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INDEX TO BUSINESSES

These indexes cite notable references to most parent companies and businesspeople in today's edition. Articles on regional page inserts aren't cited in these indexes.

INDEX TO PEOPLE

BUSINESS & FINANCE

YONHAP/EPA/SHUTTERSTOCK

South Korean President Yoon Suk Yeol, right, and Dutch King Willem-Alexander toured ASML headquarters this month.

Governments Warm Up To Chips

Continued from page B1

pany's most recent earnings call. Nvidia declined to comment further.

By holding such meetings, governments can demonstrate to their citizens and local industry that they understand the semiconductor supply chain and are giving priority to innovation, said Jan-Peter Kleinhans of Stiftung Neue Verantwortung, a German think tank that recently published a report on chip diplomacy between governments. "It also typically feels good for heads of state or for high-ranking officials to be associated with highly innovative companies," Kleinhans said.

The marquee stop for a South Korean state visit to the Netherlands this month was the headquarters of **ASML**—the world's only producer of advanced lithography machines that are critical for making cutting-edge chips. Joining the South Korean delegation were the heads of Samsung and **SK Hynix**, two ASML customers.

ASML has a yearslong backlog for its machines. Samsung, TSMC and Intel are the only three companies positioned to manufacture the world's most-advanced semiconductors—and each is vying to get the earliest access to ASML's next-generation lithography equipment.

During the four-day trip, South Korean officials said the country's chip cooperation with the Netherlands had been transformed into a full-fledged chip alliance. The country's trade minister said a new joint ASML-Samsung investment into a research center in South Korea would give it the upper hand over rivals in high-end chip making.

ASML's departing CEO, Peter Wennink, in a September speech to university students said the emergence of government subsidies was helpful. But few countries have outlined a clear, long-term vision for their chip ambitions. Wennink cited South Korea—and President Yoon Suk Yeol—as an exception because of their focus on semiconductors as the cornerstone of the country's innovations. "Currently, we're at a disadvantage because governments and politics are fragmented," Wennink said.

The spotlight has brought offers of funding from governments.

Hinting at the chip focus of the South Korean state visit, Samsung Chairman Lee Jae-yong, who accompanied Yoon to the Netherlands, said around 90% of the trip had dealt with semiconductors.

As they lobby for more funding, chip makers also have become more familiar with the complexities and sometimes plodding pace of the political sphere. TSMC's Arizona project has been slowed by a labor spat that it wouldn't have faced at home in Taiwan. The U.S. enacted its $53 billion Chips Act in 2022, but the Commerce Department, which is overseeing it, has only made a $35 million grant so far.

"I joke that the Commerce Department is like the dog that caught the bus," Intel CEO Pat Gelsinger said in an interview. "This was way bigger than anything that they had ever done before."

The idea of state governments locking arms with a specific industry isn't unprecedented, policy experts said, whether it was during the competition over oil in the 1970s or the rush to procure vaccines during the Covid-19 pandemic.

As semiconductors have become more important to national security and economic competitiveness, dozens of partnerships between governments relating to chips have been created since 2021, focusing on policy coordination, workforce development, supply-chain monitoring and other topics, according to the Stiftung Neue Verantwortung report. Virtually none existed before.

Chip makers have had to quickly adjust to the insertion of their industry into the geopolitical conversation. Even some of the larger chip companies, including Nvidia, had no lobbying presence in Washington until recently. Nvidia hired several people to press its case in the capital in 2023 as U.S. government export controls tightened around its chips in China.

Until recent years, it was unusual for such high-ranking government officials to take part in trade delegations, according to industry insiders. Many see it as the unfolding of a new global business order where allies such as the U.S., Japan, South Korea, Taiwan and European countries help build up each other's chip industries while excluding China.

Chris Camacho, the chief executive of the Greater Phoenix Economic Council, recently hosted a Dutch delegation led by the country's prime minister—the first time in his career that he had seen a head of state involved. Arizona has become a hotbed of semiconductor investment in recent years, led by Intel, which has long had a presence there, and TSMC, which is building a factory near Phoenix.

"Post-World War II, we went through an era of significant global expansion, and I think the next era is going to be allies coming together to assess how to meet the growth of the digital economy," Camacho said. "Adversaries are probably going to be left out of that equation."

During the visit, ASM International, a chip-manufacturing-equipment maker based in the Netherlands, said it would spend $300 million expanding its research-and-development operations in Arizona. Benjamin Loh, the CEO of ASM International, was part of the Dutch delegation.

"These days it's difficult to completely decouple business and politics given all the attention semiconductors are getting," Loh said.

Fracker Cooks Up Green Gas

Continued from page B1

Energy Agency warned in a November report, potentially requiring an "inconceivable" 32 billion metric tons of carbon captured at a cost of more than $3.5 trillion a year until 2050 if current oil-and-gas consumption trends continue.

Carbon capture got a boost in the U.S. in 2022, when the renewable-energy and drug-cost law known as the Inflation Reduction Act increased tax credits for the practice, but the economics remain unclear and regulations affecting the industry are still being created. Few companies have committed to projects as aggressively as BKV.

BKV started pumping CO_2 into a well in Bridgeport in November—one of the first such efforts to get off the ground. If all goes well, the company will reap nearly $18 million a year in government subsidies based on the volume of carbon it injects—an amount Kalnin estimates could cover the cost of the project in three or four years.

Skeptics argue that abatement technologies are expensive boondoggles.

On a recent windy afternoon at the well site, Lauren Read, a former Exxon engineer who now heads BKV's CCS business, pointed to a round, white meter with a readout showing how much CO_2 is flowing into the ground. "This is the cash register," she said.

BKV has contracted to sell gas as well as blockchain tokens tied to carbon-dioxide reductions to the French utility **Engie**—one of the first such deals in the world.

Kalnin, a former McKinsey consultant, crafted the company's decarbonization strategy during the pandemic, as he read through marketplace surveys. Customers were saying: We want three cars, big houses and cheap, abundant power, Kalnin recalls. But they also didn't want to feel bad about the environment.

Kalnin told his staff to crunch the numbers on what it would take to reduce or offset all the emissions associated with both BKV's gas-production operations and the combustion of that gas by its customers—a target nearly unheard of in the energy industry. That currently totals roughly 15.3 million metric tons of CO_2 a year, equivalent to the emissions from the annual energy use of almost two million homes.

The company figured it could eliminate around 7% of that largely by retooling to halt leaks and vents of methane, a potent greenhouse gas, at its 6,000-plus gas wells. BKV is about halfway through that effort now.

For the other 93% of its emissions, mostly associated with the burning of its gas, the company settled on CCS. Kalnin took the plan, which had a price tag of $500 million to $1 billion, to BKV's board, which approved it.

Kalnin started with the easiest project: sequestering the carbon dioxide that is mixed with the natural gas it pumped up from its own wells. That CO_2 was being vented into the atmosphere at a processing plant in Bridgeport. Read and her staff designed and drilled the first carbon-sequestration well in 18 months.

At full capacity, the well—a nearly 2-mile-long, concrete- and steel-lined shaft drilled into a layer of porous rock—will store CO_2 from the processing of roughly half of the company's natural-gas output, around 210,000 metric tons of CO_2 a year.

Engie is buying all the emissions reductions associated with that storage, so BKV can't use it to offset the footprint of its own operations. BKV will have to tap other companies' CO_2 to store in future wells. That could be more difficult, since those companies are likely to want a share in the CCS subsidies as well as the emissions reductions.

DESIREE RIOS FOR THE WALL STREET JOURNAL

Compressor units at BKV's compression station in Bridgeport.

Rivals Beat Apple in Smart Cars

Continued from page B1

the price of the car and said it would take a few months to reach the market.

Two days before Xiaomi, Huawei displayed models including a pure-electric SUV that it plans to sell starting from around $70,000, competing against the likes of Tesla and **BMW**. Tesla's Model X SUV starts at around $100,000 in China.

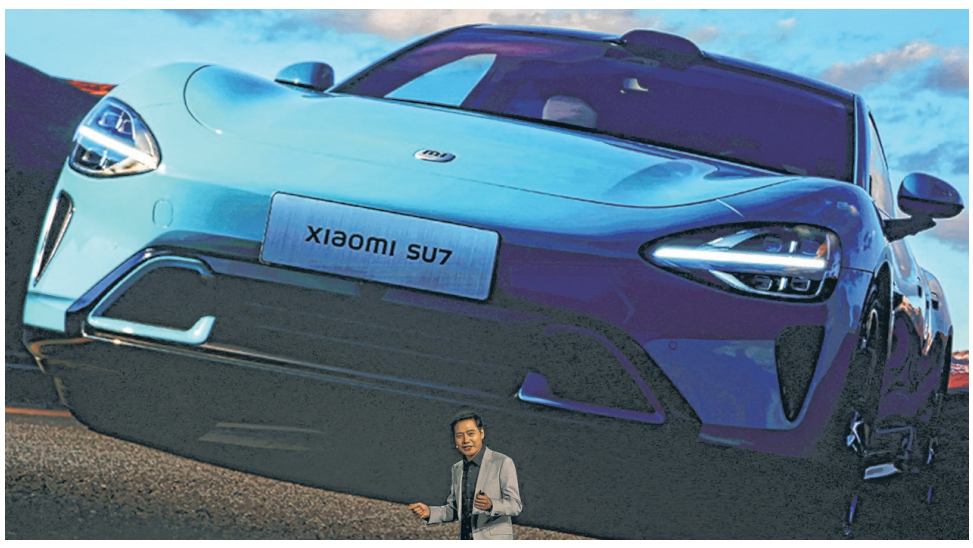
Tesla has been slashing prices in China and some in the industry warn of overcapacity and thinning profit margins as more tech companies pivot to cars.

"I think the Chinese car companies are extremely competitive," Tesla CEO Elon Musk said at a New York Times event in November. "By far our toughest competition is in China."

Huawei is trying to recover after being hit in recent years by tough U.S. sanctions that blocked it from getting advanced chips made with U.S. technology. It recently released phones with homegrown chips that offer high download speeds similar to fifth-generation, or 5G, phones available in the U.S.

Richard Yu, the director of Huawei's automotive business, said the company can offset the impact of U.S. sanctions by selling cars.

Huawei's car strategy reflects its smartphone roots and the goal of keeping its customers engaged while they are on the road. The company isn't selling Huawei-branded cars but rather codesigning its models with several established carmakers. These models come with Huawei's operating system and driver-assistance software, and its smartphone customers can synchronize settings and apps between phone and car.



FLORENCE LO/REUTERS

Xiaomi founder Lei Jun at an event in Beijing Thursday showed off the company's first car.

Huawei's latest SUV, a collaboration with Chinese carmaker **Seres**, follows a lower-end model released by the duo in September with a starting price of $35,000. Seres said the lower-end model garnered more than 100,000 orders with nonrefundable deposits in its first 2½ months. By comparison, Tesla's Model Y starts at $37,500 in China.

Xiaomi resembles Huawei in seeing cars as a way out of a tight spot. After rapid growth in China and emerging markets with low-cost phones that appealed to younger users, Xiaomi in recent years has seen profit fall, while demand for smartphones has plateaued. It has been squeezed by other phone makers on the lower end.

Lei, Xiaomi's founder, has said he wants to target the higher end and go head-to-head with the likes of Apple, **Samsung** and Huawei in key technologies such as chips, smart manufacturing and robotics.

If there is any reassurance for Apple in the rapid market shifts, it is that its suppliers in China and Taiwan are jumping into the EV business, too. That suggests the iPhone maker would have ready access to partners and technology if it ever decided to make a car.

Foxconn Technology, the biggest assembler of iPhones, wants to serve as a contract manufacturer for brand-name carmakers, while iPhone assembler **Luxshare Precision** is expanding its car-parts business. China's biggest EV maker, **BYD**, is an Apple business partner, assembling some Apple products and supplying components.

Dan Ives, an analyst with Wedbush Securities, said he didn't think Apple would want to be on the outside looking in for too long. Ives expects an Apple car to arrive sometime around 2026.

Watch a Video

Scan this code for a video on the new cars from Apple's Chinese rivals.

LOTTERY OF THE STATE OF MINAS GERAIS

LEMG BIDDING NOTICE

The LOTTERY OF THE STATE OF MINAS GERAIS - LEMG announces that it will carry out the bidding entitled INTERNATIONAL PUBLIC AUCTION Nº 02/2023 - HIGHEST OFFER TYPE, for contracting, exclusively within the limits of the State of Minas Gerais, a company to carry out the operational activities inherent to the exploration of Lottery games via the On-Line/Real Time System, according to Lottery official rules as of the legislation, through the granting of a public service concession. The Notice can be obtained on the website **www.loteriamineira.mg.gov.br**, tab "tenders". As said in the Notice, delivery deadline for tender submittions in sealed envelopes will be 05/03/2024, by 4 pm, and the date, time and place of opening of Envelope No. 1 - Remuneration Proposal will be 06/03/2024, 2 pm, at Rod. Papa João Paulo II, 4.001, Ed. Gerais, 13th floor, meeting room No. 6, Serra Verde, Belo Horizonte/MG.