Q1 2019 Earnings Call

Company Participants

- Peter Wennink, President and Chief Executive Officer
- Roger Dassen, Executive Vice President and Chief Financial Officer
- Skip Miller, Vice President of Investor Relations Worldwide

Other Participants

- Adithya Metuku, Analyst
- Amit Harchandani, Analyst
- Andrew Gardiner, Analyst
- C.J. Muse, Analyst
- David Mulholland, Analyst
- David O'Connor, Analyst
- Krish Sankar, Analyst
- Mehdi Hosseini, Analyst
- Mitchell Steves, Analyst
- Pierre Ferragu, Analyst
- Robert Sanders, Analyst
- Sandeep Deshpande, Analyst
- Stephane Houri, Analyst
- Tammy Qiu, Analyst
- Weston Twigg, Analyst

Presentation

Operator

Ladies and gentlemen, thank you for standing by. Welcome to ASML 2019 First Quarter Financial Results Conference Call on April 17, 2019. Throughout today's introduction, all participants will be in listen-only mode. After ASML's introduction there will be an opportunity to ask questions. (Operator Instructions)

I would now like to turn the conference call over to Mr. Skip Miller. Please go ahead, sir.

Skip Miller {BIO 20244900 <GO>}

Thank you, operator. Good afternoon and good morning, ladies and gentlemen. This is Skip Miller, Vice President of Investor Relations at ASML. Joining me today from ASML's

headquarters in Veldhoven, The Netherlands is ASML's CEO, Peter Wennink; and our CFO, Roger Dassen.

The subject of today's call is ASML's 2019 first quarter results. The length of this call will be 60 minutes and questions will be taken in the order they are received. This call is also being broadcast live over the Internet at asml.com. A transcript of management's opening remarks and a replay of the call will be available on our website shortly following the conclusion of this call.

Before we begin, I'd like to caution listeners that comments made by management during this conference call will include forward-looking statements within the meaning of the federal securities laws. These forward-looking statements involve material risks and uncertainties. For a discussion of risk factors, I encourage you to review the safe harbor statement contained in today's press release and presentation found on our website at a asml.com and in ASML's annual report on Form 20-F and other documents, as filed with the Securities and Exchange Commission.

With that I'd like to turn the call over to Peter Wennink for a brief introduction.

Peter Wennink {BIO 1852674 <GO>}

Thank you Skip. Good morning, good afternoon, ladies and gentlemen, and thank you for joining us for our first quarter 2019 results conference call. Before we begin the question-and-answer session, Roger and I would like to provide an overview and some commentary on the first quarter as well as provide our view of the coming quarters. And Roger will start with a review of our Q1 financial performance with some added comments on our short-term outlook, and I will complete the introduction with some additional comments on the current business environment and our future business outlook. Roger, if you will.

Roger Dassen {BIO 15064806 <GO>}

Thank you, Peter. Welcome everyone. I will first highlight some of the first quarter accomplishments, and then provide our guidance for the second quarter of 2019. Although this was a modest quarter in absolute numbers, we did report both sales and gross margin above our guidance. Q1 net sales came in at EUR2.23 billion, slightly above guidance driven by an additional EUV shipment in the quarter.

Net system sales of EUR1.69 billion was more weighted towards Logic 60% with the remaining 40% for memory, the same split as previous quarter. We reported EUV system revenue of EUR371 million from four shipments. Installed base management sales for the quarter came in at EUR540 million, which was slightly lower than guided due to lower-upgrade business. Gross margin for the quarter was 41.6%, which is slightly higher than the 40% guidance due to a favorable Deep UV mix more than compensating for the gross margin impact of one additional EUV system. Overall R&D and SG&A expenses came in a little lower than guidance with R&D expenses at EUR473 million and SG&A expenses at EUR121 million.

Turning to the balance sheet, EUR55 million worth of shares were repurchased in Q1. We ended last quarter with cash, cash equivalents and short-term investments at a level of EUR3.28 billion.

Moving to the order book, Q1 system bookings came in at EUR1.40 billion, Logic order intake was 75% of total value with the remaining 25% from memory, again reflecting the strong logic demand expected this year. We took three new EUV orders in the quarter. Net income in Q1 was EUR355 million, representing 15.9% of net sales and an EPS of EUR0.84. This was favorably impacted by one-off tax benefit.

With that, I would like to turn to our expectations for the second quarter of 2019. We expect Q2 total net sales between EUR2.5 billion and EUR2.6 billion. Our total net sales forecast for Q2 includes around EUR600 million of EUV system revenue on six expected shipments in Q2. We expect our Q2 installed base management revenue to be around EUR700 million. Gross margin for Q2 is expected to be between 41% and 42%. The lower margin EUV revenue will be compensated by higher margin, non-EUV business.

We continue to expect further improvements in gross margin in the second half, driven by higher system sales, increased field upgrades, shipment of higher margin NXE:3400C systems, as well as contribution of EUV service revenue. This will provide a significant step towards our 2020 target of over 50%. Expected R&D expenses for Q2 are around EUR485 million and SG&A is expected to come in at around EUR125 million. Our estimated 2019 annualized effective tax rate is around 11% because of a one-off tax benefit in 2019. We still expect our long-term effective tax rate to be 14%.

As we remain confident in our long-term growth, we will propose a 50% increase versus last year and our dividend to EUR2.10 per share at our Annual Shareholder Meeting which takes place on April 24th in Veldhoven. The dividend payment is valued at around EUR0.9 billion. We still expect to execute the remaining EUR1.3 billion of the 2018-2019 share buyback program this year with a weighting towards the back of the year.

With that I'd like to turn the call back over to Peter.

Peter Wennink {BIO 1852674 <GO>}

Thank you, Roger. As Roger highlighted, although it was a modest quarter the results came in above our guidance and we expect further strengthening in the coming quarters. There continues to be volatility in the markets due to the macroeconomic environment and some uncertainty remains in the semiconductor industry. Our memory customers are going through a period of rebalancing supply and demand with an expected improvement in their business conditions over the course of the year.

Our view of 2019 remains unchanged from last quarter. We continue to expect overall growth in 2019 with increasing demand for our products as we move through the year. The fundamental end market drivers clearly remain in place as expanding end market applications continue to fuel the demand for high-performance compute, and high performance memory.

In memory, the NAND market continues to digest the high level of capacity additions over the past few years, and this digestion started last year and will likely extend through most of this year. DRAM market is also seeing softening in the near-term demand as they work through an inventory correction. And based on our customers' view we continue to expect memory demand for our litho systems down around 20% relative to last year. But bear in mind, there is a portion of this memory demand that supports new technology as well as new domestic Chinese customers. And this demand is clearly more strategic and will -- is very likely to happen independent of the near-term global bit demand. If you remove these two components from our estimated 2019 memory demand, you get the lithography spend for memory bit supply that is 30% lower than the comparable spend in 2018. This reduction in spend is significant and will help in correcting the supply demand balance. And on top of this, we have seen a significant reduction in wafer output in the memory space. This quick reaction to the changes in the end market demand is clearly different from what we've seen in earlier cycles and will also help in correcting the inventory situation.

The Logic segment is expected to be the growth driver in 2019, with the majority of the demand linked to technology transitions and production capacity for advanced nodes. We still expect this Logic business to be up around 50% relative to last year, driven by Deep UV as well as significant EUV demand. Furthermore, we still expect single digit percentage growth of installed base revenue. On the ASML products side, let me start with an update of our EUV business. In EUV, customers are starting production of the most advanced Logic processes on our NXE:3400B systems with plans to transition to the higher productivity NXE:3400C systems in the second half of the year.

First set of qualified NXE:3400C optics are in our factory. These higher transmission optics will enable the higher throughput of 170 wafers per hour. We expect these systems will deliver the next level of cost effective shrink in both Logic and memory. We shipped 40 EUV systems in Q1 and are on track to ship to plants 30 systems in 2019.

In Deep UV, we continue to innovate in support of future nodes and new applications, driven by a continued high level of demand for dry products, we will bring the dry -- the Deep UV Dry products to the high-performance NXT platform, starting with the NXT:1470, planned for delivery mid next year. We also see increasing demand for 200-millimeter TWINSCAN systems across all dry wavelength and industry segments. For instance in thin film head manufacturing, we've recently received an order for special version of the XT:1470K, which is a dry ArF platform, which is expected to enable the shrink roadmap at the leading hard disk storage manufacturer.

In our application business, our computational lithography deep learning technology has been adopted at several leading-edge customers. We continue to make progress in e-beam technology and are on track to deliver a multi-beam system for this year for R&D with plans for commercial product shipments in 2020. With the announcement of the acquisition of Mapper's IP assets in January, more than 100 former Mapper employees accepted jobs from ASML and are now working on the development road map of our e-beam and application products.

In summary, despite uncertainty in the current environment, we continue to see market demand that supports another growth year with strengthening of both sales and profitability quarter -on -quarter this year. Logic will be the primary driver of growth this year, supported by technology transitions and production ramp of the most advanced nodes. As discussed memory includes more uncertainty, on the one hand because of the uncertainty of global bit demand, but on the other hand, due to fast adjustment of production capacity and therefore presents both a risk and an opportunity.

Overall, our view of the business is largely unchanged from last quarter, we are on track to achieve our 2020 targets with significant growth potential beyond 2020. With that we would be happy to take your questions.

Skip Miller {BIO 20244900 <GO>}

Ladies and gentlemen, the operator will instruct you momentarily on the protocol for the Q&A session. Beforehand, I'd like to ask that you kindly limit yourself to one question with one short follow-up if necessary. This will allow us to get to as many callers as possible. Now, operator, could we have your final instructions and then the first question please.

Questions And Answers

Operator

Thank you, sir. Ladies and gentlemen, at this time we will begin the question-and-answer session. (Operator Instructions) First question is from Mr. C.J. Muse of Evercore ISI. Go ahead please. Your line is open.

Q - C.J. Muse

Great, thanks. Good afternoon. Thank you for taking the question. I guess first question on your memory outlook if I were to exclude, expected EUV shipments, it looks like memory half over half for you guys is roughly up 30%, give or take in the second half and so, curious there is that all largely shrinks or are you starting to see greenfield from the 3D NAND side? I'd love to hear your thoughts and any color on that from you?.

A - Peter Wennink {BIO 1852674 <GO>}

Well, thank you C.J. No capacity additions on the 3D NAND side. That's not what we're seeing. It's really technology transitions other than EUV. So it's largely in the DRAM space.

Q - C.J. Muse

Okay, helpful. And then I guess as my follow-up, as you think about DRAM and adoption of EUV, it sounds like perhaps layer count could increase from perhaps two to as many as four layers, would love to hear how you're thinking about that -- how you're thinking about that ramp and I guess what contributions to EUV we could see into the 2020-2021 time frame?

A - Peter Wennink {BIO 1852674 <GO>}

Yes, that's a very good question. I think as you know, DRAM is much more -- we started -- I think we discussed this on previous calls also. It is much more cost sensitive than the Logic space. And actually it means that the higher productivity EUV tool the 3400C is the tool of record for DRAM manufacturing. Now clearly we're in the process of maturing the 3400C tool in terms of availability, in terms of the productivity of course which is to be proven in the customer fab. So I would expect that by the end of this year, I would say somewhere in Q4 where we see the first results of those tools in the customer fabs. And we would need the projected wafers per day productivity, which is the result of the raw throughput plus the availability. That will really drive the number of layers ultimately in application of DRAM. I would expect though that customers will first allocate a relatively small portion of their output to EUV because it's a new technology, it's a new process, but when that is proven that can accelerate.

So it's -- could really say, it's really up to us to make sure and of course together with our customers because this new technology, new process technology we need to prove that in the course of this year really towards the end of the year that the promised productivity and availability is there that we beat the 2000 wafer per day target that we've set ourselves and even see whether we can get higher. And going -- no , I would say, significantly above 2,000 wafers per day, with which ultimately should be possible will drive the adoption of the number of DRAM layers. So it's a bit too early to give you a guidance on the 2020-2021, that really depends on how we perform and of course it's in our best interest and that of our customers to do as good as possible.

Q - C.J. Muse

Great , thank you.

Operator

Our next question is from Mr. Krish Sankar. Please state your company name, followed by your question.

Q - Krish Sankar {BIO 16151788 <GO>}

Hi. It's Cowen & Co. Thanks for taking my question. I had two of them. Peter, you kind of reiterated your EUV outlook for this year with 30 units. So is it fair to assume that these units are pretty much locked and loaded and your customers have gotten the green light from their customers to proceed with EUV for their end product in the second half?

A - Peter Wennink {BIO 1852674 <GO>}

You're right. I think, Krish I think that is a fair assumption, because these are not cheap tools. So to spend that kind of CapEx without having the business and without having some decent level of commitments from your end customer that's probably not very likely. So yes, I would say yes.

Q - Krish Sankar {BIO 16151788 <GO>}

Got it, got it, that's very helpful. And then a question on the memory side, your memory orders have been down sharply for the last two quarters and it looks like it's stabilizing at least EUR300 million run rate levels and you also mentioned that memory business should improve as the course -- through the course of the year, but given your long lead time, is there a way to figure out if you're -- if will DRAM or NAND is going to bottom out at some point for your customers? How many quarters before they will come in place the orders for ASML tools?

A - Peter Wennink {BIO 1852674 <GO>}

Yes, like I said in my introductory comments what we're seeing is there is a bit difference of what we've seen in previous cycles is the the pretty rapid reaction of customers to actually reduce output, so basically to -- to lower the utilization. I think that is an attempt of the customers to quickly adapt the imbalance in supply and demand. Now that will lead to a situation whereby the course of the end -- many customers have actually said this, that they expect throughout the year could be middle of the year or at the end of the year, but throughout this year a better situation for them and return to better business levels for them.

Actually -- so what that means is that we don't expect this year that there will be a big snap-back in demand for those systems, because if you lower the utilization now first what you will do is use that utilization when you go up, so that probably means that if we see a correction is going to be next year and not this year. Now having said that the, we are preparing the supply chain. We also have in the supply chain, a certain level of buffers, so we can have a rapid response shipment ready, which is true for the long lead-time items at our optics supplier and some very long lead time electromechanical parts of our tool. So the first snap back we probably can do it in a relatively short period of time and that gives us the time to also organize the supply chain if the ramp turns out to be more substantial and longer term.

Q - Krish Sankar {BIO 16151788 <GO>}

Thanks a lot. Peter. Very helpful.

Operator

Next question is from Mr. Sandeep Deshpande. Please state your company name followed by your question .

Q - Sandeep Deshpande {BIO 3869012 <GO>}

Yeah, hi, JP Morgan. Thanks for letting me on Peter. Just one, first question from me on EUV, you just -- to an earlier question you responded regarding DRAM memory and memory adoption of EUV in the 2020 depends on 3400C. So how confident are you on EUV shipments into 2020 based on what guidance you've given in the past? And what will drive those shipments into 2020 at this point, based on -- clearly you've already -- probably getting indications from your customers on these trends?

A - Peter Wennink {BIO 1852674 <GO>}

Yes, we did. I think what we are planning -- what we've given you as an indication in the past and I'd like to refer to the update that we gave at the Capital Markets Day last year, where we gave you kind of a mixed scenario. When we look at that number, then I think everything that we're currently seeing in terms of Logic demand, the the use of EUV at 7, 7 plus, 6 and 5 nanometer, I think that confirms our thinking for that particular number that we gave you. And there is a level of memory shipments in there also whereby we assume that at least in a moderate market scenario we will ship some numbers to -- some shipments to memory customers also. So all in all, I think we have in our moderate market scenario 2020, about 33EUV units and that's what we're targeting at. Now, is there some upside potential? I think if the 3400C works indeed as smoothly as we're planning, that could be -- but that means that we should have -- I would say double-digit above the 2000 wafers per day level then. Yes, this could spark some additional demand and then customers should give us approval to get more out than those 33 systems, but this is what we're currently seeing as the most likely scenario. So that's what we told you back in November last year.

Q - Sandeep Deshpande {BIO 3869012 <GO>}

Thanks, Peter. And just, I've following up on the margin question associated with EUV. In the second half of this year, you're looking at shipping about 10 tools a quarter. So essentially you're at scale in terms of quarterly volume on EUV. So would you be expecting to be shipping scale margin as well? You've talked about in the past that EUV can do about 40% gross margin initially, but then by 2022 or so going towards the DUV level of gross margins, so do you think that you will be at that scale margin?

A - Peter Wennink {BIO 1852674 <GO>}

That's roughly speaking the trajectory that we're on. I think what is important to recognize Sandeep, is that for the second -- for the second half, it will still be a mix, right. It will be a mix of 3400B machines and 3400C machines, but in the course of the second half starting in the Q3, we'll see the first C shipments with a considerably better gross margin profile associated with that. But what you just mentioned, the 40% for 2020 and then that gradually growing towards the margin that we have on the Deep UV, that's exactly what we confirmed at the Capital Markets Day.

Q - Sandeep Deshpande {BIO 3869012 <GO>}

Thank you.

Operator

Next question is from Mr. Weston Twigg. Please state your company name followed by your question.

Q - Weston Twigg {BIO 15419233 <GO>}

HI, thank you. With KeyBanc Capital Markets. Just wondering if you could help us on the Logic side, just like you did on the memory. If you stripped out the EUV ramp or the technology purchases, what do you think the core Logic revenue growth would be this year?

A - Roger Dassen {BIO 15064806 <GO>}

It's very hard to strip the technology component out there because nearly everything that we have in Logic is related to that. We would say about 85% of our shipments will be related to technology upgrades, so that's a vast majority that was in.

Q - Weston Twigg {BIO 15419233 <GO>}

Okay. Yes, that makes sense. Maybe on e-beam then, just wondering if you have any expected changes in the growth rate related to the multi-beam launch in 2020, if you give us an idea for what that might mean for revenue or ASP opportunity next year?

A - Peter Wennink {BIO 1852674 <GO>}

Yes, I think the most important part is here to make sure that our R&D system lands by the end of the year and that is what we are still planning. And then because it's a new technology, to give you a detailed outlook on growth rates for 2020 for this technology is a bit too early. But it also very much depends on how the technology being used and on the application space. So for us, the most important part of e-beam is to get the node to beam out. Get the multi-beam out and to have the first qualifications done with our customers. And based on that, we'll be by the end of the year, early next year in much better position to guide you on growth rates and market expectations.

Q - Weston Twigg {BIO 15419233 <GO>}

Very helpful, thank you.

Operator

Our next question is from Mr. Mehdi Hosseini. Please state your company name followed by your question.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Yes, thank you. Mehdi Hosseini from Susquehanna International. Peter I want to go back to your comment from January earning conference call. You said you expect up to 13 EUV system 3400C, but you are still not really clear of those systems, how many would be an upgrade from B to C? Is there an update here and I have a follow-up?

A - Peter Wennink {BIO 1852674 <GO>}

Yes, the full Cs are actually less. If you have a kind of an intermediate version. So the full Cs is probably around five, so this is an intermediate version that will be upgraded later on. So that was a bit of a confusion. That has to do with the fact that not all modules are fully ready when we start shipping the first C with the improved lens. And there are other features to that C system that come later. So that is the upgrade in the C version, which is relatively minor. But the upgrades you're probably referring is from the B to C and this is where we don't think there will be a lot of upgrades for the simple reason that the B is a lower productivity tool with a low price. And if you want to go to the C version, you really need to have two new optical path there, which actually doesn't like it's -- it's possible, but and then you have to have such a major upgrade in the field that it's questionable

whether it's economical for customers to take the tool down for such a long time and pay such a high price for the upgrade. So I think the Bs will remain the Bs and the Cs -- the real Cs -- the final Cs will probably a handful, and there is then this version that is going to be shipped at least with the right lens and with some other modules later on. So, those are small upgrades, which are part of the purchase price.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Thanks for clarification and rather a quick follow-up. I estimate the installed base of all EUV systems out there in this year to be around 60 and obviously some of these systems are for R&D and some of them are older generation. So, let's say 60%, 70% of that 60 units could potentially be upgraded and you just referenced the economic challenges for upgrading, but then again I can't ignore the fact that there is a large installed base. And in that context, how should I think about the tools that are already being paid for and some of them maybe halfway through depreciation versus benefit of purchasing an outright C version.

A - Peter Wennink {BIO 1852674 <GO>}

Yes, I think it's not 60, it's just below 50, that is in the field. You have to realize that the number of those tools are 3300s, 3350s and most of those tools have been used in the qualification and the R&D space. So you're right, some of them actually are entering into their last term of depreciation. Now -- some of those will be used also in the R&D space and will not be upgraded. And all those like the 3300Bs, they are lower productivity tools, but also lower price tools, but are perfectly capable production tools. And those will stay in production. And that's nothing different than what we did in the past when we had NXT versions where basically you have 1950, followed by 1960 and 1970.

Yes, some of them can be upgraded, but as I've said earlier, the upgradability of the 3400B is there, but it's very very expensive and you could argue whether it's economical. So I don't expect it there. On the 3300s, 3400 to 3300s I see limited upgrade possibility, but many of those tools will stay in R&D space. And some of them, we can negotiate with the customers to take some of them back and we've refurbish them here in the factory and and those are the kind of plans that we are developing with our customers today just to make sure that they have an efficient use of their assets and those are programs that we'll probably run over the next couple of years and to make sure that we can help our customers get the maximum amount of that installed base, which is by the time fully depreciated. And it will be kind of in the trade-in and upgrade program, but that those details still need to be worked out.

Q - Mehdi Hosseini {BIO 4362002 <GO>}

Great, very helpful. Thank you.

Operator

Our next question is from Mr. Mitchell Steves, go ahead. Please state your company name followed by your question.

Q - Mitchell Steves

Thanks. Mitch Steves from RBC. So, I really have two. The first one's kind of on the gross margin side. And so you guys saw a better shipment in EUV and you guys are talking about better DUV profitability, but then you're kind of guiding to similar gross margins for next quarter. So I'm trying to understand why you're not seeing any scale from the extra EUR300 million sequentially?

A - Roger Dassen {BIO 15064806 <GO>}

So it's a sort of gross margin from Q1 into Q2 as a bit of a blend. So as you rightfully said, we'll have more EUV shipments. And as you know, with the 3400B, that means that the gross margin for that reason was down. It will be compensated by the Deep UV business and we'll also be compensated by the fact that we do have better installed base revenue with some field upgrades in there in the second quarter. So if you take the negative from more EUV shipments that gets compensated by the other two developments and that get you -- as we already said by the way on or call after Q4, that gets you to essentially the same gross margin for Q2 as we have in Q1.

Q - Mitchell Steves

Got it. And then secondly, you guys have a pretty large target in terms of 50% out there for gross margin. So when do we see that step function in terms of the gross margin that driven by the type of EUV shipments are going to have or is that driven by mix? Just how do we get kind of a step function from 41% to call it high 40s -- like going 40s?

A - Roger Dassen {BIO 15064806 <GO>}

You're on a roll there. So you absolutely mentioned two very, very important elements in there. So indeed this is the introduction of the 3400C model, which is -- which as we said is going to start in Q3. And that will be a significant uptick in our gross margins, so that's one the component. The second component, indeed, is mix, which is also envisaged for the second half of the mix in the Deep UV business more towards -- even more towards immersion. A very significant part that we've talked about quite extensively also on the call last time is installed base revenue and then in particular the EUV service, service cost and service revenue.

So we're working very hard, as you know, at this stage to get our customers -- help our customers go to high volume manufacturing, so there's a lot of cost that we incur as a result, right now. The revenue is very limited because as you probably know most of the revenue and services buy to [ph] wafer output, which of course at this stage is very low. So there is a big mismatch at this stage between the cost and the revenue that will obviously remedy itself in the second haven't done significantly into 2020 and beyond.

So those are the key drivers and then we have factory loading to the extent that the business goes up and some other components in installed base revenue including field upgrades. So those are the main levers that we're pulling in order to indeed get to the over 50% that we've guided for 2020, and we believe we're on track. So the step change you will see significant elements of that step change in the course of the second -- the second half.

Q - Mitchell Steves

Perfect, thank you.

Operator

Our next question is from Mr. Stephan Houri please state your company name followed by your question.

Q - Stephane Houri {BIO 3899118 <GO>}

Yes, this is Stephane Houri from ODDO. I have a question again on the services because you said that services will jump in Q2 to EUR700 million. So just to understand the dynamic I thought that services recovery would have come with EUV services revenue in Q3 and Q4, so what services are driving the growth in Q2? And basically, are you -- will you be significantly above the EUR700 million level to quarter in Q3, Q4? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

So the main driver of getting it from the Q1 number to the Q2 number is not related to the EUV that is -- that would include field upgrades so that's an important driver where we had a limited number of that in Q1 as we also indicated, which is also a -- was also a function of the the supplier situation that we talked about last time. So field upgrades is one significant -- one important driver of the higher number in Q2.

In the second half -- the second half, we expect installed base revenue to be higher than in the first half. As you said, we're still looking at single-digit growth for installed base revenue. So if you do the math of the first half and the second half, you would see that there is -- there is about a 20%, 25% increase that you would have to have over the first half into the second half to get to that number.

Q - Stephane Houri {BIO 3899118 <GO>}

Okay. Maybe a quick follow-up on the price of EUV tools, there has been a full significant fall -- if I might correct in Q1 versus Q4, is there any reason for that? and where do you see the EUV average price going given the introduction of the 3300C? Thank you

A - Peter Wennink {BIO 1852674 <GO>}

So if you compare the -- I guess what you say is you compare Q4 '18 to the Q1 '19 number right and then the average. Yes, the average pricing of all of our machines including the EUV machines is obviously to a large extent contingent upon the configuration of the machine and also mix, what customers will -- let's say will to, go to, what's the size of the customer, et cetera.

So there is a number of drivers there and sometimes, that's a little higher than the average sales price of 100 that we've -- that you typically work with, and sometimes it's a little bit lower. As it relates to the introduction of the 3400C, I think we've been very clear there, we're looking at a more than 35% -- we're looking at 35% increase in the throughput in

terms of wafer -- wafers per hour and that's we've always said translates into an ASP increase from the B to the C model.

Q - Stephane Houri {BIO 3899118 <GO>}

Okay, thank you very much.

Operator

Next question is from Amit Harchandani, please state your company name followed by your question.

Q - Amit Harchandani {BIO 16134002 <GO>}

Good afternoon and good morning all. Amit Harchandani from Citi and thanks for taking my question. I would like to maybe get to your thoughts with respect to EUV orders and shipments going into 2020. As you alluded to earlier for 2019 your shipments plan look fairly secure in terms of customer commitments, but as we look towards 2020 and we look at some of the recent order flow around EUV, how are you thinking? What's your confidence that will with respect to hitting the 33 to 35 that you've referenced earlier? Do you need to demonstrate more improvement to your customers, are there any -- do customers have to come through. I guess I'm just trying to get comfort in terms of when do we start seeing the EUV orders per quarter tracking close to the shipment level that's expected for next year? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Yes, two things here. One is these orders come in choppy. There are only a few customers there. So it means that there's not a whole bunch of customers. We get onesies and twosies to come in these batches, so that's what you have, one. And it is about the same as we were last year. Last year first quarter 2018 same thing, where we include the orders come from for 2019, this year 30 units. This was same question, same situation, choppy, but we said at that time before the end of 2018, we have all the orders for 2019. I think it's the same situation now.

When we look at 33 systems, we look at and I relate back to earlier question, where does the demand come from? It comes from the Logic transitions at a 7 plus, 6 nanometer, 5 nanometer for three customers, the potential for DRAM that we've talked about in a moderate market scenario. Those are the discussion that we're having with our customers and gives us the confidence that we are preparing for these 33 unit numbers and we will have those orders by the end of the year to fulfill 2020 like we did last year.

On top of that we are reducing our order lead-time to our customers. When we're in this phase where customers need to order two years in at times, with a semiconductor industry that's quite choppy, they don't like two years. Those were actually agreed with them that we going down to 18 months and 15 months and ultimately want to end at the 12-month lead time for EUV systems, that gives them some more flexibility to better plan.

Well, part of that we're already seeing. So with that planned lead time reduction, customers will take that into account in placing the orders that are going to be choppy and that will fill the order book to make sure that by the end of this year we will have the units there fore 2020 shipments.

Q - Amit Harchandani {BIO 16134002 <GO>}

Thank you, Peter and as a follow-up if I may, could you maybe give us a quick update on the business momentum out of indigenous Chinese customers across the different end markets? Have you seen any changes versus previous quarters, any further update from your side would be helpful? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Yes, I think as I shared in my introductory comments, these -- especially in the memory space these investments are of a strategic nature because they're greenfield companies have a greenfield fabs and the first qualification rounds of the devices that they're making-- they actually have, they are behind us -- so actually, they are looking at ramping their first lines and this is what that we are doing this year. So that will happen.

So, I think that -- we don't see any change there. I think the same is true for some of our indigenous Logic customers. They have technology transitions ongoing to either 28-nanometer or 40-nanometer, which is strategic and that happens, albeit that is somewhat lower level. I think in China, we see memory quite significant volume and Logic is more modest, but all those plans stay on track.

Q - Amit Harchandani {BIO 16134002 <GO>}

Okay. Thank you, Peter .

Operator

Our next question is from Ms. Tammy Qiu. Please state your company name followed by your question.

Q - Tammy Qiu {BIO 17604871 <GO>}

Hi, thank you for taking my questions. So firstly I have noticed that R&D has been keep increasing since last year. I understand that last year you started to accelerate your R&D for the high NA generation tools. So I'm just wondering that, is 2019 another up year for R&D, compared to 2018 and of course the year before? Or are we actually seeing some time H1 2019 will be the top of the R&D cycle? And also secondly after 2020 in theory, if you have done all the R&D and all the preparation for high NA launch your free cash flow should be increasing significantly. So what's your view in terms of your future capital return program? Thank you.

A - Roger Dassen {BIO 15064806 <GO>}

Thank you. So in terms of the R&D, we're looking at about EUR1.9 billion R&D for a full year and that's what we've communicated and I think what we're on track and I think the

number that you've seen for Q1 is very consistent with that number. And indeed, we said that there is a number of reasons why we're doing that, one is continued preparation for high NA, pulling in the 3400C development and also, for instance, a run to the development of multi-beam. So there are distinct programs that underpin that.

We've also said that we believe that in the course of 2020, we will see that we are gradually navigating that back to the local term 14% number that we've indicated. So you will still see a higher percentage for 2020, but in the course of 2020, you will see us navigating back to that 14% longer-term number. I don't want to spoil the party, but we shouldn't expect that the R&D work on high NA comes to a grinding halt by 2020. Obviously that will continue to be there and and a significant part of the R&D work in 2021 and beyond will still obviously be related to high NA. But you are right, there will be a significant generation of free cash flow. And I think we've been fairly clear on that during the Capital Markets Day, where we said, first of all, we're going to make all those investments that we deem necessary for the continuation of the business as we run it today, which is primarily R&D and that's the number we just talked about.

We said on the M&A front that is unlikely that will be targets both available and attractive for us such that there would be a significant expenditure on that front. We will sustain or cash balances as we've indicated than anything that is available over and above that we said will return to our shareholders and we'll do that in a policy of increasing dividends and I think the dividend proposal that we've given for this year, I think is testimony to that. And anything else that we have available will return and by way of the share buyback programs as you've seen, we execute on in quite a disciplined way.

Q - Tammy Qiu {BIO 17604871 <GO>}

Okay, cool. Thank you.

Operator

Our next question is from Mr. Pierre Ferragu. Please state your company name followed by your question.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Hi, thank you for taking my question. Peter, I was wondering if you have any perspective on how things are happening in terms of the clients, of your clients in Logic added things to nodes in which EUV is run. So there are some reports that the 7 plus node might be not as popular and successful as initially anticipated and maybe the 5-nanometer node will end up being a bigger one and 7 plus is smaller one. So my first question is do you have any visibility and perspective on that? And my second question is that way as a case does that impact in any way the cadence at which are going to deliver your tools or would that be actually not impacting you? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

Yes. Thank you, Pierre. I think to answer your last question, I don't think it has an impact on the cadence. What you will see is, it's going to be one nodes, and half nodes and

quarter nodes that people are using for different purposes, for different devices, for different end markets and different applications.

It was clear, some of our largest customers in the Logic space have indeed announced nodes that they call 7 plus, 6, 5, 3 for different types of customers. But more importantly I think when you talk to our customers actually say and especially in the foundry space, that the number of tape-outs for those devices are very significant. And I think you will see a more heterogeneous supply of those nodes for different applications, and different customers.

So, but when we add it all up, it is the most important and we see what we think the EUV demand will be next year, and years thereafter. There is no reason why we change our -- let's say our modest market view for next next year. It all fits, but you will see a more heterogeneous and and thereby perhaps for you guys less transparent node to node transition. It's getting a bit more complicated.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Thanks, Peter.

Operator

Our next question is from Mr. Andrew Gardiner. Please state your company name followed by your question.

Q - Andrew Gardiner {BIO 7137663 <GO>}

Barclays. Good afternoon, gentlemen. Just another one on the memory space, perhaps slightly more near-term. With the fourth quarter results, and I suppose with third quarter results before it as well. You had talked about push-outs from certain customers. I'm just wondering, clearly you're keeping the full-year guidance the same in terms of the down 20 for memory overall and down 30 as you've described for the underlying business. But just within that, as the customers are trying to find the bottom in the cycle and return to supply demand equilibrium, have you seen any further push outs, at least from perhaps quarter-to-quarter basis within the year or if things been fairly steady for the last couple of months? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

I would say they have been pretty steady, Andrew. Like I said also earlier in my earlier comments, there is always the fact that we in this digestion or this supply demand balancing phase, there is always a question of how long will it last and it's going to be basically a function of the bit demand for the end markets, which for DRAM I think our latest, outside analysts when we think of a Gardiner or these guys have for DRAM around 20% and for 3D NAND between 30% and 35%.

If you follow that, then we just stick to what our customer says there, you could see a rebound in that business, throughout this year and basically because the first thing they're going to do, like I said earlier, they've reduced their utilization, which is pretty unique for

us. We haven't seen that in the earlier cycles to this extent and then they will first reuse that.

So they will see their business pick up, of course earlier. So there are no signs that at this moment in any case that they are going to have another round of reductions. I think what they're doing is they're just trying to get the supply-demand balance in order as soon as possible by -- through their own actions is basically controlling the utilization and that's good.

So, maybe that's the reason why they feel based on for instance on the 20% bit growth in DRAM and 30% to 35% in 3D NAND, that they believe that somewhere in the course of this year, they'll see a rebound in their business, that could very well be. So, no further adjustments that we've seen. Of course there is absolutely, no security or certainty with these comments, because nobody can really predict where the end markets are going, but at this moment, no change.

Q - Andrew Gardiner {BIO 7137663 <GO>}

Sounds good. Thanks, Peter.

Operator

Our next question is from Mr. Adithya Metuku. Please state your company name followed by your question.

Q - Adithya Metuku {BIO 17642884 <GO>}

Good afternoon guys. All my question has been answered, but just a quick clarification from Roger maybe, just on the CapEx, I noticed Q1 was pretty high in terms of CapEx to the proportion of sales, how should we think about CapEx for the full year? Is it going to be in line with your 2020 targets or should we expect something different this year? Thank you.

A - Peter Wennink {BIO 1852674 <GO>}

CapEx this year will be fairly high. It will be higher than the typical run rate that we see on a long-term basis, but that's the nature of CapEx, right. It's CapEx -- CapEx is not a smooth line. So this year we'll be fairly high in CapEx because we have quite some development preparation that we're doing for high NA, for instance. So that's why that's why CapEx is fairly high this year. But longer term, the guidance that we've given for 2020, 2025 that percentage of focus on the sale, the right percentage to look at, but it will vary over the years, up and under and this year it will be a little higher.

Q - Adithya Metuku {BIO 17642884 <GO>}

Let's say, if I were to annualize the Q1 number, would that be a fair representation or --

A - Roger Dassen {BIO 15064806 <GO>}

I think that would not be excessive. I think that is a reasonable number to go by.

Q - Adithya Metuku {BIO 17642884 <GO>}

Understood. Thank you.

Operator

Our next question is from Mr. David Mulholland. Please state your company name followed by your question.

Q - David Mulholland {BIO 16819172 <GO>}

Hi, it's David from UBS. Just one quick question on the kind of pace of node introductions, I know you touched on briefly, but and we are normally having this discussion in terms of whether the cadence went slow, overnight, it was -- TSMC has been talking about it, introducing a 6 nanometer node and seemingly moving to annual node introductions. I'm just wondering if you could comment on what you think that might mean for your logic business going forward whether it becomes a bit more stable and less lumpy or doesn't change that much? And then just as a quick follow-up, we've commented on a little bit, but given the messaging around 3400C, is it fair to assume that the next kind of sway of EUV bookings for 2020 is likely to be quite back end loaded this year?

A - Peter Wennink {BIO 1852674 <GO>}

Okay. Yes that could very well be. I do expect that to be honest also given the reduced lead time, so that the -- it's more back-end loaded, but on the -- so if, yes and your first question, yes, the impact of this cadence change. Like I said earlier -- I think it's a bit more heterogeneous and is more less transparent what that means. I also think customers are going to make -- customers of customers are probably going to make more application specific choices of what they want to use for that particular application because it's not a full node, this is the half node. You could even quarter nodes. That makes it less transparent, but also for us -- but we do in the discussion with our customers -- we talk -- do to talk about those nodes that require EUV because that's where the question is, how much EUV would they need and in that discussion, we would just look at -- we have to look at this blends of EUV applications and the number of wafers that you would need per node. We would need to get to some kind of equilibrium almost to assess how much EUV we would need, but everything we've heard till now with all those node changes, we do believe that what we have in our moderate market scenario 2020 is the right number. So, but yes -- you are right, it's just starting and that we don't have the full transparency on this. We'll have to figure this out as we go with our customers.

Q - David Mulholland {BIO 16819172 <GO>}

That's great. Thank you.

Operator

Our next question is from Mr. Robert Sanders. Please state your company name followed by your question.

Q - Robert Sanders {BIO 19087450 <GO>}

Yes, hi. Good afternoon. It's Deutsche Bank. First question, just on your US Logic customer, I was just wondering if you assuming that they will rollout 10-nanometer across the three major sites? Or do you think they're actually sort of revisiting what they're doing there because I guess is an important assumption given what your seeing in the terms of EUV spend in 2019? And the second question was just one for Roger, just on the buyback, I noted this slide down a lot, but plenty of raised the dividend. So is that just a general philosophy now to prioritize dividends over buybacks? Thanks.

A - Peter Wennink {BIO 1852674 <GO>}

Okay well , I know, Robert as we're on the US Logic side, there are not many choices, so we're going to -- we cannot be very specific on that customer. But I think that's -- to answer in general sense, we haven't seen changes in that sense, if you look at is from a point view of the node introductions, the planned node introductions are actually happening and the existing nodes are high utilization, because that's a particularly high demand for that current node, which is not a surprise either and as everything else is according to plan. So we haven't seen that much change to be honest, that's on the particular customer, but no names.

A - Roger Dassen {BIO 15064806 <GO>}

On the dividend versus share buyback as we said, we are looking also on a go-forward basis, we are looking in growing dividends. I wouldn't want people to assume that it's going to be 50% uptick every single time. But we are looking at a policy of growing dividends, but as I already answered to a previous question, given the free cash flow generation that we expect in the years to come, we believe there will be significant amount available also for share buybacks and particularly on the share buyback program that we're looking at for this year and for the previous year. Indeed the amount that we had in this quarter was fairly limited, but we are expecting to to complete that program by the end of this year in accordance with what we've indicated.

Q - Robert Sanders {BIO 19087450 <GO>}

Okay, great. Thank you.

A - Skip Miller {BIO 20244900 <GO>}

Ladies and gentlemen, we have time for one last question. If you are unable to get through on this call and still have questions, please feel free to contact ASML Investor Relations department with your question. Now, operator, may we have the last caller, please.

Operator

Thank you, sir. Our last question is from Mr. David O'Connor, please state your company name followed by your question.

Q - David O'Connor

Great. Thanks for taking my question. This David here from Exane BNP. Maybe Peter, one or two smaller follow ons from previous questions. Firstly, the smaller node transitions and the cadence change that we're now seeing, what does that mean for the change in customer ordering patterns for ASML? Does that smooth the kind of ordering? And how should we model that from a little intensity viewpoint? Maybe just one second question on the memory customers in this cycle reducing utilization versus the previous cycle, what do you think is really behind that, what's the real big change there and can we expect that in the future cycle going forward? Thanks.

A - Peter Wennink {BIO 1852674 <GO>}

Yes, I think -- I don't know exactly what is behind that. You should ask our customers. That is, which is just simply what we are seeing. I think it has a certain logic to it. You can keep your utilization as high as you can, but just -- that basically means you're driving the cost per device down. So the cost per chip, because you're basically use the fixed cost better, that's one strategy. Yield strategy is to say, but that could mean that the cycles last longer. If it also have a strategy basically, we would have shorter cycles, we'll go a little bit deeper, but then the recovery is also faster and I think this is where, when you see this and quite a significant reduction in utilization in the memory space that looks like that's the type of decision that they have taken. On these small node transitions change in order patterns, I don't think so. What I basically think is that, it's more the end markets for our customers where they have different nodes that they can offer to their customers and different nodes for different purposes, different customers, whereby the positive here is that the tape-outs that our customers are talking about, the number of tape-outs are as high as ever. So that means that there's a lot of demand for different solutions and as long as we all use EUV, I don't see there is going to be any choppy pattern here or a smoothing of that pattern. I think it's -- it doesn't make a big difference in my opinion, it's just more diversity. So no big change I don't expect that.

Q - David O'Connor

Very helpful. Thank you.

A - Skip Miller {BIO 20244900 <GO>}

Now, on behalf of ASML's Board of Management, I like to thank you all for joining us today. Operator, if you could formally conclude the call, I'd appreciate it. Thank you.

Operator

Thank you, sir. Ladies and gentlemen, this concludes the ASML 2019 First Quarter Financial Results Conference Call. Thank you for participating. You can now disconnect your line.