Is there a tech bubble?

Between the mass layoffs in the tech industry and indicators of an economic slowdown, some have raised concerns as to whether we might be witnessing a bubble about to burst. Is this really the case, or are they merely course corrections from over-hiring during the pandemic? How is Poland's tech industry fairing? Which tech segment is safe?

BY SEAN REYNAUD

SHUTTERSTOCK

Poland is the third most competitive IT market in Central and Eastern Europe after Estonia and Lithuania. It is also the second-biggest outsourcing hub for IT services, having attracted billion-dollar investments from global tech giants such as Microsoft and Google. The Polish IT sector has a workforce of an estimated 525,000 Polish employees with an average pay equal to 174% of the country's overall average salary, according to a report by Emerging Europe Limited in London.

That is even with COVID's negative impacts on growth. The pandemic contributed to growth in some ways by boosting hardware and software sales, including virtualization, cybersecurity, and remote asset management tools.

EUROPE'S SILICON VALLEY

By the end of 2030, the value of Poland's digital economy is forecast to reach an estimated €122.6 billion, according to Statista. The main drivers for the tech sector include globalization of the ICT market, foreign investment, digitalization of society (supported by EU funding), Poland's geographic proximity to major European countries and IT centers, and low tariffs. Microsoft, Lenovo, Amazon, Apple, Google, and many others have invested in the Polish tech market and have moved operations here.

Poland's IT and technology industry has been doing well since joining the EU in 2004. If one googles "Poland's tech industry," one is bound to see titles about Poland's transformation into an IT Hub, that we should "forget about Silicon Valley" because Poland is where the future lies. In addition, the country has 60,000 technology companies and ten "unicorns," according to intelligentcio.com.

IS THE GAMING GIG UP?

While computing services are still the largest piece of the tech pie, gaming and streaming services, as well as e-commerce, play a major part in Poland's tech growth. Poland's video game market revenue alone stands at $850 million.

Poland has nurtured multiple successful game companies, including CD Projekt Red, responsible for the release of The Witcher games and Cyberpunk 2077, whose subscribers reached a worldwide total of 1.6 million.

Most games developed by Polish companies were purchased through the Steam platform. However, CD Projekt Red's gog.com (Good Old Games) also reported a net profit of $1.2 million in 2022, even after suspending operations in Russia and Belarus, which represented approximately 4% of sales historically. Therefore, as Steam releases newer games, gog.com has chosen to focus more on classic games, filling a niche that has netted an 18% growth in its user base.

HOW HOT IS THE STARTUP SCENE?

It would seem then that tech startups would be an easy sell in Poland. After all, there is a lot of investment here. However, there are issues with startups, generally, even in this positive tech climate. Some of the issues that hinder startups in Poland include the costs of hiring employees, obtaining funding for further development phases and/or government bureaucracy, according to startuppoland.org.

Also of note are the frequent changes in legal regulations, which make it difficult to formulate a plan of action. If a startup intends to secure money, it needs to find daring investors willing to test a solution to a problem that may or may not have an answer. Startups are inherently risky endeavors, and the Polish regulations and investment climate are not particularly favorable for risk-takers. Needless to say, shortfalls in funding debilitate startups in Poland.

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One of the main factors keeping Polish startups from achieving unicorn status is an unwavering focus on the domestic market at the expense of international strategies. However, according to Nico Schoenenberger, Early-Stage Investor at 10x Founders, things have changed.

"I think the new generation of Polish startup founders realizes the need for a global mindset from day one. That may be because of education: many young entrepreneurs have worked for US companies or CEE companies that became global champions. They see the opportunities in looking outside the domestic market," he explained.

Investors also emphasize the role of AI in new startups' strategy, which has become a springboard for thousands of apps built on top of existing AI engines. In fact, most startups at this year's Infoshare tech conference in Gdańsk flew under the AI banner. A few of these AI Startups included names like Bin-e, Edward.ai, Tuatara, Molecule.one, etc. It is evident that AI is here to stay in Poland.

AI TAKING OVER

Following the announcement of OpenAI's ChatGPT, a buzz about the potential for AI and images of Terminator robots, "Skynet," and the Matrix flooded public internet spaces. Large Language Models (LLM) are being developed and deployed by practically all tech giants, including Google, which had to scramble to catch up with the Microsoft-funded OpenAI.

The initial shock and awe that followed ChatGPT's meteoric rise (reaching one million users in five days), quickly turned into an "arms race" for the tech industry. Since 2015 the concept of the "Fourth Industrial Revolution," powered by increasing interconnectivity and smart automation, integrated with gene editing and advanced robotics, has blurred the line between the physical and digital worlds.

"Technology will provide more and more ways to bring people together," said Microsoft's CEO Satya Nadella. "I see these technologies acting as a co-pilot, helping people do more with less." In an interview with American broadcaster NBC, Nadella was asked when he thought things had changed with AI: "When it started to show emergent qualities, when it learned to code, when it was not trained specifically, that's when I felt, wow, this is different."

But not all are convinced the AI boom is anything more than a fad, an NFT of the month. David Rosenberg, Chief Economist and Founder of Rosenberg Research cautions that AI investment, with all its potential, echoes what happened in the late 90s with the dotcom bubble. Investments in AI are all over the place, with Google working to catch up to Microsoft and even companies like Heinz Co. and Wendy's Co. looking to use AI to boost efficiency.

VR IS BACK?

While tech firms are diverting resources to chase the AI train, many projects have been scrapped in recent months, including virtual reality and the metaverse. Although, with the announcement of Apple's Vision Pro, the buzz has returned to the VR world. Some Polish games studios are poised to make a splash, having traditionally had a strong presence in the simulator and VR games segment.

VRFabric, a subsidiary of Warsaw-based SimFabric, has recently signed an agreement with Apple to collaborate on releasing two games for Apple Vision Pro devices, including the use of Apple's network services and augmented and virtual reality technology.

RESILIENCE AND INNOVATION

Polish tech companies have long proven competitive internationally, especially in software-heavy niches. The country's vast pool of coders and other IT talent has attracted all the major players to locate their R&D centers here. Even amidst the layoffs, Poland's tech market has remained strong, even seeing a 12% increase in average salaries of IT specialists in Poland, according to the "Salary Report 2023".

Even if the tech market experiences a global hiccup, Poland seems poised to remain competitive. According to Nico Schoenenberger, the layoffs in late 2022 and early 2023 were merely a freeing up of talent that can be utilized elsewhere on more innovative and selective projects.

"Investors have become more picky. They are taking way more time in terms of due diligence now," he said, and added: "We are now seeing a clearing out to a certain extent. What has disappeared is what I like to call 'tourist VCs,' people who chose to invest for lifestyle reasons without really understanding how to invest."

Yet tech is a better bet than other industries. Speaking more broadly, the tech industry is "the only game in town" when it comes to investment right now. It is outperforming the S&P 500 in the US, with the tech sector gaining 27% since January. Currently, tech stocks are the most attractive, and with American investment in Poland's tech industry, Poland stands to reap the rewards. This remarkable growth contradicts the dismal news from other investment sectors as US interest rates have climbed. ●

Grid for all weather

Poland has been switching to renewables by leaps and bounds over the past years. The big question is: can the power grid handle this excess of power and what if it can't?

BY SEAN REYNAUD

The doom and gloom drumbeat, punctuated with stories of weather catastrophes around the world, more persistent with every news cycle, leaves no room for doubt: the effects of climate change are here. The World Meteorological Organization (WMO), a United Nations agency, now says there is a 66% probability that global temperatures will surpass the 1.5°C threshold in at least one of the next five years.

This is a significant increase from the WMO's previous estimate of 48% just a year ago. Even if the 1.5°C target is not exceeded, the WMO predicts with virtual certainty that one of the next five years will be the hottest ever recorded in human history. The urgency to reduce emissions should have been addressed approximately three decades ago. Which is why many stragglers, like Poland, have now taken a full steam ahead approach to switching to green energy.

INVESTING in Poland

FROM 0 TO 100

In Poland, the availability of solar panel subsidies has led to a remarkable increase in prosumer installations over the past years. As of the end of August 2022, the country had installed over 20 GW of renewable energy, with 11 GW specifically generated from solar photovoltaic (PV) installations. This represents an impressive year-on-year growth of over 80%, considering that by the end of August 2021, the total solar capacity stood at 6 GW.

Solar PV now covers nearly 10% of Poland's electricity demand, a meteoric rise from less than 1% just three years ago. The Energy Market Agency's data reveals that as of August 2022, there were 1,131,973 photovoltaic micro-installations under 50 kW in the country, thanks to favorable financial conditions for prosumers. Under Poland's net-metering scheme, prosumers with systems up to 10 kW could supply 1 kWh to the grid and receive 0.8 kWh in return for free, while larger installations above 10 kW had a ratio of 1 to 0.7. Additionally, prosumers were exempt from paying distribution fees for grid usage.

WINDS OF CHANGE

While wind energy, both onshore and offshore, may have faced some challenges, the Polish Energy Policy (PEP) Road Map 2040 incorporates offshore wind plans as part of Poland's energy goals by 2027. Some initial advanced projects have already emerged or are expected to be completed by 2024.

The strategic plans envision the potential for generating 10.3 GW of power, made possible by a law enacted on January 21, 2021. This law allows companies, some under the control of the Polish State Treasury, to develop offshore wind farms. Polish Energy Group (PGE and their Danish partner, Ørsted), intend to erect wind farms with 2.5 GW on the Baltic Sea. PKN Orlen, has concessions to construct a 1.2 GW offshore wind farm.

The Polish Wind Energy Association (PSEW) estimates that the Polish energy system will require 1,000MW of wind energy capacity each year to comply with EU targets. Meanwhile, state-owned lender BGK projects that investments in offshore wind farms under Polish authority in the Baltic Sea could reach PLN 130 billion over the next decade.

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NEW METERING

As of April 1, 2022, the net-metering system in Poland was replaced with a net-billing system. Under this new system, the amount of electricity injected into and retrieved from the grid is balanced through hourly settlement using a metering system. Prosumers are now rewarded for any surplus energy they feed into the grid at the wholesale price, while they pay for the consumed energy on par with other consumers.

A public opinion survey commissioned by the Polish Photovoltaic Association, conducted in May 2022, revealed significant public support for solar energy. Solar PV emerged as the most favored technology among the respondents, indicating favorability towards solar installations in their neighborhoods.

TOO NOISY AND TOO CLOSE?

Nonetheless, there are concerns raised about the visual and acoustic impact of wind turbines, at least in their current design. A recent article on DW.com highlighted complaints against companies such as Energia Eco and Enerco, which operate wind farms along the Baltic coast, for their alleged lack of consideration in turbine placement. However, there is a 2016 law, commonly known as the "10H rule," which mandates that the distance between a wind turbine and the closest residential house or nature reserve must be at least ten times the height of the turbine.

As a result of the 2016 law, future wind turbine permits will require construction offshore or in remote areas. However, there have been ef-

In 2022, renewables produced 36.8 terawatt hours (TWh) of electricity, **20%** more than in 2021.

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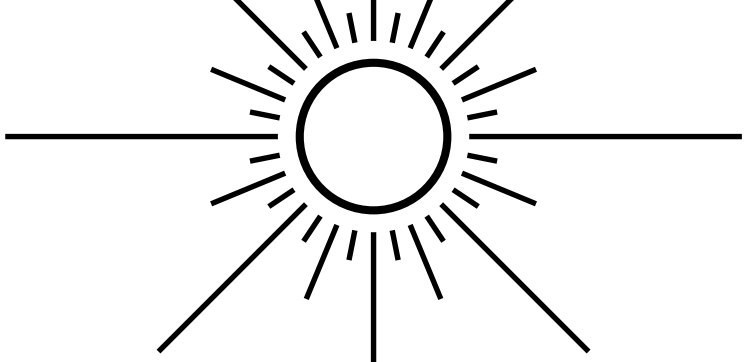

forts to find a compromise by legally reducing the required distance between turbines, houses, or nature reserves to 500 meters. While a slight extension to 700 meters could still enable some projects to proceed, it would severely limit the capacity to generate green energy. Damian Babka from the renewable energy producer Qair Group expressed concerns that such a restriction would significantly hamper the potential for green energy generation.

CHANGEABLE WEATHER

Besides the less-than-stable legislation on power generation in Poland, what is holding back the transition to renewables? In part, it is the weather itself. The sun does not always shine, nor does the wind always blow. Poland plans to implement a nuclear power strategy in the next few decades to offset the uncertainty ingrained in Intermittent renewable energy sources (IRES).

According to Climate and Environment Minister Anna Moskwa, Poland aims to have approximately 73% of renewables and nuclear power in its energy mix by 2040. The country expects to invest around PLN 726 billion in new capacities by 2040, with 60% of the investments going into renewable energy sources. Nuclear power is projected to account for 26% of the total investment.

LIMITED STORAGE

While the production of energy ramps up, there are issues with storage. Insufficient power generation is one problem, usually solved by importing power from abroad. But overgeneration is a different problem altogether, and even if the solution is symmetrical, it may not always be possible to find a willing electricity consumer next door to offload the excess.

Back in late April, the national power grid operator PSE had to cut off some of its renewable energy generation capacity, and for the first time, this fate fell not only on wind farms, but also on solar power producers.

Poland currently has limited energy storage capacity, primarily consisting of pumped hydro, with 1.7 GW and 7.6 GWh in 2020. Battery storage deployment is also limited, with a total capacity of around 9 MW and 33 MWh in 2020, mainly used for voltage stabilization in the distribution system.

However, Poland aims to increase its energy storage capacity to support the integration of variable generation and enhance system flexibility. State-owned power company PGE plans to build 0.8 GW of energy storage by 2030, and the Energy Policy of Poland 2040 targets approximately 1.0 GW of energy storage (excluding pumped storage) by 2040.

Recent regulatory amendments have been made to support energy storage, including establishing a licensing process and regulatory status for battery storage, eliminating double tariffs for charging and discharging, providing discounts on grid connection fees, and allowing storage participation in renewable energy support schemes. In addition, distribution system operators are now permitted to include electricity storage in their investment plans and recover storage costs through tariffs if justified by a cost-benefit analysis.

OR NO STORAGE AT ALL?

Another possible solution is to make the grid more resilient and efficient to power generation fluctuations by turning the knobs on power usage when necessary. A UK-based tech company, Oaktree Power, is looking to partner up with Polish large real estate portfolio managers and implement solutions they have already figured out on their domestic grid, arguably 10-15 years more advanced than the rest of Europe, according to Michael Cox, director of corporate partnerships, at Oaktree Power.

"We look to optimize a customer or site's energy usage, and we do that by monitoring electrical usage and modulating or reducing large assets on that site," Cox said. "It works quietly and intelligently in the background, and users should not be aware it is happening. Therefore, we can maximize savings for the building," he added.

While it may seem counterintuitive, buildings could save even when they need to ramp up their energy consumption – after all, relieving the grid of excess power is a value in and of itself. Moreover, by plugging into both the grid and the consumer, it is possible to modulate and mitigate power surplus and dips in power generation when the skies are gray. ●

Production from photovoltaics increased by 4 TWh, up by 102% and onshore wind by 3 TWh, up by **19%.**