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Q1 2023 Taiwan Semiconductor Manufacturing Co Ltd Earnings
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PRESENTATION

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

(foreign language) Good afternoon, everyone, and welcome to TSMC's First Quarter 2023 Earnings Conference Call. This is Jeff Su, TSMC's Director of Investor Relations and your host for today.

TSMC is hosting our earnings conference call via live audio webcast through the company's website at www.tsmc.com, where you can also download the earnings release materials. (Operator Instructions) The format for today's event will be as follows: first, TSMC's Vice President and CFO, Mr. Wendell Huang, will summarize our operations in the first quarter 2023, followed by our guidance for the second quarter 2023. Afterwards, Mr. Huang, and TSMC's CEO, Dr. C.C. Wei, will jointly provide the company's key messages. Then we will open the line for questions and answers.

As usual, I would like to remind everybody that today's discussions may contain forward-looking statements that are subject to significant risks and uncertainties, which could cause actual results to differ materially from those contained in the forward-looking statements. Please refer to the safe harbor notice that appears in our press release.

And now I would like to turn the call over to TSMC's CFO, Mr. Wendell Huang, for the summary of operations and the current quarter guidance.

Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO

Thank you, Jeff. Good afternoon, everyone. Thank you for joining us today. My presentation will start with the financial highlights for the first quarter 2023. After that, I will provide the guidance for the second quarter 2023.

First quarter revenue decreased 18.7% sequentially in NT or 16.1% in U.S. dollar as our first quarter business was impacted by weakening macroeconomic conditions and softening end market demand, which led customers to adjust their demand accordingly. Gross margin decreased 5.9 percentage points sequentially to 56.3%, mainly reflecting lower capacity utilization and a less favorable foreign exchange rate, partially offset by more stringent cost controls.

Total operating expenses accounted for 10.8% of net revenue, which is lower than the 12% implied in our first quarter guidance, mainly due to stringent expense control and lower employee profit sharing. Operating margin was 45.5%, down 6.5 percentage points from the previous quarter. Overall, our first quarter EPS was TWD 7.98 and ROE was 27.5%.

Now let's move on to revenue by technology. 5-nanometer process technology contributed 31% of wafer revenue in the first quarter, while 7-nanometer accounted for 20%. Advanced Technologies, defined as 7-nanometer and below, accounted for 51% of wafer revenue.

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Moving on to revenue contribution by platform. HPC declined 14% quarter-over-quarter and accounted for 44% of our first quarter revenue. Smartphone declined 27% to account for 34%. IoT declined 19% to account for 9%. Automotive increased 5% to account for 7% and DCE decreased 5% to account for 2%.

Moving on to the balance sheet. We ended the first quarter with cash and marketable securities of TWD 1.59 trillion or USD 52 billion. On the liability side, current liabilities decreased by TWD 71 billion, mainly due to the decrease of TWD 65 billion in accounts payable. On financial ratio, accounts receivable turnover days decreased 2 days to 34 days, while days of inventory increased 3 days to 96 days.

Regarding cash flow and CapEx. During the first quarter, we generated about TWD 385 billion in cash from operations, spent TWD 302 billion in CapEx and distributed TWD 71 billion for second quarter 2022 cash dividend. Overall, our cash balance increased TWD 42 billion to TWD 1.39 trillion at the end of the quarter. In U.S. dollar terms, our first quarter capital expenditures totaled \$9.94 billion.

I have finished my financial summary. Now let's turn to our current quarter guidance. We expect our business in the second quarter to continue to be impacted by customers' further inventory adjustment. Based on the current business outlook, we expect our second quarter revenue to be between USD 15.2 billion and USD 16 billion, which represents a 6.7% sequential decline at the midpoint. Based on the exchange rate assumption of USD 1 to TWD 30.4, gross margin is expected to be between 52% and 54%, operating margin between 39.5% and 41.5%. This concludes my financial presentation.

Now let me turn to our key messages. I will start by making some comments on our first quarter '23 and second quarter '23 profitability. Compared to fourth quarter, our first quarter gross margin decreased by 590 basis points sequentially to 56.3% primarily due to a lower capacity utilization. Compared to our first quarter guidance, our actual gross margin exceeded the high end of the range provided 3 months ago, by 80 basis points, mainly due to more stringent cost control efforts.

We have just guided our second quarter gross margin to be 53% at the midpoint mainly due to a lower capacity utilization rate and higher electricity costs in Taiwan. After last year's electricity price increase of 15% in the second half of 2022, TSMC's electricity price in Taiwan has increased by another 17% starting April 1 this year. This is expected to take out 60 basis points from our second quarter gross margin.

We expect the impact from higher electricity costs to continue throughout the second half of this year and dilute our full year gross margin by about 50 basis points. In 2023, our gross margin faces challenges from lower capacity utilization due to semiconductor cyclicity, the ramp-up of N3, overseas fab expansion and inflationary costs, including higher utility costs in Taiwan.

To manage our profitability in 2023, we will work diligently on internal cost improvement efforts while continuing to sell our value. Excluding the impact of foreign exchange rate, which we have no control over, we continue to forecast a long-term gross margin of 53% and higher is achievable.

Next, let me talk about 2023 capital budget. Every year, our CapEx is spent in anticipation of the growth that will follow in future years. As I've stated before, given the near-term uncertainties, we continue to manage our business prudently and tighten up our capital spending where appropriate. That said, our commitment to support customers' structural growth remains unchanged, and our disciplined CapEx and capacity planning remains based on the long-term market demand profile. Thus we expect our 2023 capital budget to be between USD 32 billion and USD 36 billion.

With this level of CapEx spending in 2023, we reiterate that TSMC remains committed to a sustainable and steadily increasing cash dividend on both an annual and quarterly basis. We will continue to work closely with our customers to plan our long-term capacity and invest in leading edge, and specialty technologies to support their growth while delivering profitable growth to our shareholders.

Now let me turn the microphone over to C.C.

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C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Thank you, Wendell. Good afternoon, everyone. First, let me start with our near-term demand and inventory. 3 months ago, we said we expect fabless semiconductor inventory to start gradually reduce in 4Q 2022 and we forecast a sharper reduction throughout the first half of 2023.

However, due to weakening macroeconomic conditions and softening end market demand, fabless semiconductor inventory continued to increase in the fourth quarter and exited 2022 at a much higher level than we expected. In addition, the recovery in end market demand from China's reopening is also lower than our expectation. Therefore, the fabless semiconductor inventory adjustment in first half '23 is taking longer than our prior expectation. It may extend into third quarter this year before rebalancing to a healthier level.

For the full year of 2023, we lower our forecast for the semiconductor market excluding memory to decline mid-single-digit percent, while foundry industry is forecast to decline high single-digit percent. We now expect our full year 2023 revenue to decline low to mid-single-digit percent in U.S. dollar terms, and our business to do better than both semiconductor ex-memory and foundry industries, supported by our strong technology leadership and differentiation.

We concluded our first quarter with revenue of [USD 16.7 billion] (corrected by the company after the call), which is towards the low end of our guidance range, provided in U.S. dollar terms. Moving into second quarter 2023, we expect our business to continue to be impacted by customers' further inventory adjustment. We now expect our revenue in the first half of 2023 to decline by about 10% over the same period last year in U.S. dollar terms, as compared to mid- to high single-digit percent decline previously.

Having said that, we believe we are passing through the bottom of the cycle of TSMC business in the second quarter. While we forecast only a gradual recovery, for the semiconductor ex-memory industry in second half 2023, TSMC's business in the second half of this year is expected to be stronger than the first half, supported by customers' new product launches.

Next, let me talk about our N3 and N3E status. Our 3-nanometer technology is the first in the semiconductor industry to high-volume production with good yield. As our customers' demand for N3 exceeds our ability to supply, we expect N3 to be fully utilized in 2023, supported by both HPC and smartphone applications. Sizable N3 revenue contribution is expected to start in third quarter and N3 will contribute mid-single-digit percentage of our total wafer revenue in 2023.

N3E will further extend our N3 family with enhanced performance, power and yield and offer complete platform support for both HPC and smartphone applications. N3E has passed the qualification and achieve performance and yield targets, and volume production is scheduled for second half '23. Despite the ongoing inventory correction, we continue to observe a high level of customer engagement at both N3 and N3E with the number of tape-outs more than 2x that of N5 in the first and second half year -- in the second year, I'm sorry.

Our 3-nanometer technology is the most advanced semiconductor technology in both PPA and transistor technology. Thus we expect customers' strong multi-year demand for our 3-nanometer technologies and are confident that our 3-nanometer family will be another large and long-lasting node for TSMC.

Now I will talk about our N2 status. Our N2 technology development is progressing well and on track for volume production in 2025. Our N2 will adopt nanosheet transistor structure to provide our customers with the best performance, cost and technology maturity. Our nanosheet technology has demonstrated excellent power efficiency and our N2 deliver full node performance and power benefits to address the increasing need for energy-efficient computing. At N2, we are observing a high level of customer interest and engagement from both HPC and the smartphone applications.

Our 2-nanometer technology will be the most advanced semiconductor technology in the industry in both density and energy efficiency when it is introduced, and will further extend our technology leadership well into the future.

Finally, I will talk about TSMC's global footprint and talent development status. As we have said before, we are expanding our global manufacturing footprint to increase customer trust, expand our future growth potential and reach for more global talents.

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In Arizona, despite some challenges in obtaining permits, our first fab is scheduled to begin production of N4 process technology in late 2024. In Japan, we are building a specialty technology fab, the volume production is scheduled for late 2024. In Europe, we are engaging with customers and partners to evaluate the possibility of building a specialty fab focusing on automotive specific technologies, based on the demand from customers and level of government support. In China, we are expanding 28-nanometer in Nanjing as planned to support our customers in China, and we continue to follow all rules and regulations fully.

At the same time, we continue to invest in Taiwan and expand our capacity to support our customers' growth. In Kaohsiung, our fab construction continues, but we have adjusted our previous 28-nanometer expansion plan to now focus on capacity expansion for more advanced nodes, and we will remain flexible going forward.

In terms of talent development, a key to TSMC's success is adherence to our core values of integrity, commitment, innovation and customer trust and our discipline and spirit of working together as one team.

In both the U.S. and Japan, we recruiting from the top local colleges and universities and our progress is well on track. We have hired more than 900 US employees to-date in Arizona and more than 370 in Japan. We also plan to hire more than 6,000 employees in Taiwan in 2023. All of our hirings are to support our future growth potential.

In addition to providing extensive training program for new overseas employees, many of them are brought to Taiwan for "hands-on" experience in our fabs so that they can further their technical skills, while being immersed in TSMC's operational environment and culture. As we expand our global footprint, our priority will continue to be to identify, attract and hire talent whose core values and principles are aligned with TSMC's, so that we can establish TSMC culture in all our employees, no matter where we operate.

This concludes our key message. Thank you for your attention.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Thank you, C.C. This concludes our prepared statements. Before we begin the Q&A session, I would like to remind everybody to please limit your Should you wish to raise your question in Chinese, I will translate it to English before our management answers your question. (Operator Instructions) Now let's begin the Q&A session.

Operator, can we please proceed with the first caller on the line?

QUESTIONS AND ANSWERS

Operator

Yes, Jeff. The first one to ask a question, Gokul Hariharan from JPMorgan.

Gokul Hariharan JPMorgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst

First of all, can I talk -- can I ask a bit about the near-term demand dynamics? Could you talk a little bit about what you're seeing by segments? Is the inventory correction trend largely similar across HPC, smartphone, IoT and auto? Or are you seeing any different dynamics in these segments, especially auto, you saw some shortage still in the last quarter.

And maybe also talk a little bit about 7-nanometer. Previously, we had an expectation, 7-nanometer will start recovering in second half of this year. Do we think 7-nanometer will still be recovering in second half? That's my first question.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you, Gokul. Let me -- please allow me to summarize your first question. So Gokul's first question is more focusing on the near-term dynamics. He wants to know basically about the inventory trend across different segments and also the end demand status across the different segments, including auto. And then also, what about particularly for TSMC 7-nanometer status in terms of the utilization recovery.

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C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Okay. Gokul, let me answer the question. We observed the PC and smartphone market continue to be soft at the present time, while automotive demand is holding steady for TSMC and it is showing signs of softening into second half of 2023. I'm talking about automotive. On the other hand, we have recently observed incremental upside in AI-related demand, which helps the ongoing inventory digestion. What is the second question?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

The second part is on 7-nanometer. We had really -- previously said 7-nanometer utilization is lower. Do we expect this to pick up or recover in the second half?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

It will be recovered but slowly. As I said, most of the N6 and N7's technology loading still in HPC and smartphone. However, looking into the future, some of the specialties such as RF, connectivity, WiFi, all those kind of things will start to build up the loading their demand. And we expect in the long term, 7-nanometer's loading will become more healthier. Did I answer the question?

Gokul Hariharan JPMorgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst

Yes. That's very clear. My second question, I just wanted to get TSMC's opinion on competitive landscape. Your IDM competitor is getting into foundry. Intel has been claiming that they will be attaining process parity and then process leadership by 2025 and talking about engaging with several fabless companies. How does TSMC see this competitive threat?

And how do you benchmark TSMC N3 and N2, which is coming in 2025 with Intel's offerings over the next, let's say, 2 to 3 years? And maybe I think TSMC has not commented about foundry market share for quite some time. So could you talk a little bit about what you see, N3 market share, in the next couple of years with TSMC now that you're ramping up that node as well.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you, Gokul. Let me summate your second question. A lot of it is related to the competitive landscape. I think Gokul's question is specifically in terms of IDM that has been claimed meaning it will achieve process parity in terms of technology with TSMC and absolute process leadership.

So he wants to know and they're also talking about engaging with several large fabless customers. So Gokul would like to know how do we see or comment on this competitive threat. How do we benchmark our N3 or our N2 process technologies versus this IDM's offerings for the next 2 to 3 years. And lastly, if we have any comment on what market share we believe we can achieve.

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

That's a long question. Gokul, this is C.C. Wei again. Let me say that, as usual, we don't comment on our competitors' status, but then we emphasize again on our 3-nanometer and 2-nanometer. Our 3-nanometer is the first in the semiconductor industry to high-volume production. And I believe it is the most advanced semiconductor technology in both PPA and transistor technology.

And for 2-nanometer technology, that will, again, to be the most elegant semiconductor technology in the industry and when we introduce into mass production. And this one, we're fully confident that we will further extend our leadership position well into the future. As for the market share, we are very confident that we continue to have a very high market share. And I cannot tell you that the real number, but very high percentage.

Gokul Hariharan JPMorgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst

Okay. Maybe if I ask C.C. for that, if I ask, is N3 -- your expectation that N3 market share will be higher than N5 at the same time based on what you see today?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Very hard to answer your question, but let me say that it's well very similar in a very high percentage.

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Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you, Gokul. Operator, can we move on to the next participant, please.

Operator

The next one to ask questions, Bruce Lu from Goldman Sachs.

Bruce Lu Goldman Sachs Group, Inc., Research Division - Research Analyst

I want to ask about for the machine learning AI, which management has been saying that, that is a key growth driver. Can we have more quantitative implication to TSMC? What is the dollar content per server or how big the addressable market for TSMC in 2025? Is the recent new AI or ChatGPT, the business already embedded in your long-term growth target, which is 15% to 20%? Or can we see some incremental upside?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Bruce, thank you. So Bruce's first question is around, I guess, AI and machine learning. He wants to know if we have any quantitative numbers to give in terms of, for example, dollar content -- sorry, semiconductor content per server, dollar value or in terms of the addressable TAM. How do we see this growth of this market? And have we already embedded this into our forecast. Is that correct, Bruce?

Bruce Lu Goldman Sachs Group, Inc., Research Division - Research Analyst

That's right.

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Bruce, let me answer this question. We certainly, we have observed an incremental increase in AI-related demand. It will also help the ongoing inventory digestion. The trend is very positive for TSMC. But today, if you ask me to quantitatively to say that how much of the amount increase or what is the dollar content in the server, it's too early to say. It still continue to be developed. And ChatGPT right now reinforce the already stronger conviction that we have in HPC and AI as a structural megatrend for TSMC's business growth in the future.

Whether this one has been included in our previous announcement is said that we have a 15% to 20% CAGR, the answer is probably partly yes, because of -- for server, we have accelerated into our consideration. But this ChatGPT is a large language model is a new application.

And we haven't really have a kind of a number that put into our CAGR. But is definitely, as I said, it really reinforced our already strong conviction that HPC and AI will give us a much higher opportunities in the future.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay, Bruce. Does that answer your first question? Yes, sorry, go ahead.

Bruce Lu Goldman Sachs Group, Inc., Research Division - Research Analyst

Yes. Yes, I want to move on to the different topic, which is the cash dividend. I mean TSMC distribute like -- dividend policy was 70% of the free cash flow. And we do see the free cash flow is getting stronger, especially CapEx growth rate is slower, especially for next year. Can we expect TSMC to maintain the dividend policy, which is 70% of the free cash flow next year? Or we would like to improve our balance sheet given the current rate hike environment.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you, Bruce. So Bruce's second question is around our cash dividend policy. He notes that in the past, we have said our cash dividend will be based on 70% of free cash flow distribution. But his question is, as our CapEx is slowing, our free cash flow is going stronger. Do we still adhere to 70% of free cash flow or because of the environment, are we more focused on, I think, Bruce, in terms of maintaining a -- improving our balance sheet strength.

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Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Okay, Bruce. This is Wendell. Let me make a few comments on the dividends. TSMC is committed to a sustainable and steadily increasing dividends. During the periods of high capital intensity or high capital investment, more of the focus is on "sustainable." But when we start to capture and harvest the capital investment spend, the commitment is -- or the focus is more towards "steadily increasing."

The 70% ratio is a guideline. Let me give you an example. If in the particular year, the free cash flow is much lower because of higher CapEx or lower profit than the -- to maintain a sustainable dividend, the ratio of free cash flow to be dispersed could be higher. And on the other hand, in a year where free cash flow is particularly high, the ratio can be 70%, but it can be lower because we need to look forward into the year behind that specific year, and to make sure it is sustainable. Okay, does that answer your question?

Bruce Lu *Goldman Sachs Group, Inc., Research Division - Research Analyst*

Yes. Yes. But if we do see a comfortable range about the free cash flow, we still expect like reasonable high payout ratio, right?

Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Yes. Yes. As I said, the principle is 70%, but it has to be sustainable and steadily increasing.

Bruce Lu *Goldman Sachs Group, Inc., Research Division - Research Analyst*

I understand.

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Thank you, Bruce. Operator, can we move on to the next participant, please.

Operator

Next one to ask questions, Randy Abrams from Credit Suisse.

Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department*

I wanted to ask a question just on the CapEx in 2 parts. First, as you look at the 3-nanometer where you mentioned supply still short of demand and have a lot of applications coming in. Do you have plans for potential reuse of 5-nanometer in the next 1 to 2 years as you bring up more of the 3-nanometer? And then the second part of the question, I wanted to ask more on that Kaohsiung fab shift. If you could go through why the plan to pull back on 28. And then with the intention for where you would shift that investment. Because I know you did cancel the 7-nanometer for that line. So if you could discuss the change you're making to Kaohsiung and does it affect the timing to ramp that fab?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. Thank you, Randy. So Randy's first question is kind of related to our CapEx and capacity plan. His question partly is in terms of C.C. noted that the N3 demand exceeds our ability to supply. So he's asking, will we consider to reuse or convert tools -- N5 tools to N3 in the next few years. And also, he wants to know related to our plans in Kaohsiung. What is the thinking or the reasoning for pulling back on the 28-nanometer expansion in Kaohsiung?

C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - CEO*

Okay, Randy. You got a very good question about whether we converted some of the N5's capacity to N3 because N3 today, we are short of support to our customer. Instead of saying that convert N5 capacity to N3, let me say that we developed a strategy and a methodology to make some of the N3's tool can be supported by N5. And we take this kind of flexibility into our consideration so that we can fulfill our commitment to support our customer in N3 as much as possible. Although still not enough, but we are doing that. So that answer one of your -- the first part of your question.

You asked about Kaohsiung's plan. Let me say that we look at the market situation today, and we are going to build -- initially the 28 nanometer's demand is so high so that we have to put Kaohsiung into our consideration. However, the market situation is so dynamic, and we look at our plan. One of the plan is in Japan, we build a new fab for 28 nanometer's specialty. By the way, TSMC expand the

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mature node's capacity or for specialties. We don't increase capacity just for pure logic application. The one, no, we don't do. So in order to avoid some of the overcapacity. So we built one in Japan. We're also expanding our capacity, 28-nanometer capacity in Nanjing. That's the second one. And then we are considering of the Europe. That might be the third one for automotive application.

Put all 3 together, we don't think today that Kaohsiung's -- if we build 28-nanometer, probably it won't be kind of financially feasible. So we diverted now adjusted to become a more advanced node, which we are still in shortage. And Kaohsiung is so close to Tainan so that we can have more flexibility in between. Randy, did that answer your question?

Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department*

Yes. No, that's helpful. It sounds like it will be very much advanced capacity than like the 5, 3 and below. And just -- maybe I have one follow-up on the first question is on the CapEx framework. With the expectation second half kind of rebound with the share gains comes through considering the new nodes more capital-intensive, should we think of this CapEx having an up direction as we look ahead to next year?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. So Randy, I'll allow this to be a follow-up, but Randy's question is basically, well, considering the second half business will be stronger. I think, Randy, basically, you're asking, we have provided the guidance range of between \$32 billion to \$36 billion. Are you asking could that be upside or revised higher, is that correct?

Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department*

Yes, more the framework into next year since this is more kind of prudent management, a bit recessionary.

Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Randy, let me answer that. As we stated before, every year, our CapEx is spent for the opportunities in the future years. So although there are short-term cyclicalities in the industry, but we believe if the structural long-term demand is there, and the future opportunities is there, and we will continue to invest. That will be the framework that we can provide to you.

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay, Randy. You have a quick second question.

Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department*

Yes, I'll do the quick second. So for 2-nanometer, if you could clarify the ramp, do you expect this steep ramp to be in 2025? Or is it more 2026? And do you also view that ramp being much more with the SoC, the back-end integration chiplet?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. So Randy, second question is on 2-nanometer. We have said volume production in 2025. Will the large volume be in '25 or '26 as part of this question. And does this mean you will go hand-in-hand, I guess, with SoC and advanced packaging?

C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - CEO*

Randy, let me answer the question. 2-nanometer technology definitely will start to ramp in 2025. And you asked about the volume. The volume in 2026 certainly is much higher than 2025 because 2025 is the first year. But saying that, I mean that we are having HPC customer and the smartphone customer now engaged with N2 and what we'll be ramping up in 2025. Now whether it's related to chiplet or not, it depends on customers' product and their plan. And today, I don't have -- I cannot share with you all those kind of minor details because it's related to customer's product plan.

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. Thank you, Randy. Operator, can we move on to the next participant, please?

Operator

The next one to ask question, Charlie Chan from Morgan Stanley.

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Charlie Chan Morgan Stanley, Research Division - Technology Analyst

C.C., Wendell and Jeff, so first of all, congrats for the first quarter gross margin and great to hear that N3E yield rate continue to improve. So let me stay with the CapEx question for a little bit as my first question.

So first of all, the major equipment supplier ASML, to suggest that EUV orders get pushed out a little bit. And we all know that your company is a major user of EUV. So can management answer the question - first of all, whether the CapEx this year will be lower end of your guidance range? And also for next year, whether your CapEx intensity would decline year-on-year given that EUV push out?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Charlie's first question is related to CapEx. He points out that newspaper talks about EUV orders being pushed out. So his question is really for our CapEx in 2023, do we think it will be towards the lower end of the range? And then also any indication for 2024 in terms of both CapEx and capital intensity. Is that correct, Charlie?

Charlie Chan Morgan Stanley, Research Division - Technology Analyst

Yes.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Maybe Wendell can answer.

Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO

Charlie, this is Wendell. First of all, we don't comment on specific suppliers or customers or competitors. Regarding this year's CapEx, when we gave out the CapEx range, \$32 billion to \$36 billion, we have already started or tightened up our 2023 capital budget.

At this moment, we believe this range is appropriate and it's prudent under today's economic environment, that range is still valid. Now for next year, it's too early to talk about next year. But as I just stated, the CapEx spend this year will be for future years, and CapEx spend next year will be for even future years. So if we see the growth opportunities is there, then we will continue to invest. That's the main policy, the principle that we have.

Charlie Chan Morgan Stanley, Research Division - Technology Analyst

Yes. Yes, thanks for the clarification. So I guess the question is if, right, whether those growth drivers still there, meaning because it was outsourcing for 2024, and whether your customers are aggressively adopting your N3 and N2. Yes, I guess that's why we are concerned about whether 2024, you're reducing some CapEx. But anyway, let me shift to the next one. I think a lot of investors also are quite interested about the U.S. CHIPS Act. So I remember Chairman showed some concern about those requirements. I'm not sure which one is specifically concerned, for example, I need to disclose customer information, profit sharing, some restrictions for the future China fab investments.

So my question is that how TSMC is going to reconcile your own interest versus the U.S. government's requirements. And if it is hard to reconcile, whether TSMC would consider not to take U.S. government's grants.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Charlie's second question is regarding the CHIPS Act. He notes we have recently said that some of the terms may be not acceptable. So he wants to understand how will TSMC reconcile its own interest versus some of the guidelines or guardrails around the CHIPS Act. And is there a possibility that we will not accept or participate in the CHIPS Act.

Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO

Okay, Charlie, let me make a few comments on this one. We are currently in the application process and, therefore, we're not able to comment on specific details. However, we are in close and constant communication with the U.S. government so that we fully understand all the details and provide our feedback and comments to them. At the end, all the decisions that we make will be based on the best interest of TSMC.

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Operator

The next one to ask question, Brett Simpson from Arete Research.

Brett Simpson *Arete Research Services LLP - Senior Analyst*

Yes. Wendell, I wanted to just talk a bit about Arizona. And now that you're scheduled to move into production next year and you've been hiring a lot of people, how do we think about the cost premium for TSMC operating in the U.S.?

And then when it comes to the pricing for the wafers, would this be something that you charge a premium for, for accessing U.S. capacity? Or would you be sort of offering similar wafer pricing to what you offer in Taiwan?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. Thank you, Brett. So Brett's first question is around -- regarding our Arizona fab. He notes that the volume manufacturing schedule is on track, and we've hired lots of people. So his first question is to Wendell around sort of what is the cost premium that we face in Arizona and how will we manage this, including our wafer pricing. Will we charge a different price for a different fab? Or how do we intend to do it?

Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Okay, Brett. The overseas fab is indeed the cost is higher, at least in the first several years. And we stated last time that some of the components like the construction costs may be as high as 5x. Now the way to mitigate that, first of all, it's -- it represents our global expansion represent a value to the customers, then we will be selling that value as well.

And secondly, because of our large base and volume, we'll be able to leverage that big base and volume to lower down the cost. And at the same time, of course, we will need to secure the necessary level of government support.

So putting all these efforts together, we will -- our job is to minimize the cost gap and make appropriate return. For the whole company on a combined basis, the 53% and higher gross margin remains our long-term financial goal and is achievable.

Brett Simpson *Arete Research Services LLP - Senior Analyst*

Great. And maybe just a follow-up. I wanted to ask about the subsidies that TSMC are getting today, particularly in areas like Japan. How much is this going to be in 2023? And are you expecting a meaningful increase in support in the second half of the year? I'm just trying to understand what's embedded in guidance and how to think about accounting for the support that you're expecting over the medium term.

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. So Brett has a quick follow-up with regards to Japan. His question in terms of the government support or incentives we may receive. How will we account for it? How much will it be in 2023 and how significant? Is it most of it in the second half?

Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Okay. Brett, let me reply this matter. In Japan, we will -- our total CapEx is about \$8 billion, and we expect about 50% to receive from the government. And we will be production -- start production at the end of next year. So the incentives from the government will be according -- will be based on the progress that we are building our fabs. So that gives you some idea of how much we can receive this year and next year.

How do we account for it? Basically, we will be -- that will be accounted for as an offset of depreciation. Okay?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. Thank you, Brett. Operator, can we move on to the next participant then?

Operator

Next, we have Sunny Lin from UBS.

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Sunny Lin UBS Investment Bank, Research Division - Director & Associate Analyst

So my first question is on the pricing. So I think, just now, management again reiterated that your supply chain value is increasing and you look to sell that value. And so with that, as you are about to start ramping overseas capacity more significantly into next couple of years, how should we think about your ASP trend?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Sunny's first question is also related to pricing. She knows that semiconductor industry value in the supply chain TSMC is increasing. Her question is that, Sunny, I believe as we expand our footprint and capacity beyond Taiwan and go overseas, what will be the ASP trend in the next few years. Is that correct?

Sunny Lin UBS Investment Bank, Research Division - Director & Associate Analyst

That's right.

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Okay. Sunny, I answer this question. First, actually, our pricing strategy actually is strategic and long term. We work with our customer. Yes, you are right. I mean, that the inflation or all others, the cost is increasing, especially in the overseas fab.

However, we already put all those kind of things into consideration. And we have a lot of action items to work with internally and also with our partners, our supply partners and to lower down all the costs. And we're also working on the supply chain management. So we hope that we will control that, even with today's very tough situation.

Sunny Lin UBS Investment Bank, Research Division - Director & Associate Analyst

Got it. Sorry, if I could have a very quick follow-up. And so how should we think about the mechanism? For you to reflect that supply chain value, would it be an annual pricing negotiation? And I also wonder what's the customer feedbacks under the current situations.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

All right. So Sunny wants to know how will we do the pricing. Is it on an annual basis? How -- what's the feedback from customers?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Sunny, this is very specific, but let me emphasize again. Our pricing is strategic, and we reflect our value. Now our value includes the value of a geographic flexibility. Did that give you some hint?

Sunny Lin UBS Investment Bank, Research Division - Director & Associate Analyst

Got it. That's very helpful. My second question is on your CapEx expansion. And so I wonder, if we look at the equipment lead time, are you seeing ongoing improvement? What I'm trying to understand, if you need to tighten up the CapEx. But let's say, if later on, demand start to recover or get better into second half of the year, how much flexibility you have to pull in the equipment?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Sunny's second question is around capacity expansion and equipment lead time. She notes that we have said we're tightening up our CapEx this year and being prudent given the economic environment.

But her question is if the demand recovers in the second half, how quickly can we adjust our equipment and capacity? And would the equipment lead time then become a bottleneck? Is that correct, Sunny?

Sunny Lin UBS Investment Bank, Research Division - Director & Associate Analyst

That's right.

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Okay. Sunny, this is a very, very good question. We are tightening up on the CapEx. But at the same time, we also remain flexible that once the demand pick up quickly, we should be -- have prepared enough capacity for our customers to grow.

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And so both factors are very important, and we are working with all the suppliers preparing for that. In fact, we are planning our long-term capacity expansion and then with some kind of adjustment in between.

So we have a flexibility to increase quickly. We also have a flexibility to tighten the CapEx. But the main trend stays the same because we believe AI, 5G, the megatrend will continue to grow, and TSMC business will continue to grow.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

All right. Thank you, Sunny. Operator, can we move on to the next participant, please?

Operator

Next one, we have Laura Chen from Citi.

Laura Chen Citigroup Inc., Research Division - Research Analyst

My first question is about the data center and server space. We know that in the high computing PC category that also includes some of the PC CPU or consumer-related applications. So that may show some weakness that we see the quarter-on-quarter decline in Q1.

But I'm just wondering that since we see quite promising AI server growth, what's -- specifically, if we look at the AI-related contribution at current right now or what's the growth outlook you may be looking for?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Laura's question, she notes that our HPC platform includes more consumer-facing things such as PC CPUs, but it also includes data and server -- data center and server, sorry. So her question is, really, I guess, what is TSMC's view on the growth outlook for AI data centers? And how significant this could be for HPC business.

Laura Chen Citigroup Inc., Research Division - Research Analyst

Yes. So if we -- excluding those like gaming GPU or consumer PC CPU in this category, so what's the data center and server business looks right now?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Laura, let me answer this question. We did see some positive signs of the people getting much more attention to AI application, especially the ChatGPT's area. However, as I said, quantitatively, we haven't have enough data to summing it up to see what is the contribution and what kind of percentage to TSMC's business. But we remain confident that this trend is definitely positive for TSMC.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

And we don't break down our HPC platform into those type of subsegments.

Laura Chen Citigroup Inc., Research Division - Research Analyst

Okay. Understood. And then my second question is also related to the high computing PC angle. Just wondering that your expansion and trend in advanced packaging, so we know that many of those like AI or server high-computing PC CPU, they require the advanced packaging like a CoWoS or a 2.5D, 3D packaging.

So I'm just wondering that any more capacity you require right now. And what's the current capacity or revenue you can share with us and also the growth trend?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Laura's second question is on the advanced packaging. She notes that applications like HPC, PC CPUs, et cetera, require CoWoS or 3D stacking, 3D IC advanced packaging technology. So her question is, what is the capacity expansion outlook or plan for our advanced packaging? And also what is the revenue growth outlook, I guess, over the next few years. Is that correct, Laura?

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Laura Chen Citigroup Inc., Research Division - Research Analyst

Yes.

Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO

Okay. Laura, let me start. For the advanced packaging, the back-end services, we think that its growth in next about 5 years will be slightly higher than the corporate average. However, for this year, is -- the revenue will be lower than that of last year because of customer demand.

Last year, the revenue accounted for about 7% of our total revenue. This year is somewhere between 6 to 7. So that should give you an idea of the overall packaging.

Laura Chen Citigroup Inc., Research Division - Research Analyst

Okay. So in terms of the capacity, is there any change in this year versus last year?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

So her question -- also a part of the question is specific to the capacity for packaging. What is the year-on-year growth in the advanced packaging capacity?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Well, Laura -- no, no, no. I mean, that's -- let me say that, actually, just recently in these 2 days, I received a customer's phone call requesting a big increase on the back-end capacity, especially in the CoWoS. We are still evaluating that.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you. Operator, please move on to the next participant, please.

Operator

Yes. Next one to ask questions, Mehdi Hosseini from SIG.

Mehdi Hosseini Susquehanna Financial Group, LLLP, Research Division - Senior Analyst

Yes. Your guide for June and also 2023 revenue suggests revenues in the second half of the year would be up by 25% versus the first half. And what I want to better understand is how will new product ramps drive this growth.

Is there anything quantitative or qualitative that you can offer us to understand the mechanics or the drivers behind this 25% growth in revenue from first half into the second half? And I have a follow-up.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you, Mehdi. So Mehdi's first question is in looking at our guidance, his calculation implies around mid-20s half-on-half growth in the second half. So he wants to know how much is new projects or new business driving that percentage of the growth.

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Well, I can answer that question. To give you a hint, I mean, that we talk about customer's new product launch and which use 3-nanometer. So you can understand that we start to ramp up 3-nanometer quickly because it fully utilize and still not enough to meet customers' demand. In addition to that, actually, all the platforms, their performance, their demand will increase in the second half.

Mehdi Hosseini Susquehanna Financial Group, LLLP, Research Division - Senior Analyst

So as these new products drive wafer shipment increase, we should assume that utilization rates would bottom in June and improve into the second half, right?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

So Mehdi wants -- so can -- he wants to know, can you assume utilization bottoms in 2Q and improves in second half.

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Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO

Yes, Mehdi, that's a reasonable view.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

C.C. has already said second half will be stronger than first half. Do you have a second question, Mehdi?

Mehdi Hosseini Susquehanna Financial Group, LLLP, Research Division - Senior Analyst

Yes. I have one for Wendell. This question comes from every earnings conference call, capital intensity. Should we assume that as you tighten your CapEx project for this year? And especially in the context of declining revenues for the whole year, are we at the tail end of elevated capital intensity?

Or should we assume that you -- over the past couple of years, there has been significant investment and starting next year, you're going to be able to scale your revenues? Is that the right way of thinking about all these investments that you have done?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Mehdi's second question is on -- around capital intensity. He wants to know, given the guidance we have provided for 2023, are we at the tail end of the higher capital intensity period or elevated capital intensity period? And then will we start to, I guess, harvest or see that capital intensity come down next year or into the next few years?

Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO

Mehdi, I am not going to share with you the peak, where the peak is. But I can tell you from my current 5-year outlook, we are looking at about mid-30s percentage of capital intensity.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Thank you, Mehdi. Operator, let's move on to the next participant.

Operator

Yes. The next one to ask questions, Krish Sankar from TD Cowen.

Krish Sankar TD Cowen, Research Division - MD & Senior Research Analyst

My first one is on your comment that the N3 capacity will be fully utilized this year, is that capacity that will be online in the second half same or higher or lower than what you planned a year ago? And also at this point, do you see the N3 wafer demand profile to be similar or better than N5 at the same point in the cycle? And then I have a follow-up.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Krish's first question is on N3 capacity. Note we said they will be fully utilized this year. He wants to know the capacity that we build or plan for N3 this year and in the second half. How does that capacity amount compared to what we expected a year ago?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Well, I can answer the question. Actually, the demand is higher than we thought a year ago, and that's why that we need to work very hard to meet customer's demand. Did that answer your question, Krish?

Krish Sankar TD Cowen, Research Division - MD & Senior Research Analyst

Got it, got it. And then just a quick follow-up. You spoke about AI being a positive and all the innovation happening in generative AI today. Just from a TSMC standpoint, is this fair to assume that what you're going through today is more on the training stage and therefore is more semiconductor and wafer intensive, but when you go into more inference, that intensity has to decrease? Is that a fair assumption? Or do you think that this level of intensity will continue growing from a TSMC standpoint for AI?

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Krish's, second question is regards to generative AI and these type of applications. His observation is that the majority is training today, which seems to be beneficial. But as training moves to inference, would it be less semi-intensive or semi content intensive? And then, therefore, would that be, i.e., lower benefit to TSMC?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Krish, I mean, that today, your observation is right because, right now, most of the AI concentrate or focus on training. And in the future, it will be inference. But let me say that, no matter what kind of application, they need to use a very high-performance semiconductor component, and that actually is a TSMC's advantage.

So we expect that semiconductor content starting from a data center proliferate to device and edge device or those kind of things, put all together, they need a very high-speed computing with a very power-efficient one. And so we expect it will add to TSMC's business a lot. Qualitatively, as I said, we didn't know yet. We hope that in the next few quarters, we can give a more clear picture.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. Thank you. Operator, in the interest of time, we will take the last 2 questions from the last 2 participants, please. So can we proceed to the next participant?

Operator

Next one is Brad Lin from Bank of America.

Brad Lin BofA Securities, Research Division - Research Analyst

I have two questions, one on the internal organization change and the other on the recently announced strategic alliance. So while the global expansion is a key focus of TSMC, I noticed that TSMC set up a new unit called overseas operations office, OOO. What are the targets and impact that the TSMC management will look for from this new unit? That's my first question.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay. So Brad's first question is about our internal organization change. We set up an overseas office we call OOO. So he wants to know what is the purpose of this organization or office. What is its targets and purpose?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Well, the purpose is very simple, because we need to have all the organization. Now the fab is overseas fab's number and the amount would be more and more. So we need to have a coherence or -- and the culture, everything aligned to the headquarter to TSMC's core value.

So we established this overseas operation office to make sure that headquarters' support to each overseas fab will be sufficient and enough. And so that the performance will be aligned or matched with the TSMC's fab in Taiwan. But more importantly, because of we have this organization, so we can help them to succeed and, in the future, can be more profitable.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Thank you, C.C. Brad, do you want to -- yes, your second question.

Brad Lin BofA Securities, Research Division - Research Analyst

Sure. So my second question will be on the recently announced strategic alliance. As there node migration is the foundry's competition focus, and we know that TSMC leadership in the leading edge. We recently see TSMC partnered up with NVIDIA, Synopsys and ASML on 2-nanometer production and beyond.

And what is the target? And how is the progress so far? And TSMC is currently the only foundry within that group. Should we expect an even larger gap to peers with this? Or should we allow more companies or competitors to join this group?

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Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Brad, sorry. Let me clarify, make sure we understand your second question. So your second question is talking about, you call it, an alliance. But I think you referred to ASML and NVIDIA. So are you referring to this announcement recently of the -- what is called the cuLitho?

Brad Lin BofA Securities, Research Division - Research Analyst

Exactly, yes, computational litho.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Yes. Okay. So -- okay. Got it. So Brad really wants to know what is management's view towards this recently announced cuLitho. What is the implication? And what does this mean for TSMC's competitiveness going forward?

C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - CEO

Okay. That's a good question. It is initiative invented by TSMC's customer NVIDIA. And actually, we are working with them. And this, particularly the software and the hardware together will help speed up computational lithography by moving expensive operation to GPU, which will help us deploy lithography solution like inverse lithography technology, deeper learning more broadly or et cetera.

And because of this one, we got involved with our customer and our supplier. And we expect that this will give us some advantage over our cost improvement and also competition.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Sure. Thank you, Brad. Operator, then can we move on to the last participant, please?

Operator

The last questions are from Charles Shi from Needham & Company.

Charles Shi Needham & Company, LLC, Research Division - Senior Analyst

I have a question about your CapEx. Maybe I want to start with one item you disclosed in your filings. On your balance sheet, you have an item called equipment under installation and construction in progress.

That number has hit a record high, I think, over USD 40 billion as of the end of fourth quarter '22, which kind of means there are \$40 billion investment. You put money in, but you are not harvesting that investment yet. But there's no revenue dollars being generated.

But now I think you said you're tightening the CapEx for 2023, but you're reiterating that \$32 billion to \$36 billion CapEx. That seems to be adding on top of that \$40 billion. A lot more investment is still expected in this year.

So my question really is about this. Are you expecting a significantly higher incremental revenue opportunity in 2024 and beyond to justify that \$40 billion plus, maybe another \$32 billion investment? Or is the cycle time between you put the money in, put the investment into the time you harvest the investment, the generated revenue is getting a little bit longer than usual? So hopefully, you can clarify this.

Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Director of IR

Okay, Charles. That is a very long question. Please let me try to summarize it a little bit into 2 parts. I think Charles' question, he does rightly note that on our balance sheet, equipment under installation reached roughly about \$40 billion at the end of 2022.

He notes this is a very high level. His concern, maybe Wendell can address, as we also guided for \$32 billion to \$36 billion CapEx this year, so is this number going to only increase? And what is driving this? Is this preparing for significant revenue opportunities in 2024 and beyond? So this is his first question.

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Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Okay, Charles. The \$40 billion asset under construction at the end of last year primarily come from 2 nodes, an N3 node and the N5 node. N3 node, that is because we're ramping up the N3 nodes. And N5, we continue to increase our capacity.

Therefore, these 2 add together, you see a big -- a bigger asset under construction at the end of last year. From what I can see going forward, this number will be -- will gradually come down in the next few years.

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay, Charles.

Charles Shi Needham & Company, LLC, Research Division - Senior Analyst

Yes. Maybe the other part of this question is because you are proceeding with that \$32 billion to \$36 billion, that -- it's hard for me to reconcile how this number comes down, at least in the next one year or so over the next 12-month horizon.

How do I reconcile that? Or are you expecting, like, next year, there's going to be a significant revenue -- incremental revenue come in to TSMC?

Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Charles, as we said, it's too early to talk about next year. But we also said that if we continue to see the future growth opportunities there, we will continue to invest.

Charles Shi Needham & Company, LLC, Research Division - Senior Analyst

May I ask the second question?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Sure.

Charles Shi Needham & Company, LLC, Research Division - Senior Analyst

Yes. So the second question is about CHIPS Act. I heard you provided some help to the question from another analyst. But can you kind of quantify the potential benefits from the U.S. CHIPS Act, the manufacturing incentives, which to my understanding, including both grants and investment tax credit? I know this is kind of relevant to our modeling going forward.

And maybe if I may, can I ask -- one of your U.S. peers seems to be favoring investment tax credit over grants. They seem to only want the investment tax credit, not the grants. What is TSMC's thinking between these 2 different funding opportunities?

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. Thank you, Charles. So Charles' second question is around the CHIPS Act. He is asking if you can quantify the potential benefits, both in terms of grants and also in terms of tax credits. And also, do we favor one over the other or preference for one over the other?

Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Charles, as I said, we are in the process of the application, so we're not in a position to disclose any details. I will refrain from sharing more information at this moment.

Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Director of IR*

Okay. Thank you, Wendell. All right. So thank you, everyone. This concludes our Q&A session.

Before we conclude today's conference, please be advised that the replay of the conference will be accessible within 30 minutes from now, and the transcript will become available 24 hours from now. Both of these will be available through TSMC's website at www.tsmc.com.

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So thank you, everyone, for joining us today. We hope you all continue to stay well, and we look forward to joining us again next quarter. Goodbye, and have a great day.

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