



ANNUAL REPORT NCBR

2018



The National Centre
for Research and Development



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NCBR IN NUMBERS



PLN 6.8 bn

**ALLOCATION - AMOUNT FOR CALLS
FOR PROPOSALS ANNOUNCED
IN 2018**

3361

THE NUMBER OF APPLICATIONS FILED IN 2018

PLN 18 bn

THE VALUE OF FUNDING APPLIED FOR IN 2018

1278

THE NUMBER OF CONTRACTS SIGNED IN 2018
(TOTAL FOR ALL CALLS FOR PROPOSALS UNDER
NCBR'S PROGRAMMES, REGARDLESS OF THEIR ANNOUNCEMENT DATE)

340

INCLUDING CALLS FOR PROPOSALS ANNOUNCED IN 2018

PLN 6.57 bn

THE VALUE OF FUNDING IN 2018
(TOTAL FOR ALL CALLS FOR PROPOSALS UNDER
NCBR'S PROGRAMMES, REGARDLESS OF THEIR ANNOUNCEMENT DATE)

PLN 2.1 bn

INCLUDING CALLS FOR PROPOSALS ANNOUNCED IN 2018



PROFESSOR DSC. ENG.

**MACIEJ
CHOROWSKI**DIRECTOR OF THE NATIONAL CENTRE
FOR RESEARCH AND DEVELOPMENT**Dear Madams and Sirs,**

it is a pleasure to present to you the report on the operations of the National Centre for Research and Development in 2018. This was a special year for a number of reasons.

Firstly, with a view to increasing the availability of NCBR's funds and diversifying our services, we launched the preparation of further programmes using the problem-driven research formula, focussing, i.a., on innovative rolling stock and unmanned aerial systems. At the same time, we were implementing further stages of the already initiated procedures. We also launched the first two corporate venture capital funds with a target capitalisation of PLN 260 m. Hence, we increased the commitment of funds to programmes in which we apply return mechanisms.

Secondly, in 2018 we reached further contracting thresholds. Under the calls for proposals for the Smart Growth OP we signed contracts worth PLN 3.3 bn, and for the Knowledge Education Development OP –

almost PLN 2 bn. At the same time, at the end of 2018, from the start of the current financial perspective, contracts were worth PLN 13.4 bn for the SGOP and PLN 3.5 bn for KED OP, accounting for 66% and 65%, respectively, of total allocations for measures implemented by the Centre. The total allocation for 61 calls for proposals financed from EU funds and national funds announced in 2018 almost reached PLN 6.3 bn.

Thirdly, we successfully completed the optimisation of our organisational processes, streamlining the management of stakeholder relations. These included reorganisation within NCBR's structures, as well as the launch of operating activities by the special purpose vehicle NCBR+, which supports the performance of the Centre's statutory tasks. Taking advantage of the statutory investment opportunities, we also started working on a new co-investment instrument – NCBR Investment Fund. It is an addition to NCBR's range of services, at the same time addressing the capital gap issue on the VC market.

2018 was a year of numerous challenges arising, i.a., from the necessity to adjust to new European Commission regulations and to implement programmes in a new formula. Thanks to the hard work of the entire team of the Centre and good cooperation with other institutions and NCBR's partners, we managed to meet these challenges, bringing benefits not only to the existing beneficiaries but also improving our services and streamlining the Centre's operations, providing a robust basis for NCBR's development in the years to follow.

PROFESSOR MACIEJ CHOROWSKI, DSC. ENG.
DIRECTOR OF THE NATIONAL CENTRE
FOR RESEARCH AND DEVELOPMENT



PROFESSOR DSC. **ANNA
ROGUT**
PRESIDENT OF THE BOARD OF THE NATIONAL CENTRE
FOR RESEARCH AND DEVELOPMENT

Dear Madams and Sirs,

2018 was for the Board a period of intensive efforts to develop the new and improve the existing instruments dedicated to the performance of tasks related to research, science and technology, and innovation policies of Poland.

In the previous year the Board focussed primarily on two issues. The first of them was the use of evaluation results to improve the effectiveness of programmes already under implementation, especially strategic programmes, sectoral programmes and joint ventures. The second was the development of a new approach to the preparation and implementation of strategic programmes aimed at the integration of scientific, economic and political communities around issues of high strategic significance, and taking long-term initiatives to improve the innovativeness and competitiveness of Polish science and economy.

The outcome of the new approach was both the revision of the procedure of designing strategic programmes and an increase in

the effectiveness of their implementation mechanisms.

2018 was also when, in line with the Act on the National Centre for Research and Development, fifteen members of the Centre's Board were replaced. Efficient cooperation and dedication of the Centre's Board members representing the worlds of science, economy, finance and administration enabled us to successfully fulfil the objectives and tasks of the Board in the Centre's eleventh year in existence, a year that proved important for NCBR. The outcomes of these efforts will bring many good results, having a positive impact on the country's social and economic development both in the long and short term.

PROFESSOR ANNA ROGUT, DSC.
PRESIDENT OF THE BOARD OF THE NATIONAL CENTRE
FOR RESEARCH AND DEVELOPMENT

MAJOR EVENTS IN 2018

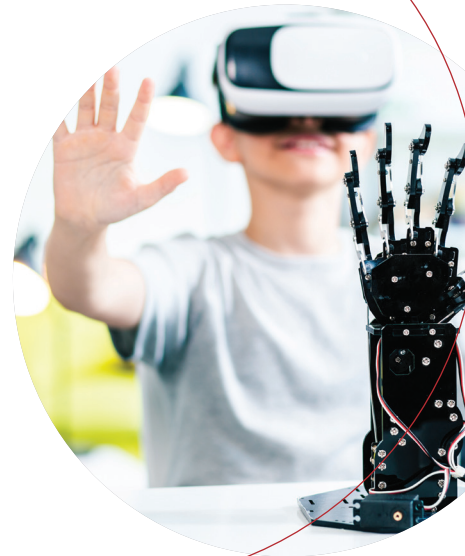


UNIVERSITY FOR EVERYONE: PLN 170 M FOR HIGHER EDUCATION INSTITUTIONS TO SPEND ON EDUCATIONAL CLASSES FOR CHILDREN, ADOLESCENTS AND ADULTS

"The third mission of the University" is a call for proposals to help tap the potential of Polish higher education institutions for the benefit of local communities. Funding under the call was awarded to 211 projects prepared by public and non-public higher education institutions from all over Poland: "The academy of creativity", "The multigenerational university of technology", "The engineering business incubator" and "The university for seniors" are examples of measures to improve the competencies of people regardless of age. The range of services specified in the projects, which combine university activities with educational activities of local authorities and non-governmental organisations will benefit more than 30,000 people.

"This is an investment in the future of all of us, both near and distant," said Deputy Prime Minister, Minister of Science and Higher Education Jarosław Gowin. Economy needs

not only well-educated specialists, engineers and experts, but also those who are creative, curious and who are leaders in their communities," said Professor Maciej Chorowski, Director of the National Centre for Research and Development.



A COURSE ON MOOC. THE FIRST POLISH MOOC PLATFORM – VIRTUAL EDUCATION FOR EVERYONE

The MOOC (Massive Open Online Course) Platform is a reliable and free source of knowledge available to everyone, regardless of their place of residence, age and education. Launched by the Ministry of Science and Higher Education, this innovation contributes to overcoming educational barriers and enabling Poles to gain knowledge using online courses. Similar platforms exist in most European countries.

The National Centre for Research and Development allocated PLN 10 m on the programme for authors from higher education institutions who will prepare courses for the platform. Courses are to be created not only by higher education

institutions but also non-governmental organisations and companies.

“We are experiencing a technological revolution in education. Today more than 80 million students in the world use platforms offering MOOC courses. Over 800 higher education institutions provide their courses to students around the world. They support and supplement traditional forms of education, where the relationship between the master and the student is essential,” said Piotr Dardziński, the Secretary of State at the Ministry of Science and Higher Education.

“NCBR responds to the specific needs of innovators in the respective research project funding rounds. SEI will be a perfect addition to the funding instruments portfolio for research and development projects offered to start-ups by such institutions as NCBR and the PFR Group,” said Professor Maciej Chorowski, Director of the National Centre for Research and Development.



PLN 100 M FOR START-UPS IN THE ENERGY INDUSTRY

Industry 4.0, electric mobility, the digitisation of customer relations, energy storage – these are only some of the areas in which young innovative companies can receive funding. The new joint fund of PGE Polska Grupa Energetyczna, the Polish Development Fund and the National Centre for Research and Development (SpeedUp Energy Innovation powered by PGE Ventures – SEI) in five years will provide PLN 100 m for support to the energy sector start-ups.



“THE ŁÓDŹ REGION IN GOOD HEALTH” – NCBR SUPPORTS QUALITY-OF-LIFE PROJECTS”

A joint venture with the Łódzkie Voivodeship is aimed at supporting projects improving the quality of life and facilitating active and healthy ageing. The initiative is part of a joint effort by NCBR and the Łódzkie Voivodeship to develop cooperation and support forms tailored to regional needs.

The Voivodeship is known for the shortest life expectancy of men and one of the lowest life expectancies of women. The mortality rate due to external causes, respiratory and gastrointestinal system diseases and cancer is the highest in Poland. Improving the state of health of the elderly has become a burning issue. Scientific and industrial consortia which conduct projects focussing on innovative solutions combining medicine and technology with the goal of reducing risks and improving the situation of the region's residents can receive grants out of the total amount of PLN 100 m.



COMBINING THEORETICAL COURSES WITH PRACTICE IN BUSINESS – PLN 123 M FOR DUAL STUDIES

From programming artificial intelligence and big data to resocialisation pedagogy – starting from the new academic year, students of several dozen Polish higher education institutions will have new options of combining theoretical courses with employment in business. The National Centre for Research and Development co-funded 69 projects which combine academic knowledge with practical experience and personnel training for innovative companies.

The recognised projects include the Kozminski University, the Silesian University of Technology, the Poznań University of Life Sciences and the Łódź University of Technology. The call for proposals will result in increasing the competencies of at least 1750 people.

“Higher education institutions which received grants prepared projects in response to the current needs of the economy, the labour market and society. This shows that both academic staff and employers are interested in developing practical education in our country,” said Deputy Prime Minister, Minister of Science and Higher Education Jarosław Gowin.



THE „E-VAN” PROGRAMME – ELECTRIC MOBILITY IN THE SHORT TERM

The National Centre for Research and Development and energy industry companies: Enea SA, Energa-Operator SA, PGE Dystrybucja SA and Tauron Dystrybucja, are launching cooperation for the development of electric mobility in Poland. The objective of the “e-VAN” programme is to develop an innovative, zero-emission delivery van. Since 2017 NCBR has intensively supported and initiated research and development projects in the area of electric mobility in Poland. An example of previous measures is the “Zero-emission public transport” programme, under which an innovative Polish zero-emission bus will be developed. The activities under the “e-VAN” programme are planned to end in 2022.

“Designing a van that meets business needs is a dream of every company, so I hope that companies involved in the project will embrace this opportunity,” Michał Kurtyka, Deputy Minister of Energy commented on the initiative.



PLN 230 M FOR BREAKTHROUGH PHARMACEUTICAL PROJECTS

According to Statistics Poland data, the pharmaceutical industry is the most active sector of the Polish economy in terms of innovation. In order to further increase the competitiveness of the Polish pharmaceutical industry abroad by 2026, the National Centre for Research and Development announced InnoNeuroPharm, a sectoral call for proposals.

“Developing new therapies, innovative medications and discoveries in such fields as medicine and pharmacy have a direct impact on life expectancy and the quality of life,” said Deputy Prime Minister, Minister of Science and Higher Education Jarosław Gowin.

THE NEW FUND SUPPORTING INNOVATIVE SOLUTIONS FOR THE ENERGY SECTOR – EEC MAGENTA

This CVC (Corporate Venture Capital) Fund was established by TAURON, the Polish Development Fund and the National Centre for Research and Development. This is the first such entity on the Polish market. The fund will support innovative companies implementing projects in areas in which the TAURON group operates. As early as in 2017 NCBR launched the CVC Fund of Funds managing PLN 880 m (half of which are NCBR funds). EEC Magenta is a component of the initiative.

“EEC Magenta is the first important step towards creating several professional CVC funds to effectively invest in high-risk projects,” said Professor Maciej Chorowski, Director of the National Centre for Research and Development.

PLN 40 M FOR KNOWLEDGE TRANSFER TO INDUSTRY: TANGO 3 – A JOINT VENTURE OF NCBR AND THE NATIONAL SCIENCE CENTRE

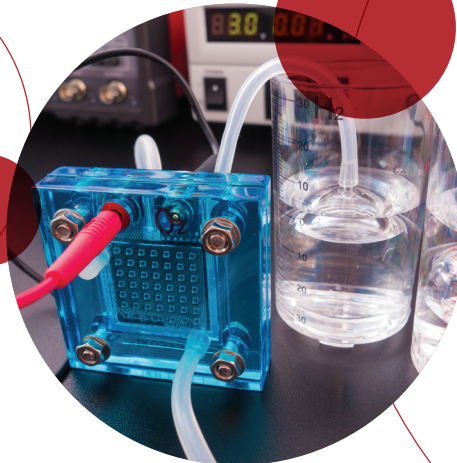
The TANGO 3 Programme, tapping the potential of the National Science Centre and NCBR (agencies of the Ministry of Science and Higher Education), provides

opportunities for the effective launching of innovations on the market. The focus is on the outcomes of projects (products, services or technologies) carried out, i.e., by research establishments, including higher education institutions, research centres of the Polish Academy of Sciences and even private individuals. Thanks to the competition, applicants can receive funds for creating concepts of the application of existing research results in business.

INVESTING IN THE FUEL OF THE FUTURE – HYDROGEN STORAGE

Developing a mobile hydrogen storage container for use with fuel cells is the main challenge faced by participants in the Hydrogen Storage Programme. With a budget of over PLN 30 m, this NCBR programme will be implemented until 2021. The programme is carried out within the problem-driven research model focussing on solving a specific problem which constitutes a development barrier for the solutions applied so far.

“This is another initiative aimed at developing and implementing innovative, pure technologies, whose wide application will significantly improve the quality of life,” said Director of NCBR Professor Maciej Chorowski.



ABOUT NCBR

THE NATIONAL BUILT FOR RESEARCH AND DEVELOPMENT HAS BUILT A BRIDGE BETWEEN THE WORLDS OF SCIENCE AND BUSINESS, CREATING APPROPRIATE CONDITIONS FOR THE DEVELOPMENT OF CUTTING-EDGE FIELDS AND AN INCREASE IN THE COMPETITIVENESS OF THE POLISH ECONOMY.

NCBR is an executive agency of the Minister of Science and Higher Education. Through the co-funding of research and development processes in Polish companies and higher education institutions, the Centre is reducing the business risk associated with developing and implementing breakthrough projects. At the same time, it is an institution which, through its operations, encourages experienced and established businesspeople to start working on innovations.

For eleven years NCBR has been on a mission of supporting development projects for the country and solving civilisational problems. NCBR is not only a “conveyor belt” of money for the economy, but also an institution which effectively drives R&D project implementation. One of the Centre’s





objectives is to support young scientists by enabling them to improve their qualifications and adapt research results to the business reality.

Innovation is one of the major factors in the economy determining its dynamism and

potential. The conditions that are being created for business people and scientists wishing to join their forces determine the country's position in the rapidly changing world. NCBR's mission is to effectively increase the potential of Polish companies.

The Centre is the Intermediate Body in the Smart Growth and Knowledge Education Development Operational Programmes of the EU. It also carries out international programmes and numerous national programmes. NCBR is the largest institution supporting the development of science and economy in Poland and in this region of Europe.

THE BOARD OF NCBR



THE BOARD OF THE NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT IS COMPOSED OF RENOWNED SCIENTISTS AND EXPERTS. IT IS THE CENTRE'S ADVISORY AND OPINION-MAKING BODY.

Its tasks include the preparation of projects within strategic research and development programmes. The Board also issues assessments in matters specified in the Act on NCBR.

In 2018 there were 11 meetings of the Board of NCBR, and 35 assessments were issued. The major focus of the Board's work was, i.a. determining a concept of needs and directions of changes in the approach to strategic programmes.

The Board also continued work on the preparation of a new strategic programme – INFOSTRATEG, covering IT, telecommunications and mechatronics.

Members of the Board prepared suggestions of annexes to the TECHMATSTRATEG and GOSPOSTRATEG programmes.

The Board issued recommendations for programmes supporting sectors of the economy and regions, including the establishing of a joint venture with the Dolnośląskie Voivodeship and the continuation of the programme implemented together with the Śląskie Voivodeship.

As a think tank of the National Centre for Research and Development, the Board works out optimum solutions for the current and future strategic operations of the Centre.

THE BOARD OF NCBR IN 2018



THE BOARD OF NCBR CONSISTS OF REPRESENTATIVES OF THE SCIENTIFIC AND SOCIO-ECONOMIC COMMUNITIES AND THE STATE ADMINISTRATION.

MEMBERS REPRESENTING SCIENTIFIC COMMUNITIES:

Lidia Gawlik, DSc. Eng.
Leszek Kwieciński, DSc.
Dominika Latusek-Jurczak, DSc.
Professor Joanicjusz Nazarko, DSc. Eng.
Professor Piotr Perlin, DSc.
Professor Grażyna Ewa Ptak, DSc. Eng.
Piotr Sankowski, DSc.
Professor Krzysztof Stańczyk, DSc. Eng.

MEMBERS REPRESENTING SOCIO-ECONOMIC AND FINANCIAL COMMUNITIES:

Professor Anna Rogut, DSc. Professor at the University of Social Sciences, President of the Board
Professor Janusz Błaszczyk, DSc. Eng.
Zbigniew Dokurno, PhD
Professor Jan Tadeusz Duda, DSc. Eng.
Włodzimierz Fisiak
Krzysztof Gulda
Włodzimierz Hrymniak
Dariusz Janusek, PhD Eng.
Krzysztof Mazur, PhD
Professor Piotr Niedzielski, DSc. Eng.

MEMBERS NOMINATED BY MINISTERS REPRESENTING THE GOVERNMENT:

Marcin Cichy – representative of the Minister in charge of digitisation
Piotr Dardziński, PhD – representative of the Minister in charge of higher education and science
Jadwiga Emilewicz – representative of the Minister in charge of the economy
Andrzej P. Jarema – representative of the Minister of National Defence¹
Janusz Karp, PhD – representative of the Minister in charge of maritime economy
Krzysztof Kozłowski, PhD – representative of the Minister in charge of internal affairs²
Sławomir Mazurek – representative of the Minister in charge of the environment³
Radosław Sierpiński, MD PhD – representative of the Minister in charge of health⁴
Mikołaj Wild – representative of the Minister in charge of transport⁵
Ryszard Zarudzki, PhD – representative of the Minister in charge of agriculture

1. Until 21 February 2018 Dominik Smyrgała, PhD.

2. Until 5 July 2018 Andrzej P. Jarema.

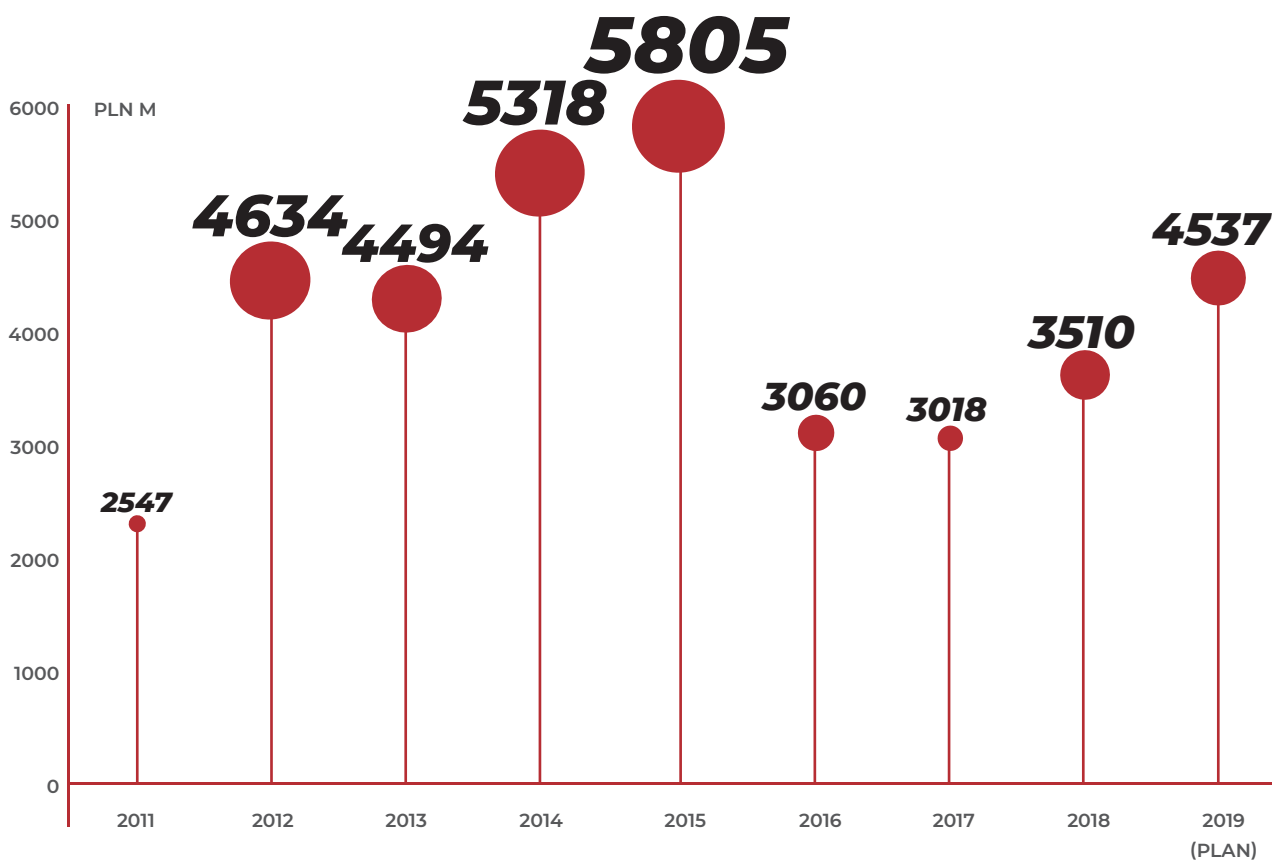
3. Until 25 April 2018 Professor Tadeusz P. Żarski, DSc. Eng.

4. Until 8 August 2018 Marek Tombarckiewicz, MD PhD.

5. Until 26 June 2018 Marek Chodkiewicz.

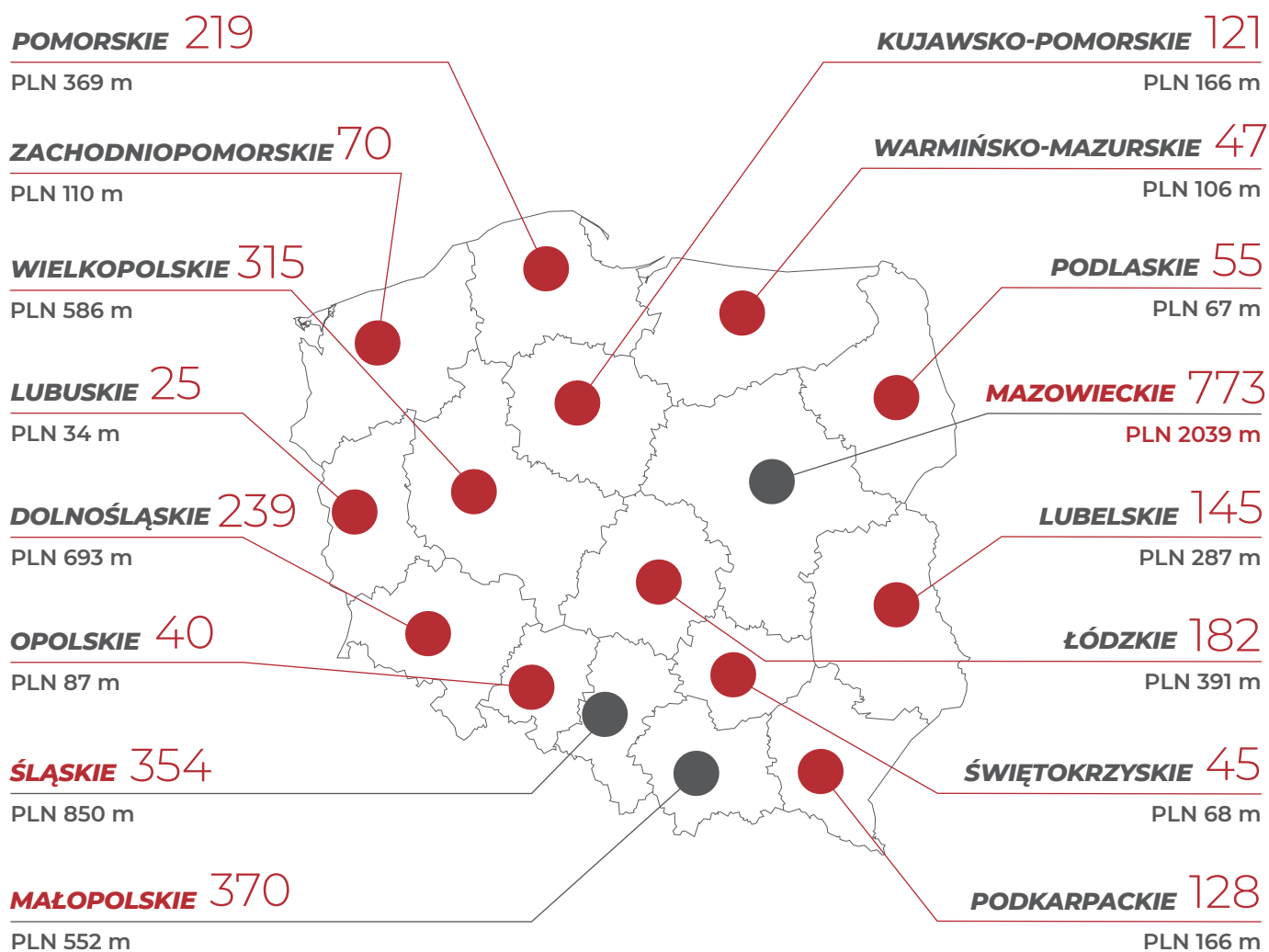
THE BUDGET OF NCBR

IN THE YEARS 2011–2018



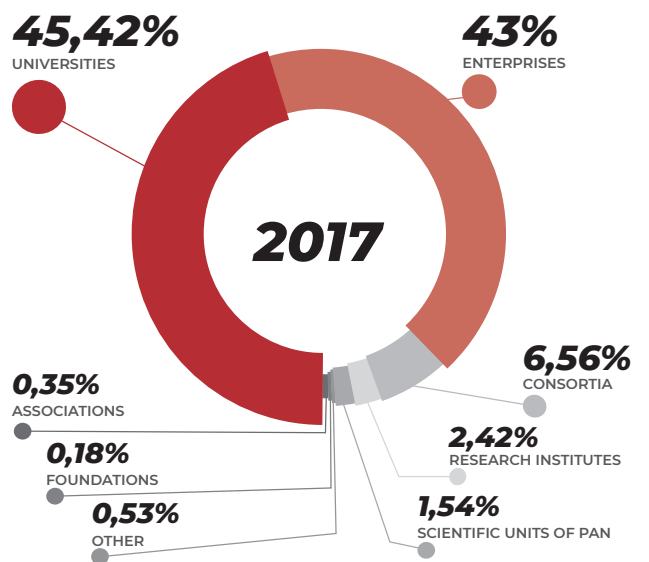
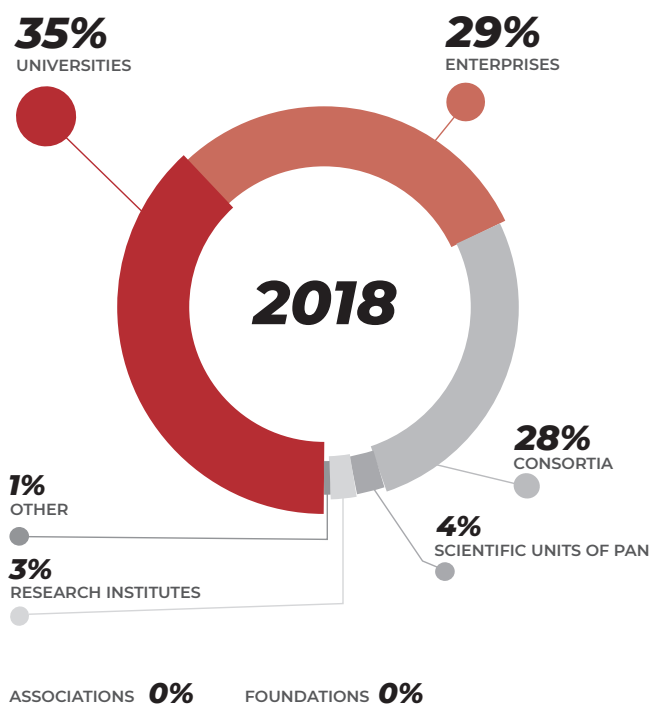
USE OF FUNDS

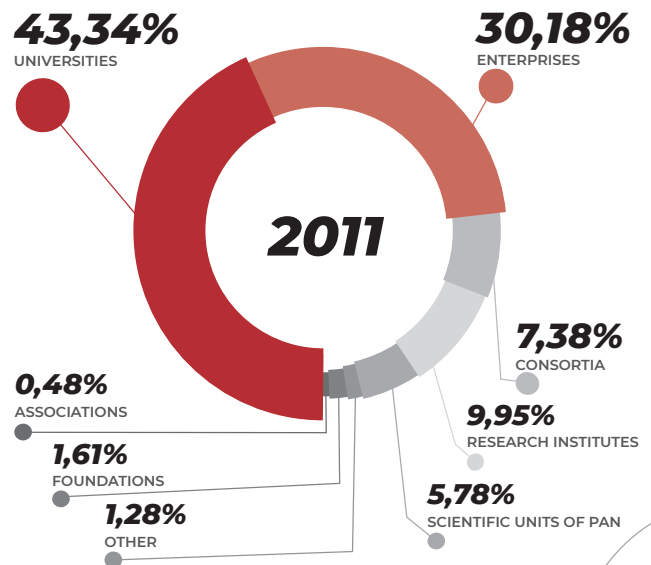
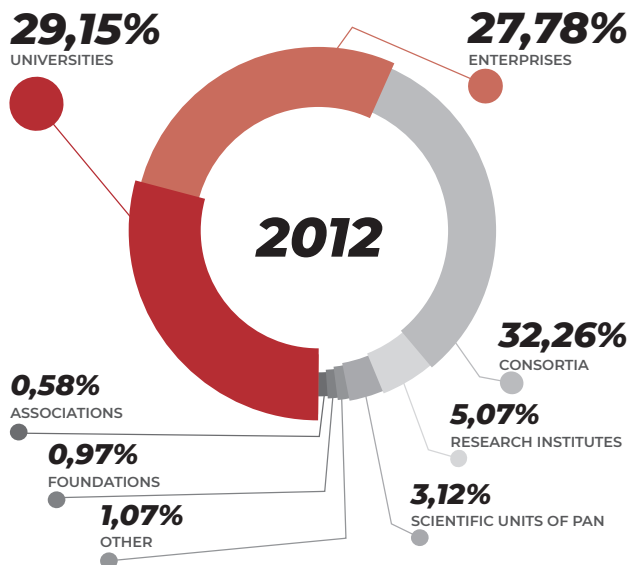
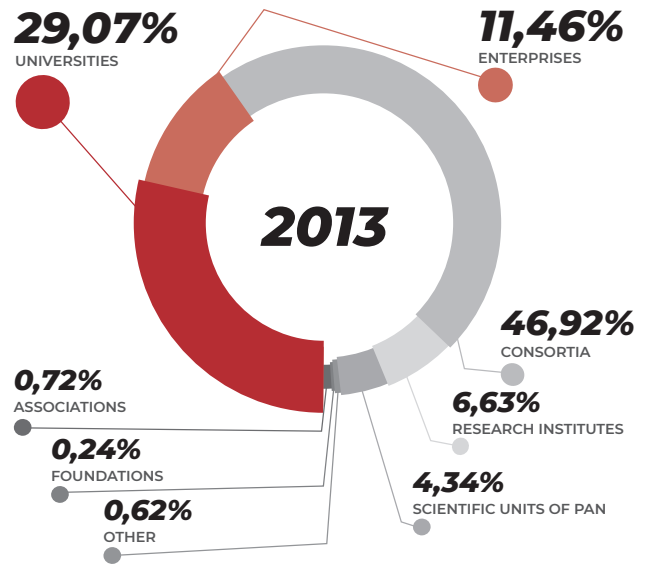
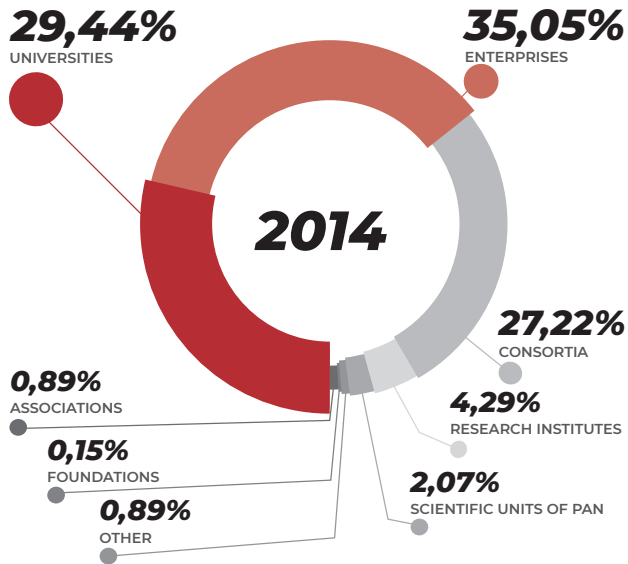
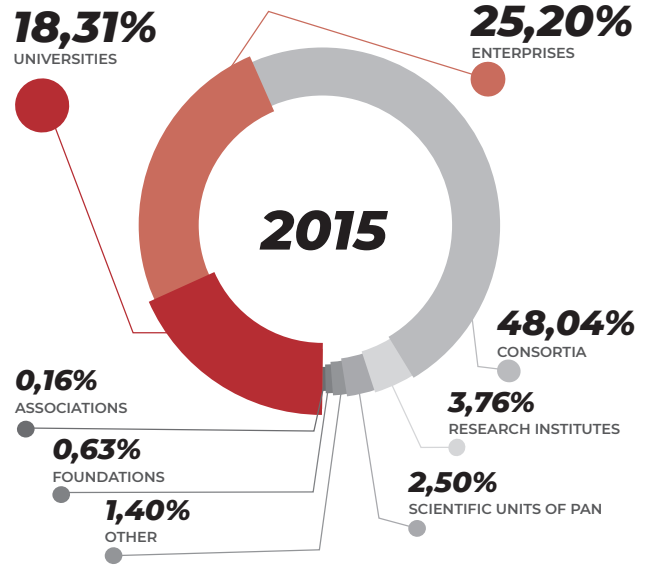
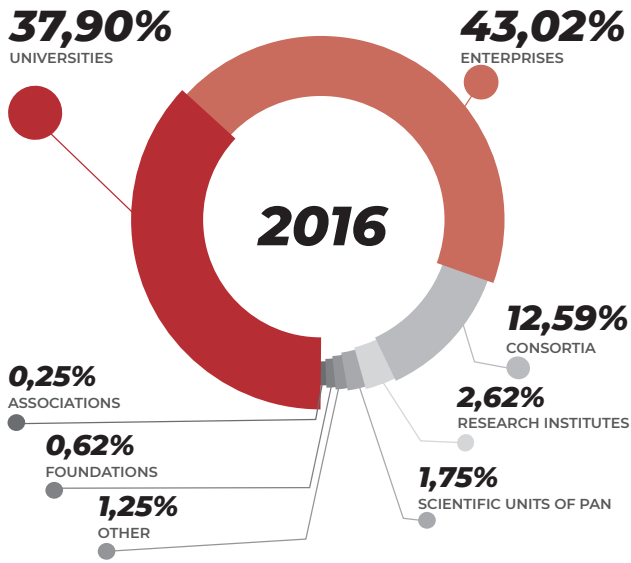
NUMBER OF PROJECTS AND VALUE OF FUNDING BY VOIVODESHIP



BENEFICIARIES

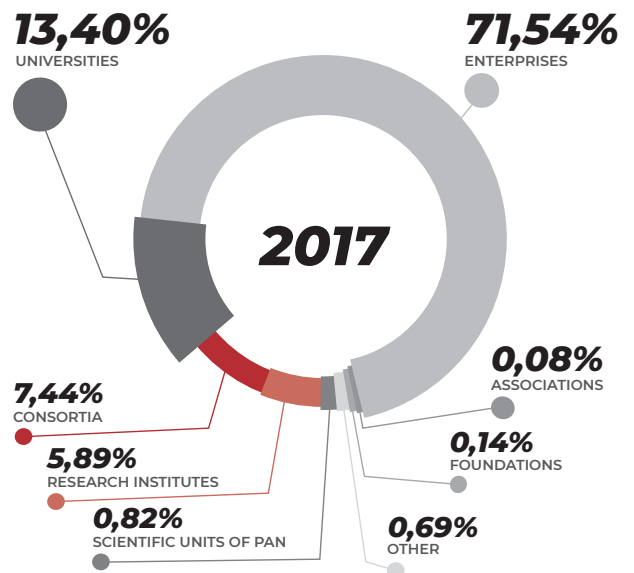
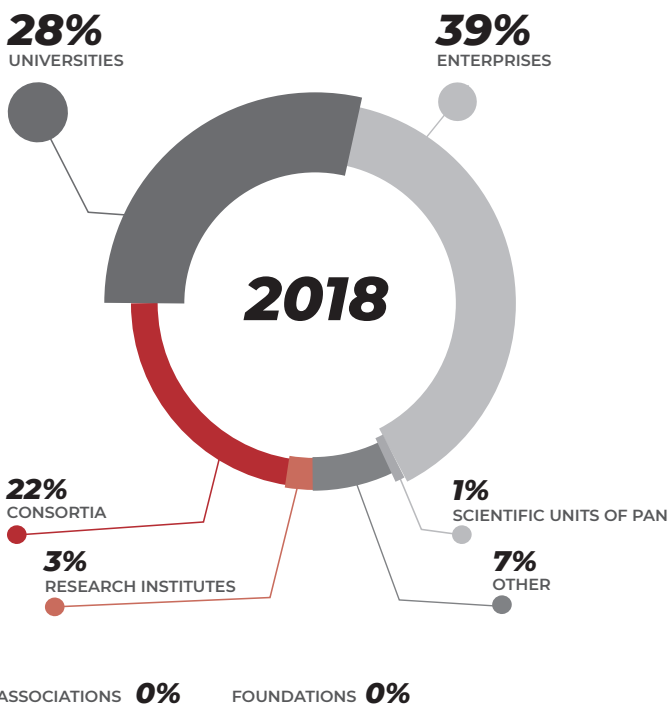
SHARE IN THE TOTAL NUMBER OF CONTRACTS BY LEGAL FORM IN THE YEARS 2011-2018

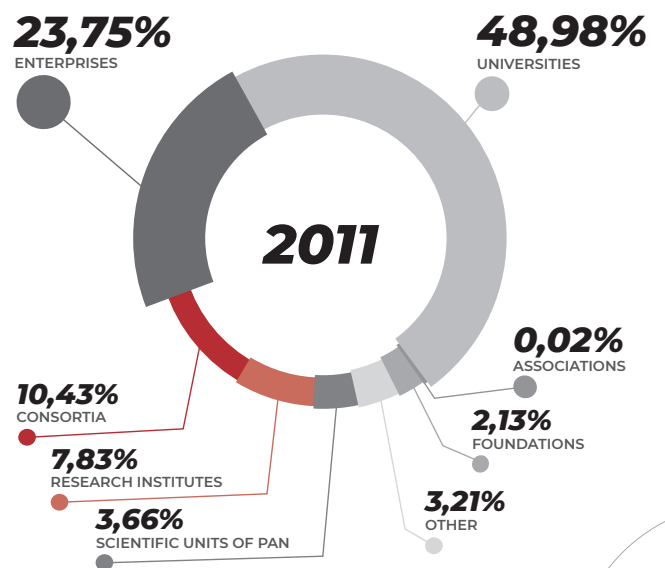
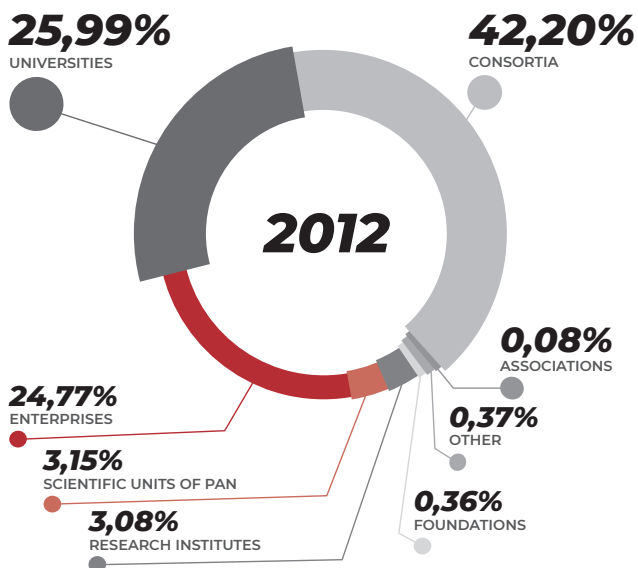
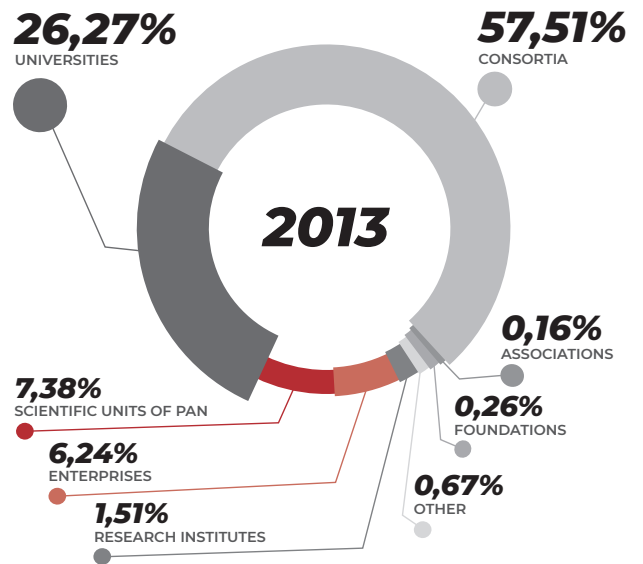
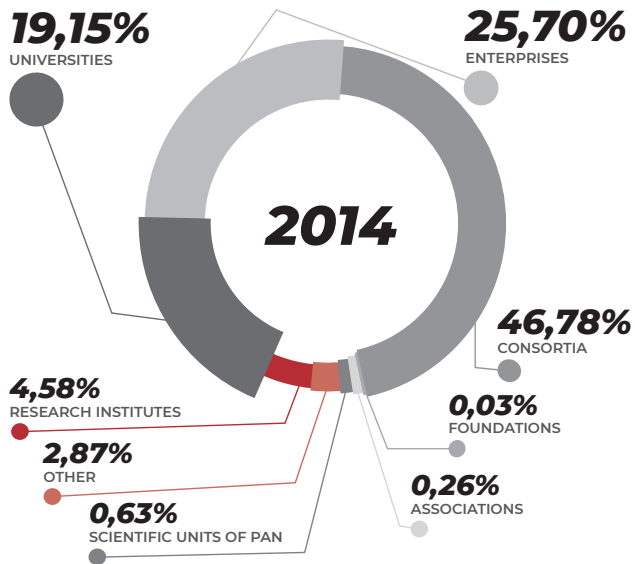
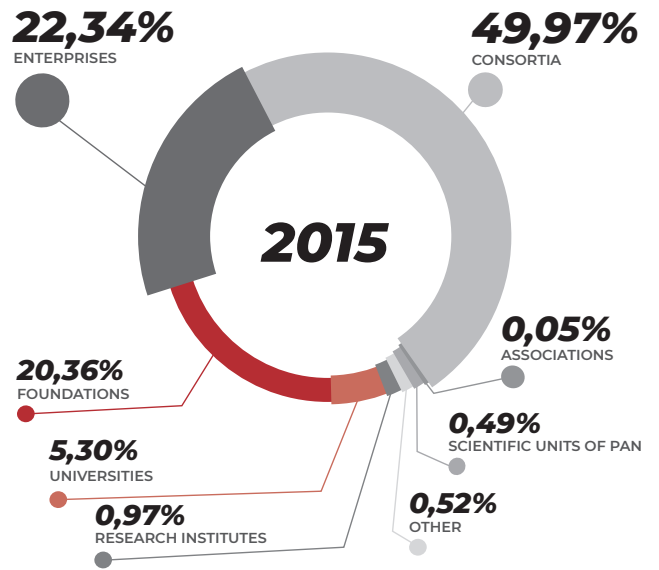
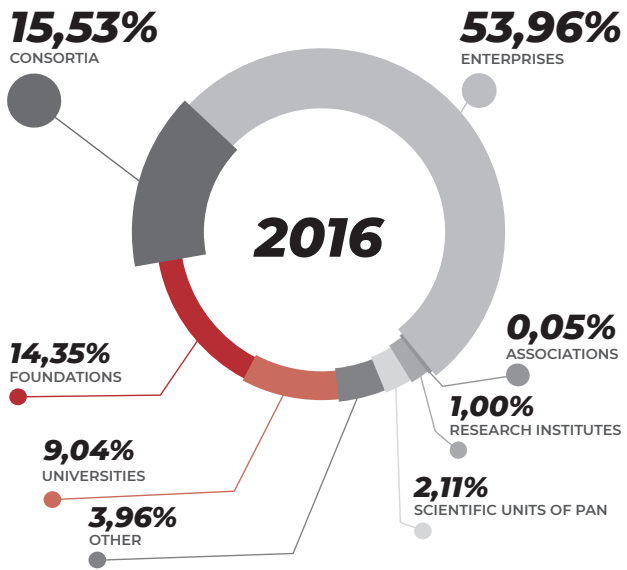




BENEFICIARIES

SHARE OF TOTAL FUNDING BY LEGAL FORM IN THE YEARS 2011-2018





MUSICON

THE SMART GROWTH OPERATIONAL PROGRAMME, **FAST TRACK.**

MUSICON IS A REVOLUTIONARY EDUCATIONAL DEVICE FOR CHILDREN THAT HAS ALREADY WON THE WORLD'S ATTENTION WITH ITS ORIGINALITY AND FOCUS ON THE VERSATILE DEVELOPMENT OF CHILDREN.

PLN 1,465,745.43

PROJECT VALUE



PLN 1,090,244.93

EU FUNDING

TOUCH THE SOUND

Musicon is Kamil Laszuk's diploma project created at the Academy of Fine Arts in Wrocław. The artist combined two of his passions – design and music, which have a vast impact on the mental and physical development of the youngest. Work on the project was continued by an interdisciplinary team of engineering, education and music experts. By the middle of 2016, a prototype of this device/ instrument was ready for mass production.

Musicon is an instrument and a toy, a mechanical device and a lab enabling children to discover sound as a form of expression in which senses, intuition and mechanics converge. Musicon operates according to the same principle as a barrel organ or a music box – simple mechanisms

generate sound. The device inspires and fascinates children with motion and sound, but mostly with limitless possibilities – in a simple way (with the use of buttons), it releases the child's curiosity and creativity using the most universal of languages – music.

The project has been a hit on the international market. Its buyers include private individuals, schools and kindergartens, as well as museums preparing exhibitions for children. It has been displayed, i.a., in New York, Singapur, Lima, Berlin, Prague, Paris, Kopenhagen and many other cities. It has won a number of prestigious awards.



Musicon is a family start-up. Kamil Laszuk, his sister Ida Laszuk and their friend Jakub Kozik, gathered a team of more than 20 experts, which – also with the help of NCBR funds – can develop further and create a Polish product/project which not only goes beyond the boundaries of art, but also fulfils business objectives.



BENEFICIARY'S OPINION

KAMIL LASZUK

MUSICON's originator and constructor



**OUR MUSICON IS A VEHICLE
OF CHILD'S CREATIVITY**

The power of MUSICON lies in the combination of various passions which gave rise to its creation. In our work it is impossible to separate the passion for music from the need to create something for others, and to surround ourselves with beautiful objects.

Similarly, it is impossible to determine the extent to which MUSICON is used for fun and for learning. Children use the devices for fun only. Parents and teachers see the aspect of learning in the play – and that these elements are inseparable. This is also an asset of our project, making it hard to pigeonhole, elusive. An instrument? An educational mechanical device?

In our opinion, it is a vehicle of imagination and creativity.

We have launched the production of MUSICON on a larger scale, and started talks and cooperation with the distributor for Poland and Europe. I hope – and it looks that way – that we are going to achieve success on the market.





AEROSIZE

THE SMART GROWTH OPERATIONAL PROGRAMME, **FAST TRACK.**

PLN 4,975,000

PROJECT VALUE

AEROSIZE – HYBRID RESCUE AIRBAGS

PLN 2,984,999.99

EU FUNDING

BUSINESS OUT OF PASSION

The company AEROSIZE Sp. zo.o. was established by enthusiasts of high-mountain trips from Bielsko-Biała, with a practical perspective on the needs of those who love hiking in the mountains in the winter like themselves.

During skiing expeditions and winter climbing, they found out that personal protection systems, specifically avalanche backpacks available on the market are not very ergonomic and despite their effectiveness, they make it difficult to move around freely and to take action in emergency situations.

The objective of the project implemented by AEROSIZE Sp. z o.o. is to develop a system of more convenient and compact rescue airbags to be used for avalanche hazards.



Avalanche airbags have been produced by the leaders on the winter mountain equipment market for years. The design developed by AEROSIZE So. z o.o. features novel solutions: it weighs less and has a lower volume, thanks to which, for the first time, it is possible to place a complete avalanche airbag system not in the backpack but in a special small pneumatic rescue vest with a harness, similar to those currently used in sailing. The project leaders are Wojciech Wiczorek



and Maciej Roth, both young businesspeople. Already at the stage of research, material and technological tests, their company presented the prepared solutions, among others, at the world's leading fair in Munich, where the hybrid airbag design was

considered by the visitors one of the most appealing new products among those presented by exhibitors operating in the mountain sports segment.


BENEFICIARY'S OPINION

WOJCIECH WIECZOREK

Head of Project Research


MACIEJ ROTH

Project Analyst



– AEROSIZE – PNEUMATIC LIFE-SAVING AIRBAGS FOR AVALANCHES – AN IDEA ORIGINATING OUT OF PASSION, PRACTICE AND EXPERIENCE. MAKE YOUR OWN LUCK – CLAIM THE CONSTRUCTORS OF THIS INNOVATIVE SOLUTION.

An avalanche accident is no fun. We know it from our own experience from years ago, when one of us survived only because of luck. We quickly learnt that in high-mountain tourism you should not rely only on luck and experience. World leaders in the outdoor sector are producing avalanche backpacks with pneumatic airbags which increase the chances of survival during an avalanche. These products are for sportspeople, tourists, amateurs and professionals, including rescue



services. However, we have noticed that the available solutions have flaws: a system consisting of an airbag and a gas cylinder or an electric turbine to fill the airbag takes at least half of the backpack's space. This is inconvenient, and when, for instance, you need to take the backpack off, also dangerous. How to change it?



We developed an avalanche airbag with a hybrid structure, where only the pneumatic frame is filled with gas from the cylinder, and the rest of the airbag is spontaneously filled with atmospheric air. Only our system fits into a special compact vest, completely independent of the backpack. Trials and tests have proven that this solution is more universal in the mountain conditions and gives you more freedom of motion. This has been appreciated by people taking mountain trips and moving through avalanche areas, e.g. skitour enthusiasts.

Project funding provided by NCBR enabled us to create the technology for the product whose prototypes we presented, i.a. at ISPO Munich in Germany – the largest sports equipment fair. We already have potential clients interested in our product from the whole world: South Korea, Japan, the United States and Alpine countries!

AIRLY

THE SMART GROWTH OPERATIONAL PROGRAMME, **FAST TRACK.**

DEVELOPMENT AND IMPLEMENTATION OF AN EFFECTIVE FORECASTING AND MONITORING OF AIR POLLUTION BASED ON AI (ARTIFICIAL INTELLIGENCE) TECHNOLOGY WITH THE USE OF DATA FROM AN EXTENSIVE MEASUREMENT NETWORK

PLN 4,522,020

PROJECT VALUE

PLN 3,399,244.50

EU FUNDING

TO BREATHE CONSCIOUSLY

„Breathe consciously. Information for millions of people about the current state of air quality” – this is how the AIRLY company advertises its project.

Creating a network of air sensors and developing an app analysing data from the sensors is the goal of the start-up from Kraków. Forecasting the state of air is particularly important for sportspeople, the elderly and people suffering from respiratory system diseases. Most of available pollution data describe a past situation, usually going back several hours. The application prepared by AIRLY aggregates data, also from the sensors designed by Airly, to predict the state of air in advance.

There are already more than 2500 AIRLY sensors in the world, and the app for mobile devices was downloaded more than 450 thousand times.

The project is a brilliant response to the needs of people concerned about air quality. Among Poles:

- **94% are aware of the problem of smog**
- **65% do not feel sufficiently informed on air quality in their place of residence.***

The company from Kraków was founded several years ago as a start-up by four young enthusiastic scientists. Today, it employs more than 20 people and recruits further members of staff.



*results of a survey entitled "Wiem, czym oddycham, czyli Polacy o smogu (I know what's in the air I breathe. Poles' opinions on smog)" carried out in November by the ARC Rynek i Opinia research institute, commissioned by Aviva

BENEFICIARY'S OPINION

WIKTOR WARCHOŁOWSKI

Co-founder and President of Airly Sp. z o.o.

**GENERAL MONITORING
AND ANALYSIS OF AIR
POLLUTION LEVEL
ASSISTS MEASURES
CONTRIBUTING TO ITS
IMPROVEMENT.**

Smog and air pollution are among the major health-related issues in Poland. Our project makes it possible not only to monitor pollution levels but, thanks to data aggregation and analysis, predict the status in a given location in the next 24 hours. It can also help people with respiratory system diseases and assist sportspeople in their training. The last example applies to us, the founders of AIRLY. When we were already students of the AGH University of Science and Technology, we prepared for the Kraków marathon. Planning the training for a given day, we were unable to find current data on smog – the ones that were available described the status from a few hours ago.

We developed a smart monitoring system: particulate matter, temperature and humidity sensors provide data on an ongoing basis. We are able not only to determine the level of pollution at a given moment, but thanks to data analysis with the use of algorithms and artificial

intelligence we can diagnose the degree of pollution in the following hours. We present the data in the generally available app developed by us.

We cooperate with the media, promoting the idea of improving the quality of air we breathe based on the assumption that knowledge, information and awareness of threats is the first step towards changing something that is bothering us. Data have great power!

We placed more than 2,500 sensors across Poland. It turns out that air pollution is an issue not only for large cities. Realising that 9 out of 10 people breathe air of a disastrous quality is the first step to make a change for the better. Thanks to the funding from NCBR, we are trying to make a contribution to make this change happen.



BIOENGINEERING

THE SMART GROWTH OPERATIONAL PROGRAMME, **FAST TRACK.**

A NEW GENERATION OF A BIONIC ARTIFICIAL HAND BASED ON A CONTROLLED MODULAR STRUCTURE OF FINGERS, WRIST AND ELBOW JOINT FOR PATIENTS WITH UPPER LIMBS AMPUTATED AT VARIOUS LEVELS

PLN 5,713,742

PROJECT VALUE

PLN 4,082,495.20

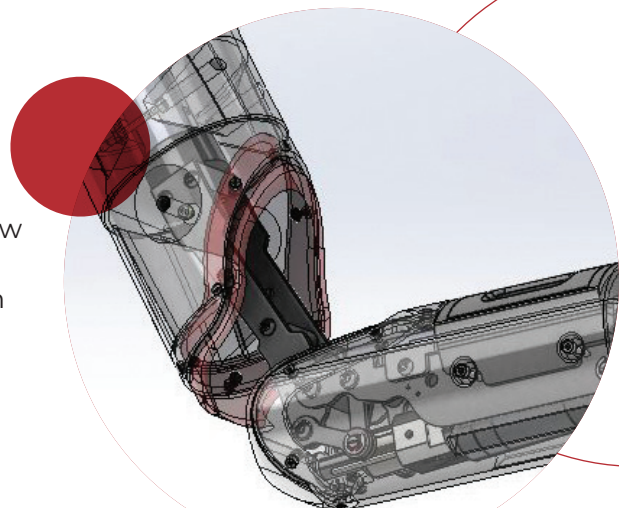
EU FUNDING

FOR THOSE IN NEED

A greater availability of state-of-the-art solutions assisting the disabled.

Bionic engineering serves as a basis for developing prostheses and their elements assisting people who need artificial limbs. The BioEngineering.pl sp. z o.o. from Wrocław within the project co-funded by NCBR is developing an artificial hand controlled with biological signals, such as muscle spasms. The prosthesis reflects the kinematic structure of the hand – independent control of artificial fingers facilitates complex grabbing movements.

The solution is highly practical and easy to handle, and at the same time cheaper than similar solutions developed abroad. This makes it possible to reduce financial barriers, which often prevent people with amputated limbs from taking advantage of state-of-



-the-art solutions which may measurably improve the quality of their lives and facilitate their normal daily activity.

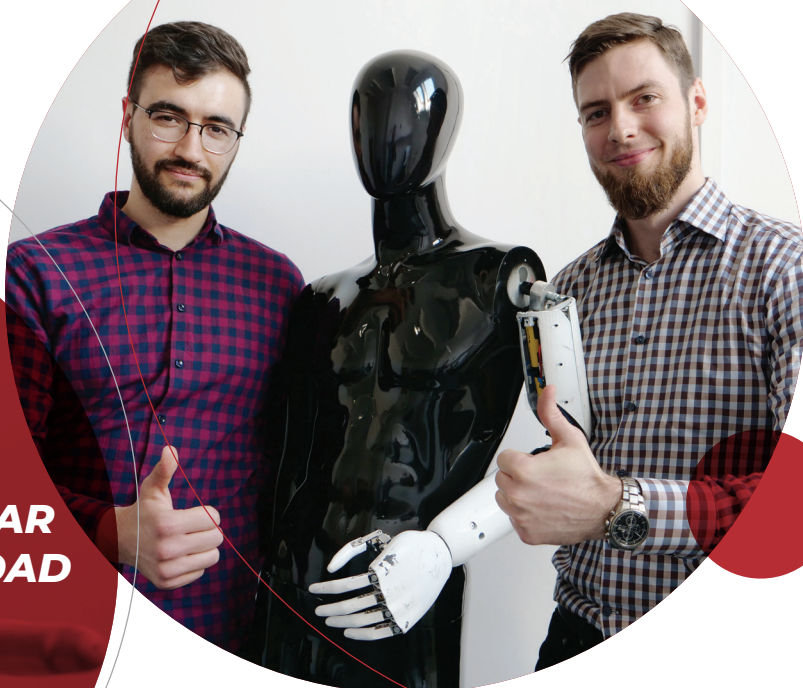
BENEFICIARY'S OPINION

WOJCIECH ROKOSZ

Project Coordinator

MATEUSZ STACHOWIAK

Constructor and software developer



**A NOVEL, RELIABLE
SOLUTION, LESS
EXPENSIVE THAN SIMILAR
PRODUCTS FROM ABROAD
– THESE WERE THE
OBJECTIVES OF THE
PROJECT.**

Advanced artificial limbs are expensive. We imagined a situation when a person who suffered from an accident and became unable to work must finance the purchase of high-end equipment largely from their own resources. This is not easy.

Research and development work enabled us to produce a device of a quality comparable with solutions from other European countries at half their price. The functionality of the

prostheses produced by our company enables people using them to become active again. In turn, NCBR's funding made it possible for us to set no limits to our research imagination and achieve our goals faster and in a more precise way through testing the prototypes and verifying whether theoretical assumptions will prove effective in practice.

The project is part of the mission instilled in us by our teachers during our biomedical engineering studies – technology should first of all assist medicine – that is, help people. The work that combines mission with the joy of developing novel engineering solution is exciting.

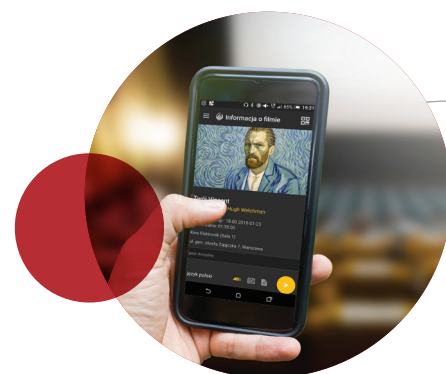
AUDIOMOVIE

NATIONAL PROGRAMMES, **SOCIAL INNOVATIONS II APPLIED RESEARCH.**

**IN A MORE CONVENIENT,
CHEAPER AND MORE
ACCESSIBLE WAY SO THAT
PEOPLE WITH IMPAIRED VISION
COULD TAKE ADVANTAGE
OF THE PREPARED SOLUTION
PROVIDING ACCESS TO SPECIAL
VOICE-OVER FILM VERSIONS**

PLN 902,581.61

PROJECT VALUE



PLN 850,000

NCBR'S FUNDING

CINEMA FOR EVERYONE

Can cinema be accessible to people with impaired vision? Of course! – claim AudioMovie creators.

The AudioMovie project envisages the development of a globally innovative solution: an app for personal mobile devices for managing audio description and voiceover during cinema shows, at film festivals and TV broadcasts.

The project assists mainly people with impaired vision and the elderly who have problems with reading subtitles in cinemas. These limitations contribute to the exclusion of many groups of people throughout the world from participating in culture. In Poland so far only a small percentage of cinemas (approx. 10%) is prepared for providing

filmgoers with an option of audio description, and the number of films with that functionality was also limited.


In line with the current regulations, each Polish film production co-funded by the Polish Film Institute must have a prepared audio description. This creates space for popularising devices and applications enabling the use of this functionality.

The AudioMovie project is carried out by a scientific consortium composed of the Seventh Sense Foundation, the Institute of Innovative Technologies, the Jagiellonian University, the "Katarynka" Foundation for the Development of Audio Description, Centre of Technology Transfer EMAG and the Pod Baranami Cinema in Kraków.

BENEFICIARY'S OPINION

ANNA JANKOWSKA, PHD

The Jagiellonian University, the Seventh Sense Foundation,
Project Leader



**THE AUDIOMOVIE APP
ENABLES PEOPLE WITH
IMPAIRED VISION
EXPERIENCE THE MAGIC
OF THE FILM WORLD**

Audio description is simply the additional description of the places and situations in a film read between dialogues. In a way, this is a story of its own that smoothly merges with the film.

Audio description in the traditional technical form requires specialised equipment: transmitters, receivers and headphones (similar to those used for, e.g., simultaneous translation). Only every tenth cinema in Poland has such equipment, and its costs are a barrier that is hard to overcome. The situation resembled a vicious circle: distributors did not invest in audio description, because cinemas did not have the equipment, and cinemas did not buy the equipment because there were few films available with audio description. AudioMovie is breaking this circle, offering a systemic solution.



The AudioMovie system first of all creates space where you can integrate a number of audio descriptions prepared by various foundations and institutions supporting people with visual disabilities. Secondly and most importantly, it provides everyone with an opportunity to use audio description through their own device: smartphone or tablet.

The app is also designed for seniors, also those who don't experience major problems with vision but do not like to read subtitles during film screenings. AudioMovie features a voiceover option, where only the dialogues are read. We hope it's only a matter of time when the project gains popularity throughout Poland.

SAFEDAM

THE SECURITY AND DEFENCE PROGRAMME.

**ADVANCED
TECHNOLOGIES
SUPPORTING
THE PREVENTION
OF FLOOD- RELATED
HAZARDS**

PLN 6,788,840

PROJECT VALUE

PLN 6,103,840

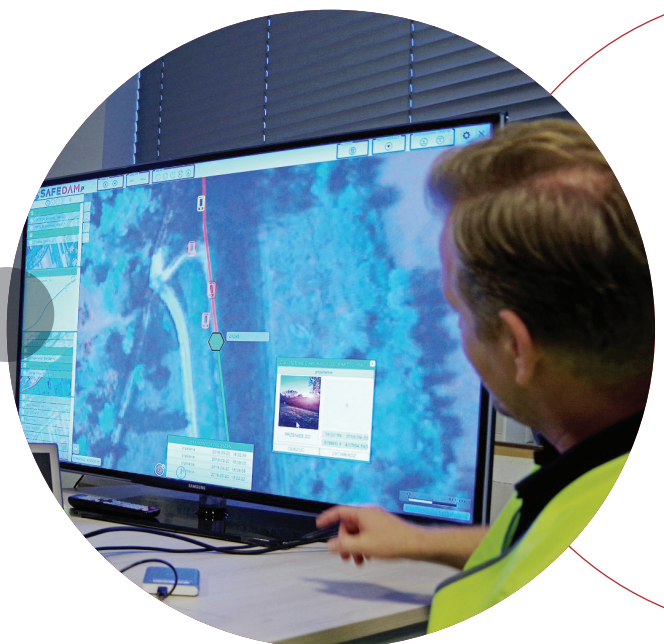
NCBR'S FUNDING

TO LIVE MORE SAFELY

A detailed analysis of the condition of flood defences can save the lives and property of thousands of people.

The SAFEDAM project involves the preparation of a system monitoring levees much more precisely than before. The monitoring is performed by unmanned aerial systems and aerial and satellite data. Most importantly, levee trouble spots can be measured with an accuracy of up to several centimetres thanks to the use of a laser scanner and photogrammetric data.

3D data obtained in this way are automatically analysed under the supervision of hydrological services and used for creating visualisations for the State Fire Services and crisis management experts.



SAFEDAM has two configurations: preventive, involving the acquisition of data to monitor flood defences, and interventional, supporting the services in threat situations and during floods. Thanks to that the services can identify precisely where the probability of



a crisis is the highest, and which locations are at the greatest risk – in other words, where taking protection and rescue measures is or will be required.


The project has been implemented as part of the Security and Defence Programme by the

consortium of: the Warsaw University of Technology, Faculty of Geodesy and Cartography, the Institute of Meteorology and Water Management – National Research Institute, MSP Marcin Szender, Astri Polska Sp. z o.o., the Central School of the State Fire Service in Częstochowa.

BENEFICIARY'S OPINION

KRZYSZTOF BAKUŁA, PHD ENG.

President of the SAFEDAM project Steering Committee,
Warsaw University of Technology, Faculty of Geodesy
and Cartography



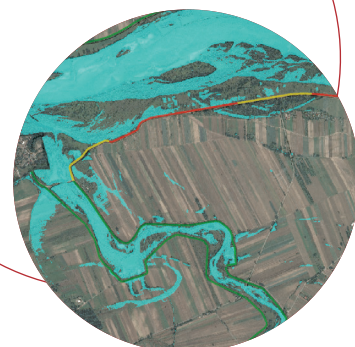
**THE SAFEDAM PROJECT
CONSIDERABLY INCREASES
THE ACCURACY OF LEVEE
MONITORING. IN CRISIS
SITUATIONS THE SOLUTION
CAN HELP SAVE HEALTH
AND LIVES**

Spatial information and data for a detailed analysis of the condition of flood defences are essential for security purposes. Our system is a revolutionary solution for levee monitoring and rescue action coordination in the event of a flood.

In Poland there are thousands of kilometres of levees. The traditional monitoring of their condition involves taking direct geodesic measurements every couple hundred metres. SAFEDAM, which operates from the air, makes it possible to analyse the condition of each square metre of the levee! We are

able to provide hydrological services and the State Fire Service with precise data on the condition of flood control structures, as we believe that prevention is better than intervention. The geoparticipation module constitutes an essential part of the system, engaging communities in flood control measures. With the integration of their mobile devices, people will be able to send notifications on the condition of levees in the country, and the system will gather much more information.





In the event of a flood, the system will help the services coordinate actions, pointing to locations where the risk of levee failure is the highest.

NCBR provides almost 90% of the project's funding, and the rest is provided by consortium members. It is important to mention that our IT solutions were based on the opinions of experts dealing with levee

management measurement, and with rescue operations. We are convinced that our project will be a breakthrough and will prove useful for services, local authorities and units throughout Poland.

SPACE AND SATELLITE TECHNOLOGIES

THE KNOWLEDGE EDUCATION DEVELOPMENT OPERATIONAL PROGRAMME.

**THE GDAŃSK UNIVERSITY
OF TECHNOLOGY
ADAPTING POSTGRADUATE
(SECOND-CYCLE)
PROGRAMMES IN SPACE
AND SATELLITE
TECHNOLOGIES TO JOB
MARKET NEEDS**

PLN 1,973,352

PROJECT VALUE

PLN 1,914,150

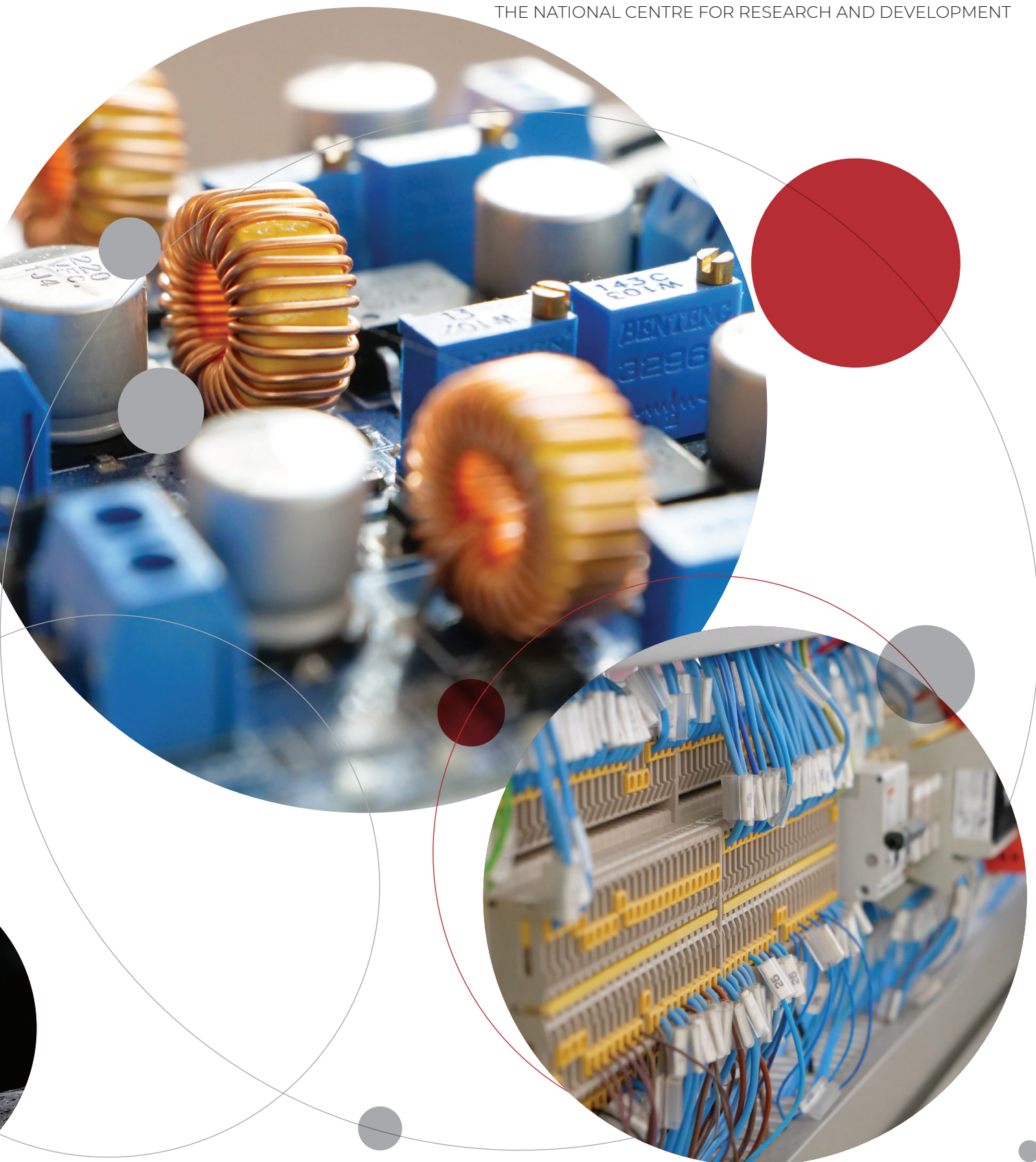
EU FUNDING

Poland is in the vanguard of countries educating space and satellite technology experts.

As part of the project, Tricity universities are to join forces to educate top-class specialists in the field of space technology. The study programme designed as part of the project responds to the needs of companies operating on the market. Four specialisms were launched:

- Information and telecommunication technologies in space and satellite engineering
- Mechanical and mechatronic technologies in space engineering
- Maritime satellite and space systems
- Space and satellite applications in security systems





The postgraduate programme is provided as part of cooperation between Tricity's higher education institutions: the Gdańsk University of Technology, the Gdynia Maritime University and the Polish Naval Academy in Gdynia. The curriculum was designed and is carried

out with the participation of employers from the space sector in collaboration with the Polish Space Agency. These include the Space Research Centre of the Polish Academy of Sciences and the Blue Dot Solutions company from Gdańsk, and many more.

BENEFICIARY'S OPINION

ZBIGNIEW ŁUBNIEWSKI

Gdańsk University of Technology, Faculty of Electronics,
Telecommunications and Information Technology

MAREK CHODNICKI

Project Analyst
Gdańsk University of Technology, Faculty of Mechanical Engineering

**SPACE TECHNOLOGIES
ARE NOT ONLY MARS
ROVERS AND
INTERPLANETARY TRAVELS,
BUT ALSO SOLUTIONS USED
IN EVERYDAY LIFE, SUCH
AS TELECOMMUNICATIONS,
SATELLITE NAVIGATION,
THE INTERNET AND NATURAL
DISASTER RISK ASSESSMENT.**

We are often unaware of how many technologies are based on satellite data and information related to space and satellite technologies. Thanks to the joined forces of the Gdańsk University of Technology, the Gdynia Maritime University and the Polish Naval Academy in Gdynia, we have designed a Master's programme carried out at those three higher education institutions focussing

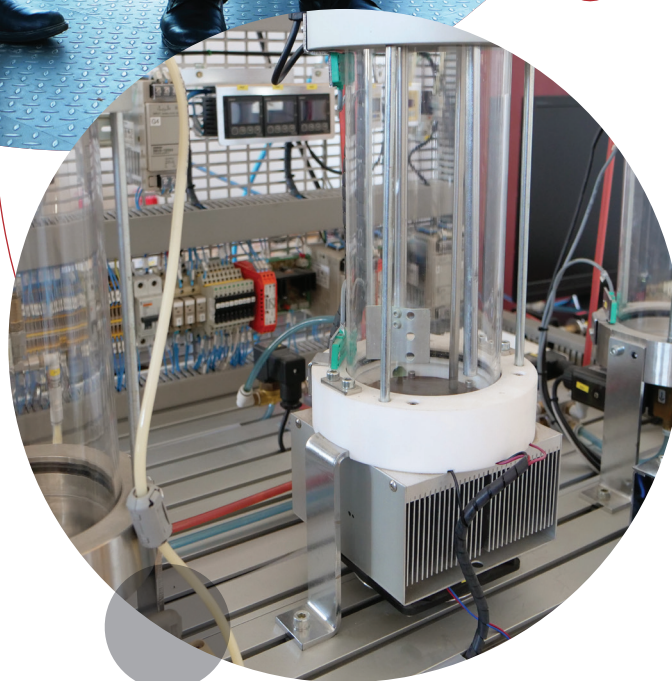
on space and satellite technologies. This is their response to job market needs.

Poland is quite successful on the international market of space technologies and participates in a number of related projects, Polish businesses from the sector provide services and products to international consortia and companies. Thanks to our programme university students have an early opportunity to find out about the needs of potential employers, and acquire skills required for specific practical projects. The programme was designed and



is carried out in cooperation with businesses dealing with, i.a., teledetection and satellite communication, robotics, security technologies, satellite data analysis, and mechatronics in space and satellite applications. Companies need experts – we educate them.

Students learn how to build research teams, how the market works in practice and which fields associated with space technologies are developing at the fastest rate. With our project, Polish experts will play a significant role in projects carried out in the country and internationally.



THE THIRD AGE TECHNOLOGICALLY

THE KNOWLEDGE EDUCATION DEVELOPMENT OPERATIONAL PROGRAMME



THE WEST POMERANIAN UNIVERSITY OF TECHNOLOGY IN SZCZECIN

PLN 1,671,480

PROJECT VALUE

PLN 1,619,080


EU FUNDING

UNIVERSITY FOR EVERYONE

Thirst for knowledge can grow with age, as proven by the participants of the educational programme for seniors prepared by the West Pomeranian University of Technology.

Within 36 months (2019-2021), more than 1000 seniors (aged 60+) will benefit from the project aimed at promoting and popularising technical and life sciences, scientific achievements and research and their application in social life. The employees of the Szczecin university, in cooperation with the Universities of the Third Age operating in the region, prepared a comprehensive and fascinating package of educational and cultural activities.

Each of the participants can choose 6 to 12 thematic modules (from chemistry, to biotechnology, to economics and information technology), taught to groups of students by 10 academic faculties. The programme was developed after consultations with



representatives of the Universities of the Third Age. It refers, i.a., to the application of new technologies in everyday life, the presentation of exact sciences and other fields, such as electronics, information technology and mechanics.

The project participants have a unique opportunity to work in laboratories with extensive equipment which are usually available only to the students and lecturers of the University of Technology. The programme energises elderly people and has a practical impact on the development of their competence in today's rapidly changing world.

BENEFICIARY'S OPINION

KINGA WĘLYCZKO

Project Manager

The idea came from within our university. Our university has carried out various educational and promotional projects not only for students for years. Among them was the Children's University operating since 2009. It turned out that the youngest are very often brought to classes by their... grandparents. A question arose: why not design classes for seniors?

We soon found out that the stereotypes about the elderly are false – these people are not couch potatoes but active individuals who are curious and seek knowledge, showing keen interest in the classes conducted by our experts.

The Third Age Technologically was among the highest-ranking among over 200 submitted projects. Universities of the Third Age have operated in Poland for years, and now thanks to NCBR's financial support we are able to cooperate with them, providing seniors with a series of classes in a variety of fields: from media and technological aspects of data flow, to cybersecurity, to projects associated purely with engineering, and projects related to mechatronics and renewable energy.

**THE WEST POMERANIAN
UNIVERSITY OF
TECHNOLOGY IN SZCZECIN
HELPS SENIORS LEAD
AN ACTIVE LIFE ACCORDING
TO THE NOW-POPULAR
BELIEF THAT PEOPLE CAN,
AND SHOULD, LEARN
CONTINUOUSLY**

Seniors are active people willing to expand their skills and knowledge about the world. During the theoretical and practical classes at the University of

Technology, they will become familiar with fields of knowledge unavailable to the general public. Our lecturers point out that the participants of the Third Age Technologically often show more dedication and are more active than regular students, who, by the way, should learn from seniors how to effectively cooperate with the teacher! It is a source of great satisfaction for us that thanks to our project seniors are able not only to keep up with the changing world, but to actually have their fingers on the pulse of modern developments.

UNIVERSALITY

THE DIGITAL POLAND OPERATIONAL PROGRAMME, **E-PIONIER.**

PLN 805,439.72

PROJECT VALUE

**UNIVERSALITY SP. Z O.O.,
KRAKÓW**

PLN 805,439.72

EU FUNDING

TO JOIN FORCES

An IT sector company is looking for well-trained candidates ready for the job?

A university lecturer is trying to find a practical subject for their classes?

A student is looking for a job and wants to participate in interesting projects?

How to connect them?

The Universality start-up is trying to answer these questions. The platform enables companies to identify subjects that can be part of university classes. At the same time, students who solve specific tasks during those classes may attract the attention of potential employers from the sector and expand the range of their practical skills. With the Universality educational platform, young IT developers, already at the stage of university studies, are able to pave the way for their future careers and development, not theoretically but in a very practical way,

corresponding to market needs. Interest in the platform has been shown by most higher education institutions providing IT programmes in Poland, including such giants as Microsoft and young ambitious IT companies attracting students with opportunities of joining interesting, original projects.



The originator and CEO of Universality is Jerzy Czepiel, owner of an IT company and a former lecturer of the Jagiellonian University.

BENEFICIARY'S OPINION

JERZY CZEPIEL

originator and CEO of Universality

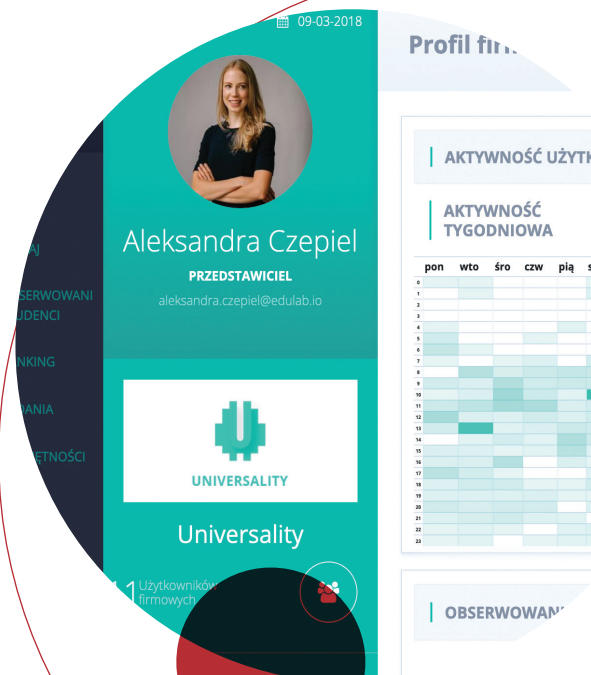
UNIVERSALITY IS AN INNOVATIVE PLATFORM COMBINING THREE GROUPS OF USERS: LECTURERS AT HIGHER EDUCATION INSTITUTIONS IN POLAND AND ABROAD, STUDENTS AND EMPLOYEES OF IT COMPANIES

The education system does not always respond to the job market needs. Our platform involves potential employers, students and graduates of IT majors in developing university curricula.

IT specialists identify problems and issues, which are compiled into a database of assignments for students. Academic

teachers can use these tasks, and the students solving them can present their skills to potential employers. Samples of each student's work are stored in an archive, creating a kind of a CV – the students learn and at the same time demonstrate their talents and capabilities. Companies can “watch” them, there is no need to apply for a job.

Students can attract the interest of their dream employers, regardless of whether these are major corporations or ambitious start-ups. Lecturers, in turn, can use the database of actual problems rooted in reality instead of being only purely theoretical assignments.





With UNIVERSALITY one can prepare classes and ... find a job more easily.

In IT companies training a new employee can last up to 3 months. With our platform graduates and undergraduates can seamlessly move to working on projects a given company is working on which they previously had contact with during their classes.

Small local companies can attract employees through interesting, ambitious tasks and projects which, by inspiring potential employees, can turn out to be more appealing to them than working in global corporations.

We have already gathered thousands of assignments and projects available on our platform.



STRATEGIC PROGRAMMES

The research and innovation policy of the state implies high-budget, strategic research and development programmes contributing to the social and economic development of Poland. The basis for these programmes is the National Research Programme established under the Resolution of the Council of Ministers of 16 August 2011 defining strategic research and development areas. On the basis of the programme, the Board of NCBR prepares projects for strategic programmes, which are later submitted for approval to the Minister of Science and Higher Education.

The strategic programmes include projects, whose purpose in general is to solve specific technical, scientific and social problems. Projects are carried out by research teams selected in calls for proposals and other economic operators.

In 2018 four strategic programmes were implemented:

The total budget of the programmes is **PLN 2.3 bn.**

In 2018 the selected economic operators of projects under strategic programmes for innovative undertakings were allocated a total of **PLN 257.2 m.**

GOSPOSTRATEG
Social and economic development of Poland in the context of globalising markets

PLN 500 m

TOTAL BUDGET

- 1 **GOSPOSTRATEG**
- 2 **TECHMATSTRATEG**
- 3 **BIOSTRATEG**
- 4 **STRATEGMED**

The main objectives of the programme are to improve the quality of life of society and to fulfil the aspirations of Poles in line with the sustainable development principle through solving the problems of the developing country. The indirect objective is to increase the use of socio-economic research in developing national and regional development policies by 2028.

There are four thematic areas of the programme:

- the middle income and middle-product trap
- the imbalance trap
- the demographic trap
- the weak-institutions trap

The programme is designed for scientific consortia consisting of at least three entities, at least two of which must be research institutions and one needs to be capable of implementing the developed solutions on the market.

GOSPOSTRATEG is in the initial phase of implementation.

IN 2018:

the first call for proposals for open projects was concluded

on the basis of expert recommendations, 18 projects are approved for implementation, with PLN 100 m available in funding

the first disbursements were made for a total of PLN 20 m

draft rules and regulations for the call for proposals were prepared for subjects to be used for the 2nd GOSPOSTRATEG call for proposals, whose announcement is planned for 2019, and which will be carried out on a procurement basis

TECHMATSTRATEG

Cutting-edge material technologies

PLN 500 m

PROGRAMME BUDGET UNTIL 2021

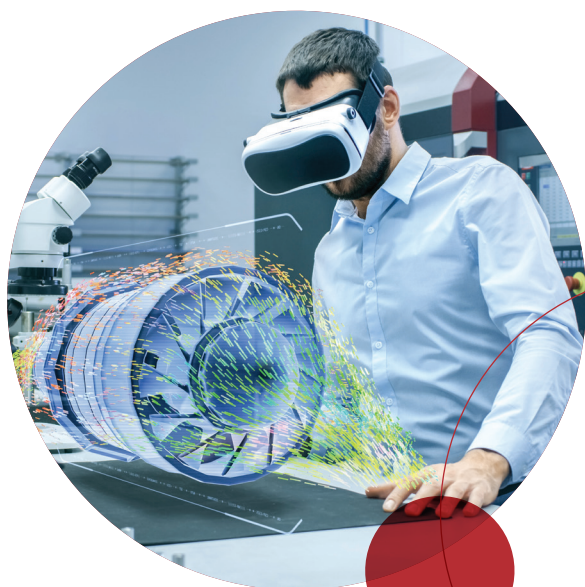
Developing state-of-the-art, durable structural and functional materials safe for the environment and for the health is one of the key areas of the country's development. The TECHMATSTRATEG programme meets this requirement. Its direct objective is to develop knowledge leading to the transfer of innovative solutions to the socio-economic environment, contributing to building Poland's international position in research and development work on materials. The programme's implementation started in 2017.

IN 2018:

the 2nd call for proposals was carried out – proposals were received and evaluated, and the call for proposals' results were published

ongoing programme evaluation was performed. The main objective of the study was to evaluate the implementation of TECHMATSTRATEG completed so far with regard to the conditions necessary for the effective continuation of the support (report in 2019)

PLN 26.8 m in co-funding were disbursed for 18 projects



BIOSTRATEG

Environment, agriculture
and forestry

PLN 500 m

PROGRAMME BUDGET UNTIL 2019

The goal of the programme is to strengthen the position of the Polish economy in the international environment and drive innovation in agriculture and forestry. The goal is also to increase the contribution of Polish research groups to European research programmes in the subjects covered by the programme.

Strategic programme areas (arising from the Government's National Research Programme and areas of research carried out in the EU):

- **forestry and the wood industry**
- **protection of biodiversity and sustainable development of agriculture**
- **preventing climate changes while adapting agriculture to to these changes**
- **rational natural resources management, with a particular focus on water management**
- **food security**

The BIOSTRATEG programme was established in 2013, and launched in 2016.

**IN 2018:**

programme evaluation continued. The main objective of the study was to evaluate the implementation and the initial impacts of the programme to assess whether it is reasonable to continue the programme (recommendation: limiting the thematic scope and reformulating the approach from tool-based to objective-based)

the funding of 38 selected projects was continued

PLN 98.3 m were disbursed (from the beginning of the programme's implementation – PLN 315.9 m)



STRATEGMED

Prevention and treatment
of lifestyle diseases

PLN 800 m

TOTAL BUDGET

Lifestyle diseases are a plague of our times. Ageing society (experiencing the positive trend of increasing life expectancy) is at the risk of chronic diseases, often associated with the development of industry and technology.

The main objective of the STRATEGMED programme is to achieve substantial progress in combating lifestyle diseases and in regenerative medicine on the basis of the results of research and development in the following fields:

- **cardiology and cardiac surgery**
- **oncology**
- **neurology and sensory examination**
- **regenerative medicine**

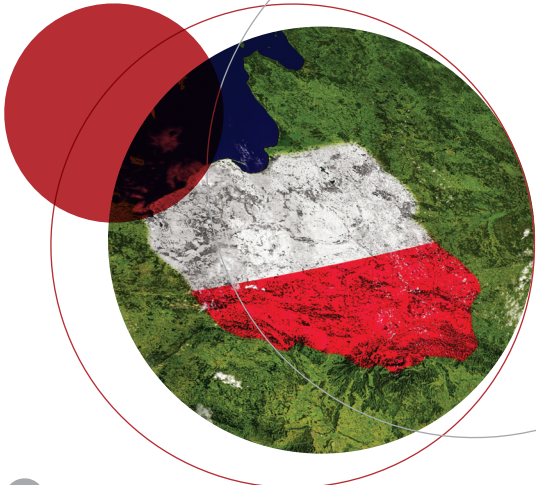
The detailed objectives of the programme include to create young, dynamic research teams with members from various countries of the world and a strong, well-documented international position, as well as to facilitate the transfer of know-how and new technologies for prevention, diagnosis, therapy and rehabilitation from Polish research institutions (public research organisations) to the economy.

IN 2018:

project evaluation was carried out (demonstrating the essential medical, social and economic effects of the respective projects, with a reservation that their implementation contributes to achieving the broadly defined main objective of the programme – following evaluation, changes were recommended and the programme was assessed as qualifying for further implementation).

the funding of 45 projects was continued, and a further PLN 112.1 m were disbursed

43 interim reports of the programme beneficiaries were evaluated



NATIONAL PROGRAMMES

Supporting the development of state-of-the-art solutions and technologies to increase innovativeness and competitiveness of the Polish economy – this is the role of the National Centre for Research and Development according to the Act of 30 April 2010. Its role is to strengthen cooperation between science and the Polish business – the commercialisation of research results is of great benefit to the economy.

NCBR fulfils these objectives through programmes supporting applied research and R&D work, helping young scientists and funding the transfer of research results to the economy. The effectiveness of the Centre's operations is facilitated by sectoral programmes and joint ventures with other entities.

In 2018 more than **18 national programmes** were implemented. Their total budget was over **PLN 4.482 bn.**



TANGO

Supporting the cooperation between scientists and businesspeople. A joint venture of NCBR and the National Science Centre (NCN).

PLN 120 m

TOTAL BUDGET

TANGO facilitates the commercialisation of solutions developed by research institutions. The programme (addressed to entities conducting basic research, such as NCN) provides funds for, i.a., the development of concepts of the economic application of research results and for the protection of intellectual property rights, as well as for finding partners interested in implementing research results on the market by research institutions, science centres and individual scientists.

IN 2018:

59 projects were funded

PLN 8.7 m were disbursed

22 interim reports of the beneficiaries were evaluated

CUBR

A programme supporting research and development activities for the non-ferrous metals sector. The project is carried out together with KGHM Polska Miedź S.A.

PLN 200 m

TOTAL BUDGET

The programme has contributed to increasing the competitiveness of the Polish non-ferrous metals sector on the global market. This has been achieved through developing and implementing new technologies, products, devices and materials. With the use of the know-how of the partner, which is one of the leaders in the industry, and with the participation of research institutions, the programme is expected to improve the effectiveness of the production process. The project focusses on four areas:

- mining and geology
- ore dressing
- metallurgy and new materials
- reducing the environmental impact of ore quarrying and processing

IN 2018:

the 4th call for proposals in the programme was announced (PLN 46 m allocation)

the submitted proposals were evaluated (12)

the implementation of projects selected in the previous calls for proposals was continued (21)



RID

Road Innovation Development. A joint venture of NCBR and the General Directorate for National Roads and Motorways

PLN 50 m

TOTAL BUDGET

The objective of the RID programme is to improve the effectiveness of managing the planned, prepared, constructed and existing road network in Poland by 2024. The programme drives innovation in the road construction sector, at the same time stimulating the R&D activities of research institutions in this area. The programme is designed for research consortia.

IN 2018:

programme objectives were updated (in line with the programme evaluation performed in 2016)

9 out of 15 of the monitored projects were completed

11 annexes to agreements were signed

GEKON

Environmentally friendly technologies. A joint venture of NCBR and the National Fund for Environmental Protection and Water Management

PLN 400 m

TOTAL BUDGET

The programme's objective is to increase the innovativeness of the Polish economy through the development of environmentally friendly technologies. Energy efficiency and energy storage capabilities are the challenges of today. The programme is aimed at stimulating cooperation between companies and research institutions, including:

- the analysis of the environmental aspects of obtaining unconventional gas
- energy efficiency and energy storage
- water protection and rationalisation of its use
- obtaining energy from clean sources
- innovative methods of obtaining fuels and materials from waste and waste recycling

IN 2018:

ongoing evaluation of the programme was carried out under the evaluation study entitled "Study of the effectiveness of commercialisation support through NCBR's programmes"

6 projects were funded (as part of the programme launched in 2012, a total of 65 projects were funded)

the programme results so far were summarised (64 technological solutions ready for implementation were developed as part of the programme)

THE APPLIED RESEARCH PROGRAMME

Increasing the use of research results in the economy

PLN 1,407,9 m

BUDGET

The objective of the programme is to support cooperation between research institutions and businesses to facilitate the absorption of research results by the economy. The programme's objectives is also to strengthen the potential of research institutions for carrying out research with practical applications.

IN 2018:

the project monitoring and accounting selected in calls for proposals announced in the years 2011–2013 were performed

a total of 129 projects were funded

PLN 23.2 m were disbursed

52 final reports were evaluated

the completion of 50 projects was confirmed



CYBERSECIDENT

Cybersecurity and e-identity

PLN 111,5 m

BUDGET

The objective of the project designed for research consortia (research establishments and enterprises) is to develop and implement solutions facilitating the coordination of measures between various domains of cybersecurity, and to implement innovative methods and techniques of online identification and authentication.

IN 2018:

6 further projects were selected in the call for proposals (4 in 2017)

a total of 10 projects were funded

PLN 30.9 m were disbursed

4 annexes to contracts were signed

2 interim reports of the beneficiaries were evaluated

INNOTECH

Technological innovations

PLN 650 m

BUDGET

The goal of the programme launched in 2011 is to increase the number of developed and implemented technological innovations, and to motivate entrepreneurs to increase expenditures on research and development work. The programme also aims to strengthen cooperation between higher education institutions and research establishments.

IN 2018:

project monitoring and accounting was performed; most projects were completed and their lifespans had not expired

6 projects were funded (296 in total)

2 annexes to contracts were signed

PLN 700,000 was disbursed



SOCIAL INNOVATIONS

Supporting initiatives stimulating social development and an improved quality of life

PLN 35 m

BUDGET

Scientific and technological achievements can stimulate innovative initiatives of the economic environment sector and NGOs. The Social Innovations programme is aimed at supporting initiatives which lead to expanding the resource of technical solutions, products, procedures and services helping to solve social problems at the local, regional and national level.

The programme is intended for research establishments, consortia and enterprises.

IN 2018:

project monitoring and accounting was performed (most of the projects were completed and their lifespans had not expired)

9 projects were funded

10 interim reports were evaluated

PANDA 2

Subsidising research infrastructure maintenance costs

PLN 250 m

BUDGET

The programme is addressed to the project beneficiaries of Priority Axis II of the Innovative Economy Operational Programme, for which the funding amount was at least PLN 50 m. Institutions carrying out research or development and working towards the popularisation of science can spend funds from the PANDA 2 programme on the maintenance of research and development infrastructure built thanks to the Innovative Economy programme.

IN 2018:

the ongoing programme evaluation began

16 projects were funded

16 annexes were concluded

16 interim financial statements were evaluated



LEADER

Support program for young scientists

PLN 415 m

BUDŻET

The aim of the program is to increase the competences of the scientific staff, especially scientists of the younger generation. The LEADER program finances initiatives aimed at improving competences in the area of independent planning and management of a research team. Such initiatives can be implemented by conducting research projects which results have perspectives of practical application and implementation on the market.

The program is also intended to strengthen the cooperation of enterprises with state-owned scientific units, and allow entrepreneurs to increase expenditure on research and R&D.

DEMONSTRATOR+

Support for scientific research and development at the demonstration scale

PLN 500 m

BUDGET

The goal of the programme is to facilitate the transfer of research results to the economy through supporting R&D projects related to the development of a new technology or product, including the testing of the developed solution on a demonstration scale (the programme was established in 2013).

IN 2018:

project monitoring and accounting was performed (most of the projects were completed and their lifespans had not expired)

4 final reports were evaluated

IN 2018:

142 projects were financed for PLN 41.5 million

the assumptions of the program were updated (in accordance with the Act of July 20th, 2018 Law on Higher Education and Science)

201 applications submitted in the ninth edition of the program were evaluated (51 positively evaluated)

evaluation work has begun

In 2018, 35 scientific units participated in the program, program participants - Leaders made 88 patent applications, utility models and implementations, and also published 254 articles in international scientific journals.



IMPROVING WORK SAFETY AND CONDITIONS

Multiannual programme
(established in 2007)

PLN 121,1 m

BUDGET

The objective of the programme is to prepare innovative organisational and technical solutions aimed at human resource development. The programme's goal is also to contribute to the development of new products, technologies, methods and management systems, leading to a considerable decrease in the number of workers exposed to hazardous, harmful and burdensome conditions. This, in turn, is expected to limit the number of accidents at work and the incidence of occupational diseases.

IN 2018:

ex-post evaluation of the programme was performed (resulting in approval)

1 agreement was funded

1 interim report was evaluated

GO_GLOBAL.PL

Support for innovative companies commercialising the results of research and development work on global markets

PLN 30 m

BUDGET

The programme's objective is to help enterprises prepare for entering international markets through developing detailed plans, acquiring venture capital and the assessment of the potential for effective impacts on the selected market.

IN 2018:

1 project was funded (a total of 124 projects from the launch of the programme in 2012)

PLN 0.17 m were disbursed

1 grant contract was concluded as part of the 4th call for proposals (following an appeal procedure)

monitoring and accounting was performed for projects from the 4th and 5th calls for proposals



BRIDGE CLASSIC

Facilitating the commercialisation of R&D work by young innovators

PLN 1,3 m

BUDGET

The programme's objective is to provide an alternative form of funding for innovators from higher education institutions, research institutes, scientific institutes of the Polish Academy of Sciences and SMEs.

IN 2018:

1 project was funded

4 interim reports were evaluated – PLN 0.3 m was disbursed

the Risk Committee monitored the loan agreement concluded under the programme, the supervision over the project's milestones and expenditure management control

BRIDGE VC

Pilot venture. Public-private support for R&D work commercialisation with capital fund participation

PLN 220 m

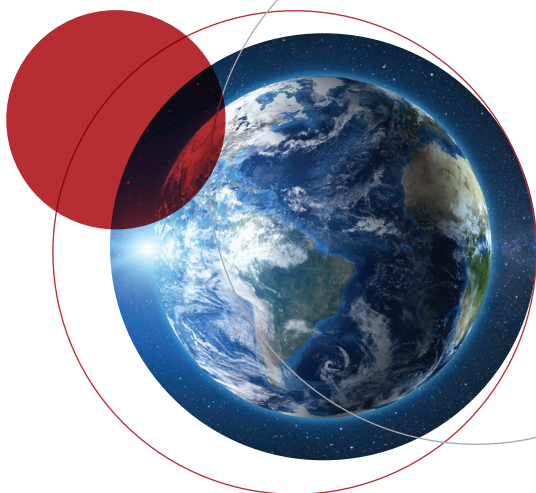
BUDGET

IN 2018:

2 projects were funded

8 interim reports were evaluated

NCBR evaluated the **Bridge Alfa** pilot programme in order to summarise and assess the effects achieved so far and to identify good practices (as exemplified by selected projects) of investments in portfolio companies which ended with measurable financial success and research results commercialisation. The evaluation resulted in a positive assessment of the adopted financial support mechanism (80:20 financial leverage) and the possibility of investing in R&D projects at research establishments. The evaluation indicated difficulties related to the specific cooperation conditions with research institutions and the need to develop a method of dealing with investments which did not work out.



INTERNATIONAL PROGRAMMES

The European Union is working towards a common goal of creating the **European Research Area (ERA)**. The initiatives of the EU Framework Programme are a form of implementing these plans and combining the financial and scientific potential of Member States in order to increase the competitiveness of the European economy.

These endeavours are joined in by institutions carrying out research funding programmes in their respective countries: ministries, research and technology agencies, and scientific boards. **The role of NCBR is to establish cooperation and join initiatives** under which international calls for proposals are organised in various areas of science and economy for research and research and development projects funded with national resources (i.a. ERA-NET, ERA-NET+, ERA-NET CoFund and Joint Programming Initiatives – JPI).

BILATERAL COOPERATION

contributes to strengthening the position of Polish research institutions in the global and European research community, and in international undertakings carried out jointly with researchers from abroad. When initiating and entering into bilateral cooperation agreements with foreign partners, NCBR takes into account the following factors: the level of R&D activities of a given country,

priority thematic areas, economic benefits, best international cooperation experiences of Polish scientists, cultural relations and historical relations at the level of countries and research establishments. NCBR is cooperating, i.a, with Israel, Germany, China and Luxembourg.

MULTILATERAL COOPERATION

serves to further the Centre's mission and is carried out simultaneously with several partners. Multilateral cooperation encompasses initiatives directed at supporting broad international cooperation (CORNET, EUREKA, EUROSTARS) and promoting cooperation with specific countries (V4 – Korea, V4 – Japan).

NORWEGIAN AND EEA FUNDS

Memoranda of Understanding for the implementation of Norwegian and EEA Funds were signed on 20 December 2017. In line with the provisions of these documents, Poland will receive a total of EUR 110 m for a research project. The national contribution is EUR 19,411,765. The programme's operator was the National Science Centre (NCN) and NCBR took the role of the operator's supporting institution.



IN 2018:

NCBR, together with the consortia selected in the call for proposals, co-implemented the 1st phase of the **Teaming for Excellence (TFE)** instrument involving the preparation of a comprehensive business plan for creating new research establishments.

TFE is one of the instruments of the Horizon 2020 Programme aimed at creating new (or significantly upgrading the existing) centres of excellence (CoE) through partnership between national research institutions and foreign partners. NCBR coordinates two projects: CECM, with AGH – Cyfronet as the leader, and ENSEMBLE3, led by the University of Warsaw, and the Institute of Electronic Materials Technology

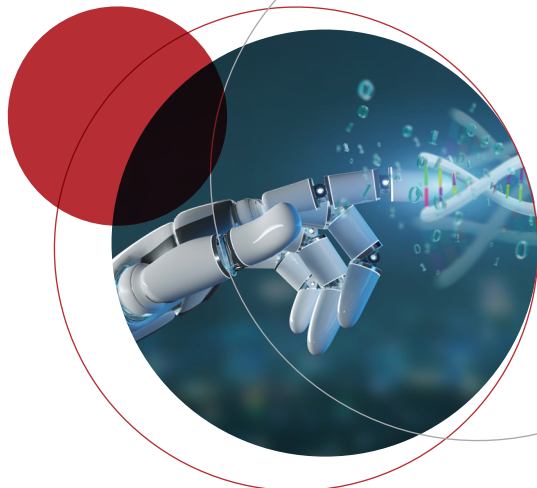
Under the **Norwegian Funds**, as part of preparations for signing the agreement on the implementation of the research programme, NCBR and NCN prepared a joint Concept Note (CN). It was approved by the donors on 30 November 2018. On its basis in December 2018 supplementary information was sent to the Financial Mechanism Office in Brussels to be used for the preparation of agreements on the programme's implementation. At the same time, arrangements were made relating to programmes areas for the main call for proposals for Polish-Norwegian research projects. The first calls for proposals are to be launched in Q3 2019

NCBR co-organised **32 calls for proposals for international research or R&D projects** with the participation of Polish entities under 29 international initiatives. The Centre also started a new initiative: the Trans-Atlantic Platform: Social Innovation Call. **346 applications** were submitted with the participation of Polish entities, including 139 preliminary proposals submitted in the 1st stage of the Polish-Chinese call for proposals. Six selection procedures will be continued in 2019

The Centre signed a **consortium agreement with BANOS CSA** (Baltic and North Sea Coordination and Support Action). The goal of BANOS CSA is to prepare the basis for the new joint research and innovation programme for the Baltic Sea and North Sea region

297 agreements for the implementation and funding of international projects were monitored

In the selection procedures carried out in 2018 **346 proposals** were accepted. The amount allocated is PLN 117,548 m



THE SMART GROWTH OPERATIONAL PROGRAMME

The Smart Growth Operational Programme is the largest programme in the European Union that supports developing research and creating innovations. The programme is funded with the European Regional Development Fund. The support is intended for the implementation of R&D projects involving industrial research and development work.

Calls for proposals under the SGOP are divided into two categories: for small and medium-sized enterprises and for large companies and consortia. The National Centre for Research and Development is the Intermediate Body under Priority Axis I of the SGOP: Support for R&D work performed by enterprises (the Fast Track call for proposals, sectoral programmes, programmes involving capital funds) and Priority Axis IV: Increasing the research potential (research programmes for the economy, joint ventures), development of state-of-the-art infrastructure (regional research agendas, application projects), modern research programmes (based on the problem-driven research model).

IN 2018:

programmes within 11 measures (or submeasures) were implemented. Their total budget was over PLN 24,353 bn.

1821 projects were funded and monitored (including 940 under Submeasure 1.1.1 Fast Track)

17 calls for proposals were announced under the SGOP (13 were announced by NCBR) with a total allocation of PLN 4,690 bn

21 calls for proposals were concluded with a total allocation of PLN 4,133 bn.

331 projects were recommended to receive PLN 2,326 bn in funding

more than PLN 1,769 bn were disbursed to the economic operators



SECTORAL PROGRAMMES

Aimed at implementing large R&D projects to strengthen the competitiveness of industries and sectors on international markets.

The initiators of undertakings under sectoral programmes are groups of enterprises representing the sector. Almost EUR 875 m is allocated for sectoral projects in the years 2015-2023.

In 2018 the implementation of **13 sectoral programmes** was continued.



SUB-MEASURE 1.1.1

FAST TRACK

The National Centre for Research and Development was the first public institution in Poland to have introduced a market-based financing system that reduces paperwork to a minimum and shortens the decision time.

All this is meant to enable entrepreneurs to launch their planned investments and undertakings as quickly as possible.

FAST TRACK calls for proposals are organised separately for small and medium-sized enterprises (SMEs) and for large companies. The calls for proposals include **support for industrial research and development work**.

The budget of the Submeasure launched in 2016 is **PLN 8,345.7 m**.

In 2018 **940 projects** were funded under FAST TRACK (the total funding amount is PLN 5,142.3 m); the beneficiaries received **PLN 704.2 m**.

GAMEINN

PLN 300 m

BUDGET

The programme initiated by the Polish Games Association is aimed at increasing the competitiveness of the Polish video games sector on the global market by 2023 through increasing research and development activity.

Support can be provided to projects related, i.a., to the use of artificial intelligence, games design and the development and advancement of IT platforms.

IN 2018:

ongoing programme evaluation of the GAMEINN programme was performed. On this basis, a decision was made to increase the programme's budget to PLN 300 m (previously PLN 245 m)

74 projects were funded

PLN 48.7 m were disbursed

INNOSHIP

PLN 363 m

BUDGET

The goal of the programme is to increase the competitiveness of the Polish ship industry by 2023. This will be achieved primarily by increasing the activity of the sector in the field of R&D work.

The programme was established and the pilot phase was launched in 2018.

IN 2018:

the call for proposals was announced, the selection and evaluation of proposals was performed

7 projects (out of 25) were selected for funding

the funding amount was established at PLN 26.4 m

INNOSTAL

PLN 396 m

BUDGET

The programme was initiated by the Polish Steel Association. Support under the INNOSTAL programme has been provided, i.a., to aid the development of new technologies of steel production, the recovery and recycling of waste and scrap, and the development of technologies that reduce the harmful environmental effects of the steel industry.

IN 2018:

33 projects were funded

PLN 23.1 m were disbursed

ongoing evaluation of the programme was carried out, and a decision to continue it was made

INNOMED

PLN 300 m

TOTAL BUDGET

The programme contributed to an increased availability of advanced medical technologies for patients in Poland. The goal is also to strengthen cooperation between scientific groups and R&D activities of pharmaceutical companies.

IN 2018:

20 projects were funded

PLN 17,9 m were disbursed

13 interim reports and 1 final report were evaluated

9 annexes to contracts were signed

SUB-MEASURE 1.3.1**BRIDGE ALFA**

The goal of the project is to assist the implementation of R&D projects at the early stage. This is facilitated by the creation of networks of investment vehicles – proof of concept funds. The purpose of these funds is to verify the market prospects of new projects and to increase their number on the capital investment market.

The programme is aimed at co-funding the test phases of R&D projects and companies established on the basis of the approved projects.

The budget of a single vehicle fund ranges from PLN 10 to 30 m, and non-refundable NCBR's contributions may not exceed 80%. The remaining part is provided by business investors.

Since 2 August 2018, in line with the amendment of the Regulation of the European Parliament and of the Council, the value of an R&D project funded with the Bridge Alfa programme may not exceed EUR 200,000.

IN 2018:

213 meetings of investment committees were arranged

159 investment decisions were made

until 2 August 2018, the average investment value was PLN 2.1 m, and later PLN 1 m

73 projects were funded

**SUB-MEASURE 1.3.2****BRIDGE VC**

Public-private support for R&D activity with capital funds participation.

The programme's objective is to ensure effective funding of R&D activities carried out by innovative small and medium-sized enterprises (to reduce the financial gap) through the operations of corporate venture capital and venture capital funds, which, together with NCBR, contribute funds to support companies carrying out innovative projects.

In 2018 **1 project** was funded, and **PLN 107.8 m** were disbursed.

**SUB-MEASURE 4.1.1****JOINT VENTURES**

A joint venture is a funding mechanism of research and development work under which the Centre, together with an external partner, supports the implementation of the research agenda developed on the basis of research areas suggested by the partner (consistent with the National Scientific Research Programme or the National Smart Specialisations).

NCBR's partners can be businesses or public entities, in particular central and local government authorities and state-owned legal persons carrying out state tasks, such as, e.g., executive agencies.

A common budget is established for the programme, for which NCBR, as the partner, is obligated to contribute at least 50%.

Under Sub-measure 4.1.1 **6 joint ventures were established** with a total budget of over **PLN 900 m.**

THE JOINT VENTURE WITH THE ŚLĄSKIE VOIVODESHIP

The purpose of the undertaking is to stimulate the economy of the Śląskie Voivodeship to create solutions minimising the causes and effects of the negative impact of air pollution in the voivodeship in the perspective until 2026.

The programme's budget is **PLN 100 m** (PLN 50 m from NCBR and the voivodeship each).

In 2018 the first call for proposals was announced as part of the venture.



THE JOINT VENTURE WITH THE LUBELSKIE VOIVODESHIP

Projects funded under the programme are selected in calls for proposals organised independently by NCBR (industrial research) and the voivodeship (development work). The aim of the venture is to provide more knowledge commercialisation prospects in the field of photonic technologies.

The budget from EU sources is PLN 70 m. NCBR and the Lubelskie Voivodeship each contribute half of the budget funds.

In 2018 funding was provided to **5 projects** with a value of **PLN 17.6 m. PLN 1.5 m** were disbursed.

THE JOINT VENTURE WITH THE ŁÓDZKIE VOIVODESHIP

Supporting and increasing the R&D activity of the economy and science in the Łódzkie Region in order to slow down and reverse negative trends observed for life expectancy and the incidence of lifestyle and metabolic diseases among the Voivodeship's residents is the main objective of the venture.

In 2018 NCBR concluded an agreement with the Łódzkie Voivodeship, thanks to which a call for proposals was announced on the allocation of **PLN 50 m. 6 grant applications** were submitted for a total amount of **PLN 13.8 m.**



INGA

A joint venture of NCBR, PGNiG and GAZ-SYSTEM

The venture involves supporting scientific research and development in the gas industry. The goal is to increase the innovativeness and competitiveness of the Polish gas sector on the global market and reduce the negative environmental impact of the sector, by 2023.

The venture's budget is **PLN 400 m.** (NCBR – PLN 200 m, PGNiG – PLN 133 m GAZ-SYSTEM – 67 m).

In 2018 the first call for proposals under the venture was announced and concluded. Contracts were signed for **4 projects** for a total funding amount of **PLN 21.6 m.**

BRIK

“Research and Development in the Railway Infrastructure”. Joint venture of NCBR and PKP PLK S.A.

The main goal of the venture is to increase the innovativeness and competitiveness of railway transport in Poland by 2026. As part of the programme, NCBR and PKP PLK S.A. would like to achieve a higher effectiveness of the operation and an improved management of the railway infrastructure.

The venture's budget is **PLN 50 m** (NCBR and the voivodeship each contribute half of the amount). In 2018 **9 projects** were funded (the total funding amount is PLN 35.1 m), and **PLN 0.8 m** was disbursed.



SUB-MEASURE 4.1.2

REGIONAL RESEARCH AGENDAS

The goal of creating regional research agendas (RRA) is to coordinate and create synergies between research projects and development work by research and industry consortia (with a maximum of 5 entities) with the leading role of research entities.

Funding is provided for projects covering industrial research and/or experimental development work, which can be supplemented with pre-implementation work understood as preparatory measures for the implementation of R&D work results in business.

The submeasure's budget is **PLN 428.3 m.**

In 2018 the 3rd call for proposals under the RRA was announced and concluded, along with its assessment, most grant contracts were concluded and the projects' monitoring was launched. Projects selected under the calls for proposals so far and funded under the agreements concluded in 2018 were in the implementation phase, and none of the projects was completed.

In 2018 **PLN 43.4 m** was paid to the consortia, which carried out **58 projects.**

SYNCHEM

The joint venture of NCBR and SYNTHOS S.A.

The programme is aimed at increasing the innovativeness and competitiveness of the Polish chemical industry by 2023. Its budget is **PLN 7.4 m.**

One of the detailed objectives of the venture is to increase the participation of the chemical industry in funding R&D work.

In 2018 ongoing evaluation of the venture was performed. Based on its results, no further calls for proposals were announced. Under the programme, **3 projects**, are funded, and in 2018 the implementing entities received **PLN 1.2 m** of funding.



SUB-MEASURE 4.1.4

APPLICATION PROJECTS

The call for proposals supports projects focussing on research and development work carried out by scientific and industrial consortia. In principle, the results of projects within the call for proposals should bring new science and technology insights, and the expected project results should be a novelty, at least on the Polish market.

The submeasure's budget is **PLN 815,9 m.** In 2018 **95 projects** were funded, and **PLN 77 m** were disbursed.

MEASURE 4.2

DEVELOPMENT OF MODERN RESEARCH INFRASTRUCTURE

The Measure's objective is to support selected projects for large strategic research infrastructure on a national or international scale included in the Polish Research Infrastructure Roadmap. The measure is also to ensure efficient access to such large infrastructure for businesses and other interested entities.

The projects cannot duplicate the existing resources and should supplement the previously created research and development infrastructure. Among the conditions for obtaining support is the presentation of a research agenda which is in line with the relevant National Smart Specialisation and a plan for using the R&D infrastructure after the project's completion and the plan for covering the infrastructure's maintenance costs. The Measure's budget is **PLN 1,921,7 m.**

In 2018 the selection procedure initiated in the previous year was concluded. **PLN 253,5 m** were disbursed under **7 projects.**

**MEASURE 4.4**

INCREASING THE HUMAN POTENTIAL IN THE R&D SECTOR

The objective of the Measure is to provide the workforce for the innovative industry and research teams conducting R&D work. The work implemented within the supported projects and organisations must represent lead to breakthrough achievements and be of essence for the economy or for solving key social problems.

The measure is also intended to support the development of the competence of researchers and employees of companies in the field of research management and commercialisation of the results of research and development work and also to support researchers (through university technology transfer centres and special purpose vehicles) in the commercialisation of the results of their research.

The Foundation for Polish Science (FNP) is responsible for selection, monitoring and accounting of project within Measure 4.4. FNP changed the status of a beneficiary of grant projects to the SGOP Implementing Authority, thus, in line with the audit recommendations of the European Commission, the Foundation together with NCBR and the Ministry of Investment and Development carried out a number of tasks in 2018.

The budget of Measure 4.4 is **PLN 704,9 m.**

Under the Measure in 2018 **7 calls for proposals** were carried out, mostly addressed to experienced and recognised scientists, but also young researchers from Poland and abroad: TEAM, TEAM TECH, TEAM TECH CORE FACILITY, TEAM TECH CORE FACILITY PLUS, FIRST TEAM, HOMING, POWROTY.

201 projects were funded, with a total of PLN 180,8 m disbursed, of which in 2018 – **PLN 17,2 m.**

MEASURE 4.3

INTERNATIONAL RESEARCH AGENDAS (IRA)

The objective of the Measure is to increase the number of research establishments/teams carrying out ambitious R&D projects under a research programme created by international bodies. The programme is also to increase the number of foreign scientists and PhD students participating in such projects in Poland.

Measure 4.3 supports the implementation of international research agendas (IRA) in order to set up in Poland, in cooperation with renowned research centres from other countries, specialised research establishments with a global leading position.

In 2018 **7 projects/grantees** received funding.

The Measure's budget (established in 2015) of **PLN 545,5 m**, in 2018 **PLN 18 m** were disbursed.

SUB-MEASURE 4.1.3**OUT-OF-COMPETITION PROJECTS**

The National Centre for Research and Development is the beneficiary of two out-of-competition projects under Submeasure 4.1.3 with a purpose of implementing research programme based on the problem-driven research model using an innovative approach to public procurement:

The project ***“Increasing the innovation level of the economy by implementing a new funding model of breakthrough research projects”***, under which the following research programmes in the field of e-mobility are carried out:

- **Zero-emission public transport**
- **Electric vehicle charging infrastructure (under development)**
- **Modern hydrogen storage methods**

The project ***“Increasing the innovativeness of the coal power industry by developing a set of solutions for the upgrading, redevelopment or operation rules of class 200 MWe blocks”*** (Blocks 200+ Programme).

In 2018 NCBR performed work on launching further programmes under the problem-driven research formula focussing, i.a., on innovative rolling stock, zero-emission delivery vans up to 3.5 t and unmanned aerial systems.

ZERO-EMISSION PUBLIC TRANSPORT

PLN 100 m

BUDGET

The main objective of the programme is to design and deliver, until 2023, approx. 1000 innovative zero-emission public transport vehicles for local authorities.

The programme is carried out under the innovative partnership formula.

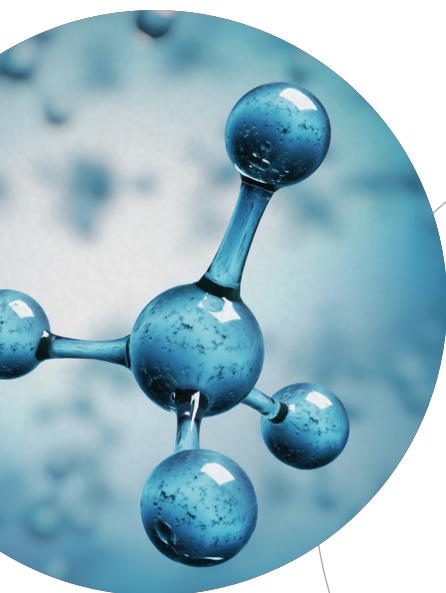
IN 2018:

A call for proposals was announced for a total value of PLN 2,308,700,000 for the design and delivery of innovative public transport vehicles. The call was published in the Official Journal of the European Union 2018/S 001-000183 of 3 January 2018.

Meetings of economic operators were arranged (due to the innovative nature of the procedure, the statutory options of communication with economic operators were used in order to clarify the content of the documentation)

The procedure (announced in January 2018) was carried out – 9 applications for admission to the tender procedure (8 economic operators met the access criteria), 7 valid preliminary proposals were submitted

The estimated programme budget for the R&D part is **PLN 118 m.**



**MODERN
HYDROGEN
STORAGE
METHODS**

PLN 32 m

BUDGET

The goal of the programme is to develop a hydrogen storage technology which can be used for powering fuel cells and its detailed objective is to create a prototype of the innovative Hydrogen Storage System and to demonstrate its operation in the Mobile Facility.

In 2018 **5 projects** were selected for funding. The beneficiaries received **PLN 2.4 m.**

BLOCKS 200+

PLN 190 m

BUDGET

The objective of the programme is to develop (and verify in the operating conditions of an actual coal power block) a set of technical, organisational or legal solutions for low-cost technology for changing the basic operating and maintenance parameters of class 200 MWe blocks, adjusting them to the new requirements and the specific operating regime.

In 2018 **5 projects** were selected. The beneficiaries received **PLN 2.4 m.**



DEFENCE AND SECURITY

A programme for improving national security.

The National Centre for Research and Development carries out measures supporting State security in conjunction with the Minister of Defence and the Minister of Internal Affairs.

Under programmes in this area, 17 calls for proposals have been carried out so far, awarding more than PLN 2.67 bn of funding for projects. 80% of them were directly related to security and defence.



PROJECTS FOR STATE DEFENCE AND SECURITY

PLN 2,398 bn

BUDGET

In calls for proposals for specific subjects, funding is awarded to ventures with the best chances of actually increasing national security. The aim of the projects is to achieve technological independence through the creation of Polish know-how for technologies critical to state defence.

IN 2018:

107 projects were funded

PLN 197,8 m were disbursed



FUTURE TECHNOLOGIES FOR THE DEFENCE SECTOR

A call for young scientists

PLN 85 m

BUDGET

The programme's objective is to acquire groundbreaking solutions in the field of defence prepared by young scientists. The programme's goal is to encourage young researchers to focus on this field. The detailed objectives of the programme include, i.a., cybersecurity, autonomous unmanned aerial platforms (aerial, ground and sea-based) and rocket technologies.

IN 2018:

the call for proposals announced in the previous year was concluded

24 projects were selected

PLN 22,5 m of funding was disbursed

THE STRATEGIC PROGRAMME NEW ARMAMENT AND DEFENCE SYSTEMS IN DIRECTED ENERGY

PLN 504 m

BUDGET

The main objectives of the programme are to develop technology and equipment required to build new armament and defence systems in the field of directed energy for the purposes of the Armed Forces of the Republic of Poland, to develop protection and defence methods against electromagnetic radiation impulses for soldiers and civilians, and to develop research infrastructure for new technologies related to the generators of high-power impulses of electromagnetic radiation.

IN 2018:

6 projects were funded

PLN 1,3 m were disbursed



THE DIGITAL POLAND OPERATIONAL PROGRAMME

The goal of the programme launched in 2016 is to strengthen and utilise the digital potential of the Polish economy. The programme is to support, i.a., the provision of universal internet access, introduce user-friendly public e-services and improve the digital skills of citizens.

MEASURE 3.3

E-PIONIER

PLN 106 m

BUDGET

The Measure is aimed at developing solutions in the form of minimum viable products (MVP) in response to the specific socio-economic challenges from public institutions. MVPs will be created by interdisciplinary teams, including IT developers.

The detailed objectives of the measure are, i.a., to improve the occupational competence of talented IT developers, project management skills and the understanding of production, logistics and organisational processes, to develop entrepreneurship, R&D work and interpersonal skills.

IN 2018:

8 projects were funded

the 2nd call for proposals was announced and concluded

the Steering Committee of the e-Pionier project was established

PLN 12,5 m were disbursed to beneficiaries





THE KNOWLEDGE EDUCATION DEVELOPMENT OPERATIONAL PROGRAMME

The Knowledge Education Development Operational Programme is implemented by the National Centre for Research and Development, which is the Intermediate Body for Priority Axis III Higher education for the economy and development of the KEDOP.

Under the programme the Centre carries out the following tasks:

- **3.1 Competences in higher education**
- **3.2 PhD studies**
- **3.3 Internationalisation of Polish higher education**
- **3.4 Management in higher education institutions**
- **3.5 Comprehensive programmes of higher education institutions**

So far under these measures the Centre has announced 28 calls for proposals with **a total budget of PLN 4,944 bn**, and in the already completed calls, PLN 2,814 bn were awarded for project implementation.



MEASURE 3.1

COMPETENCES IN HIGHER EDUCATION

The Measure's objective is to develop the skills of individuals participating in tertiary education in order to meet the needs of the economy, the labour market and society.

TRAINING PROGRAMMES FOR TEACHERS

PLN 200 m

BUDGET

In 2018 a call for proposals was concluded with the goal of selecting the best projects for developing and implementing educational curricula for teachers in majors with a teaching specialisation. The curricula must include contents relevant to socio-economic development.

27 projects were selected, for which **PLN 39,1 m** were awarded.



A COURSE ON MOOC

PLN 10 m

BUDGET

The programme's objective is to create and carry out, in the form of e-learning, one of two types of educational courses: educational course for students as an addition to the educational process as part of undergraduate or postgraduate studies, or Mass Open Online Course (MOOC) available to all. The courses must be free-of-charge and available to the general public. The courses selected for funding will be placed on a specially designed platform administered by the Ministry of Science and Higher Education.

In 2018 the first call for proposals was announced and the submission of proposals was launched.

THE THIRD MISSION OF THE UNIVERSITY

PLN 200 m

BUDGET

The aim of the programme is to support the extension of higher education institutions' range of services to include their third mission, as a forum for social activity, e.g. through programmes carried out in cooperation with non-governmental organisations, contributing to the development of skills responding to the needs of the labour market, the economy and society.

The detailed objectives also include the development of educational curricula and the provision of courses and training (i.a. as part of children's universities, universities of the second and third age) together with entities that play a role in education, such as local authorities and NGOs.



INTEGRATED PROGRAMMES OF UNIVERSITIES

PLN 2 bn

BUDGET

In 2018 the assessment of proposals was continued and calls announced in the previous year were concluded.

148 projects were selected for funding (137 in 2018), with a funding of **PLN 1613,3 m**. In 2018: **PLN 93,9 m** were disbursed to beneficiaries.

MEASURE 3.5

COMPREHENSIVE PROGRAMMES OF HIGHER EDUCATION INSTITUTIONS

The goal of the Measure is, i.a., to raise the quality and effectiveness of **education in PhD** programmes, to increase the availability of international educational programmes for individuals from Poland and foreigners participating in tertiary education, as well as to support organisational changes and to develop the competence of personnel in the higher education system.

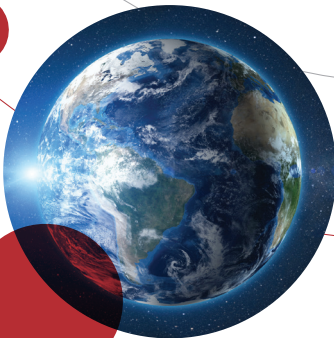
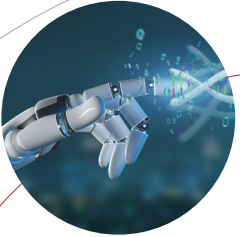
INTEGRATED PROGRAMMES OF UNIVERSITIES FOR LOCAL DEVELOPMENT

PLN 300 m

BUDGET

Activities performed as part of projects covered by the call must comply with the Regional Innovation Strategy of a voivodeship for which education within the project will be provided.

In 2018 the call for proposals was announced and the submission of proposals was carried out.





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