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- Vattenfall AB Vattenfall Heat – Power Climate Smarter Living
Presentation

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CORPORATE PARTICIPANTS

Johan Sahlqvist *Vattenfall AB - Head of IR*

Tuomo Hatakka *Vattenfall AB - Head of Business Area Heat*

PRESENTATION

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Welcome to this audiocast with a deep dive on our heat business. I'm very pleased to have with us here today, Mr. Tuomo Hatakka, Head of Business Area Heat. A warm welcome to you, Tuomo

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

Thank you very much, Johan.

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Tuomo, last week, we spent a day in London with a number of round table discussions on this topic. And, looking back, what are your thoughts on the meetings? And are you satisfied with the outcome?

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

I think it was very good. I didn't really know what to expect, but actually the end result was very good. We had, there were four of us representing BA heat, Business Area Heat, and I was actually surprised by this very lively discussion we had.

The participants, the analysts and the investors on the debt and equity side, really, there is a lot of interest, and I think they learned a lot about our heat business. So I was very pleased with the outcome of the three sessions we had.

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Yes. All right, so the idea now is that you will guide us through the same presentation materials. And, yes, I will now simply hand over the word to you.

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

Thank you very much. Yes. We started by giving an introduction to our heat business. We have a very successful heat business. We are one of the largest heat suppliers in Europe. We serve the booming growth cities of Europe - Berlin, Amsterdam, Hamburg, Uppsala. They are cities that grow.

We have a customer base of over 2 million customers with very low churn. The business enjoys very strong political support at all levels -- at the EU level, and the member state level, and even at the city level. People want district heating, or nowadays of course, as well, modern heating solutions.

We deliver 9% ROCE have delivered in 2016. And we combine that finance focus on financials, with focus on climate and CO2 neutrality is our goal, and we have concretized a road map that will deliver CO2 neutrality to the communities that we serve.



So, that's it. I made a brief reference to return on capital employed being on target. We're actually above the target 9% return on capital employed. The business is doing well, we have stable revenue, approximately [3 billion] (corrected by company after the call) Euros per annum.

EBIDTA, earnings before interest tax and depreciation, is improving. We have seen a growth from SEK 5.6 billion or something like EUR 600 million to SEK 7.1 billion and that's partly due to growth in customer numbers. But primarily due to good cost management that we have focused on in the last three years.

ROCE is about 9% and the cash flow is positive.

Johan Sahlqvist - Vattenfall AB - Head of IR

And then, Tuomo, just to clarify, so the numbers on this slide is including the condensing business, correct?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Absolutely. This is including the numbers from condensing.

Johan Sahlqvist - Vattenfall AB - Head of IR

Yes.

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Then we actually spent some time explaining the business to the investors and analysts. We have three core markets with very different characteristics. Sweden, which is a very mature district heating market. There we have 230 thousand customers.

We have wood, biomass, waste, and actually, wood and biomass as the dominating fuel. Here, we have a challenge as far CO₂ is concerned, and that is to squeeze out the peat, which will take place with the investments that we are preparing.

Germany is a growing heat market, district heating market, as well. We have 1.7 million customers, half a million in Hamburg, 1.2 million in Berlin. Dominating fuels are gas and coal, to some extent, waste. So here we have a CO₂ challenge that we need to address, and that we will address in the years to come. Good growth prospects in Berlin and Hamburg.

Then we move on to Netherlands, which is a young, embryonic district heating market. We have 200 thousand customers, and very much focused in Amsterdam and the surroundings. We have actually waste and gas as the dominating fuels.

In the Netherlands, as opposed to Germany and Sweden, we have a lot of external heat sources. So TPI is already something we do in Netherlands, and we see good growth prospects for district heating there.

Johan Sahlqvist - Vattenfall AB - Head of IR

Question, Tuomo, how is the heat market affected by the changes in the fuel prices and the electricity prices?

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

A very good question. It varies, by market. Let's start with Germany where we have long term contracts. Ten year contracts, annual price adjustment clauses and those price adjustments will be based on changes in fuel prices as well on general inflation. So, defacto, we get changes in fuel prices passed on to our customers.

As far as Netherlands is concerned, there our prices are actually backed to the gas price. And as far as Sweden is concerned, there it's market-based. And actually, what we are experiencing in Sweden is that with the low electricity prices, heat pumps are providing real competition to district heating.

Good. So, we then move on. I've discussed the characteristics of the three markets as well we then get a bit more flavor to the investors as to how the heat market looks in the three countries and where the growth potential is. I don't want to go through these in great detail -- just a couple of additional comments I would like to make.

NL is really a young, district heating market. It's an embryonic market for district heating. We see good growth potential, particular in Amsterdam. As you may know, the Dutch government wants to replace gas as a source of heat in the households. That provides a very good opportunity for district heating. And, of course, as will, decentral energy solutions will benefit from this squeeze out of gas.

All in all, I would say, in all of the markets, we will, we want to grow in decentral.

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Perhaps, one question here, also, Tuomo, on the investment process for district heating, how does that work, really? So do you first build the network and then sign up the customer? Or vice versa?

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

That's a good question. What's the chicken and what's the egg? And obviously, if you look at the activity we have today, we focus, the first priority is densification. So selling more within the district heating grid area. And there, obviously, the market is there.

We obviously, we serve cities that are growing, so of course we want to expand district heating. And that then means that we need to invest in the transport infrastructure -- heavy duty pipeline to actually get the heat to the new areas.

And of course, we have to take a view on the market potential. But, all in all, it all starts with the market, and then really taking a view that the market is there, and then making the required investments.

I think there's one particular point that should be mentioned here - it's the fact that in the Netherlands, the business is actually concession based.

So, because it's a new market, so first you get the concession and then based on that concession, you start acquiring customers and then building the infrastructure.

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Right, thank you.

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

Very good. Decentral, well, before we talk about decentral, let's still describe the business from the point of view of revenue sources.



Over 80% of our revenue is generated from the heat business . We generate [18%] (corrected by company after the call) revenue from electricity as a by-product from CHP plants, primarily in Germany, but as well in the Netherlands.

If you then look at the composition of the heat revenue, it's based on long-term contracts. If you look at Germany, I think I made the point, already, 10-year contracts. And, Netherlands is concession-based, so long term contracts, 15 to 30 years. In Sweden the contracts are for an indefinite period of time, but the customer can give notice with three months notice period.

All in all, churn is very low, and that really gives a very much stability to the revenue stream that we have.

Johan Sahlqvist - Vattenfall AB - Head of IR

And, where would you put heat in comparison to other businesses in the Vattenfall portfolio in terms of business risk?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Given the long-term nature of the contracts, low churn, I think the risk is rather low. But, of course, heat is as well affected by this energy sector transformation. And, so we are not oblivious to that. What customers want increasingly from us is CO2 neutrality. They want hassle-free products, and obviously they want cost competitiveness, as well.

So, we shouldn't have any false sense of security as far as the risk is concerned.

Johan Sahlqvist - Vattenfall AB - Head of IR

And, in terms of regulation, is that equally supportive across all markets? Or, how do you view that?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

From regulatory point of view, again there are differences. In Sweden we have pretty much no regulations, so it's really market based. We are competing against other heat sources. In Germany, I would say its semi-regulated business, where obviously the government provides some support scheme for investments in CHP capacities, combined heat and power capacities. But of course, on the market, we are then competing against the decentral solutions, as well.

As far as Netherlands is concerned, I think we have mentioned that already, is concession based and in that respect for the concession period, we have a stable situation. But of course we still have to acquire the customers and connect them, even in Netherlands.

Right. That's what we went through with investors and analysts describing our business and it really provoked a lot of good questions and questions that Johan has been asking from me now. They reflect what the investors were asking us, so very good.

And then we moved on to say ok. Where do we want to take the heat business? We made the point that heat fits extremely well to the new energy landscape and as well fits very well to Vattenfall's purpose, to Power Climate Smarter Living, we want to grow, we want to grow and we can grow, we have a track record of growth.

We want to grow by offering customers solutions that are relevant for them that fit into their situation. Sometimes it is district heating, sometimes it is decentral solutions, sometimes it is a combination of the two.



In order to grow, we need to shape our production portfolio to be more sustainable, clear target of CO2 neutrality. We need to try with innovation, tomorrow's district heating or heat solutions in general, they will be much more digital. And obviously, we need to focus on driving performance improvement and all that requires a motivated and passionate team.

And so we then actually did a bit of a deep dive into all of these five dimensions, starting with customer growth. We have, as I mentioned earlier, over 2 million customers. We can grow that customer base to over 2.5 million and that's just within the existing business units Berlin, Hamburg, NL and Sweden, and as well the decentral solutions in Germany.

And, we can do that organically. And in order to do that, what we need to offer customers is solutions that fit their needs. They need to be cost competitive. They need to be sustainable from climate point of view. And there needs to be a bit of a personal touch, we need to get things right the first time around.

And, we need to be able to present, just to give you an example, present our invoice to the customer in a matter that is understandable to him and that the customer gets a feel for being fairly treated by us.

Johan Sahlqvist - Vattenfall AB - Head of IR

Here, a question on the markets and the potential growth - are we considering also expanding geographically to other areas?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

It's definitely not ruled out. We have obviously our hands full in dealing with the growth that we have in our home markets. But I think we are doing so well with the growth that the team in heat feels inspired to grow beyond the home base organically and why not even inorganically if the right opportunities arise?

Johan Sahlqvist - Vattenfall AB - Head of IR

And also, when you expand in district heating is it possible to expand within an existing city infrastructure or is it only in greenfield investments?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

I think it most probably is going to be a combination of the two. I think it's important to identify cities that grow so that you have good underlying growth potential. And then whether you enter through an acquisition or through organic development, perhaps you start with an island (inaudible).

It might even be that you start with a decentral solution, decentral energy solution for a couple of hundred flats and then you build on that. The main thing is that there's a good underlying growth in the city. I mean, not being investing in cities, that are kind of going backwards. We need to find growth areas. And then I think at the end of the day it is going to be a combination of the two.

Johan Sahlqvist - Vattenfall AB - Head of IR

Okay.



Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Historically, Vattenfall has focused, in the heat business, has focused very much on district heating and we have done a very good job in expanding the customer base and that growth potential continues to be there. But, and of course, it varies by market, but it's a fact that we can grow significantly in the decentral energy solutions market.

Let's take Germany as an example. Germany has a heating market where decentral solutions dominate. District heating has in Germany only a market share of 16%, the rest of the heat market is being served by decentral heating and energy solutions. And obviously, there are decentral segments in every other market, as well.

So we want to grow there, we can grow there. Our prime focus is actually on the B2B-segments, so housing companies and the likes, where we see significant potential in growing and that can provide significant complimentary revenue on income to the district heating business that we have.

Johan Sahlqvist - Vattenfall AB - Head of IR

And Tuomo, on the decentral part of the business, when will that take off or is it already taking off? How big contribution to the overall results today is it for Vattenfall?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

I mean we have - it's all a matter of perspective. Of course the decentral businesses we have today is rather small if you compare it to our district heating activity. But then if you look at absolute numbers, we have an installed base of over 300 decentral units in Berlin and in Hamburg primarily, almost 200 megawatts of capacities. And, so there's a good base on which to build further growth organically in Berlin and Hamburg and beyond. And as well then, inorganically, in Germany -- and why not in the other countries as well?

The good news is that the customer base we have, the housing companies and property developers, they are the same customers we are selling district heating to, so there's a logical step to selling them solutions. We are very much limited if we only sell district heating to them.

Johan Sahlqvist - Vattenfall AB - Head of IR

And, the risk of cannibalizing the district heating business?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Well, of course that's a good point and that's something that we need to consider but let's face it, we cannot stop the market in its development. Decentral energy solutions, they will play an important role.

And if you don't do it, somebody else will do it, so I think, from my point of view, again when it comes strategically, I think district heating can very well defend its position in the market in any country in the densely populated areas.

And then when it comes to the less densely populated areas, those will be dominated by decentral energy solutions. And I think we should have a strong presence in both of those segments.

Johan Sahlqvist - Vattenfall AB - Head of IR

Yes. OK, thank you.



Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Excellent. So, growth was something that we focused very much on and none of the investors protested, which was good to hear. We have spoken about CO2 and we have a very clear target of going green by 2050.

It will vary by market. In Sweden, it's sort of speak easier. We just have to eliminate the peat and we are well on our way to do that. The real challenge we have, is in Germany where we have significant number of coal fired plants. We're very much focused on step by step phasing out coal.

First step will take place actually next week when we close down the Klingenberg lignite fired unit, once and for all, forever. And then the next steps will follow. Going green, it starts with getting rid of coal, converting the coal assets to gas and then getting rid of peat. Peat will be replaced by biomass.

But that alone will not be enough. We are working on power to heat solutions that will then integrate the surplus of renewable energy into our district heating grids, and we can complement that with heat storages.

These are then third party integration. What I mean by that is taking advantage of existing heat sources that exist. That will play a much more important role, capturing waste heat as a source of heat for district heating activity is going to be very important.

We will - I would say it's relatively straightforward to halve CO2 emissions from today's level. We have approximately 10 million tons of CO2. As you can see from that chart, we can get that down to below 5 million tons with the measures we have spoken about. Becoming totally CO2 free will actually require finding a solution to replace gas, natural gas as a fuel.

And as well there we are working with technology partners on such solutions. It will take some time but I think, fortunately, we have the time. But anyway, we have started on that road as well.

Johan Sahlqvist - Vattenfall AB - Head of IR

Tuomo, on heat storage, what is the potential impact of that going forward? And how efficient of a process is that?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

I think, well we have heat storage in the Netherlands attached to the Diemen plant, the experience is good. Now, with more and more renewables coming, renewables capacity being installed in particular in Germany, we see a good opportunity in integrating that in our district heating grids.

And then if we complement the solution with a big water tank because it's as simple as that as a heat storage, I think we will actually enhance the potential of integrating renewable energy into our district heating grids, or district heating business.

It will play an important role. It's not a silver bullet but it's an important - it will play an important role as a part of the solution to become green in our heat operations.

Johan Sahlqvist - Vattenfall AB - Head of IR

Right, OK. Another question here, energy efficiency is another area. How is that impacting the heat business?



Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Absolute right. We have today, I would say, an analog heat system, we are not that digital. I think one of the great benefits of digitalization is going to be that we will really be able to measure the heat consumption, and we will be able to then manage it down.

I think energy efficiency, we can contribute energy efficiency. And then, of course new buildings are going to be much more energy efficient and that will then reduce the per square meter energy consumption. But I think that's something that we are in favor of, because at the end of the day that means that when it comes to replacing existing production capacities, we can make them smaller if the energy efficiency reduces overall heat consumption.

Johan Sahlqvist - Vattenfall AB - Head of IR

Thank you.

Tuomo Hatakka: So CO2 was something we spoke about, clear ambition of going green, and part of the portfolio reshape is that as well. I made a reference to it already, is to really go out of our way to take advantage of the existing heat sources, sort of industrial waste heat. It comes in different forms, it can be waste incineration plants that are not connected to district heating activity.

It can be industrial plants that are generating waste heat as part of the production process, you name it. We already have today significant portion of third party heat sources in our portfolio, altogether 800 megawatts. We have now identified additional sources that could actually take the third party potential to 1,500, effectively double it to 1,500 - 1,600 megawatts.

And that would be very good because that means that we get heat, that is effectively CO2 free for a reasonably attractive price. And we don't have to make those investments to production capacities. So that's why we very much, we are very interested in increasing the share of third party heat sources in our generation portfolio.

Johan Sahlqvist - Vattenfall AB - Head of IR

And how big share is this of the total then?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

If you look at that pie chart, it's actually 18% today so it's the dark blue 10% and the light green 8% and that will go up if we can realize those identified TPI sources, that can go up to over 30% so significant increase in store. When it comes life after 2030, it's fair to say that that's more of a scenario.

It's really an expression of intent. We want to be actually CO2 free, and we can significantly increase, still increase the TPI. But, most importantly, we have to find a solution to replace natural gas as fuel.

Johan Sahlqvist - Vattenfall AB - Head of IR

And is the rationale for TPI, is that also to reduce maintenance spend or?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Yes, absolutely, we would have less assets, so. Point number one, we will spend less capex. And point number two is that this TPI will then, as well replace some of our existing production capacities, so there will be less need for maintenance, as well. So lower capex and lower opex.

Innovation, I have made a reference to that already. We have pretty much, analog heating system, heating value chain today. You could perhaps define it as if you look at the district heating business, it's kind of, district heating one point zero. And I don't think it's good enough, I think the customers expect more from us than just an analog system, that's why going digital is a very high priority for us.

And it actually starts with installing smart meters. And we have actually decided to roll out smart meters -- meters that can communicate two ways. So, that we can actually -- not only do we read the heat consumption, but we can as well steer with those smart meters. Steer the system.

We have then taken the decision to roll the smart meters out. That will have significant benefits, upstream, when it comes to our production and load management, and it will have as well significant benefits to the consumers.

And, obviously as well for us, in our downstream activities, electronic -- well, I mean automatic meter reading as far as the heat consumption is concerned and then as well, very simplified billing, based on that. It supports effective fault management, and so on and so forth.

And honestly, I don't think we have fully yet even identified or concretized the potential upside from those smart meters. But anyway, that plays an important role and we start with Berlin. We want to have all 19,000 meters replaced in the next 18 months to two years, and other geographies are following.

Johan Sahlqvist - Vattenfall AB - Head of IR

And how big of an investment are we talking about, here?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

In Berlin, we are talking about approximately EUR 10 million and then if you take business area heat wide, we are talking double of that; plus minus EUR 20 million.

Johan Sahlqvist - Vattenfall AB - Head of IR

Okay and this we'll charge our customers for then in the end, or?

Tuomo Hatakka - Vattenfall AB - Head of Business Area Heat

Well, I hope that we can actually then develop services that we can sell our customers. And, of course, we have these, we have developed, it started as a Varme (inaudible) and now we have renamed it Energy Check. We have developed a service that based on smart meters that will then help customers to really analyze their heat and even energy consumption.

So I hope that we can actually sell additional services to customers, and that customers are prepared to pay for them. But take the Berlin example; we will actually be able to finance the investment in smart meters just with the upstream benefits. Providing the same output of heat with less fuel.

Johan Sahlqvist - Vattenfall AB - Head of IR

Yes. Good.



Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

Excellent, so we drive innovation and obviously we drive our costs down, as well. And, again, none of the investors protested when we said that we have every intention of continuing reduction in our maintenance spend, that's the maintenance spend on both capex and opex.

If you take 2013 as the base year, we have in the last 4 years driven the costs down by approximately 20% and we believe that there's another 20% in store. And I'm convinced that we're going to see that without jeopardizing or sacrificing the availability of our plants.

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Okay and the achievement up until today, which have been the main drivers?

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

I think there's a couple of elements, we have tried to summarize the key contributors to that on that slide. Obviously, we are decommissioning some aging assets and by doing that, we eliminate some operating costs. We have been very proactively benchmarking ourselves.

This so-called Solomon benchmark has been done on the production assets already for many years. And, that has resulted in significant savings and we have now for the last couple of years as well, implemented the so-called Structured Maintenance Reviews, with a view of making the right balance between maintenance spend and availability and then a trade off between risk of not maintaining a certain component and consequences in the form of lost margin, if that component breaks down.

And I think we have made good progress there and I think that's really the key for sustained maintenance spend reduction. And I think we will be seeing some of those fruits of the work that the team has been doing on the Structured Maintenance Reviews in the years to come from 2016 to 2020. That reduction is a lot based on the Structured Maintenance Review approach.

So those were the things that we were discussing with the investors and we finished discussing the meetings by going back to the slide that you saw earlier about our strategy.

Basically concluding that we are well underway to actually deliver on our strategy, a strategy that basically means that the heat business is going to be decarbonised, its going to be more decentral and its going to be digital.

And those are the initiatives that will deliver on the future strategy and I'm actually convinced that that will be a very good way for Vattenfall to Power Climate Smarter Living.

Johan Sahlqvist - *Vattenfall AB - Head of IR*

Okay. So this concludes our audiocast for today and thank you everyone for listening in and a big thanks to you, Tuomo, for taking the time.

Tuomo Hatakka - *Vattenfall AB - Head of Business Area Heat*

Thank you very much.

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