously also had the electricity grids in Hamburg which they also bought back.

And yes, we would like continue the partnership. But of course, we respect now that the city wants to take this decision and go in this direction. January 1 is the cutoff for the business, but the transaction will actually be carried through later during the year because there are issues with carve-outs and things that needs to be clarified before the whole business can go over.

It affects around 700 people in the Company. And if you look to the far right, you can see how big a share it is. It's about 16% of the EBITDA on the heat group. And if you look to the whole group, it's about 3%. It's not that material, but of course it is a development opportunity that we would have liked to keep in this area where we believe is a strategic important for the group.

Now, it doesn't change our view on the German situation in terms of the market opportunities in the market because there are lots of other things that we have that we will continue to develop in Germany. Germany remains an important market for us and also the Hamburg area where we also already have other types of heat solutions for big real-estate owners and where we will continue to develop that, but then of course not based on the district heating system. There are big other business that we will continue to develop in Germany and where we will continue to grow.

Distribution, a stable result development there. Quite a small increase. The reason for the increase is of course tariff increases in Sweden. But we also have higher costs for the operation in the mean time. What is important to note here is that we are increasing the investments in the grid and that's absolutely necessary.

Everybody agrees that the next phase in the development of the Swedish energy system is to have stable grids and expand the grid so that we can connect renewables, we can connect growing cities, we can connect new users like datacenters and others and so it's important that we keep the investment level going.

And so, as you can see to the far right there, we have increased them by close to 20% in the first nine months this year compared to last year. And we also had one investment that is well known by now; we had to change the control system of the cables supplying Gotland.

There's a specific situation in the fact that the transmission Company, Svenska Kraftnät, is normally running the big hubs in Sweden. But Gotland, that's actually a responsibility from the Vattenfall side. And there we have two commercial links, two commercial cables that go out.

And they were mainly built to supply the island. Now it has changed so there is a lot of production on the island and this cable will go back and forth. We have had some problems there and we are now investing in order to solve those problems.

But during that investment and the repairs, so to speak, we had quite a few power cuts which was a big problem for the people and also for companies on Gotland which we are now discussing with how we can help in the next phase. But we are through that. And there should be a stable situation in Gotland. But of course we regret these things happening; it's not good.

Just a few words on the final issue of the regulation. There is a new regulation was announced in Sweden just after summer. The government took a decision there. The main thrust of this is really that the cost of capital that you can apply to your charges is reduced quite heavily; it's down to 3%.

We are currently at just above 5%, which means that there will be less money available for investments now. It is a typical business where there is a lot of mandatory investments. We need to make sure that we handle the delicate situation of reduced income and, at the same time, do the mandatory investments.

This is an issue where we have to see going forward how we deal with it, but the investment plan has to be scrutinized. Yes, there will be less possibilities for us to allocate money to the investments in this area. That's for sure.

Now, we think it's a pity because we are quite convinced, and I think everybody agree also politicians that the grid is, as I have mentioned from the beginning, a very important part of the development of the Swedish electricity system. It needs to be reinvested in. And of course, if we are going to be able to reinvest, there needs to be money also available to do that.

Let's see how this discussion goes on. But for sure, it's an important question, both for us as a Company but also for Sweden as a country.

With that, I think I'm through with the first part and would like to leave the word to our financial director.

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**Anna Borg Vattenfall AB - CFO**

Let's have a look at the financials for the first nine months. Here we go.

Our profit for the period increased, we're now at SEK8.9 billion, which is an improvement, with SEK2.2 billion compared to the same period last year. Our net sales increased with SEK12 billion and is now amounting to SEK108.8 billion. That's mainly due to increased sales volumes in the Nordics, in France and in UK, but also due to an increased and still growing customer base in Germany. We also see an impact from higher prices in the Nordics and the Netherlands.

The underlying EBIT decreased with [SEK0.7 billion] (corrected by company after the call). That is mainly due to the pressured margins and the deteriorating spreads in our heat business. It was partly compensated for by an increased contribution from our wind business where we see a lot of new capacity coming online.

Our return on capital employed is at 7.9%. That's a fairly steep increase compared to the same period last year. But then, it's also important to remember that last year we had quite a lot of nuclear provisions and also impairments relating to our condensing fleet in the Netherlands, which is affecting this comparison.

Our FFO over adjusted net debt is at 20.6%. That is lower than last year but expected. As we have communicated in quarter one and two, 2018 is a heavy investment year for us. In addition, we're paying

higher preliminary taxes in Sweden and Germany, and that is due to the fact that our business is increasing in those countries. And we're also starting to pay corporate tax this year in the Netherlands and UK due to our growing business there. In addition to that, we had a one-off last year of a operational tax refund for nuclear in Germany which is also contributing to the differences in FFO over adjusted net debt between this year and last.

Taking a look at our underlying EBIT and going one step deeper into each of the business segments. In Customers & Solutions, we saw an increased net sales. That is offset by higher operating expenses and UK expansion. The higher operating expenses are mainly related to IT investments and many of those are one-offs.

Our power generation business is impacted by a higher nuclear generation. It's especially our Ringhals operations that have very much better availability this year compared to last. We also see the impact of the higher prices. But they are, however, mitigated to a large extent by the hedges. We don't see that positive coming through in the result. Our wind business, they are benefitting from the higher prices, but mainly from the additional capacity that is now up and running.

Heat business we mentioned a couple of times now. We see the deteriorating spreads in continental Europe. That's mainly due to higher fuel prices but also due to the very steep increase in CO2 prices that we have seen the last year. And in addition to that, we have a one-off because in 2017 we got a subsidy payment that actually belonged to 2016. We got unusually high subsidies in [2017] (corrected by company after the call), it's not that they are unusually low this year.

Our distribution business have a positive impact, both from price and volume in Sweden, but that is partly offset by higher operating expenses and depreciations. And these expenses and depreciations in the distribution business are related to the investments that we are doing into that business.

Taking a look at our cash flow development, we have a very strong cash flow for the first nine months. It's amounting to SEK35.3 billion. It's mainly positive impacts from changes in working capital with SEK19.3 billion, which in turn is related to margin calls. And with the volatility in the market that Magnus also showed you in the price graphs, these swings are quite big. We also see changes in operating receivables and liabilities for our customer-facing businesses, which is in relation to the normal seasonal pattern we have there.

Our cash flow before financing activities is also very strong, it's SEK23.3 billion. And then we have put SEK4.4 billion into growth investments and that is mainly going into wind which is a good bridge to the next slide, where you can see our capital expenditures for the first nine months.

More than 60% of our investments are going into renewables and into networks. You can see that we put 39% of the investments into wind, solar, biomass and waste, and 24% into our electricity networks. The 14% that you see going into fossil is mainly in Germany and the investments we're doing there is to convert from coal to gas, so that is part of our strategy to move away from coal. Looking at the detailed



overview to the right, you can then see that we spent SEK6 billion up until today in the wind, solar, biomass and waste, and more than half of this in this quarter alone.

To summarize our first nine months, we see an increase in net sales, in EBITDA and in EBIT, we see a slight decrease in underlying EBIT and that is due to the results in our heat business. Our return on capital employed is going up quite a lot, but then you need to remember that last year we had provisions in nuclear, but also some impairments which made that number unusually low. Our FFO over adjusted net debt is lower this year compared to last but that is expected. As we have communicated before, 2018 is a heavy investment year for us.

We have some provisions in here as well mainly related to our cost-saving programs. And in addition we have a currency translation effect since we're consolidating our group statements in SEK and the SEK is weaker and that has an impact. And especially since the lower income from our heat business is in Euros so you have a double effect there.

But all in all it can be summarized as a stable result, a very strong cash flow. Challenges related to spreads, volatility and high CO2 prices and I think that these developments are pretty much what we expect to continue throughout the year as well. Thank you.

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## QUESTIONS AND ANSWERS

### **Karin Lepasoon Vattenfall AB - Head of Communications**

Thank you, both, Anna and Magnus. And now we open up for questions and we're joined here by also Markus Friberg, heading our Media Relations here at corporate. We will start by opening up for questions here in Solna in the audience. Do we have any questions here in Solna from the audience? There appears to be no questions here in Solna but I do know that we do have a few questions on the web, Markus.

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### **Markus Friberg Vattenfall AB - Communications**

Yes, we can start with question from Andrew Moulder at CreditSights.

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### **Andrew Moulder CreditSights**

In the e-mobility partnerships with McDonald's, Diös and Klövern, who pays for the charging points?

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### **Magnus Hall Vattenfall AB - CEO**

It's actually different. Sometimes the customer pays, sometimes we pay. In the Swedish ones the customer pays and in the other one we will pay part of it.

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### **Markus Friberg Vattenfall AB - Communications**

Then we have a couple of questions from Norway regarding NASDAQ and we start with Marius Lorentzen from E24 in Norway.

**Marius Lorentzen E24**

What's your view of NASDAQ's handling of the situation regarding the derivatives portfolio that had to be closed out in September and the subsequent losses to the default fund? Did Vattenfall purchase the portfolio in question?

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**Anna Borg Vattenfall AB - CFO**

Well our reflection in relation to the events is that we were very surprised that they happened. We were surprised that one single actor actually had a position that almost put the clearinghouse into default. We take that very serious and we had continuous discussion with NASDAQ on this.

When it comes to the close-out procedure as far I understand they have been following the agreements they have and the procedures they have in place for a situation like this. But I'm sure it will call for questions in relation to whether the regulation, for example, REMIT or EMIR is actually sufficient in situations like this.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

How about the last question, did we purchase?

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**Anna Borg Vattenfall AB - CFO**

Well we never comment on our business transactions or on our trading operations so we don't do that this time either.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

We have one question from the telephone conference. Let's hear from the telephone conference. Please go ahead.

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**Operator**

The first question from the phone is from Philip Akoto from Energate. Please go ahead.

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**Philip Akoto Energate - Analyst**

Good morning. My question is about the investments you mentioned that you will do in Germany and in Hamburg. Could you please name a few examples for that?

And second question, the 700 employees there, will they leave the Company or will they change jobs within the Company somewhere else?

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**Magnus Hall Vattenfall AB - CEO**

I wasn't quite sure of the first question but if you look to the developments we have in Hamburg, we are doing business there with also other big real estate companies than the ones connected to the heat grid which is I can't give individual names but of course we have a business there already established and then we also have our wind operations and our electricity sales. We are a big supplier of electricity to the

Hamburg market. We have business there which we will continue to do and grow.

The second question was around--

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**Karin Lepasoon Vattenfall AB - Head of Communications**

The 700--

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**Magnus Hall Vattenfall AB - CEO**

-- the 700 employees in Hamburg and the whole point is that we will move that part of the business to the city which has a holding structure for their business that they are doing which is not normally communal work. And so people will not leave the Company for that reason.

But they will be moved to the new Company. That's what we call the carve-out process. Exactly how that will look will have to be part of the discussions we are now carrying out together with the city.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Part of the question was also examples of investments that we make in Germany, not just necessarily Hamburg--

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**Magnus Hall Vattenfall AB - CEO**

Yes, and of course we invest a huge amount of money to the change of the Berlin Heat business where we are investing in new gas-fired CHPs to replace coal-based which is the first step in a decarbonization process. And then we invest heavily also in the Berlin grid where city is growing. One of the biggest, most strongly-growing cities in Europe and where we are part of investing.

And we are also investing in wind power in Germany and we see other also growth opportunities where we are now with supplying customers both B2B customers and B2C customers with solutions for solar panels, for charging infrastructure and for their own heat needs. We're continuing to developing our business in Germany.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Yes, good--

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**Markus Friberg Vattenfall AB - Communications**

Can I just add on that topic, we have a question from Andrew Moulder on Berlin.

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**Andrew Moulder CreditSights**

Is there a risk that we could lose the heat and electricity grid networks in Berlin?

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**Magnus Hall Vattenfall AB - CEO**

On the heat side there is no risk because there is no concession or anything. On the grid side, yes there is a situation where the city is now having a new concession and where we have appealed their process

because we believe they haven't handled in the way we think is fair and we will see how that develops.

We think we have a very good offer to continue to run the grids in Berlin so we will just have to wait and see what the outcome will be.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Good, we have more questions Markus, on the web.

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**Markus Friberg Vattenfall AB - Communications**

Yes, Michael Charlton from Banco Santander.

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**Michael Charlton Banco Santander**

Vattenfall has not tapped the bond markets since 2015. When is a return likely and which would be the preferred currency?

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**Anna Borg Vattenfall AB - CFO**

Well first of all, we never sort of replace one bond with another. We are looking at the total need for Vattenfall from a financing point of view and we have indicated earlier that we would need to do that somewhere during the autumn or the winter and then it would be a green bond probably listed at NASDAQ in Stockholm.

As you saw today, we have a very strong liquidity situation with a very strong cash flow so there is no sort of immediate need for us to rush this and in addition we are now looking into what the effects of the fact that the city of Hamburg is repurchasing the remaining part of the heat companies.

We are not in a hurry in any way. When we do refinance we will do that from an overall Vattenfall point of view, not to replace one bond structure with another.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Yes, one more, Markus?

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**Markus Friberg Vattenfall AB - Communications**

We have one more quite a detailed one on distribution from Andrew Moulder again.

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**Andrew Moulder CreditSights**

In Swedish distribution, what is the capital structure, debt, and equity on which the 3% WACC is based? And what is the capital structure of our distribution business? And what would be an appropriate WACC?

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**Magnus Hall Vattenfall AB - CEO**

Well, I mean, I think that there are details there that might need a separate answer. But if you just talk of appropriate WACC, we believe for similar operations in the European market in average above five. And that is a long-term WACC. What is being introduced now is actually more of a short-term WACC.

The 3% might grow with increases in market rates. It's perhaps difficult to compare, but the immediate effect of this will, of course, be a lower income for the distribution operations in Sweden. When it comes to the capital structure, I propose that that is probably difficult to answer here. But, Johan, you might come back on that issue.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Yes, Johan Sahlqvist from Investor Relations together with Andrew can sort details out there.

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**Magnus Hall Vattenfall AB - CEO**

Yes.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Good. But I believe we have one more question from the telephone conference. Please go ahead.

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**Operator**

The next question comes from the line of Jakob Magnussen, from Danske Bank. Please go ahead.

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**Jakob Magnussen Danske Bank - Analyst**

Thank you very much. I have two questions also relating to the Swedish distribution ruling or suggestion. What do you see the chances of a WACC of around 3% actually being the endgame to this?

I understand that you are contesting this position, and history has shown us that there will be revisions to the final WACC. And then, the second question is can you just confirm that Rinhals 1 and 2 are still up for closure next year, and next year again. I'm asking because I've seen some politicians suggesting that it could make sense to prolong the lifetime of reactors given the surge in power price. Thank you.

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**Anna Borg Vattenfall AB - CFO**

Maybe I can start answer the WACC question, whether that's the end of the game or not. I don't think that we really know. But what we do know is that the regulation in Sweden has been changing a lot every fourth year.

We had a lot of changes over the last decade or so. And that's problematic as such because this business really needs long-term investment conditions. And I think that therefore it's important to continue the dialogue.

Also for the reason that we are in an investment period in the Swedish distribution grid where we need to make investments in order to be sure that we can onboard the new renewable capacity, take care of the growing cities, new kind of customers, e-mobility, et cetera.

It would be very troublesome if it's not possible to do that, also from a financial point of view. And there I think there are a lot of common interest, both, among the distribution companies and society. I'm sure

that the discussions will continue. But the regulation, the way it is now is decided.

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**Magnus Hall Vattenfall AB - CEO**

And on the Ringhals one and two, it's clear. We have taken those decisions a few years ago and they were taken on the basis of a very bad market, high cost for us. And we stopped investments that were necessary in order to continue to run them.

It's not possible for us to come back to change any decisions that we have made. They will close, Ringhals 2 in 2019, and Ringhals 1 in 2020.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Thank you. I believe we have another question from the telephone. Please go ahead.

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**Operator**

The next question is from Jose Lopez from Millennium. Please go ahead.

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**Jose Lopez Millennium Management LLC - Analyst**

Hello, good morning. Thank you for taking my question. I just have several questions. The first question was on -- if you could give us a little update on how you're seeing battery technology evolve, and what your plans are there? And -- a small update on that.

And also, I'm interested to know if you're seeing any impact on the profitability of your pump storage in Germany from the competition that batteries are creating in the ancillary service space?

The second question, if I may, was on the Dutch carbon tax. What stage are we at there? At what level do you think it's going to come in at? And when do you think we'll have more visibility on this? Those are my two questions. And thank you very much. Thanks for taking my questions.

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**Magnus Hall Vattenfall AB - CEO**

When it comes to battery technology -- I mean, it's being developed as we speak. I'm sure about that. And we can see that there is a cost decrease in development of new batteries.

For instance, in Sweden we now have a big discussion about the new battery factory that is being discussed for construction there. There is a lot of development in battery technology that will drive down the costs. And we are close to that because we think that that is the basis for electrical vehicles. That will also be introduced into individual houses in the future.

When it comes to the competition to pump storage, we think that pump storage is a -- that's a huge potential for market stability reserve or reserve capacity on a short notice which it can't really be easily compared to a battery in a sense.

We still think there is a lot of value in our pump storage in Germany. When it comes to the Dutch carbon

tax, I mean, that has been now discussed. And currently, the starting point is actually lower than the current CO2 price.

I think it's very difficult to assess what they will finally come up with because there is a proposal for a starting point, and then an increase every year. We believe this, in a sense, is a little bit unfortunate - we rather hope that the ETS would prevail. But it's too early to see any clear details on how it will be done in the end.

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**Anna Borg Vattenfall AB - CFO**

I think it's 2020 which is the year that they're aiming at. But just as Magnus said, the level is very unclear, and also the final implementation of this.

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**Jose Lopez Millennium Management LLC - Analyst**

Okay.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

All right. We have another question, Markus?

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**Markus Friberg Vattenfall AB - Communications**

Yes, again about NASDAQ. Ida Grieg Riisnæs, from Dagens Næringsliv in Norway.

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**Ida Grieg Riisnæs Dagens Næringsliv**

The liquidity of the NASDAQ commodities has seriously deteriorated since the default in September. What does that mean to Vattenfall?

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**Anna Borg Vattenfall AB - CFO**

Well, what we saw was that there was quite some nervousness in the market for the first few weeks after this incident. And then, things have stabilized a bit. The liquidity in the short end is okay. The liquidity in the long end is lower than what it usually is. And it's usually low in the long end to start with.

I think that it's not possible to see any definite impact of the event yet. But the liquidity in the products that were not very liquid to begin with, especially in the long end contracts has definitely gone down.

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**Karin Lepasoon Vattenfall AB - Head of Communications**

Thank you for that. Do we have any further questions here in Solna in the audience? No, nothing more on the telephone conference, and nothing more on the webcast.

In that case, thank you very much everybody for your attention. Thank you very much.

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