

Slovenia: Green, smart and creative

The Southeast European nation celebrates its 30th anniversary as one of the most advanced and sustainable economies in its region

At the heart of Europe geographically, tiny Slovenia is also at the center of the European Union's efforts to engineer the bloc's economic recovery from COVID-19 this year. Over two-thirds of the way through its presidency of the EU Council, has it realized the main goal it had when it took on that responsibility in July?

The first priority of Minister of Finance Andrej Šircelj was to gain council approval for the 27 EU member states' Recovery and Resilience Plans, which could see a combined €800 billion being invested in those countries' economies. By the end of October, 22 plans had already been approved, including Slovenia's. Šircelj insists the EU funds will allow member states "not only to recover from the COVID-19 crisis, but also to create a resilient, greener and more digital, innovative and competitive Europe."

Slovenia has a headstart in all of these areas. According to the International Monetary Fund, although its gross domestic product contracted by 4.2 percent in 2020 to fall to €47 billion, it has wiped out those losses and could achieve growth of 6.3 percent this year. "Slovenia's response to the pandemic was very swift, our measures were efficient, and the financial and economic data shows that we are on a good path to recovery—our unemployment level is currently lower than it was before the pandemic, for instance," says Šircelj. "In addition, our position on the capital markets is strong, our ratings are good and we're recognized as a very stable and trustworthy country in the long term. In 2021, we issued a new 60-year government bond with 0.7-percent yield and a new 10-year benchmark bond at a negative yield, and demand was ample across the two tranches."

A major reason for the country's rapid return to robust growth is that it has transformed its economy toward innovative, sustainable and high-tech export sectors over the 30 years since it gained its independence from the former Yugoslavia. "Slovenia is a small and open economy, highly exposed to foreign trade, international transport and communication. We have a strategic position in the middle of Europe and, as the most western of the Slavic countries, very strong connections with Western Europe. Our export-oriented position was developed as a consequence of losing the Yugoslav market, which forced us to do more business with EU countries and the rest of the world. Today, exports are the main driver of our economy and we reached almost €33 billion from exports of goods and services in



Andrej Šircelj
Minister of Finance



Ljubljana consistently ranks among the world's greenest cities

2020," explains Sibil Svilan, president and CEO of SID Bank, the country's promotional development and export bank.

Blaž Brodnjak, CEO of NLB, Slovenia's largest international financial group, expands on this: "Even during the pandemic's heaviest lockdowns, the production part of our economy was functioning and, today, we are looking at full utilization of capacity in the productive sector. There is now a demand for investment loans to expand capacity, and for automation, robotization and digitalization, which have become the name of the game in Slovenia." He reveals that even the service industries worst hit by the crisis have come through it in great shape. "The hospitality sector was shut for six months, but Slovenia was in a good enough position to keep these businesses alive and this summer the sector was booming. It became impossible to book a room on our Mediterranean coast or visit our spas!"

The country offers numerous advantages that not only help its domestic businesses to thrive but are also attracting increasing numbers of foreign investors, notes Šircelj. "Our tax system is modernized, simple, efficient and stable, for instance. Slovenia also has an adequately capitalized and robust banking sector, a competitive and well-diversified economy, a strong health system, a good educational system, and we encourage companies and investments with many incentives."

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Andrej Šircelj, Minister of Finance

Svilan provides another perspective on why it is such an enticing place to be based: "Our workforce is our greatest asset. Slovenia has a well-educated workforce with high labor productivity compared to other countries in this part of Europe. We are also one of the safest and greenest countries in the world—the quality of life is very high here."

That quality of life is set to rise even further as Slovenia starts to implement its own EU Recovery and Resilience Plan. "These EU funds will complement our national budget. We will support green and digital projects, strengthen health and social systems, support research and development, and also encourage education, reskilling and lifelong learning. I'm looking at the future with realistic optimism," asserts Šircelj.

An extremely export-oriented country

Zdravko Počivalšek, Minister of Economic Development and Technology, reveals how digitalization is key to Slovenia’s competitiveness

In the years leading up to the pandemic, Slovenia recorded a robust economic performance with export levels increasing by over 83 percent within less than a decade, for example. How would you depict the Slovene economy and what opportunities does it offer?

We are an extremely export-oriented country—exports are our main engine and 85 percent of what we produce in products and services, we export. Currently, 75 percent of our exports go to the European Union (EU). Our priority markets outside the bloc are in the Western Balkans, China and the U.S., while we also intend to strengthen our diversification in a number of other prospective markets around the world.

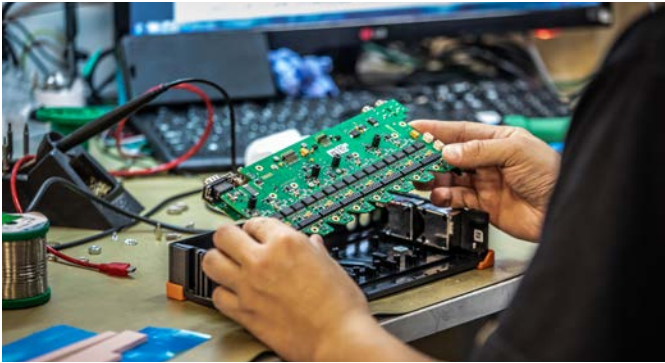
In terms of our key economic strengths, we have most export-development potential in the automotive industry and advanced mobility, metal products, machinery, pharmaceuticals, the medical sector, electric equipment, electronics, information and communication technologies, and the food and beverage sector.

“The EU Recovery and Resilience Facility offers us an enormous opportunity to speed up Europe’s post-COVID recovery through massive investments in green and digital transitions.”

Zdravko Počivalšek
Minister of Economic Development and Technology

Slovenian productivity—a vital long-term factor in economic development and wellbeing—has grown in the recent past, mainly due to the workforce’s skills, a favorable working environment and better use of technology. Slovenia has played a pioneering role in introducing the most demanding technological solutions for digital transformation. In the field of advanced digital technologies, Slovenia is the frontrunner. For example, we are recognized globally as one of leaders in artificial intelligence (AI), which is why we were chosen as a host country for UNESCO’s International Research Centre on AI. Another illustration in advanced technology is that our blockchain projects and companies realized 5 percent of the total invested in blockchain globally in 2017-18. But there is still a lot of potential in technology, particularly in the digital transformation of traditional companies and sectors.

Slovenia is expected to rebound rapidly from COVID-19 to achieve a 3.5 percent increase in gross domestic product (GDP) in 2021 and 4.6 percent in 2022. How has the government invested in this recovery?



Slovenia is a frontrunner in advanced digital technologies

A number of measures were taken both for citizens and the economy. So far, eight anti-COVID packages amounting to €6 billion have been adopted. We decided to react quickly because of our experience of the 2008 global financial crisis, and our main task was to save as many jobs and companies as possible.

For instance, the pandemic has accelerated the development of Slovenian companies and their digitalization. The government reacted immediately to this acceleration and offered support to small and medium-sized enterprises (SMEs) for their digital transformation with the use of Recovery Assistance for Cohesion and the Territories of Europe (React-EU) funding. In upcoming years, the government will invest further in the Slovenian economy’s recovery and to improve its resilience by transferring funds into green, digital and sustainable economic development.

The EU Recovery and Resilience Facility offers us an enormous opportunity to speed up Europe’s post-COVID recovery through massive investments in green and digital transitions. Slovenia, like the entire EU, is facing challenges that pose a threat on the one hand and an opportunity on the other, depending on how successfully we face them. The answer is the development of a cohesive innovative ecosystem that forces us to excellence. The most important task for us as a government is to better connect companies and research institutions. On a national level, we have to make additional effort to force the transfer of innovation to markets and to strengthen the innovation potential of companies by improving international cooperation.

What is Slovenia’s roadmap for preparing for the fourth industrial revolution, particularly in terms of its SMEs, which currently generate 47 percent of the country’s exports?

The competitiveness of the Slovenian economy is strongly linked to digitalization, which contributes to the greater international competitiveness of our SMEs as well, as it allows them to easily and quickly penetrate foreign markets or expand operations in existing markets. It also enables shorter processing times, lower administration costs, increases the transparency of business processes, boosts international sales, improves competitive positioning, simplifies channels, expands market and business regions and, consequently, ensures higher revenues.

Since 2014, an important priority for my ministry has been to provide



Zdravko Počivalšek
Minister of Economic Development and Technology



Hidria Holding is a global leader in cold-start systems for engines

support for research, development and innovation (RD&I) and to create a supportive environment for digitalization and innovation in which companies can develop.

Another of our priorities is to enable and increase internationalization of our companies through the greater use of information and communication technologies. A third is to strengthen the competencies of Slovenian employees and business management in the fields of digitalization and the economy, while our fourth priority has been to encourage industry 4.0, including in areas such as automation and robotics.

We currently have a program of digitalization and digital transformation measures that are complimentary to our core digital ecosystem and the financial support packages that we offer specifically for SMEs. We are also supporting networking through strategic RD&I partnerships, and are implementing demonstration and pilot projects in which key emergent technologies for industry 4.0 are required.

“We have an attractive business ecosystem that promotes itself for green, creative and smart production, and custom-made support is given to investors.”

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We are intensively introducing advanced digital technologies into our business processes and governmental procedures as well, and we are frontloading investments into the digital transformation of businesses as a priority in the Slovenian Recovery and Resilience Plan, which was adopted in July this year.

Over the last 10 years, the stock of foreign direct investment (FDI) in Slovenia has doubled. What is the government’s overall policy toward attracting investment?

We have put effort into attracting sustainable investments with higher added value. In the past, we have been very successful and, in 2020, FDI into the country amounted to €16.6 billion. Slovenia is a very beautiful, diverse place and I invite everyone to experience the only country in the world with the word “love” in its name. We have an attractive business ecosystem that promotes itself for green, creative and smart production, and custom-made support is given to investors through our national one-stop shop, SPIRIT Slovenia.



The country offers excellent land-sea-air infrastructure

Environmentally focused, high-tech innovation

Far from being an idle boast, Slovenia’s claim to being a green, creative and smart country is an accurate reflection of an economy with a long tradition of combining experience and knowledge with innovative thinking and care for the environment. As a result, the country has a global reputation for its competitiveness in areas of the green economy, environmental technologies, robotics, mobility, digitization, biotechnology, research and development, organic food and the creative industries, among other sectors.

Despite having the sixth-smallest population in the European Union, Slovenia ranks third highest in the bloc for eco-innovations, with companies of all sizes and ages developing technical products that prioritize sustainability for numerous sectors. The country’s green credentials are also evidenced by the fact that it is a world leader in environmental health and ecosystem vitality. When it comes to creativity, Slovenia is placed 32nd on the latest Global Innovation Index, scoring well above average for its supportive institutions and business environment, human capital and research. It is also the top Central European country for the registration of patents, demonstrating the uniqueness of the added-value solutions its businesses are creating.

It’s being smart as well as green and creative that makes Slovene enterprises really stand out, however. By ensuring that their high-quality, sustainable and technologically advanced products and services are globally competitive, the country has become the worldwide leader in cross-border trade. Today, its innovative automotive components are integrated into almost every European vehicle, for example. As a consequence of this strength, Slovenia is ranked fifth by the Organisation for Economic Co-operation and Development for the generation of smart products.

Slovenia fact box

- **Population:** 2.1 million people
- **Capital city:** Ljubljana
- **EU accession:** 2004
- **Neighboring countries:** Austria, Croatia, Hungary and Italy
- **Global Innovation Index:** Ranked 32nd
- **Global Peace Index:** 8th-safest country

A strategic location at the heart of Europe

Tomaž Kostanjevec, CEO, SPIRIT Slovenia, explains why the Central European country has become a prime destination for global investors

SPIRIT Slovenia is the gateway into the country for foreign investors. Could you introduce the national agency?

As the government's business development agency, SPIRIT Slovenia is entrusted with regulatory, expert and development tasks that serve to increase the competitiveness of the country's economy in entrepreneurship, internationalization, foreign investment and technology. In addition, we are the focal point for integrating and reforming the Slovenian innovation ecosystem.

In terms of foreign investment, SPIRIT Slovenia is the central reference for potential investors and international companies looking for new business opportunities. We treat each investor individually, assign them a key contact within the agency and guide them throughout their entire investment process. We also cooperate closely with a network of regional development agencies when identifying investment opportunities and locations. Once an investment is complete, we include the new business in our aftercare program that helps them grow within the country and beyond.

SPIRIT Slovenia also connects foreign businesses with domestic suppliers and business partners. One of our biggest achievements in past few years is setting up a one-stop shop for investors and our exporters.

How would you assess Slovenia's attractiveness as a destination for foreign direct investment (FDI)?

We have been recording growth in FDI for several years, with companies investing in production, processing, finance and insurance activities. Especially in the manufacturing industry, investors have recognized the potential of Slovenian companies and have included them in their supply chains as well.

Most foreign investors are attracted by Slovenia's strategic position at the heart of Europe, our excellent transport and communications infrastructure, value chains, industry clusters and centers of excellence. Investors keen on locating their operations in the center of a market with 500 million consumers find Slovenia's international commercial contacts and the land-sea-air transport system ideal. As an example, it's four-days quicker to connect to Asia and the Far East across Slovenia than from the north of Europe, while we are only 3.5 hours from Vienna, four hours from Munich and five hours from Milan. We are currently developing our infrastructure even further by, for instance, building an additional railroad to our multi-purpose port of Luka Koper on the Adriatic Sea, which provides users with the shortest route from Asia to Central Europe.

Slovenia also offers a stable and cutting-edge business environment. In



The port of Luka Koper is Asia's gateway to Central Europe



Tomaž Kostanjevec
CEO
SPIRIT Slovenia

the last decade, gross domestic product (GDP) per capita has grown from €33,000 to €44,000 a year. We also have the eighth-lowest corporation tax rate among European Union (EU) members, excellent government incentives, low costs of living, low import tariffs and exchange rate stability, while establishing a company in Slovenia is fast and simple.

Our economy is well diversified, fits into the European production chain and we are the third-most industrialized EU member state. We kept producing throughout the pandemic and came out of the first waves even stronger, as maintaining our production chains allowed us to assist many of our neighbors that were looking for new suppliers. We were there for them, helped them achieve their goals and demonstrated that we are a reliable partner.

“Our economy is well diversified, fits into the European production chain and we are the third-most industrialized EU member state.”

Tomaž Kostanjevec, CEO, SPIRIT Slovenia

In terms of our relationships with our neighbors, we have excellent long-term connections with Austria and Germany, plus good connections with all the countries of the former republic of Yugoslavia, which are well linked to our industry. Additionally, we are proud of our very skilled and highly productive workforce, and our well-developed education system. Almost half of our young people study and research at Slovenia's globally renowned universities, with 41.2 percent of students graduating in science and engineering. Slovenian people are also known for foreign languages, with many speaking at least two, most commonly English, German or Italian. Slovenia offers the perfect environment to live in as well, ranking as the eighth-safest country in the Global Peace Index and 13th worldwide in Numbeo's Quality of Life Index.

In 2019, Slovenia spent more than any other nation in the region on research, development and innovation (RD&I). How is SPIRIT Slovenia working to boost RD&I even more?

Slovenia allocates 2 percent of its GDP to R&D, we have 4,200 research-



Industry 4.0 is a Slovenian priority

ers per million people, industry accounts for 80 percent of private investment in R&D and, impressively, the Slovenian Office for Intellectual Property receives an average of one patent application every day. Slovenia gives up to 100-percent tax deduction on R&D expenses if they are made within five years and foreign investors can also claim a corporate-tax reduction on amounts invested in R&D.

SPIRIT Slovenia is a key stakeholder in developing the country's innovation ecosystem. During the pandemic, for example, we offered grants for RD&I projects and for the establishment of production capacities to mitigate the consequences of COVID-19. Furthermore, we are preparing grants related to financing for researchers in companies.

SPIRIT Slovenia plays a critical role in building capacities of the country's entrepreneurs. How are you promoting the internationalization of Slovene businesses at the moment?

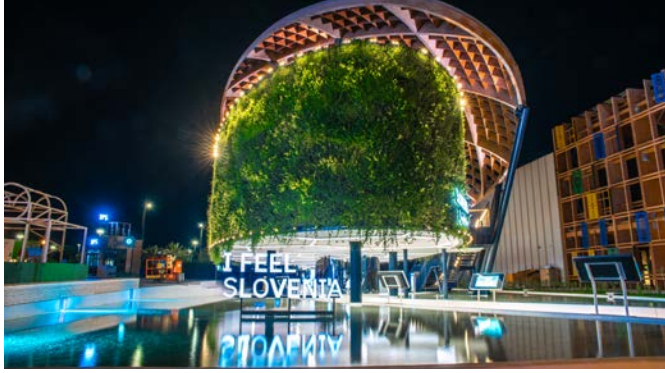
One of the main projects we are focusing on is the Expo Dubai 2020. Under the motto “Slovenia: Green and Smart Experience”, the country will symbolize the green heart of Europe, addressing visitors with extraordinary multimedia presentations that will allow them to experience the parts of the country Slovenians are most proud of. By entering our beautiful pavilion with its unique green facade, visitors will be able to explore the singular Slovenian interplay of nature, knowledge, innovation and breakthrough businesses. More than 130 Slovenian companies will take part in the event, as well as the best of our education system and entrepreneurs—we will be

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Tomaž Kostanjevec, CEO, SPIRIT Slovenia

showcasing the top level of the Slovenian economy within our sustainable pavilion.

We are also a partner of Slovenian Digital Centre: Technology for the People, the central economic event of Slovenia's presidency of the EU Council. Our European Union presidency is a great opportunity to raise awareness of our potential and we hope that international investors will realize that Slovenia is a good partner, not only in relation to the EU, but also the U.S., Russia, China, Japan and the Far East. Slovenia is a land of infinite potential for business.



Slovenia represents the green heart of Europe at Expo Dubai

A dynamic hub for startups, entrepreneurs and hidden champions

With a wide range of support available from SPIRIT Slovenia for startups and entrepreneurs, including mentoring, networking, technology parks, incubators, generous grants and other financial resources, it's no wonder that Slovenia ranks sixth in Europe in terms of the proportion of its population that believes entrepreneurship is a good career choice. Over the years, many of the fledgling businesses it has nurtured have become hidden champions in niche technology areas—highly positioned in their sectors on the global stage, but unknown to wider audiences. “Slovenia ranks sixth for hidden champions in Europe, with 3.5 per million inhabitants,” explains CEO, Tomaž Kostanjevec. Possibly the largest concentration of them is in the automotive industry, where frontrunners include Akrapovič in titanium exhaust systems and Polycom in gas springs plus hybrid thermoplastic and metal parts, while a number of smaller names are gaining reputations for everything from wheel technologies to electric-car batteries and self-drive vehicles.

To illustrate the expanse of Slovenia's expertise, it has also nurtured hidden champions in the aerospace sector, such as drone creator C-Astral; electrical-equipment manufacturers like biomass-combustion specialist At-ech elektronika and vacuum-cleaner-motor producer Domel; in machining and fabricated metal, Tajfun Planina stands out for logging winches and fire-wood processors; and among its ICT stars is Cosylab, which is preeminent in particle-accelerator systems. “Another example is biotech, where we have dominant firms in innovative healthcare based on genetic testing, and the production of cellulose nano-crystals and bacteriophages,” notes Kostanjevec. There are many more champions in Slovenia and the number keeps growing, he adds. “They may be hidden, but they certainly are not sleeping!”

Top 5 reasons to invest in Slovenia

- A strategic position at the heart of Europe
- An excellent transport and ITC infrastructure
- Easy access to a 500-million consumer market
- A corporate culture of transparency and accountability
- A qualified workforce with high levels of education and skills

Innovation-driven domestic enterprises

Entrepreneurial Slovenian businesses have cultivated strong external trade links that capitalize on the country's unique position

Prior to gaining its independence in 1991, Slovenia was the main hub for trade in Yugoslavia. At that point, however, the Central European country reoriented its business focus west toward the European Union (EU), as the links with its traditional markets to the east temporarily broke down.

Today, the EU accounts for over three-quarters of Slovenia's external trade but its connections with markets like the former Yugoslav countries and Russia have blossomed again, putting Slovene firms and their partners in prime position to capitalize on the EU market of 500 million people as well as hundreds of millions more in Central and Eastern Europe (CEE). After its independence, Slovenia rapidly transitioned to a modern economy and has remained ahead of others in CEE in terms of, for example, its utilization of technology, and the excellence of its communication, transport and logistics infrastructure and services. Key to that ongoing competitiveness is a talented population that is more enterprising than most: according to the Global Entrepreneurship Monitor, 59 percent of Slovenians believe they have the knowledge, skills and

"The foundations of our success have been leveraging the region's geography, creating our proprietary brands and then transforming into a digital company."

Jan Heere, CEO, Studio Moderna

experience to be an entrepreneur. As well as driving the economy's modernization, its domestic businesses are internationally focused. In 2020, for example, 46 percent of its early-stage entrepreneurs already had foreign customers.

"Slovenia is a real opportunity for business. It's a very well-connected entry point to the EU and CEE, a region with untapped potential that is under the radar and which is not always straightforward for players from outside to access," reveals Jan Heere, CEO of Studio Moderna. A huge local success story, Studio Moderna's development mirrors—and in some ways has catalyzed—the country's modernization over the last three decades. Established in 1992 as a startup selling one innovative product via direct-response television (DRTV), the group is now a leading home and living omnichannel e-commerce and direct-to-consumer retailer across CEE, with a vertically integrated network that reaches more than 360 million consumers in 20 markets.

Having disrupted the local retail market through DRTV, Studio Moderna started to build its portfolio of proprietary brands that includes names like Dormeo, the top sleep brand in most CEE markets. By the end of the 1990s, it had pioneered teleshopping in Slovenia under its Top Shop brand, started expanding internationally and opened the first of what is now a chain of 360



Dormeo is the biggest sleep brand in most CEE markets

physical stores in the region. To manage those sales channels, the group set up some of the country's first call centers and logistics services, which continue to support its own brands as well as ones from local and international partners. Milestones over the next decade included the launch of a first homeshopping TV channel in Russia, direct tele-marketing and e-commerce.

Currently, Studio Moderna's 6,500-strong workforce assists over 500,000 daily customers on 180-plus websites and social-media platforms, broadcasts on more than 220 TV stations and handles over 85 million calls in 20 languages every year. "The foundations of our success have been leveraging the region's geography, creating our proprietary home and living and, more recently, beauty brands, and then transforming into a digital company. Our founder was visionary in looking at what was happening in the U.S. in terms of innovation and communication. We brought those things into this region at an early stage and they had a real impact. A lot of market leaders in Slovenia today grew through Studio Moderna," summarizes Heere. In the last two years, the contribution of e-commerce to the group's revenues has grown from 17 percent to 25 percent, and it aims to increase that to 50 percent in the near future, making e-commerce the number-one channel for the group. Heere believes the group's evolution into an omnichannel retailer with a primary focus on e-commerce has been a logical development. "E-commerce in CEE accelerated by 25 percent during the pandemic and Studio Moderna will continue to be a pioneer in how we engage with customers going forward. For example, we are testing live streaming on social media across the region," he says.

As the group has developed, so have the number of international brands wanting to access the group's platform, marketing capabilities and knowledge of CEE in order to enter and be more present in the region. "A major advantage is that we are based in the region, unlike other players such as Amazon and Alibaba. We offer ourselves as an enabling interface: we know how to trade with all of these countries, we have been doing it for the last 30 years, and we understand their complexity and customer perspectives." While geographical expansion has been one of the defining elements of Studio Moderna's success to date, it is currently focused on seizing opportunities in its existing markets, which are growing at a faster rate than economies in Western Europe, Heere states. "We want to be the reference for customers looking for innovative, modern products, and we want to be the leading home and living platform in the region in CEE, with a primary focus on e-commerce."



Jan Heere
CEO
Studio Moderna

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Entrepreneurs revolutionize life with technology

Slovenia is the launchpad for an environmentally friendly gamechanger in personalized comfort

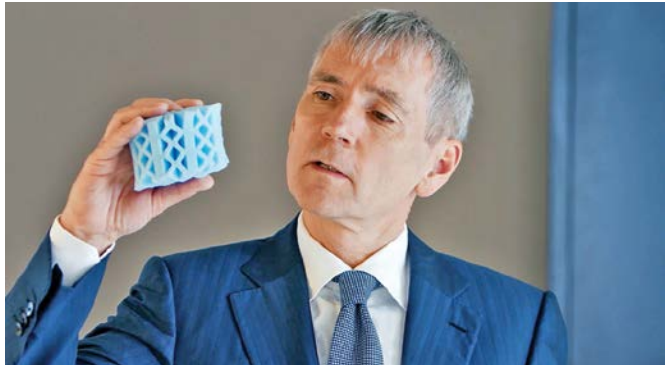
According to Sandi Češko, probably the country's most internationally respected entrepreneur, the opportunities available to emerging Slovene innovators have never been greater. "They just need to think out of the box and redesign everything. They have to create new concepts and improvements in sustainability, quality and service. I always say, don't assume, test different things and you'll get a new answer."

By following that mantra, Češko has transformed various industries over the last 30 years. After setting up one of Slovenia's first computer firms in the late 1980s, he founded Studio Moderna, Central and Eastern Europe's (CEE) leading home and living omnichannel retailer. "We bootstrapped the company from zero to \$500 million in revenues, which we achieved with a winning combination of investment in talent, technology and innovation," he states.

Having sold his stake in the main Studio Moderna platform, Češko gained the rights to Octaspring, a patented spring-from-foam technology, and then in 2016 he launched Vanema, a Slovenian startup that is exploiting the full potential of this groundbreaking technology in order to revolutionize the way we all sleep, sit, travel and walk. "An advantage of Octaspring is that it uses half the foam in the same volume of product; so, we can take 50 percent of the material out of any foam-based product, such as mattresses, couch cushions, car, airplane and train seats. Octaspring is at least 50 percent more eco-friendly than traditional foam and, because it's a spring, it's around 100-percent more comfortable. The product is also much lighter, so it reduces weight when used in transport sectors and, therefore, we reduce energy consumption and dramatically reduce carbon-dioxide footprint, while increasing comfort at the same time," explains Češko.

The award-winning technology is thought to be the first genuine innovation in the foam industry for 20 years. Because the springs that move in three dimensions are placed individually in products, different smart zones with varying firmness can be created to optimize weight distribution, pressure relief, comfort and support. In addition, the springs' open structure offers eight-times better ventilation than traditional foam—which means that users of Octaspring-based mattresses, for instance, enjoy a three-degree cooler sleep.

Six-million people around the world are already using its products. Although Češko sold his stake in Studio Moderna, he retained the rights for the Dormeo brand outside of continental Europe and, today, Dormeo Octasmart is one of the world's fastest-growing sleep brands. "Through those brands, we are selling mattresses, toppers and pillows that incorporate Octaspring everywhere from the U.S., through Europe, Japan and down to Australia," he notes. "The most important application for the technology at the moment is definitely the sleep business, but Vanema is also active in upholstery and aviation, where we have very ambitious plans. We are getting a lot of interest



Sandi Češko, CEO of Vanema, demonstrates Octaspring

from the automotive industry, original equipment manufacturers, footwear firms and businesses in the travel industry as well. The pressure is growing for sustainability, companies can't get away with greenwashing anymore and they are recognizing the advantages of our technology. We can help them become greener and better."

Vanema offers a full-service product cycle that runs from initial in-house research to prototype development and ISO-certified final production. Currently, for instance, it is developing the first completely personalized and customizable mattresses on the market, Češko reveals.

"The concept is that you take a photo of yourself with your smartphone, we are sent a digital avatar of your body and from that we can take precise measurements. Then we ask you some questions about how you sleep: if you prefer a softer or a firmer surface, if you have shoulder or back pain, what sleeping position you prefer and so on. Our artificial-intelligence algorithm can then create your personal mattress that is perhaps only 20-percent more expensive than a regular mattress. Personalization is coming not only to mattresses but to everything. We are working on these projects with leading scientists and universities, and we can address them without a significant increase in production costs."

"Octaspring is at least 50 percent more eco-friendly than traditional foam and, because it's a spring, it's around 100-percent more comfortable."

Sandi Češko, CEO, Vanema

To produce its personalized bedding products, Vanema is investing heavily in state-of-the-art facilities. At the moment, its manufacturing is concentrated in large third-party factories in the U.S., Europe and China, but it is now developing its own smart-factory template, which will be completely robotized and digitalized.

The company's goal is to establish a micro-manufacturing hub that manages its customized processes in every major city worldwide, starting in Slovenia, the entrepreneur says. "We are always striving to create solutions, instead of only pushing products. To succeed today, you have to create a completely new philosophy or paradigm across the whole supply chain and you have to locate your manufacturing facilities as close to the buyer as possible. This is our aim: small-factory concepts, with an innovative marketing and distribution strategy, which our technology can enable. Simply put, we are revolutionizing everything."

Sustainability permeates manufacturing

Slovenian manufacturers offer a case study in how to mix tradition with innovation to have a global impact on the environment and society

Manufacturers in some of the world's oldest industries are among Slovenia's strongest ambassadors for the country's emerging reputation for environmentally friendly innovation and creativity.

Examples include Marles hiše Maribor, which sets global standards in its construction of buildings made from sustainable materials, and footwear manufacturer Alpina, which designed the first degradable boot for cross-country skiers. Another illustration is Medex, a company that has been driving the development of beekeeping since 1954. Medex is a pioneer in food supplements made from hive-gathered ingredients, including honey, royal jelly, pollen, the resinous propolis and bee venom. Enriched with other natural resources such as herbs and plant essences, Medex's products form the foundation of apitherapy, in which bee-produced substances are used in the treatment of medical conditions and to promote health. "Our products are especially green. We work directly with nature, taking advantage of the natural active ingredients without altering them at all. We make all kinds of supplements, although our liquid formats, such as syrups, tinctures and gels, may be the most popular," reveals general manager Aleša Mižigoj.

Today, Medex is one of Europe's leading manufacturers of bee-related dietary supplements and its products are available in over 30 countries worldwide. Some of its supplements have been on the market with the same traditional recipes for 50 years, but the firm also pushes apitherapy forward through research and development. In collaboration with Slovenia's University of Primorska, for instance, Medex carried out the first double-blind study into

"We say everyone should 'be like bees': connect, work together and do good in the world."

Aleša Mižigoj, General Manager, Medex

the impacts of royal jelly in humans, Mižigoj says. "It was shown to improve antioxidant activity, decrease inflammation, lower cholesterol levels and it has a satiating effect. It essentially brings the body to homeostasis and has an excellent effect on hormones." Medex also introduces innovative new products every year to meet the changing needs of its customers. As an example, last year it launched products based on propolis enriched with vitamin D in response to research suggesting that nutrient is useful in staving off the effects of COVID.

According to Mižigoj, however, "Medex's first priority is to imprint onto people the importance of taking care of bees and their products." In 2018, it began a scheme to develop beekeeping in Bangladesh in order to modernize that country's practices and create employment opportunities, particularly for

women, she states. "We're now starting a project in Ghana with Exim Bank. We would like to build training centers that educate women especially because, in Africa, women can support their family with just a few beehives. It's a win-win situation where we create jobs and help bees, which are the most important link in the chain of our human ecosystem. At Medex, we say everyone should 'be like bees': connect, work together and do good in the world."

That philosophy is shared by Matej Feguš, owner of Donar, a manufacturer of top-quality, sustainably designed furniture. "It's my strong belief that we have to put our planet first and that business should mostly be about social impact. Donar has upgraded design thinking in furniture to make it circular and we've added a new vision of compassion design. For us, it's not important to just make another chair, it has to be revolutionary. We developed technology that uses waste plastic bottles, then started working with the best architects and designers we could find, and used our vision to make unique, long-lasting, award-winning and sustainable chairs. That's our story."

Feguš wants to continue to innovate to create design icons that are cherished by their owners for decades, he says. "Recycled is not enough for me. We're always considering how we can turn waste into something beautiful and long lasting, and we're going to launch, for example, new materials made out of wasted wood. The furniture industry has been the same for the last hundred years—let's make something different." Highly sought after in Europe, Feguš wants to extend the presence of Donar's unique technologies in other global markets. "We would be really happy to share our knowledge on other continents, but there is no environmental sense in using waste in Slovenia and shipping it to the U.S. We're a small company in a small country, but I believe Slovenia should be a case study for others. As a country, we have so much knowledge about sustainability and decarbonization."



Retail innovators provide support through crisis

During the pandemic, the market leader in fast-moving consumer goods made good on its claim to be the best local partner and retailer

In common with the rest of the world, COVID-19 introduced uncertainty and change to the lives of Slovenia's citizens. One thing the population could rely on as normal, however, was ready access to all essential consumer goods.

A key contributor to that was Mercator Group, the biggest retailer in Southeast Europe (SEE) with 1,240 stores in Slovenia, Serbia, Montenegro, and Bosnia and Herzegovina. Its portfolio includes wholesale, manufacturing, technical goods stores and real estate, but Mercator's core activity is fast-moving consumer goods retail. "Our role in Slovenia during the pandemic was extremely important, as we are the number-one player in the country with almost a third of the market. Any major disruption in our supply chain would have meant a massive crisis for citizens," says its president, Tomislav Čizmić.

Mercator saw its responsibility to keep the region supplied without shortages as an extension of its role as a defacto ambassador for Slovenia, he adds.



Tomislav Čizmić, President, Mercator Group

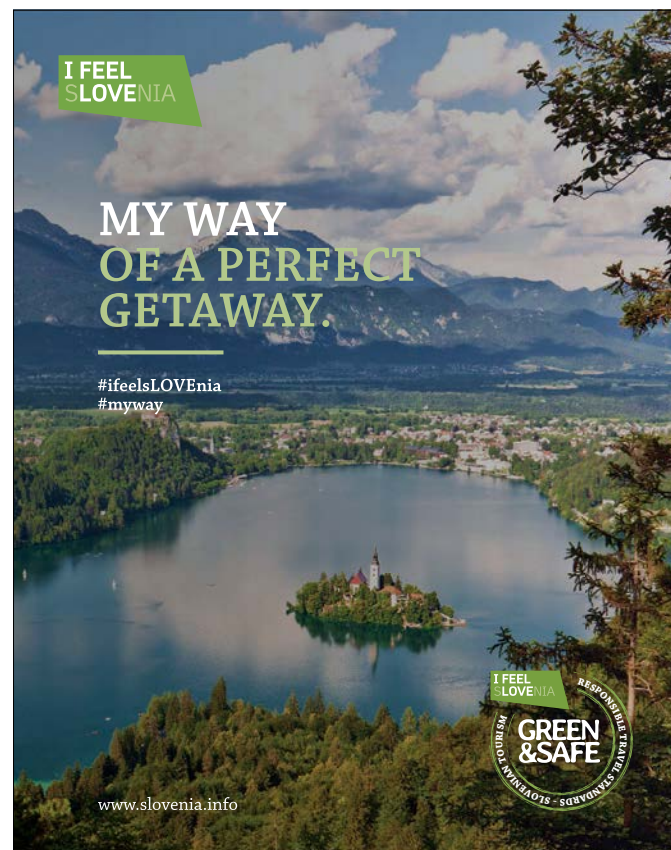
"For over 70 years, Mercator has been among the country's most recognized and valued brands and it's one of the symbols that best represents Slovenia. We have a vital place in the economy, society and culture." To illustrate the importance of the group to SEE, it has a workforce of almost 21,000 people in total and is Slovenia's largest employer. In 2020, its revenues amounted to €2.1 billion and it buys over €500-million in goods from Slovenian manufacturers alone every year, Čizmić reveals. "We are the largest partner for our suppliers in the countries we operate in. We offer more than 1,500 goods from local farmers and small producers in Slovenia alone, and we develop special marketing platforms for them." During the pandemic, the group managed 10-times growth in its online sales relatively smoothly being a driver of retail innovation. "Mercator had notable advantages. We opened our online business in 1999 and were the first to launch a mobile payment app, so we are leaders in those fields. We also have by far the biggest loyalty program with 1.8 million members in the region, 780,000 active members in Slovenia, and we are the only retailer covering almost all of the country for home delivery," he states.

"Our biggest project is a new, highly automated €170-million distribution center in Slovenia. It will be the heart of our logistics operation."

Tomislav Čizmić, President, Mercator Group

One reason for this is the density of its distribution and retail network. With a portfolio valued at about €900 million that includes outlets of all sizes from small grocery stores to shopping centers, plus other facilities associated with its business and investment properties, Mercator is among the largest real estate operators in SEE. In 2020, it invested €41.8 million into its facilities, much of which was spent on modernization and launching new retail concepts. However, he says, "Our biggest project is a new, highly automated €170-million distribution center in Slovenia. It will be the heart of our logistics operation and will allow us to create a personalized offer for our customers, providing what they need wherever, whenever and however they want it."

According to Čizmić, this size of investment was made possible by Mercator's recent incorporation into Croatia-based Fortenova Group, one of the largest enterprises in SEE that operates in retail, food and agriculture. "With Fortenova's support, we are entering the next phase of our plan, which is development, investments and growth. We will continue to deliver the very best stores, distribution system and an omnichannel approach; and Mercator will continue to be the best local partner and retailer in every market in which we are present."



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Thriving life sciences, led by pharmaceuticals

Innovative businesses operating in advanced healthcare industries make up one of Slovenia's key economic sectors

Bolstered by three centuries of tradition in the chemical industry, Slovenia is a major international force in life sciences in general and pharmaceuticals in particular.

Today, the country boasts hundreds of innovative, export-led healthcare businesses operating not just pharmaceuticals, but in advanced sectors as diverse as biotechnology, medical devices, genetics and digitalization solutions for laboratories. They are supported by renowned research organizations like Institute Josef Stefan and the National Institute of Chemistry that have a strong focus on life sciences, plus research-oriented higher-education institutions—especially the Universities of Ljubljana and Maribor—in which around 5,200 Slovenian undergraduates enroll every year to study chemical technology, biology, pharmacy and veterinary medicine.

As one of Slovenia's most developed and extensive industrial sectors, its life-sciences ecosystem contains companies of all sizes and ages. Among its most recent startups to gain international recognition, for instance, is contract manufacturer and researcher Jafra, an innovator in the development of bacteriophages. While two prominent examples of small and medium-sized enterprises that are global players in niche areas are Bia Separations, which makes filter systems for the production, purification and analysis of biomolecules, and GenePlanet, a European leader in preventive genetic testing and genome sequencing.

Slovenia is also home to two pharmaceutical giants—Lek and Krka—which not only dominate the life-sciences sector, but which rank among the country's largest businesses, exporters, employers and investors in research and development (R&D) overall.

With more than 5,000 employees in Slovenia alone, Lek has been developing, manufacturing and marketing medicines and active pharmaceutical ingredients (APIs) for 75 years. "Lek has a long history of many 'firsts': we were Slovenia's first modern pharmaceutical company, the first Eastern European pharmaceutical firm to demonstrate high enough quality to enter the demanding U.S. market, the first to enter the biosimilar sector in Slovenia, the first to open a facility in the country for the production of APIs for innovative medicines and we are still the only ones with the necessary knowledge to produce innovative biological drugs. Over time, we've evolved from a purely generic manufacturing company into one that also develops and produces biosimilars and innovative small-molecule and biological pharmaceuticals, whose



Robert Ljoljo
President, Lek and
Country President
Slovenia, Novartis



Lek specializes in developing technically demanding medicines

products are exported to more than 150 countries globally" explains Lek's president, Robert Ljoljo. Probably the most significant step in that evolution came in 2002, when Lek was acquired by the global giant Novartis, which is also represented in Slovenia by Novartis Pharma Services, and the generic and biosimilar specialist Sandoz. Combined, the Novartis companies contribute over 3 percent of the country's gross domestic product and they are its most important provider of medicines with nearly 14 percent of the market.

According to Ljoljo, the integration of Lek into Novartis' empire was strategically important for the pharma giant. "Firstly, Novartis now has end-to-end capabilities throughout the pharmaceutical value chain in Slovenia. Secondly, Lek is in the final stages of establishing a global operations center for Novartis in Slovenia, which will provide service support for its network in terms of quality assurance, supply chain management, engineering, manufacturing, procurement and so on. And thirdly, Lek has become the backbone for sales, logistics and distribution for Sandoz in many countries."

"Our center for the development and production of biological medicines is the only of its kind in the country."

Robert Ljoljo, President, Lek
and Country President Slovenia, Novartis

Over the last two decades, Novartis has invested in excess of €2.7 billion into Slovenia, much of which has gone into modernizing and expanding Lek's R&D and manufacturing capacities so that, today, Slovenia plays an increasingly important role within Novartis, with Slovenian teams involved in the development and manufacturing of some key pharmaceutical products and breakthrough solutions for patients worldwide. "Our center for the development and production of biological medicines is the only of its kind in the country, we also have an important role developing technologically demanding new products for Sandoz and are expanding our operations in biosimilars, one of our flagship areas where we are most competitive." Cutting-edge digitalization, automation, artificial intelligence and data science feature prominently in Lek's operations.

Despite the upheavals of COVID-19, Lek achieved ambitious business results last year and employed a record 650 new associates. "Our excellent performance is the outcome of a strong organizational culture and an inspiring work environment that create empowered, motivated and engaged employees. Even though we've seen enormous growth in the last two years, I always encourage our associates to never be satisfied; you need to keep moving forward, embrace change, remain agile and turn disruption into opportunity."



Krka is currently developing 180 new pharmaceutical products



Jože Colarič
President and CEO
Krka

Creative dedication to generics

Established in 1954 in the Slovenian city of Novo Mesto, Krka is another firm that turns change into opportunity. Today, it is one of the world's leading generic pharmaceutical companies, with a global reputation for high-quality, safe, efficient and value-for-money products. However, explains president and CEO Jože Colarič, "Until the 1980s, we were a bridge between the Western pharmaceutical industry and Eastern Europe. We got product licenses from their sources in Japan, the U.S., other parts of Europe and elsewhere,

and we manufactured products based on that know-how, which we sold in the former Yugoslav and socialist countries. With the fall of the Berlin Wall in 1989, everything changed—we weren't needed as the bridge between West and East anymore. We had to go our own way, which was into generics."

Currently, the company that achieved revenues of €1.5 billion and a net profit of €289 million in 2020 employs more than 13,000 people, 46 percent of whom work outside Slovenia in subsidiaries and representative offices in over 40 countries that serve 70 markets. "50 million patients all over the world take Krka's pills every day and, on a yearly basis, we produce and sell a little in excess of 16 billion tablets and capsules. We have products that are registered and sold on various continents, but the majority of our business covers Europe, from Vladivostok in the far east of Russia to Reykjavik in Iceland," he states.

Prescription pharmaceuticals represent more than 85 percent of Krka's sales, with it being particularly strong in products targeted at cardiovascular diseases, such as high blood pressure or cholesterol issues; central nervous system concerns, including antidepressants and tranquilizers; gastrointestinal diseases; the treatment of pain; diabetes; and oncology. The majority of the rest of its sales come from over-the-counter pharmaceuticals, predominantly cough and cold treatments and lower-dosage painkillers.

According to Colarič, the key to Krka's success is a vertically integrated business model that allows it to flexibly manage the entire pharmaceutical value chain and enables it to adjust rapidly to market changes. "It's a different model to other generic producers, which usually outsource some elements. We do everything by ourselves, and practically everything we produce and sell today is based on our own know-how. We decide which new product we would like to have based on what the market needs, and then we start to develop that product before the originator's patent expires. Furthermore, we manufacture the raw materials and we produce the finished dosage forms that include tablets, capsules, injectables, ointments and so on."

Because it is vertically integrated, Krka has operated as normal throughout the pandemic, he notes. "We've had no problems with raw materials, production, packaging or transportation of finished forms. We even increased our sales in 2020 and in the first half of this year. Within our portfolio, we have products that are very helpful for the treatment of those with COVID-19, like paracetamol, vitamin D3 tablets, and dexamethasone tablets and injectables. Importantly, patients suffering from other conditions have also had uninterrupted supplies of our products."

Responsible for the health and safety of patients and society

Another reason Krka was able to achieve this is the geographical spread of its technologically advanced manufacturing facilities in Slovenia, Germany, Poland, Croatia, Russia and China. "Being a local producer gives us strong advantages. All of our factories are practically new and exceptionally modern, because we invest in them substantially on an annual basis. A few years ago, one of our Slovenian facilities won an award for being the most digitalized and automated factory in the country, for example," Colarič comments.

As he stresses, however, "Even the most advanced technology is only technology when it's not used by creative and dedicated employees. We have well-educated personnel that are able to choose the right products to develop, then to develop and produce them, and then to market and sell them." Highly focused on innovation, Krka's workforce includes 1,700 R&D experts that are qualified in over 30 fields of science and engineering. To date, they have generated more than 350 patent-protected innovative methods and procedures, while 700 of its experts are currently working on bringing 180 new molecules to market.

"We've been investing 10 percent of our revenues into R&D. As a generic pharmaceutical company, that's a high percentage," he asserts. Sectors of innovative strength for Krka include removing impurities from pharmaceuticals, pills containing two or three active substances, plus orodispersible tablets that dissolve quickly on the tongue and other technologies that help patients take pills or tablets much more easily than traditional forms.

"We've been investing 10 percent of our revenues into R&D. As a generic pharmaceutical company, that's a high percentage."

Jože Colarič, President and CEO, Krka

Colarič believes that the trust the firm has built up in patients and partners comes from not just its know-how, professionalism and standards, but also from its ethical approach to business. "We are a responsible company that continuously strives to implement sustainability into our strategy and operations. All our actions are socially and environmentally responsible in order to further improve nature's preservation, and the health and safety of patients, society and our employees. As an illustration of our endeavors, our company is named after the River Krka, which flows a few meters away from our headquarters. Over the years, that river has retained its characteristic green color as a result of our efforts to prevent pollution, which is something we're really proud about."

Looking to the future, Krka aims to continue to introduce new high-quality generic pharmaceuticals at a rapid rate, and to grow by at least 5 percent a year in terms of sales value and quantity through organic growth in current and new markets, he says. "We have a clear strategy and many reasons to be inspired with confidence. Around the world there are billions of potential patients who need our products that will enable them to have a better life."

Digitalization: A catalyst for biotech success

Transformative digital products and services from Slovenia take an interdisciplinary approach to solve challenges faced by global scientists

When it comes to strengthening its innovation ecosystem, among Slovenia's biggest preoccupations is boosting knowledge transfer from its research-focused institutions into industry.

A prominent success in this regard is BioSistemika, a 2010 spin-out from its National Institute of Biology. "BioSistemika was first recognized mainly for expertise in quantitative PCR (qPCR). Our goal was to transform cutting-edge molecular-biology knowledge into reliable, easy-to-use laboratory software products and services. Later, we expanded our focus to include lab automation and workflow management. Our mission is to empower every lab employee with digital products and services that enable sustainable, innovative, digitally transformed laboratories on a global scale," states CEO Roswita Golčer Hrastnik. BioSistemika's disruptive products and services are built on the skills of a team that includes life scientists, software developers, user-experience and interface designers, testers and business developers, she says. "Digitalization of labs has only gained traction in the past five years and there are many challenges. User adoption is a major one where BioSistemika's interdisciplinary expertise plays a crucial role. Only by understanding the user can you develop a solution that empowers them to be more productive and efficient."

The firm's in-house-developed products include SciNote, a highly rated electronic lab notebook used by scientists in over 100 countries, and GENE-IO, a qPCR software package. Gaining particular attention at the moment is PlatR, a smart, cost-effective and easy-to-use tablet application for reliable, rapid and error-free manual microplate pipetting. Among the many adopters of PlatR is the worldwide leader in laboratory testing services, Eurofins, which has incorporated the pipetting aid into its COVID-19 diagnostic workflow.

BioSistemika also develops custom software for international lab equipment manufacturers, such as Gilson, Cytena and Alifax, while another pillar of its operations is digitalization consulting, the CEO reveals. "In labs around



Roswita Golčer Hrastnik
CEO, BioSistemika



PlatR Pipetting Aid is used in research and diagnostic labs

the world, devices are still not interconnected, data is scattered across different media and is often not labeled appropriately. As a result, it's difficult to find, compare, reuse and analyze. Our consulting services enable labs to increase efficiency, productivity and data integrity."

In addition, BioSistemika is constantly working on revolutionary new ways to improve science. Its European-Union (EU) funded DATANA project that addresses the data-storage challenge in a sustainable way is an illustration. "By 2025, we will produce about 175 zetabytes of data globally and will only be able to store 20 percent. DNA can contain 20-million times more information per gram than any other storage medium. With our algorithm and device, we can transcribe binary data into the shape of a DNA molecule and use it as storage," she explains. The firm is also developing software for the Innovative Medicines Initiative's RAPID-COVID project to create a diagnostic kit that simultaneously detects COVID-19 and 30 other bacteria and viruses. "Another example is that we are creating the software for the EU-funded Auto3dMSC platform for the semi-automated growing of 3D mesenchymal stem cells, which are widely used by the pharmaceutical industry," adds Hrastnik.

"We want to establish BioSistemika as a leader in lab digitalization—our vision is to make data integrity a commodity for every lab."

Roswita Golčer Hrastnik, CEO, BioSistemika

Her future goals include expanding BioSistemika's global distribution network, as well as exploring more alliances with companies in life sciences and diagnostics. "We want to establish BioSistemika as a leader in lab digitalization—our vision is to make data integrity a commodity for every lab."

In 2017, Slovenia established the Consortium for Technology Transfer from Public Research Organisations to the Economy Sector, which aims to boost the commercialization of its academic innovations by providing support to both researchers and companies. BioSistemika's alma mater, the National Institute of Biology, is one of the eight institutional consortium members, as are the country's two most important universities for science research: the University of Maribor, which is located in Slovenia's second-biggest city and ranks in the top 4 percent of universities worldwide, and the University of Ljubljana, the nation's largest higher-education and scientific-research institution. "Subjects our university is very strong in include engineering, medicine, biomedical sciences and physics. We would like to improve our knowledge transfer, which is very robust in some areas but not strong enough in others," comments University of Ljubljana's rector Gregor Majdič.

Your guide to the connected lab

BioSistemika's new book, **Digital Transformation of the Laboratory: A Practical Guide to the Connected Lab**, delivers essential insights into technologies and strategies for digitization

5-star eco-friendly tourism destination

Slovenia offers boutique experiences that are dedicated to sustainability

Earlier this year, Condé Nast Traveller magazine named Slovenia as one of its top-10 sustainability-oriented global destinations that offer visitors an "enriching, positive-impact escape."

The small, welcoming country at the heart of Europe is one of the greenest and most biologically diverse countries on the planet, and among the most advanced in sustainability practices, enthuses Maja Pak, director general of the Slovenian Tourist Board: "Slovenians have always had respect for our natural resources: over 60 percent of the country is covered in forest and almost 40 percent of our land is protected, for example. With the consensus of everyone in the tourism sector, Slovenia has become a green boutique destination for visitors seeking diverse, authentic experiences."

The country's size makes it easy to explore the stunning but very different worlds that converge there. Its Alpine region, with mountains, rivers, lakes and valleys, is perfect for activities such as hiking, cycling and skiing, while the Adriatic coast offers all the natural splendors of the Mediterranean. To the west, Pannonian Slovenia is full of rolling countryside, vineyards, healing thermal springs and ancient castles. And at the center is the lively capital, Ljubljana, whose historical and cultural delights are surrounded by woods and hills.

All four regions are strictly guided by the principles of sustainability, says Pak. "This is something that differentiates us. Not only have we never developed mass tourism, but we have also built a tool set to cultivate sustainable tourism. The Green Scheme of Slovenian Tourism is a unique, comprehensive program based on 100 factors, which certifies destinations and suppliers that follow sustainable criteria. We've already certified almost 200 destinations and suppliers, and our systematic approach to sustainability has earned us many international awards." About 20 different experiences have received endorsement from the tourist board's Slovenia Unique Experiences initiative, which recognizes truly individual five-star experiences with a local green character.

The country's focus on its natural resources extends to its many green-cuisine restaurants, which have established Slovenia's reputation as a culinary destination that embraces a farm-to-table philosophy and local ingredients. Amazingly, given its size, Slovenia has 24 distinct gastronomic territories and three wine-growing regions, which together have enriched the country with an estimated 400 different foods and drinks. This wealth of culinary tradition, coupled with its attitude to sustainability, earned Slovenia the title of European Region of Gastronomy this year, according to Pak. "We were awarded with our first Michelin stars in 2020. We are absolutely thrilled that the 2021 edition of the Michelin guide features 53 Slovenian restaurants, six of which have received the guide's green star for sustainability."

As Slovenia's profile as a green destination has grown, so have the number of discerning tourists wanting to visit it. "The sector boasted years of growth



Maja Pak
Director General
Slovenian Tourist Board



Almost 40 percent of Slovenia is protected

until COVID hit, but we had a good summer this year," Pak reveals. One reason for the high demand was that the tourist board quickly implemented a new initiative, Green & Safe, she says. "It's based on our Green Scheme but has strict safety standards. It's purpose is to reassure tourists that Slovenia is safe, attractive and sustainable."

Pak is now looking to the future. "Slovenia has become a role model in Europe for best practices in sustainable tourism, but green tourism isn't just about the destination, it's also about better living: in our Green Scheme, local communities can express how satisfied they are with the sector, for example. At our initiative, Ljubljana is hosting the European Travel Commission general meeting this month, where we will discuss new indicators of success that put sustainability, inclusiveness and responsibility at the fore. Now is the time for all of us in the sector to be innovative, smart and united to guarantee more resilient, responsible, sustainable and better tourism."

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A lab for Europe's decarbonization strategies

The Slovenian government and leading energy companies are investing heavily to accelerate the green transition

“Slovenia is convinced that the recovery and modernization of the European Union (EU) economy must be based on the European Green Deal,” says Minister of Infrastructure, Jernej Vrtovec, in reference to the bloc’s plan to become climate neutral by 2050.

The country has been using its presidency of the EU Council this year to push for measures to move forward with this ambition. “For example, transport is a sector that can contribute most toward decarbonization and Slovenia welcomes the transition to smart and sustainable mobility. The Slovenian presidency is putting a special effort into alternative fuels and e-mobility. Strengthening cross-border connectivity of the EU with the Western Balkans is another priority and it’s of essential importance that this is based on principles of sustainable mobility, digitalization and the introduction of alternative fuels. We also want to promote countries putting more money into rail to protect the environment. Slovenia itself has put over €500 million into new tracks this year,” Vrtovec asserts.

75 percent of the EU’s current emissions come from the production and use of the minister’s other focus: energy. In September, Vrtovec led a meeting of EU transport and energy ministers that reached agreement on the need to speed up the transition to a greener energy system. Slovenia is committed to playing its part in this and its electricity mix is already cleaner than many others: in 2020, fossil fuels were used to generate 26.6 percent of the country’s power, compared to an average 37 percent across the bloc. Currently, Slovenia has one active coal-fired plant and a coal mine, which it plans to phase out by 2033, says Vrtovec. “I’m optimistic that we will achieve this crucial goal.”

“EU funds are an important generator of development and will progress Slovenia in the direction of green transition.”

Jernej Vrtovec, Minister of Infrastructure

38.4 percent of electricity generated in Slovenia last year came from the Krško nuclear power plant. “I’m a promoter of nuclear energy. It’s cleaner than carbon-based energy, and we need it if we want to achieve our 2050 goals. This is crucial, not just for Slovenia but also for other countries, if we want to phase out coal and be energy independent,” he stresses. The remaining 35 percent of electricity comes from renewable sources. 92 percent of that is generated by hydropower plants and the government wants to build more of those. At 4.5 percent, the share of solar energy is growing quickly, with solar installations representing 87 percent of all new connections to the grid last year. “We must also build small wind-power plants and if we are to achieve the climate-neutral-



Over 60 percent of Slovenia is covered in forests

ity goals, we must push hydrogen,” states Vrtovec.

Slovenia plans to use a significant proportion of the grants it is receiving from the EU Recovery and Resilience Facility on boosting the share of green electricity, the infrastructure needed to support its smart incorporation into the grid, energy efficiency and sustainable mobility, he adds. “The EU funds are an important generator of development and will progress Slovenia in the direction of green transition.” Slovenia’s energy companies are already driving the country toward this transition, not least GEN-I, its biggest supplier of electricity with 20.9 percent of the market in 2020.

GEN-I to invest €1 billion in green and digital technologies by 2030

Established in 2006 as a joint venture between private and state-owned entities, which enabled extensive growth internationally, GEN-I is now one of the fastest-growing and most innovative players in Europe’s energy sector. Currently, it supplies customers in eight European countries with electricity and/or natural gas. Through its centrally coordinated trading infrastructure, it is also globally present in wholesale energy, with operations in over 20 markets from Germany and France in the West, to Ukraine and Turkey in the East. GEN-I started investing heavily in sustainable technologies in 2016 when it launched GEN-I Sonce, through which it installs micro solar-power plants on the roofs of Slovenian homes. The first energy supplier in Southeast Europe (SEE) to offer its customers self-sufficiency in energy, GEN-I has so far made over 3,500 domestic solar installations and plans to extend this to 25,000 Slovenian households within three years.

In June, GEN-I announced a strategic plan to accelerate and enable the decarbonization of Slovenia that will see the company invest €1 billion in green and digital technologies by 2030. As well as building 1 gigawatt in new solar plants of all sizes, its investments will cover areas such as energy storage for grid stability, plus the development and management of flexible energy sources. We asked Robert Golob, president of the management board, to explain how GEN-I has become probably the leading private-sector promoter of Slovenia’s green-energy transition and how it is extending that role internationally.

What are GEN-I’s goals for decarbonizing its own operations?

By 2025, we believe we can fully decarbonize all our activities. As of January 1 2021, we no longer supply electricity produced from fossil fuels—from this year onward, we will supply all of our customers only with carbon-free



Jernej Vrtovec
Minister of
Infrastructure



GEN-I is a leader of green transformation in Slovenia

electricity. As we are the largest supplier in the country, our decision has a significant impact.

Why did you decide to become the first Slovenian power supplier to provide domestic solar-panel installations?

We have a customer base of 400,000 end customers, which is our greatest asset in Slovenia. When it came to offering them a product that would help lower their carbon footprint and create long-term savings, the answer was rooftop solar. This year alone, we will have installed more than 1,000 installations. We have also expanded our offering to include medium-size installations and we will start constructing our first utility-scale solar power plant this year.



Robert Golob
President of the
Management Board
GEN-I

“By 2025, we believe we can fully decarbonize all our activities. As of January 1 2021, we no longer supply electricity produced from fossil fuels.”

Robert Golob, President of the Management Board, GEN-I

How are you using your extensive international trading network to further your ambitions for decarbonization of the energy sector?

Due to our strong presence in SEE, we are already linking our trading infrastructure and large-scale power plants, and now we want to offer power purchase agreements to all the renewable power plants in the region. This is a natural evolution of a business idea that is adjacent to our existing business. We are continuously refocusing our business for the future, always looking for trends we can explore.

GEN-I is proof that decarbonization and corporate growth are compatible. Last year, despite COVID-19, GEN-I broke all its records, generating a turnover of €2 billion and a gross profit of over €73 million. What lies behind that success?

Flexibility was the key and this year we are again surpassing expectations with results that are three-times better than 2020. Two trends accelerated during the pandemic. One is digitalization: GEN-I invested in digitalization way before COVID hit and it paid off. Being digital brings you one major ability—to be flexible. The other trend relates to the rise in awareness about the need for decarbonization. The real money that will be needed for the global

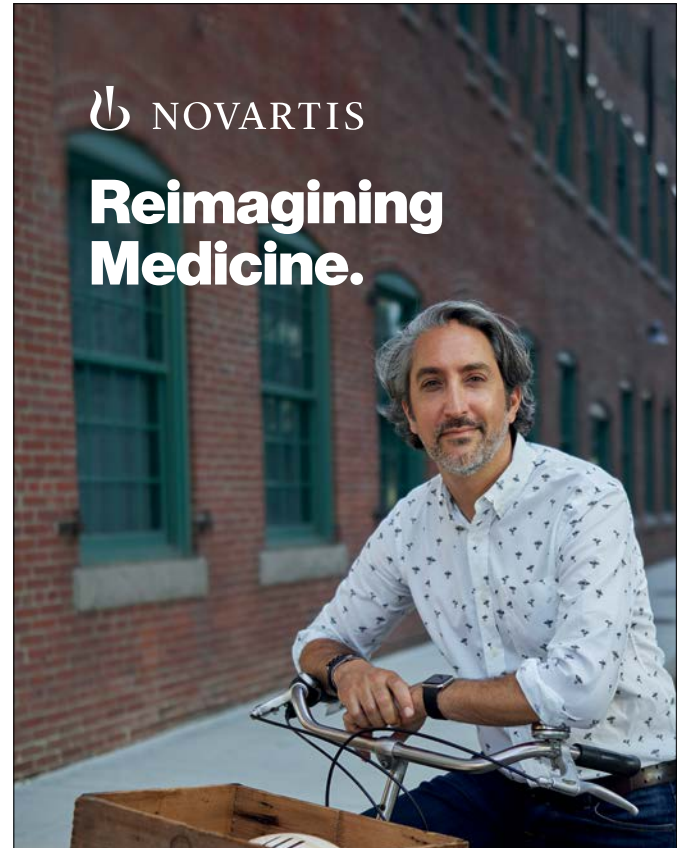
green-energy transformation hasn’t arrived yet, but I think a green investment cycle will start in the next five years. Being at the forefront, being prepared, and having the skills supported with digital infrastructure to deliver projects in a faster way is the formula for GEN-I’s future success.

Where are the largest growth opportunities for GEN-I?

I think we can have a major impact in SEE. The market in this region is dispersed and there are a lot of countries with different rules, it’s hard to make it all work together. On the other hand, there is a myriad of small investors in renewables that don’t have trading capabilities. We see ourselves as a bridge between them and global energy markets. Additionally, within our strategy is at least one major acquisition in Western Europe. We are ready, but are trying not to acquire too soon. I believe that in three years GEN-I will be twice the size that it is now and a well-established regional player for investments in solar power. I will be able to look into the eyes of my daughter and say, “I solved your challenge and brought green transformation to the region.”

What role does Slovenia have in the EU’s green transition?

When you operate on a small scale, it’s much easier to test and prototype various ideas. Slovenia is already offering an example of how to make players in the energy field work together. We have established a green consortium for accelerating the transformation of electrical power, within which is the transmission system operator, distribution operators, and GEN-I as a supplier and trader. We are trying to devise new rules to make the transition not just faster, but more efficient in terms of the amount of investment needed. The green transformation needs people to work hand in hand, and this is something that is easier to demonstrate in a small, concentrated country like Slovenia.



Nuclear energy to reach climate goals

For nearly 40 years, Slovenia has been able to rely on a clean, cost-efficient, stable and safe supply of electricity from Krško

In 2020, 38.4 percent of the electricity generated in Slovenia came from just one source: the Krško nuclear power plant (NPP), which has been providing the country with electricity ever since it was established in 1983.

The 700-megawatt generating station supplies around 20 percent of Slovenia's annual electricity needs, 16 percent of neighboring Croatia's and also helps stabilize the wider European grid as a node within the European Network of Transmission System Operators for Electricity network. It is jointly owned by the states of Slovenia and Croatia, and operated by the publicly-owned company Nuklearna elektrarna Krško (NEK). "We operate the facility according to the bilateral agreement between the two states, which sets the fundamental principles for our operations, and not as a profit organization. It's a unique situation as both parties have equal 50:50 shares, so governance is based on consensus, as are strategic decisions about, for example, business planning, waste management and financing," explains NEK president Stanislav Rožman.

According to Rožman, almost forty years after it was built, Krško remains a vital component in Slovenia's electricity mix. "We consider nuclear to be a clean source of energy, very comparable to renewables, and Slovenia's strategic orientation is that we will only achieve our climate goals with a combination of renewables and nuclear energy. Based on this, we are planning for the long-term operation of the Krško NPP"

The cleanliness of NEK's operation is borne out by independent analysis of airborne emissions and wastewater releases, both of which show that its impact on the environment is low enough to be practically immeasurable. In addition, the Intergovernmental Panel on Climate Change has demonstrated that nuclear generating stations contribute to lowering carbon footprint by outputting less carbon dioxide (CO₂) than even solar or hydropower plants. Indeed, while NEK supplies around one-fifth of Slovenia's electricity, it is responsible for less than 3 percent of the total carbon footprint from its energy sector. And on the occasions when Krško NPP is not operating, Slovene CO₂ emissions increase by the equivalent of almost 76,000 tons a month.

The facility has also helped keep electricity bills down: in the first half of 2021, Slovene power prices were 24 percent lower than the European-Union average. "We are very competitive compared to other sources of electricity production in the region. Operating costs of fossil-fuel units in particular are much higher," says Rožman. Krško NPP's reliability was proved in 2020 when, despite the pandemic and an earthquake that struck its region, NEK operated for an above-average 99.5 percent of the time and beat its targets by generating 6,040 terrawatt hours of electrical energy—only the second time it has exceeded 6,000 terrawatt hours in its history, he states. "We were very conservative in creating protective measures, but COVID-19 hasn't affected our performance. The most critical part of the last year was the shutdown

of the unit for refueling and inspection. These activities required roughly 2,000 people coming from different countries to work at the station, which was complicated from an organizational point of view. But we completed all the planned activities in the prescribed time and restarted the unit without consequences."

Safety: The first priority

When it comes to operating the facility, however, NEK's overriding concern is safety, Rožman stresses. "We're not satisfied with being positioned as an average operating company. Our vision is to be globally recognized for our safety standards and quality of operation, and there are performance indicators that suggest we are among the 10-percent best-performing nuclear units worldwide." Those indicators are drawn from expert independent safety assessments that are carried out regularly at Krško NPP, he adds. "We are transparent, open and very exposed to the international community. We accept inspections and assessments basically on a yearly basis from a range of organizations, including the World Association of Nuclear Operators, the International Atomic Energy Agency and the American Institute of Nuclear Power Operations. We see this exposure as a positive pressure on our continued development."

Under Slovenian law, NEK also carries out a major safety review of all its activities once a decade for its regulator, the Slovenian Nuclear Safety Administration. The results of this are presented with a 10-year safety upgrade plan, which has to be approved in order for NEK to keep its operating license. "We are approaching the final stage of our latest 10-year safety upgrade program in which we have invested approximately €350 million. The program focused on natural disasters. We didn't need additional measures to be protected against the magnitude of the earthquake in our vicinity in 2020. But we have to be prepared for higher magnitudes or other extreme events, such as flooding or an aircraft hitting the site. All of these things have been addressed. The scope of the program is comparable to what has been done at most European nuclear facilities and went beyond the average in some aspects," Rožman reassures.

"The world needs to pay attention to how it uses energy, how to restructure the energy sector and how to make it cleaner."

Stanislav Rožman, President, NEK

With systems as modern as those of a newly built nuclear station, NEK relies on cutting-edge, digitalized technology and a highly qualified workforce, he comments. "We can't be at risk of any deviations or incidents. We employ about 640 degree-educated people and pay tremendous attention to investing in their skills with yearly training. I'm really proud of our team and of the relationship we have with the local community."

Rožman believes that Krško NPP's contribution to Slovenia's electricity supply and climate goals will remain crucial for many years to come. "We have to take global warming extremely seriously. The world needs to pay attention to how it uses energy, how to restructure the energy sector and how to make it cleaner. We believe that a realistic solution in the short-term is a hand-in-hand combination of renewables and nuclear energy. We don't have much time to act and react to what is happening to our environment."



Stanislav Rožman
President
NEK

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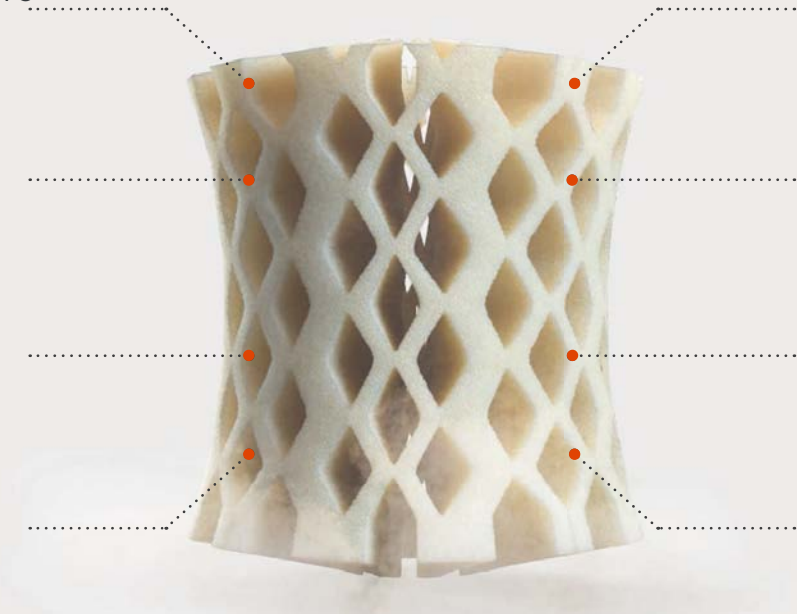
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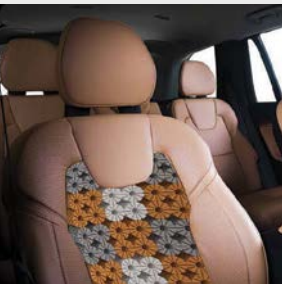
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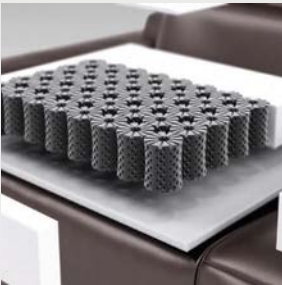
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Banks empower Slovenia's green transition

Slovenia's financial system is robust, resilient, highly digitalized and primed to stimulate sustainable and inclusive economic growth

"The strong position of Slovenia's banking system enabled a swift reaction to the COVID crisis and supported the economy as a whole," states Stanislava Zadavec Capriolo, managing director of the Bank Association of Slovenia.

In 2020, the 16 banking institutions in the country increased their combined balance sheet by over 8 percent to €44.7 billion and went into 2021 with €6.7 billion in excess liquidity. "Our banking system is one of the most liquid in the European Union (EU). The savings rate of Slovene households, which was already very high before the pandemic when compared across the EU, has further increased. Additionally, the sector entered the crisis with a low level of non-performing assets at around 2 percent," she reveals.

Amidst the pandemic, work also continued on strengthening a capital market that includes Ljubljana Stock Exchange (LJSE), which saw its revenues grow 8.9 percent to €1.6 billion in 2020. "Our capital market is very safe and stable, as evidenced by the fact that foreign investors make 40 percent of the transactions on LJSE," asserts Anka Čadež, director of Slovenia's Securities Market Agency (ATVP). Both ATVP and the country's banks are committed to sustainable financing. "Within the EU, Slovenia's banking sector has been one of the important players in green finance since 2017, when it supported the first green-bond issuance of electricity supplier GEN-I. Since then, it has offered a palette of sustainable, green and socially supportive products to companies, households and municipalities. All banks have addressed this, with the frontrunners being SID Bank and NLB," says Zadavec Capriolo.



NLB was the first company in Slovenia to set strong ESG goals



Stanislava Zadavec Capriolo
Managing Director
Bank Association
of Slovenia

SID Bank is the country's promotional development and export bank, explains its president and CEO, Sibil Svilan. "We're the central institution for financing the sustainable development of the Slovenian economy. We're working intensively toward transforming our economy to a green one through different financial instruments that we offer Slovenian companies." SID Bank is also helping the public sector to transform. In October, for instance, it agreed to a €50-million loan with the Council of Europe Development Bank that will be used to co-finance municipal sustainable projects.

NLB Group, on the other hand, is Slovenia's largest private-sector financial group and one of the top-three biggest banking institutions in five other Southeast European countries as well. "NLB is among the first in the region's finance industry to have strong environmental, social and governance goals. For example, we no longer support coal technologies, are dealing with our own carbon footprint and are introducing new underwriting criteria for corporate clients. We've also been working on introducing products that will stimulate sustainability, and seek out energy-efficiency and renewable-energy projects throughout the region," says Blaž Brodnjak, NLB's CEO.

NLB has been an active participant in an ongoing consolidation of the regional banking sector. According to Zadavec Capriolo, "In Slovenia, the number of banks has decreased by around 30 percent in the last decade. However, the advanced digitalization that has taken place in the sector has increased and enhanced their efficiency." Brodnjak confirms this: "You can make 95 percent of your transactions with NLB online today. We've also been working on a contemporary platform for data management and transformation. We're delivering the client experience of fintech, while also offering the entire portfolio of universal financial services."

Slovenia's banks are assisting in the digitalization of the wider economy as well, he comments. "The production sector is crying out for new investment to expand automation and digitalization." Zadavec Capriolo believes Slovenia's EU-backed Recovery and Resilience Plan gives banks the opportunity to participate in more projects in this area. "The sector is well equipped to support and finance the envisaged investment needs within the EU framework of green and digital orientation. Financing is going to be an important catalyst in the process of investing in green and socially responsible growth, and we are ready to play our role in the shift to sustainable and inclusive development."

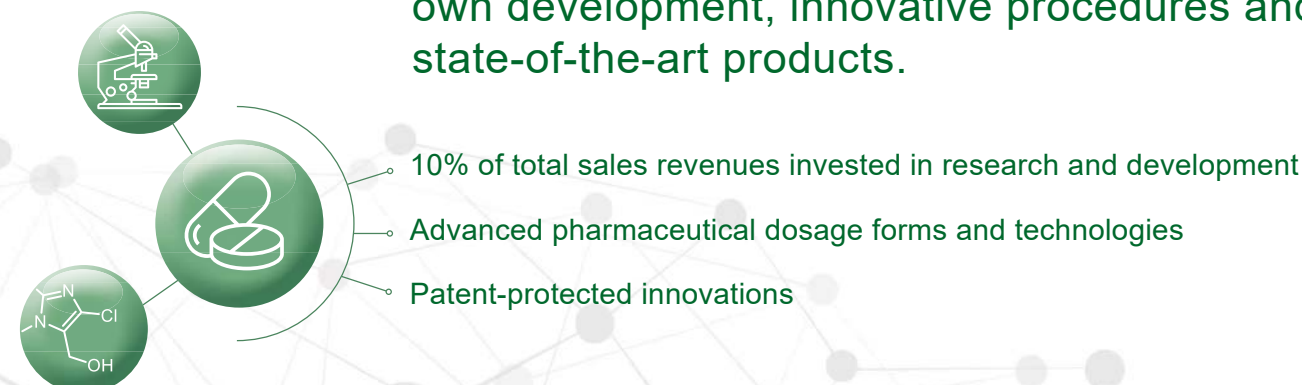


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