



Effective national cybersecurity model

Poland follows a decentralized model of cybersecurity. It has several Competent Authorities and 3 CSIRT's at the national level. Coordination is ensured by the Government Plenipotentiary for Cybersecurity and by the Advisory Committee for Cybersecurity.

The Polish cyber-ecosystem is composed of a plethora of entities representing both, public and private sectors. There are more than 160 Operators of Essential Services and more than 60 Digital Service Providers active in the country. There exist tight links between cybersecurity and critical infrastructure. It is worth mentioning that the Polish cyberecosystem also includes local government units (Nearly 2900 entities), as well as universities and research institutes.

International environment

International initiatives

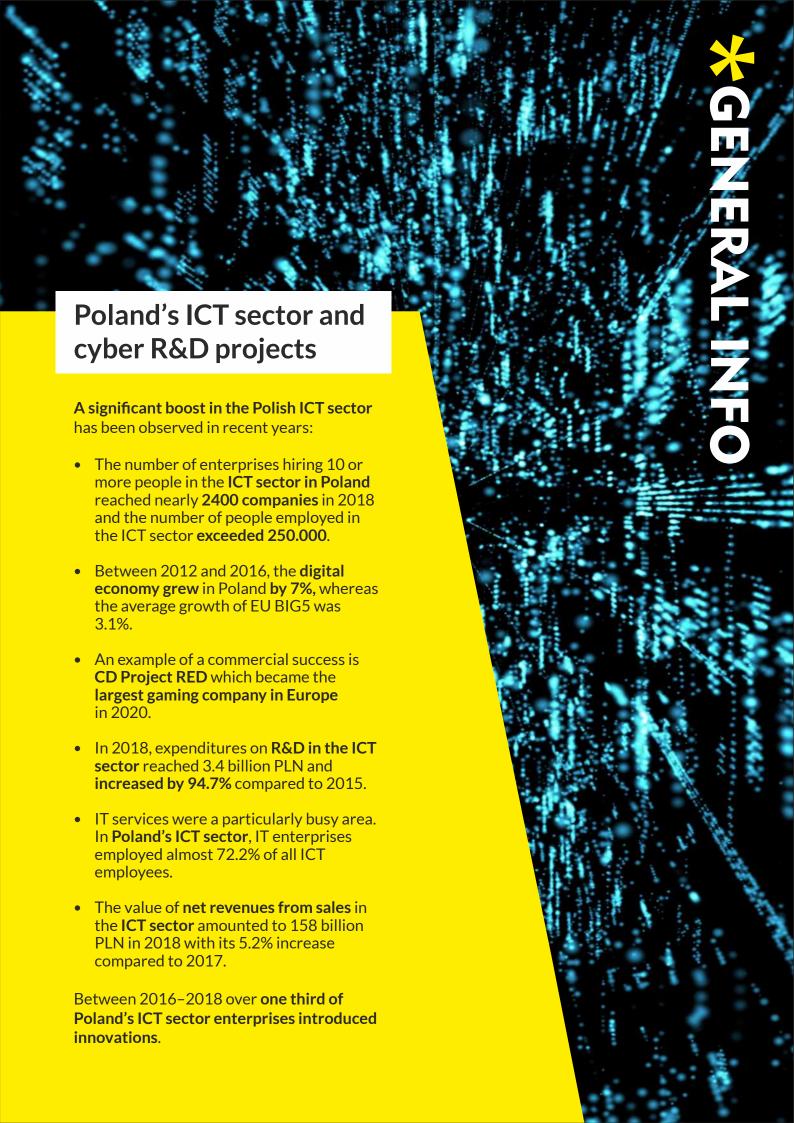
Poland closely cooperates with other countries and international organisations, in particular the European Union (EU), including European Union Agency for Cybersecurity (ENISA); North Atlantic Treaty Organisation (NATO) and the Organisation for Security and Cooperation in Europe (OSCE).

Poland is an active member of the European Cyber Security Organisation (ECSO), which facilitates a contractual public-private partnership (cPPP) in cyberspace between the private sector, the European Commission and Member State public administrations and cyber communities.

Moreover, Poland participates in many international projects, among them: Rapid Response Teams and the Mutual Assistance in Cyber Security, a treaty instrument under the Permanent Structured Cooperation (PESCO) arrangement obliging countries to enhance defence commitments and strengthen defence cooperation.

Furthermore, Poland takes part in the Central European Cyber Security Platformaregional forum for reviewing, among others, cyber security strategies and for discussing current topics on the implementation of the NIS Directive.

CSIRT NASK, the oldest CSIRT (Computer Security Incident Response Team) in the Central and Eastern Europe (CEE) region is a member of several international fora, such as: FIRST, the working group of European responsive teams - TERENA TF-CSIRT and the Trusted Introducer. It also belongs to the Anti-Phishing Working Group.

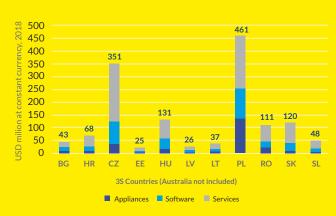




Polish cybersecurity industry and its role in the Three Seas Region

The global cybersecurity market is now (2020) estimated to be worth between 115 and 180 billion USD per year. The best experts from the Three Seas Initiative regional universities provide the foundation for the competitiveness of locally developed products. Regarding CEE cybersecurity markets sizes, **Poland is in the lead**.

Cybersecurity market in the CEE region



Source: IDC CEMA Regional Black Book Q418.

#CyberMadeInPoland/

Importantly, the cybersecurity industry in Poland is maturing and taking a more active role in the regional IT ecosystem. As of 2020, the Polish Cybersecurity Cluster #CyberMadeinPoland is the biggest IT-sec cluster in the CEE region gathering together 44 innovative cybersecurity companies from the start-ups and SME sector to national leaders in the industry.

#CyberMadeinPoland is engaged in:

- export of Polish innovative technologies,
- awareness raising activities,
- regulatory and certification issues,
- active mapping of the cybersecurity potential of Poland and the CEE.

Focusing on the last point, with regard to the Polish start-up and scale-up landscape, there are at least four potential niches for regional specialization in the most promising branches not only of the European but also of the global cybersecurity market:

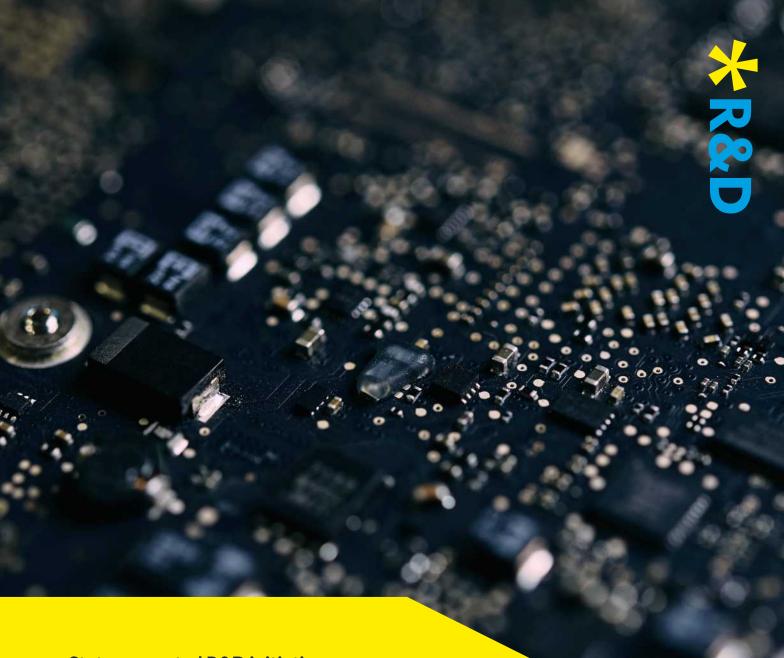
- 1. Security of industrial systems, relying on the distributed endpoints IoT and SCADA
- 2. Security of software code, web applications and programming processes
- 3. Identity verification
- 4. Cryptography

A summary of the Polish Cybersecurity Cluster #CyberMadeInPoland:

- 50+ cyber competences
- 40+ companies
- 25+ development projects
- 20+ partners







State supported R&D initiatives

A public initiative in research and innovation, **CyberSecIdent** has been launched. This initiative is fully financed from the state's budget. So far, since 2017, more **than 60 million EUR** has been **invested in R&D projects** in the field of **cybersecurity**.

Several important cybersecurity and e-identity programs have been implemented so far, including:

- The DAM (TAMA) developed by a consortium led by EXATEL, a Polish stateowned company. The expected outcome is an automated system protecting against DDoS attacks (Distributed Denial of Service).
- KSO3C national scheme for Common Criteria evaluation and certification –successful establishment of 2 Evaluation Facilities and a Conformity Assessment Body. KSO3C is a joint venture of NASK-PIB, IŁ-PIB and EMAG Institutes.
- The National Cybersecurity Platform (NPC) - a project carried out under the aegis of NASK - National Research Institute. It is a nationwide project for risk management, situation awareness and incident response for essential sectors of economy. It will be fully operational in early 2021.



Advanced research institutes

To date, there are about 30 IT hubs/ clusters in Poland and over 20 research institutes. Some are unique and crucial, such as:

Research and Academic Computer Network - National Research Institute (NASK), a leading research institute for IT solutions in Poland. Within NASK there operates one of three CSIRTs at national level, which specialises in supporting private sector.

and capabilities distinctive in the CEE region.

NASK is Poland's leading provider of **R&D** projects, and it has been delivering CSIRT's services since 1996 (indeed, it is the oldest CSIRT in the CEE region). NASK is at the forefront in the area of increasing cybersecurity awareness among society - the entity has helped to establish many **CERT/CSIRTs** teams across Europe and beyond (e.g. supported by NATO SPS Programme).

NASK also participates in several regional and European projects funded or cofunded by the EU including the Horizon 2020 program. Among them are:

1. Capability building Cybersecurity Certification – NASK is a part of a team that has developed a cybersecurity evaluation and certification scheme in Poland based on Common Criteria. Its Forensic Lab provides users with a complete set of tools and devices to collect

a complete set of tools and devices to collect all kinds of electronic evidence and conduct comprehensive analysis. The lab is divided into two modules: stationary and mobile.

NASK's MWDB (malware data base) system is designed for malware researchers. Via MWDB, experts can upload malware samples to be shared with the research community.

2. EU research projects on a worldwide scale

Cybersecurity calls for complex, innovative solutions and a holistic approach. Over the years, together with international partners, NASK created novel cyber security solutions through combined R&D projects, for example:

 The SISSDEN project (under Horizon 2020) coordinated by NASK. The project developed the tools necessary for creating a worldwide network of 212 sensors in 52 countries. Within this project, NASK researchers were responsible for developing the platform's innovative architecture.

- AMCE "Advance threat Monitoring and Cooperation on the European and national levels". This is a project financed by the Connecting Europe Facility program. The main goal of the AMCE project is to improve cooperation at the operational level among incident response teams within the European Union.
- Melicertes2 this project aims at improving and extending collaboration tools for the CSIRTs Network and emphasises information exchange and communication.
- The ARAKIS-GOV system is an outcome of cooperation between Poland's Internal Security Agency (CSIRT GOV) and CSIRT NASK. It is an early warning system that supports the protection of governmental administration and critical infrastructure ICT resources.



National Institute of Telecommunications - National Research Institute (IŁ-PIB) is an example of a leading national research and development institution for telecommunications and information technologies.

The National Institute of Telecommunications established in 1928, supports cybersecurity in the telecom sector – e.g. by establishing Crypto and IT evaluation laboratory and partnering in 5G security testing.

1. R&D activities and commercial implementation

The National Institute of Telecommunications is the leading member of consortia involved in several R&D projects in the field of cybersecurity. Among others:

- National scheme for the security and privacy evaluation and certification of IT products and systems compliant with Common Criteria (KSO3C).
- Provision of innovative hardware and software - based on developing dedicated integrated circuits and the necessary software for performing various cryptographic applications, with particular attention paid to electronic identification systems with the high level of confidence (IDSoC).
- Provision of experimental platforms for automatic verification and validation of cryptographic algorithms and protocols (EPW).

2. Developing international standards

At the international level: active participation in the international standard community, including current editions of several international standards, such as: ISO/IEC 27000 and ISO/IEC 15408.

At the European level: active participation in the works of the European standard community, including recent editions of the European Standard "Cybersecurity evaluation methodology for ICT products" (project no. CEN 013029).

Institute of Innovative Technologies (EMAG), a part of the Łukasiewicz Research Network, provides unique research activities in this part of Europe

- develops and implements innovative solutions in the range of information technology, operational technology, cyber security and Industry 4.0. EMAG combines science with business. EMAG's achievements include several hundred patents, intellectual property rights, registered trademarks, as well as numerous awards. EMAG won a number of prizes and medals at domestic and international fairs end exhibitions.

Military University of Technology (WAT) leading military university.

WAT is not only a source of educated military staff for the Polish Armed Forces, but also a research entity carrying out comprehensive scientific research in the field of cybersecurity and defence in the areas of risk monitoring, diagnostics and exploitation of infrastructure, nanotechnology and biomedical engineering, electronics and telecommunications, IT and IT support for decision - making and crisis management.

WAT closely cooperates with several civilian partners: research institutes, universities and IT companies.



Cryptography - a Polish specialty

Poland's traditions in mathematics and cryptology (cryptography and cryptanalysis), as well as mathematical methods of information protection were developed after independence was regained in 1918. The work of Professor Stefan Banach within the Lviv School of Mathematics is particulary noteworthy. However, the application of mathematics in cryptanalysis was the domain of mathematicians from the University of Poznan - Marian Rejewski, Jerzy Różycki and Henryk Zygalski, who were the first to perform ENIGMA cryptanalysis and built a replica of the device - doing so on the basis of its mathematical models. The full documentation of the ENIGMA's

cryptographic system together with working devices was handed over to French and British allies in July 1939, at the Cipher Bureau in Pyry near Warsaw. This information allowed them to break subsequent modifications of the ENIGMA (including an extended version for Kriegsmarine).

Since 1989, Poland has significantly increased the capacity of its cryptologic industry. In 2020, there are several Polish companies providing state-of-the-art technologies. An example of a company operating in the field of cybersecurity is **Krypton Polska**. This enterprise specialises in developing and providing cryptologic solutions. The company designes and produces advanced solutions in the field of ICT security. Another example is **Siltec** - a leading manufacturer and supplier of dedicated TEMPEST equipment.



Enhanced Public- Private Partnership

Since 2019, a Program of Cooperation in Cybersecurity (PWCyber) has been implemented in the formula of public-private partnership in order to increase the cybersecurity of Poland. It brings together knowledge, competences and covers all areas of cybersecurity: information, education, training and know-how.

The program is based on cooperation between Poland's administration, Polish enterprises and international companies operating in Poland.

Several international and Polish entities have already joined this initiative, for example: Cisco, Ericsson, IBM, Nokia, Samsung, Dell, Oracle, Thales, Media, Smartech, Krypton Polska, Dynacon and Cybersecurity Foundation (the first NGO that signed the MoU). PwCyber members take part in setting new directions in digitization and developing new technologies, in particular, in the field of cybersecurity. More companies are willing to join in the near future.

Another PPP is the Cybersecurity
Partnership Programme, led by NASK-PIB.
It enables 68 partners to increase the level of cyber security at the technical, strategic and competences level.

Strong participation of NGOs

Dozens of non-profit NGOs are engaged in increasing capacity of the Polish cyber-ecosystem. In cooperation with public administration or separately, they provide major input into increasing the awareness of cybersecurity within society. Among others, the following stand out:

The Cybersecurity Foundation - one of the key Polish organisations in the field of cybersecurity; its main activities are: raising awareness, research and development.

The Kosciuszko Institute - a Polish independent, non-profit, non-governmental think tank and research institute. The areas of expertise include cybersecurity. The Kościuszko Institute organises the widely known CYBERSEC Forum on an annual basis.

The Bridge Foundation – specialises in cybersecurity education and interactive cybersecurity challenges in Poland. The Bridge Foundation set up the Regional Cyber Labs project.

Polish Confederation of Private Employers - Lewiatan - represents at the national and pan-national level, the interests of Polish private entrepreneurs, including those operating in the field of cybersecurity.



a priority in education

The cybersecurity ecosystem in Poland is strongly supported by academia - especially its network of 16 Technical Universities and High Schools.

The field of IT and digitalization has been greatly developed in Poland. According to the data of the Central Statistical Office. in Poland there were approximately 15,000 graduates of IT studies, including those in cybersecurity, per year in the last 15 years.

There are almost 60 universities in Warsaw. Some, such as the Warsaw University of **Technology** (with dedicated Cybersecurity Studies for engineers) and the Military University of Technology provide education in cybersecurity (with dedicated Cryptology Studies), as well as IT, and BA, MA, postgraduate studies related to digitalization.

Every year hundreds of workshops, expert conferences including such brand marks as: CYBERSEC, SECURE, Security Case Study and other seminars are organised in Poland. Most take place in Warsaw.

Military cyber-education

Each year, 1,500 secondary school graduates begin their studies at the Military University of Technology (WAT).

It is expected that by the end of 2025, nearly 2,000 officers educated in electronics and telecommunications, computer science, cryptology, cybersecurity and information systems will leave the walls of Poland's military universities.

In October 2019, WAT in cooperation with the University of Genoa opened MBA studies in the field of cybersecurity management. These are the first studies of this type in Poland in the field of cybersecurity. By providing a strong technological background, WAT will enable experienced managers to build their expertise in the field.

In October 2019, the SONDA NCO School in Zegrze was launched. Its task is to educate military officers in the field of telecommunication and information technology.



Imagine a perfect city. A city that makes your investments easier. A stable leader in a region that is perfectly communicated with the rest of Europe. A city that is safe for you and your money. Imagine a place full of ideas and possibilities: the home to ambitious employees and modern office infrastructure. You can stop dreaming.

This is Warsaw.

Warsaw is Poland's main economic and business hub.

The capital is also one of the most important and largest metropolises in **Central and Eastern Europe - and has** tremendous investment potential.

The city's **modern economy** features a significant knowledge-based services sector including business process outsourcing centres (BPO), shared services centres (SSC), IT centres and research and development centres (R&D).

Warsaw is the capital city of Poland not only in administrative, political, and financial capacities, but also in economic. educational and cultural terms. Favourable accessibility, easy to find talents, a fast growing GPD and high quality of life. All this has enabled the city to be the hub of the most recognised business destination

more and more worldwide known brands as well as start-ups have made their home here - and are growing with Warsaw.

Key features of Warsaw:

- Warsaw ranks 1st place in the fDi **Eastern European Cities of the** Future 2020/21 list and 6th place in the European Cities of the Future 2020/21 list. It is in 2nd place when it comes to business friendliness and in 8th place when it comes to Economic Potential (ranking published by the Financial Times).
- Warsaw is considered one of the **Top three locations** in Europe in terms of overall satisfaction of place for doing business (ABSL ranking).
- It is one of the three largest business services locations in CEE.
- Warsaw has the largest office market in CEE.
- The City is one of the best**connected metropolis** in Europe.
- Warsaw's competitive operating and employment costs are comparable with the largest cities in the USA or Western and Northern Europe.

Poland, a great place to launch an investment

According to the "Global Best to Invest" ranking, in recent years Poland has been considered among the top 10 in the world to invest in. At the same time Poland is in the top 3 countries in Europe that attracted the most foreign investments and in 2019, foreign investors completed more than 370 projects in Poland.

Perfect localisation

Warsaw is the best example of a communication hub that connects North with South, and West with East. There are many national airlines and several low-cost airlines operating at the Chopin and Modlin airports.

Warsaw is easy to reach thanks to 2 international airports (Warsaw Chopin Airport and Modlin Airport) with over 120 flight destinations to 65 countries. The city's two airports handle around 16 m passengers a year.

THE CENTER OF EUROPE

FLIGHT TIME BY PLANE

almost 200
destinations

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Source: City of Warsaw

Major European cities may be reached from Warsaw within a maximum of 2h 30min, including regular flights carried to all 26 Member States.

The Warsaw Chopin Airport is located only 15 min by car from the city centre. There are several direct buses (approx. 30 minutes) and trains (approx. 20 minutes) operating to and from the airport.



Source: Chopin Airport website

Modlin Airport is located approximately 40 km from Warsaw. The Airport is connected with Warsaw by buses and trains – it takes approx. 40 minutes to get to Warsaw city centre. The network of routes from the airport includes 36 directions - and this number is growing.

Network of connection from the Modlin Airport – October 2020:



Source: Modlin Airport website

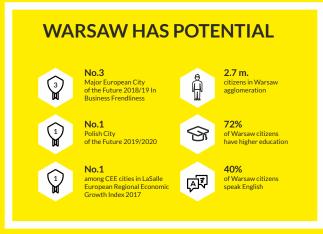
Accommodation facilities

There are **89 hotels in Warsaw** including **14 five-star hotels**, **24 four-star hotels** and **51 three-star hotels** (in total more than 26 000 hotel beds and 14 000 hotel rooms).

Warsaw offers thousands of apartments to rent. There are constantly between 9 and 10 thousand apartments in the market ready to move in.

Best human resources

Due to the constant injection of well-educated graduates secured by top public and private higher education institutions excellent professionals can be readily taken up from the Warsaw labour market. Access to a pool of well-educated employees has been an essential factor encouraging many companies to invest in Warsaw. The quality and skills of Poland's human resources are the drivers behind their business growth.



Source: City of Warsaw

World-class quality of life

Warsaw is a modern European metropolis opened to ideas and to fulfilling the needs of its residents. Investments undertaken in recent years have focused on many areas, like culture, education, sports and recreation and their common dominator has been to raise the quality and standard of living.



Source: City of Warsaw

Top class office space

A number of independent studies and the high ranking of Warsaw in several business and lifestyle categories confirm the leading role of the city in commercial office space offer in the CEE region. There are over 5 million square metres of office space in Warsaw, with BREEAM and LEED certificates and which are noted for their modern design and flexible space arrangement. This alone makes Warsaw stand out amongst other European cities.

Regarding the seat of the European Cybersecurity Industrial, Technology and Research Competence Centre, we propose several prime and modern buildings: Crown Point (Prosta 70 street, near Daszynskiego roundabout), Progress Park (Postępu 21 street only 10 min from the Warsaw Chopin airport) or Warsaw Spire (building C - Europejski 2 square).



The Polish government will cover all expenditures for renting the office space for the next 10 years.







Central Asia region.

Moreover, the University of Warsaw shares top position with Jagiellonian University in Krakow in the Higher Education Perspectives Ranking 2018, which classifies the best Polish higher education institutions.

At the same time Warsaw University of Technology came in 3rd among all public universities, while Kozminski University came in 1st among private universities in Poland.





The Polish government offers full coverage of costs for ensuring education of the Centre's staff children up to 35 000 PLN/7 800 EUR (annually per child) in the period of the subsequent 10 years.

Warsaw offers a broad range of international schooling including facilities that provide education in English, French, German and Italian.

There are a number of public and private international schools and kindergartens in Warsaw suitable to the needs of foreigners and of Warsawians such as American School of Warsaw, The British School Warsaw, French High School in Warsaw and the Willy Brandt

Polish-German School.

According to data for the school year 2019/2020, there are **96 bilingual schools in Warsaw**, where at least some classes are taught in a language other than Polish.

In total, there are 69 bilingual primary schools, 26 bilingual general secondary schools and 1 bilingual technical school in Warsaw. There are 341 bilingual branches in these schools, with 8171 pupils.

Through the Polish education system, it is possible to pass the International Baccalaureate, which is recognised in many countries all over the world and allows you to study at many foreign universities.

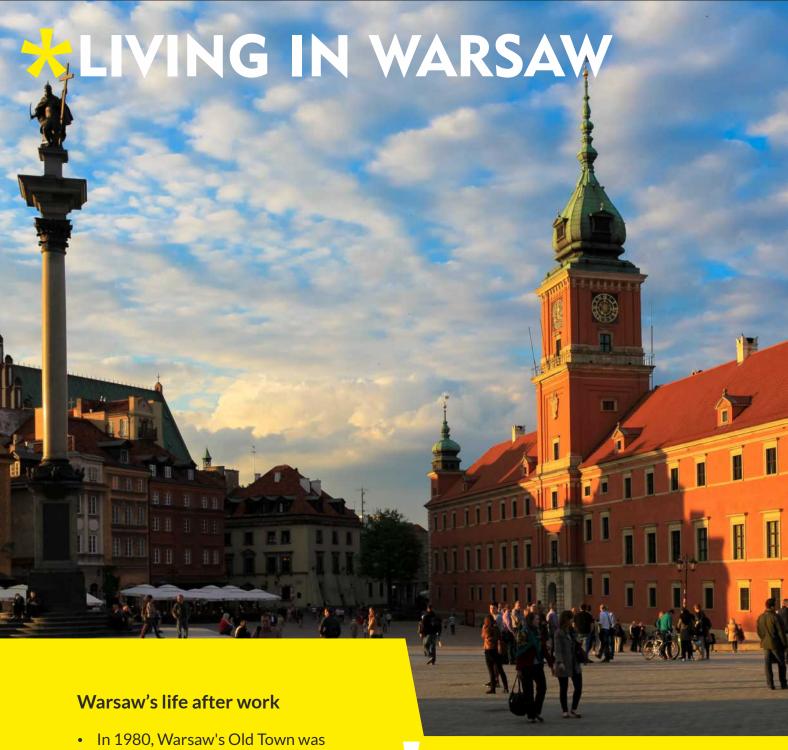


Poland's capital offers superb living conditions and accommodation options, high levels of security, educational and international facilities of the highest standard, international job opportunities, good medical care facilities and well-functioning expats communities.

Warsaw is ranked 6th on the list of top destinations for foreign direct investments in Europe for the 2020/21 – the ranking published by the Financial Times; Poland offers an open and stable job market that can easily meet the needs of the families of the Center's staff. Warsaw is a perfect place to seek for job

opportunities, as it is home to more than **400 thousand business entities** including many prominent global and local companies.

Warsaw offers perfect living conditions with very good medical care facilities. There are more than 1500 top class medical facilities in Warsaw, including 88 hospitals. Warsaw also offers walkin centers as well as overnight and holiday healthcare facilities. Access to these facilities is not limited - and the medical staff speaks English.



- In 1980, Warsaw's Old Town was inscribed on the UNESCO World Heritage List as "an outstanding example of a near-total reconstruction of a span of history covering the 13th to the 20th century.
- Warsaw is the fastest-growing, fastest-changing city in Poland, with a diverse restaurant scene that will allow you to sample the best of Polish and international cuisine in a range of different settings.
- Warsaw has the largest number of theatres, museums, cinemas, restaurants, entertainment and sports halls and other facilities related to culture, art and sport in Poland and is one of the leading cities in Europe in this respect.





















