



2013 ANNUAL REPORT

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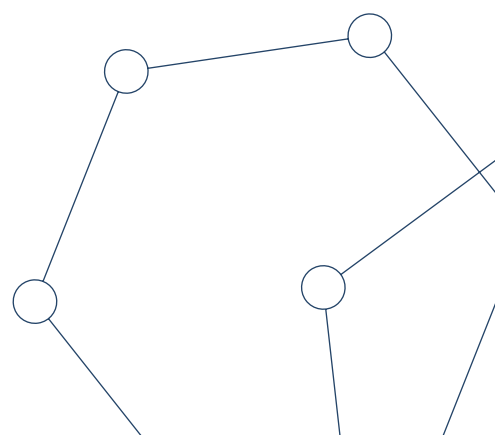
The National Centre
for Research and Development

2013 ANNUAL REPORT

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The National Centre
for Research and Development



NCRD IN NUMBERS

5,318 billion PLN
in NCRD's
2014 budget



2 425 submitted
applications

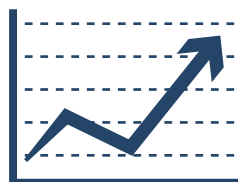
21,7 billion PLN
total value
of served projects

almost

1 billion PLN

value of entrepreneurs'
own contribution in 2013

4 267
monitored projects



59



organised competitions

4,494 billion PLN
in NCRD's
2013 budget

41 
undergoing programmes



signed deals

844



valued at almost

≤ 3,7 billion PLN

 **14 000**
reviews, including **2000**
written by foreign reviewers



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Ladies and Gentlemen, With great satisfaction I am presenting to you the annual report summarising the National Centre for Research and Development's activities in 2013.

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Selected projects executed with the help of NCRD funding:

GRAPHENE: SUPERMATERIAL FROM A PENCIL

Research on the production methods and the use of this new super-material is occurring all over the world.

42

Selected projects executed with the help of NCRD funding:

ROBOTS ARE A MAN'S BEST FRIEND

Proteus is an example of the successful cooperation of the Polish scientific consortium on a project dealing with the high-tech industry, which should end with a commercial success - setting up a production line for specialised consumers.

50

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The National Centre for Research and Development assigns great importance to the availability of the funding to beneficiaries from all over the country.

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FLARIS LAR

Funded by NCRD, Flaris Lar 1 became a sensation at the international trade fair in Paris

48

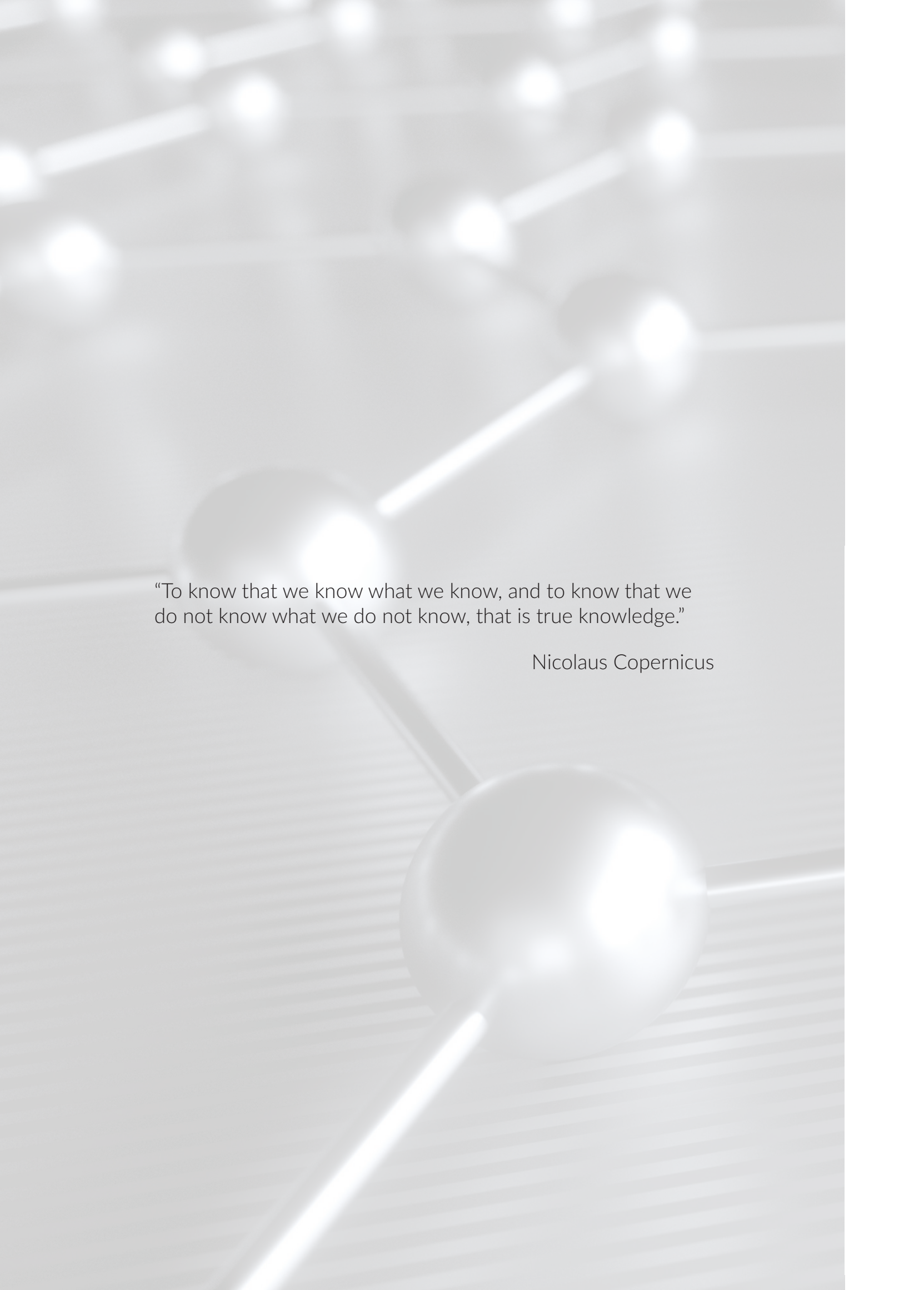
NCRD AROUND THE WORLD

50 worldwide programmes have been set up thanks to successful cooperation with partners, whose value exceeded 100 million PLN in 2013.

70

REPORT

Information about programmes and innovative projects.

The background is a grayscale abstract image featuring a network of glowing white nodes connected by thin white lines. The nodes are of varying sizes and are distributed across the frame, with a larger, more prominent node in the lower right. The lines radiate from these nodes, creating a sense of depth and connectivity. The overall effect is reminiscent of a molecular structure or a digital network.

“To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge.”

Nicolaus Copernicus



Prof. Krzysztof Jan Kurzydłowski, DSc, Eng.
Director of the National Centre for Research and Development

Ladies and Gentlemen,

It is with great satisfaction that I present to you the annual report, showing the activities of the National Centre for Research and Development in 2013. It has been an intense year, working constantly on shaping and expanding our programme's portfolio, as well as improving our current ventures. We were particularly invested in the introduction of mechanisms which encourage scientists and entrepreneurs to cooperate on implementing Research & Development projects, and for the entrepreneurs to contribute more than what was legally expected of them.

Thanks to our involvement in recent years, we have managed to compile a wide collection of methods, which support R&D projects on every TRL (Technology Readiness Level). Our portfolio today fulfils fully the assumptions of the new financial perspective. The participation of enterprises in supported projects is constantly growing, and the increased

participation of scientific-industrial consortium proves the convergence of science and business cooperation.

Our ambition was to become an important partner for these scientists and entrepreneurs, and the measure of our success is the success of our beneficiaries. The results presented, among others in this report, illustrate our success in achieving our original goal.

The implementation of our mission would not have been possible, however, if it was not for the full commitment of the almost 300 people who form the crew, to whom I say thank you for the initiative and hard work you committed to overcoming the challenges.

I sincerely hope that this report will encourage you to register further interest in the National Centre for Research and Development. Enjoy!

Krzysztof Jan Kurzydłowski

Krzysztof Kurzydłowski

WHO ARE WE?

The National Centre for Research and Development was commissioned in 2007, with the aim to perform tasks related to: scientific, technological and innovative policies adopted by the Polish government. The main duty of the Centre is to support Polish enterprises and scientific units in planning and implementing modern solutions and technologies enabling innovation, and thus, competitiveness of the Polish economy.

The Centre's activity aims to strengthen cooperation between Polish business and scientists and promote the commercialisation of the research's results. The actions are taken through planning and execution of national and international research programmes, R&D works and their management. The Centre financially supports the most valuable, which are selected by competing against one another, and then supervises their implementation.

The National Centre for Research and Development is also an intermediary for three operational programmes: Innovative Economy, Human Capital programme and Infrastructure and Environment, financed by structural funds. Actions taken make the Centre responsible for efficient implementation of the aforementioned programmes through organising the competitions - recruitment of funding applications, disbursing and settling approved funding, and ensuring that beneficiaries implementing projects from European Union funds have support based on merit.

The grants have been used to fund many investments, including ones that ensured that Polish students and scientists had access to modern infrastructure and research instruments.

NCRD works within the meaning of the Act on National Centre for Research and Development dated 30 April 2010.

BOARD OF THE NCRD

Ladies and Gentlemen,

It has been three years since I was selected to preside over the Board of the National Centre for Research and Development, which has a very significant role in designating the path that planning of the Centre's portfolio is following.

This past year has been very important for the NCRD. Many initiatives, often pioneering in their field, have been set up, including the strategic R&D programme "Natural habitat, agriculture and forestry" (BIOSTRATEG). The aim of this programme is to stimulate the innovation growth and competitiveness in agriculture, forestry and related industries: agri-food and wood. It also aims to create an environment which allows for Polish research teams and entrepreneurs to participate in EU initiatives and R&D projects implemented within the Horizon 2020. As a result of this, new innovative solutions will be transferred to the socio-economic sphere. BIOSTRATEG covers five strategic areas, defined directly by the National Research programme, in accordance with research priorities of European Union and the rest of the world:

- 1) food safety (both in context of supply and quality)
- 2) efficient and thoughtful management of natural resources (with

special interest in water economy);

3) prevention and adaptation to climate change (with special interest in agriculture);

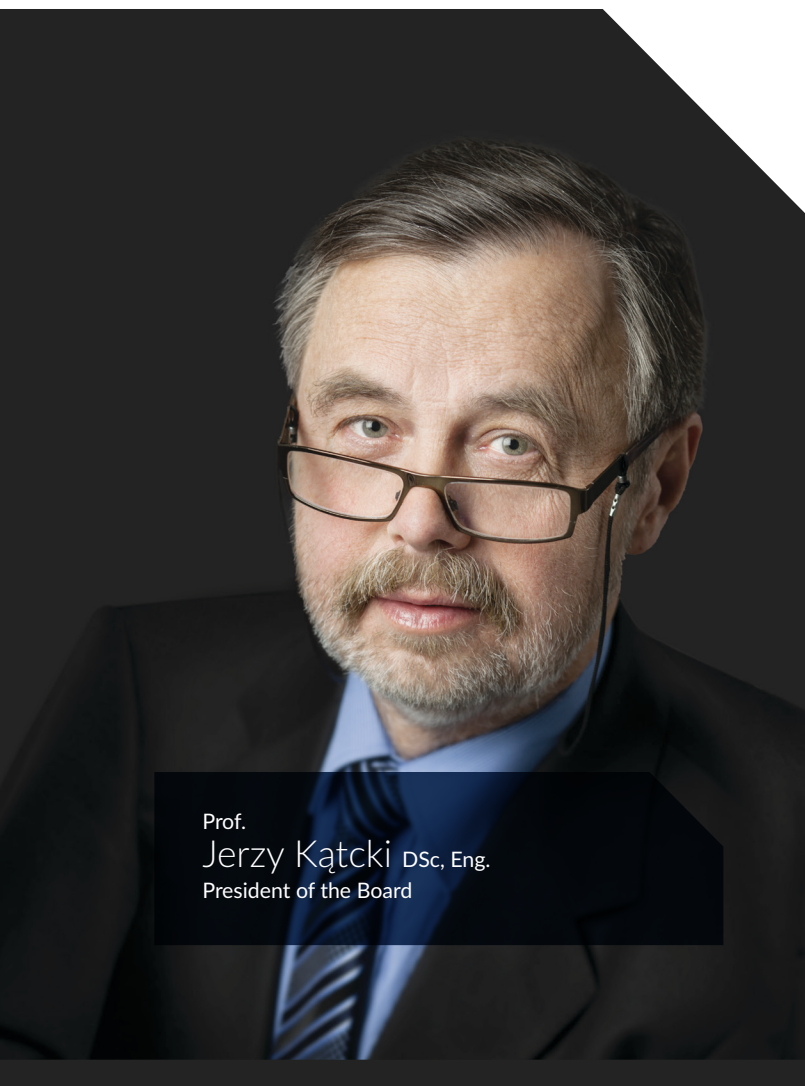
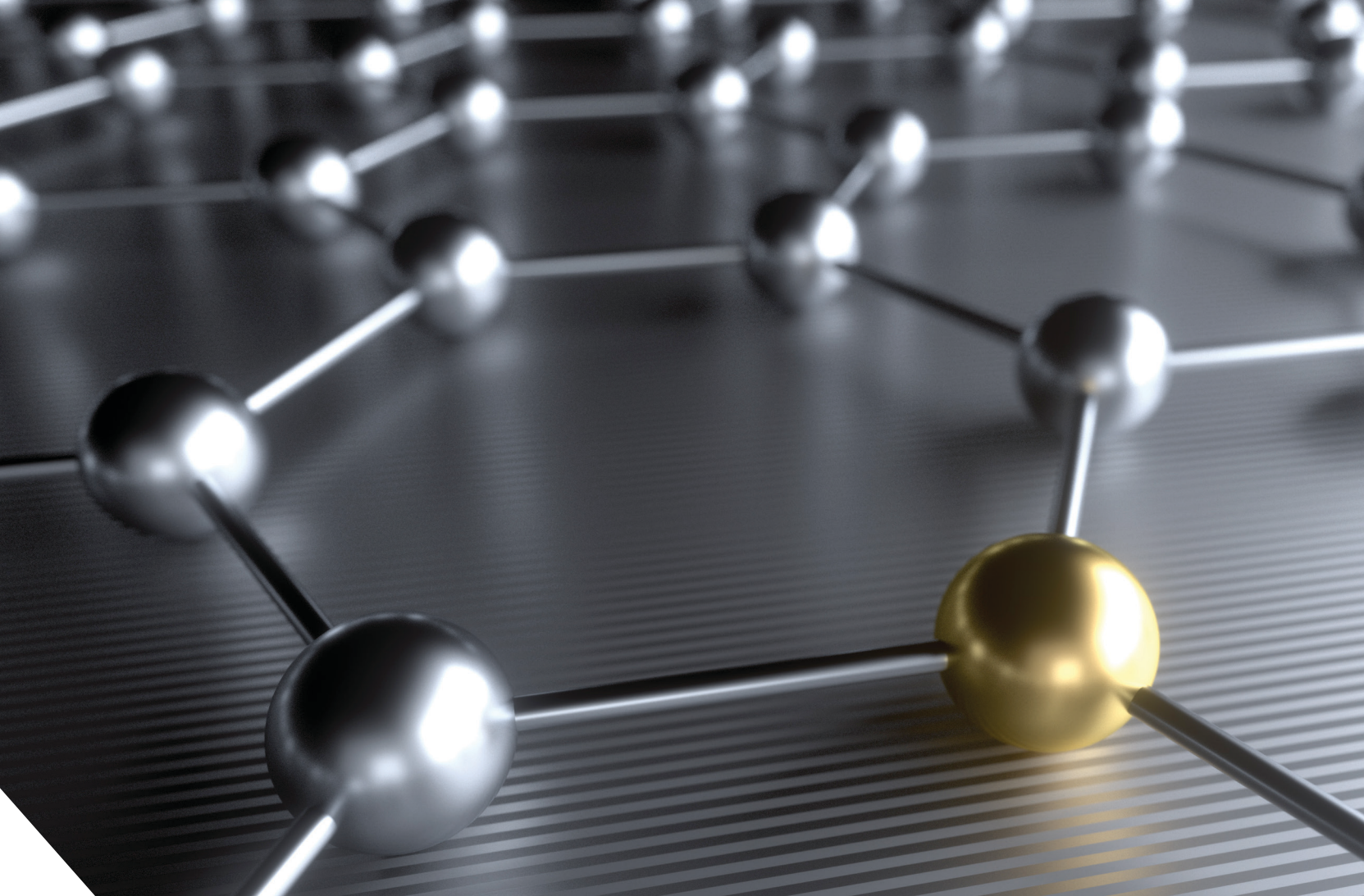
4) protection of biodiversity and sustainable development of agricultural productive space;

5) forestry and wood economy;

The strong performance of the tasks planned for 2013 was possible due to great involvement of all Board Members and fruitful cooperation between the partners and the experts of NCRD. I would like to thank you sincerely for your dedication and hard work in the implementation of the Centre's mission. I can firmly assure you that 2013 has ended with great results and that we enter the forthcoming year well-prepared for the challenges bestowed upon us.

Yours sincerely,

Prof. Jerzy Kącki, DSc, Eng., President of the Board



Prof.
Jerzy Kącki DSc, Eng.
President of the Board

OUR MISSION

The high quality offered by NCRD programmes is illustrated by numerous adaptations of scientific solutions into the Polish economy. Our mission is to support Polish scientific units and entrepreneurs in developing skills enabling them to create and implement solutions formed by scientific research. We are certain that the strengthening of the cooperation between Polish business and scientists successfully stimulates national economy and, in the long run, is highly beneficial for society.

PRESIDENTS OF THE COMMITTEES



COMMITTEE ON FINANCE

Janusz Rymsza DSc, Eng.



COMMITTEE ON STRATEGIC RESEARCH AND DEVELOPMENT PROGRAMMES

prof. Krzysztof Sacha DSc, Eng.



COMMITTEE ON IMPLEMENTATION OF OTHER TASKS

prof. Dariusz Jan Skarżyński DSc, DVM



APPEAL COMMITTEE

prof. Jan Lubiński DSc

MEMBERS OF THE BOARD

Dawid Berny MSc, Eng.

prof. **Marcin Chmielewski** DSc

Marek Cieśliński DSc, Eng.

divisional general pilot **Leszek Cwojdziński** PhD

prof. **Leon Gradoń** DSc, Eng.

Grażyna Henclewska MA

prof. **Marek Hetmańczyk** DSc, Eng.

Michał Jaworski MSc, Eng.

President of the Board prof. **Jerzy Kątcki** DSc, Eng.

Marcin Łata

Ryszard Łęgiewicz MSc, Eng.

Karol Lityński DSc, Eng.

prof. **Jan Lubiński** DSc

Andrzej Massel DSc, Eng.

Igor Mitroczuk DSc

prof. **Antoni Waldemar Morawski** DSc, Eng.

counsel **Kazimierz Mordaszewski**

Gniewko Niedbała DSc, Eng.

prof. **Maria Elżbieta Orłowska** DSc

dr hab. inż. **Artur Podhorodecki**

Igor Radzewicz - Winnicki DSc

dr hab. **Anna Rogut**

prof. **Piotr Łukasz Rutkowski** M.D., DSc

Janusz Rymsza DSc, Eng.

prof. **Krzysztof Sacha** DSc, Eng.

prof. **Dariusz Jan Skarżyński** DSc, DVM

prof. **Piotr Tryjanowski** DSc

dr hab. inż. **Krzysztof Piotr Wodarski**

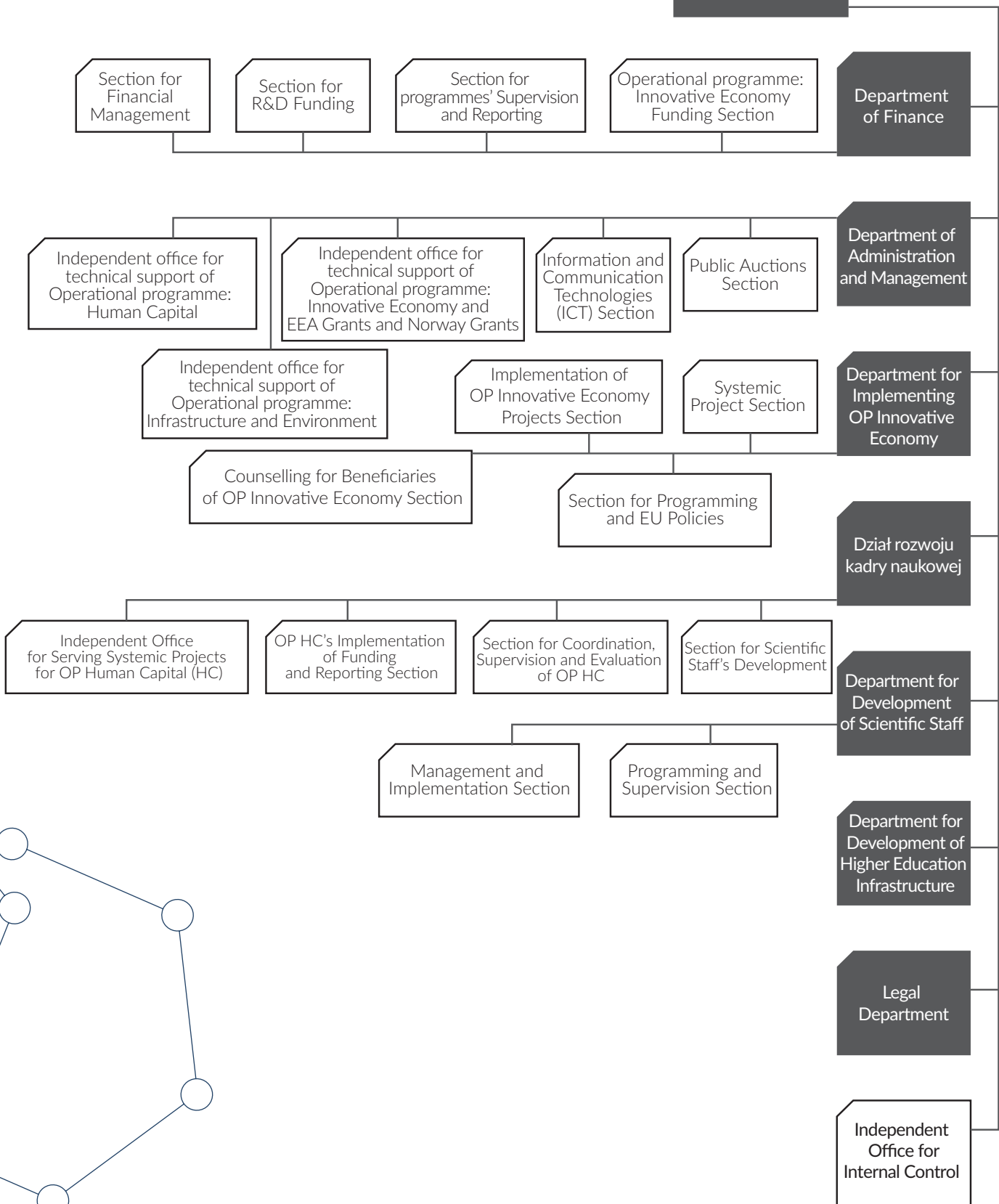
prof. **Piotr Wolański** DSc, Eng.

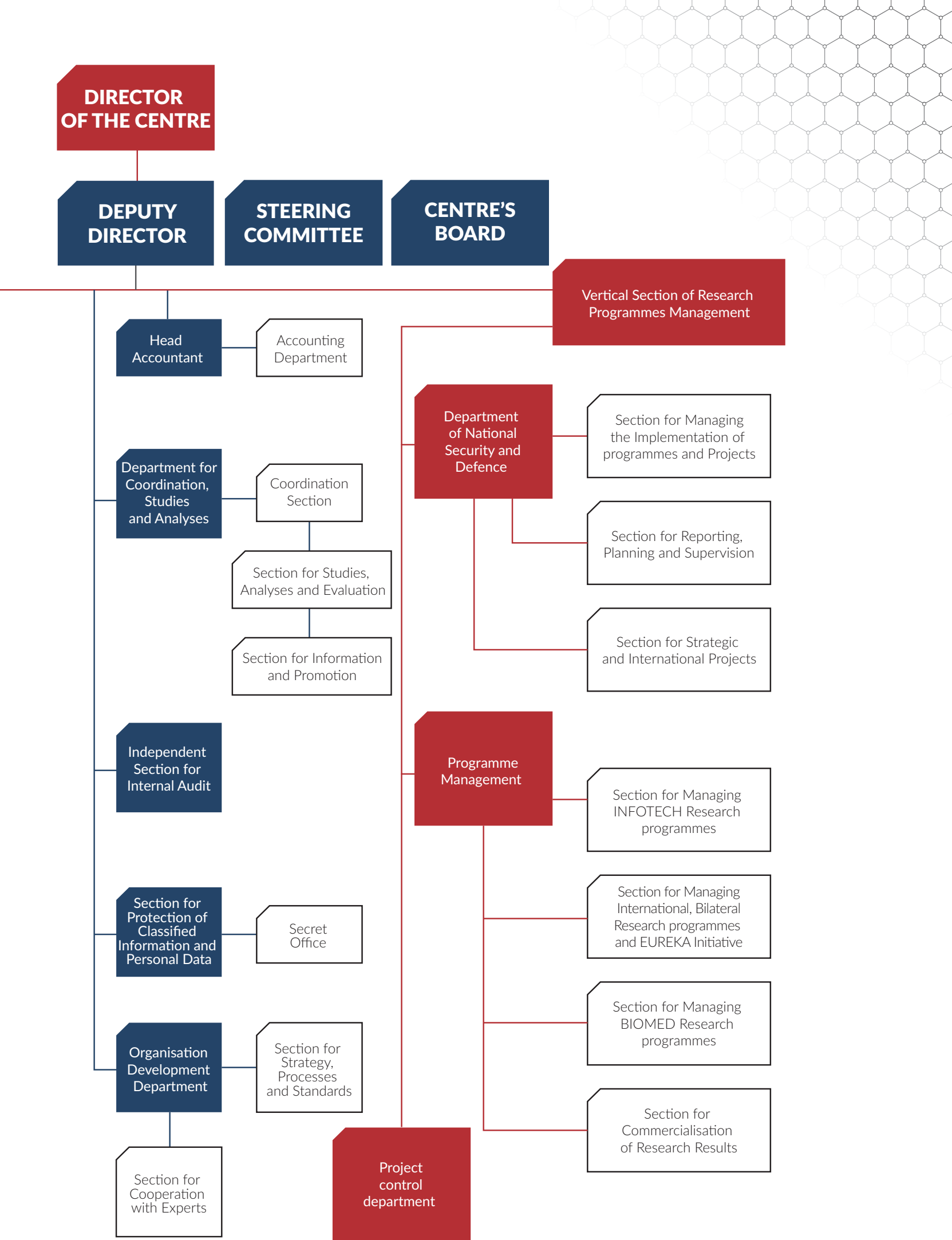
Wojciech Woropaj

ORGANISATIONAL STRUCTURE OF NCRD IN 2013

The Centre's organisational structure allows for a thorough realisation of NCRD's aims. This is partly due to the structural change utilised in 2014 – organisation has become more centralised and standardised, increasing the efficiency of the Centre.

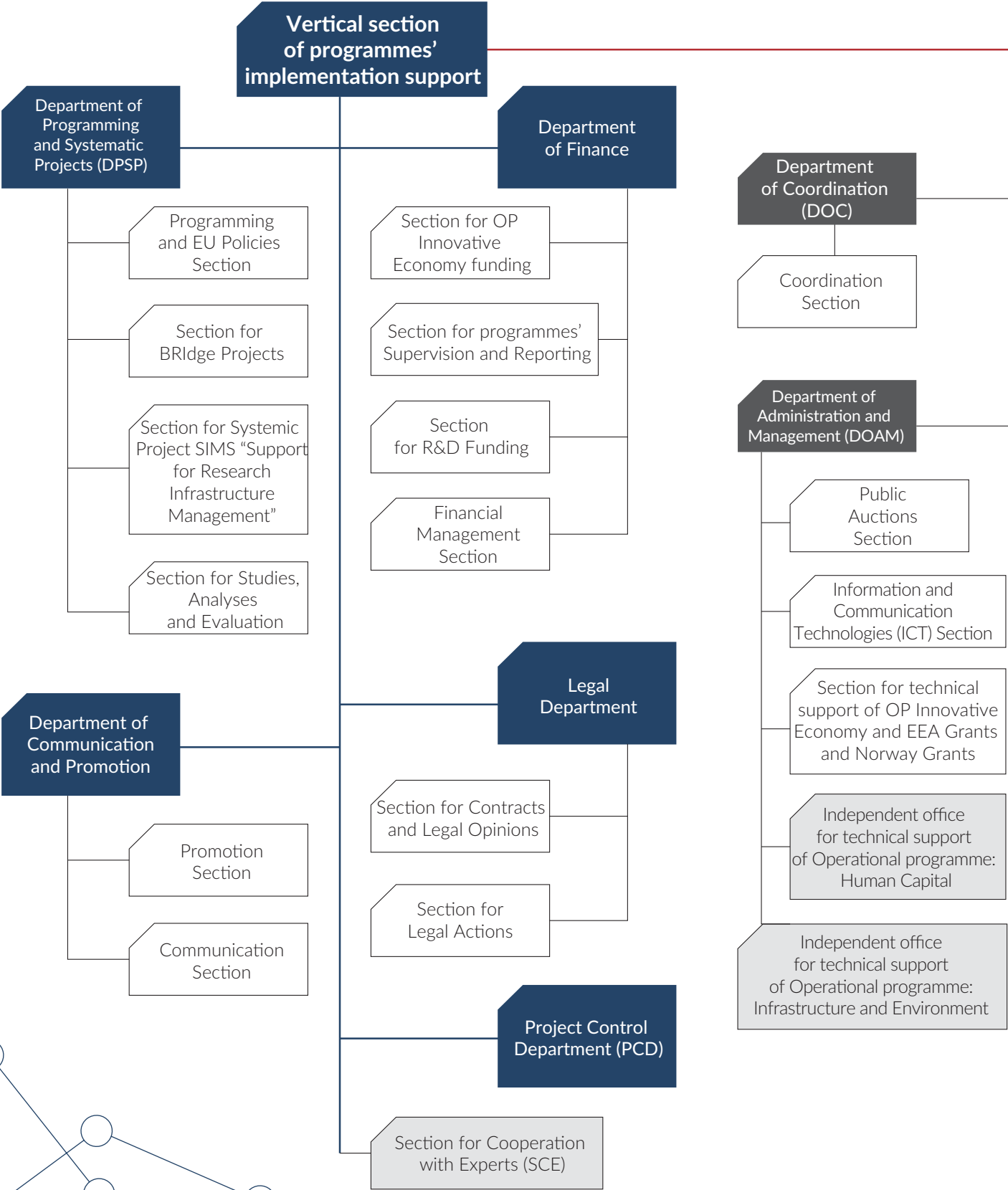
Vertical section of
structural funds and
organisational-economic matters

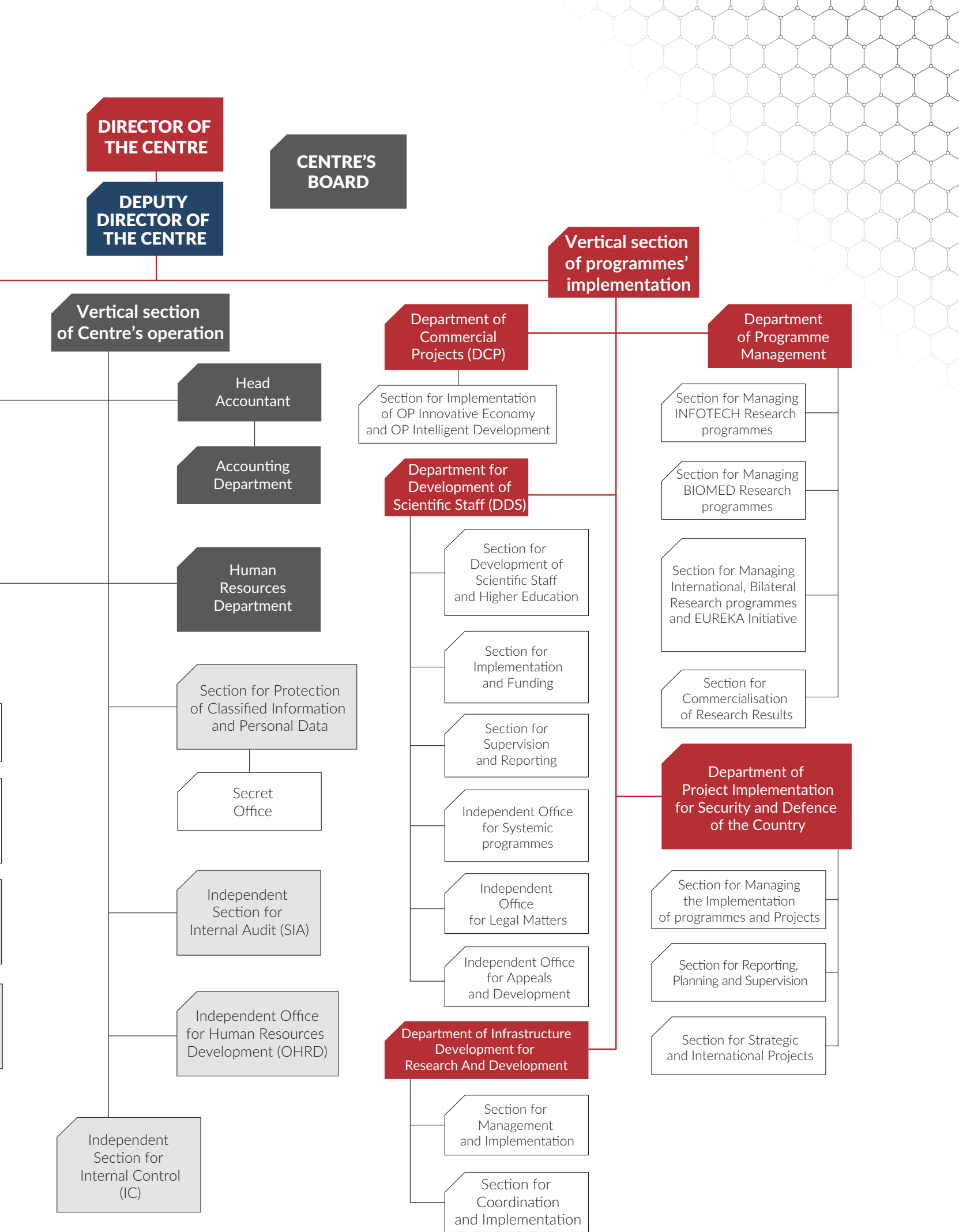




ORGANISATIONAL STRUCTURE OF NCRD IN 2014

STEERING
COMMITTEE





2013 IN NCRD

Serving the Community

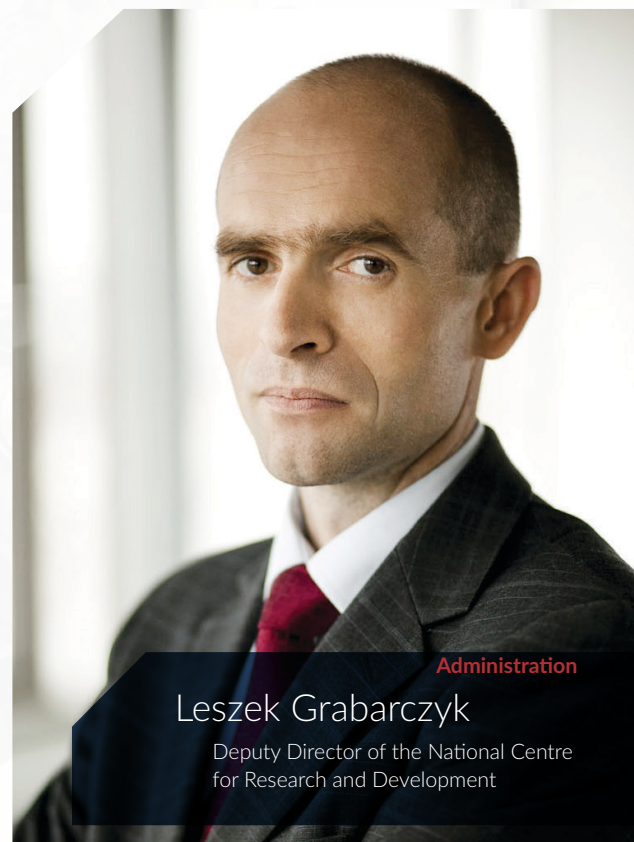
When describing what the National Centre for Research and Development has achieved in the past year, it is easy to forget the most important objectives amid the chaos of numbers and information. What is really important for one of the key institutions in Poland, is whether it can successfully influence Polish industries, not only in the near future, but for the coming decades.

The world's history has been written through the history of inventions and innovation, which significantly influence the situation of a country and the wellbeing of its citizens. The first ground-breaking invention was the wheel, appearing in Mesopotamia almost six thousand years ago. The next step was the introduction of printing by Gutenberg in 15th century. Accelerating the innovative process, the 18th century saw the invention of the steam engine. Since then, the rate of innovation surged, with solutions such as: the light bulb, the engine, the car, the plane, the computer and the mobile phone

being invented in the space of decades. These technologies have become the basis of the economic success of nations and the wellbeing of society. Nowadays, innovation is the key to knowledge-based economies' success. The economic and political triumph of countries is measured by the potential of their thinkers, who can change the reality and persuade customers to choose their solutions. Taking all that under consideration, the Sejm of the Republic of Poland (the lower house of the Polish parliament) constituted the National Centre for Research and Development, whose aim is to support Polish scientists and businesses in R&D. Inventions and technologies funded by NCRD have a direct influence on not only the country's economy, but also the lives of its citizens.

2013 has brought us a lot of valuable experience. The **National Centre for Research and Development** has expanded and improved its portfolio, introducing new and even more effective tools and methods to support the cooperation between business and science. Currently, the Centre can support R&D on every **Technology Readiness Level (TRL)**, which makes us an example for every other similar institution in Europe and enables us to support the beneficiaries from the formation of the idea until the successful commercialisation. Due to the constant modernisation of our competitions within EU Operational programmes, our portfolio is not only answering the participating scientists and entrepreneurs' needs, but also operates within the European funding scheme from the new financial perspective.

R&D budget in 2012 has reached a record number of **14.4 billion PLN** and was almost 23% higher than the preceding year. This shows well the actual situation and prospects for even wider cooperation of businesses with scientific units. The effects of our actions bring physical results in the form of the increase of the competitiveness of Polish firms around the world and the improvement of Poles' wellbeing.



Administration

Leszek Grabarczyk

Deputy Director of the National Centre
for Research and Development



Dariusz Michalak
vice-president of Solaris Bus
& Coach S.A.

Business

"Thanks to the cooperation with the National Centre for Research and Development in past years we were able to expand our research opportunities on the development of our products. One of the projects implemented with the cooperation with one of the NCRD projects, within the Innotech programme, is to create a bus with lower levels of noise and vibration. This venture will significantly increase the comfort of city bus travel in comparison to contemporary solutions."

"The Institute of Nuclear Physics Polish Academy of Sciences in Krakow (IFJ PAN) is working on building a modern facility to do research into cancer solutions - The Bronowice Cyclotron Centre (CCB). The heart of the facility is the cyclotron Proteus C-235, accelerating proton beams to almost the speed of light. Accelerated proton beams are already used to research the structure of nuclear material, in radiobiology and to test detector elements in, e.g. electronics sent to the cosmos. Protons from the cyclotron are also sent to one of the first European therapeutic stations (with gantry technology), enabling the precise radiation of the cancerous tumours in any location of the patient's body. One of the main advantages of this type of treatment, in comparison to the existing ones, is the fact that the proton beam does not necessarily influence tissue while penetrating the organism, and directs its destructive energy to the cancerous area.

The National Centre for Research and Development supervises the implementation of the project and supplies IFJ PAN with timely funding.

NCRD strongly supports the actions aiming at the final success. All stages of the construction and installation of the purchased equipment and personnel training are on schedule. The results from the first stage of experiments in CCB are being edited. First patients are expected to be treated in 2015."



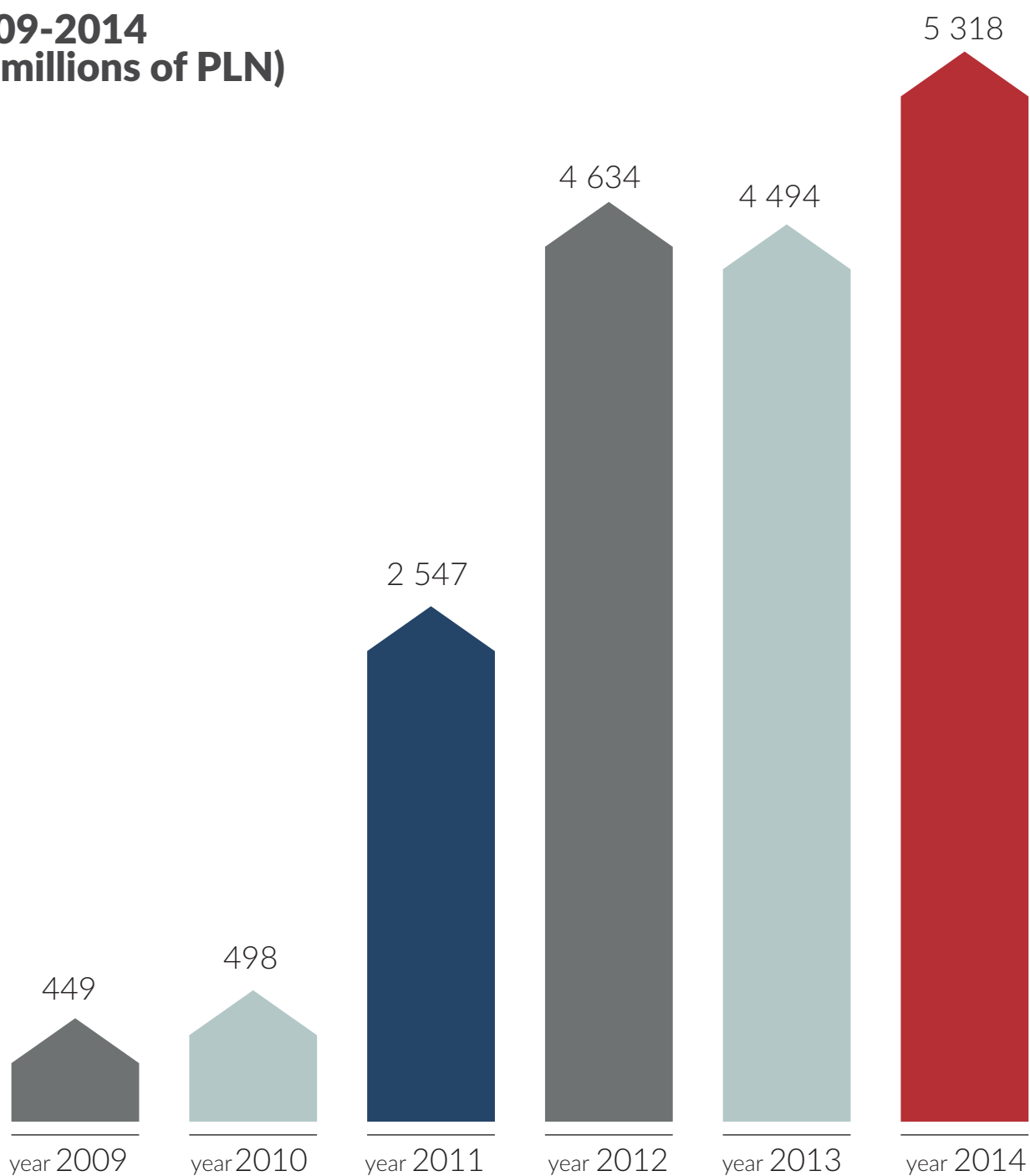
Prof. Marek Jeżabek
DSc, Director of IFJ PAN

Science



NCRD'S BUDGET

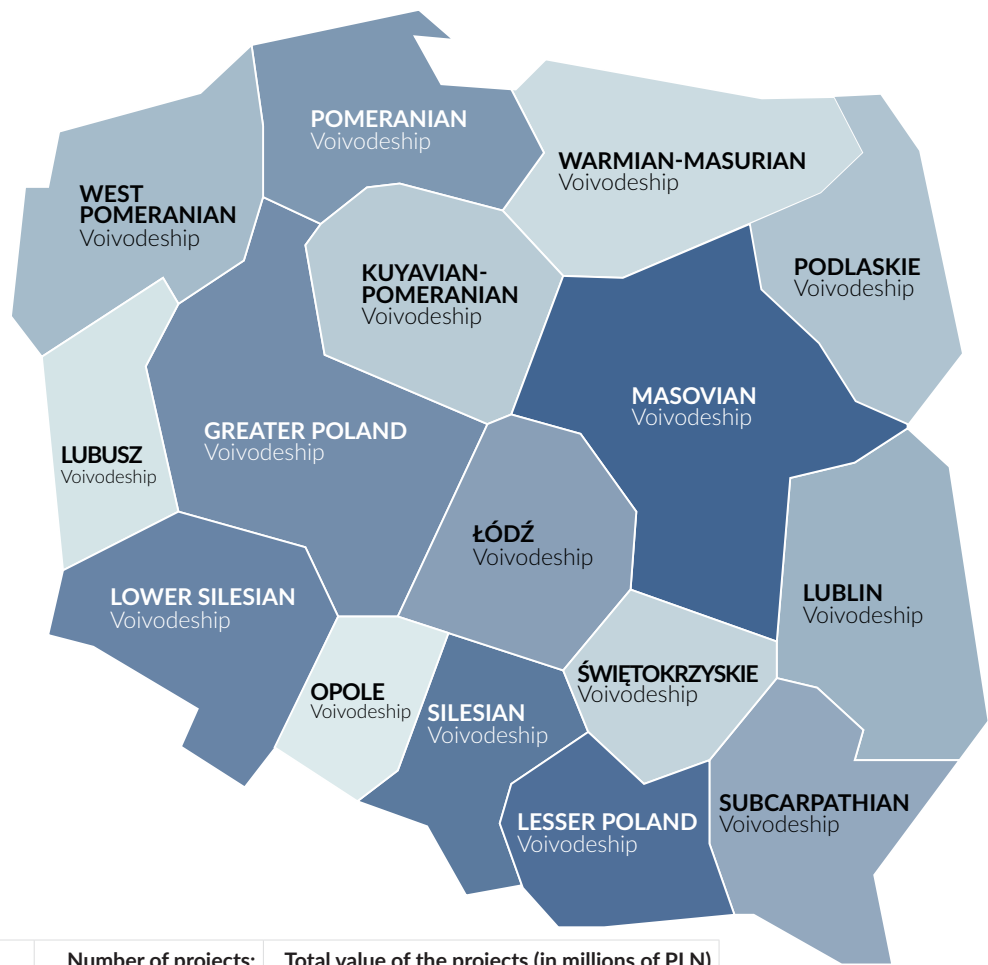
2009-2014
(in millions of PLN)



USE OF THE FUNDING

The National Centre for Research and Development puts great importance on the availability of the funding to the beneficiaries from all over the country. The highest activity is noted in three voivodeships: Masovian, Lesser Poland and Silesian.

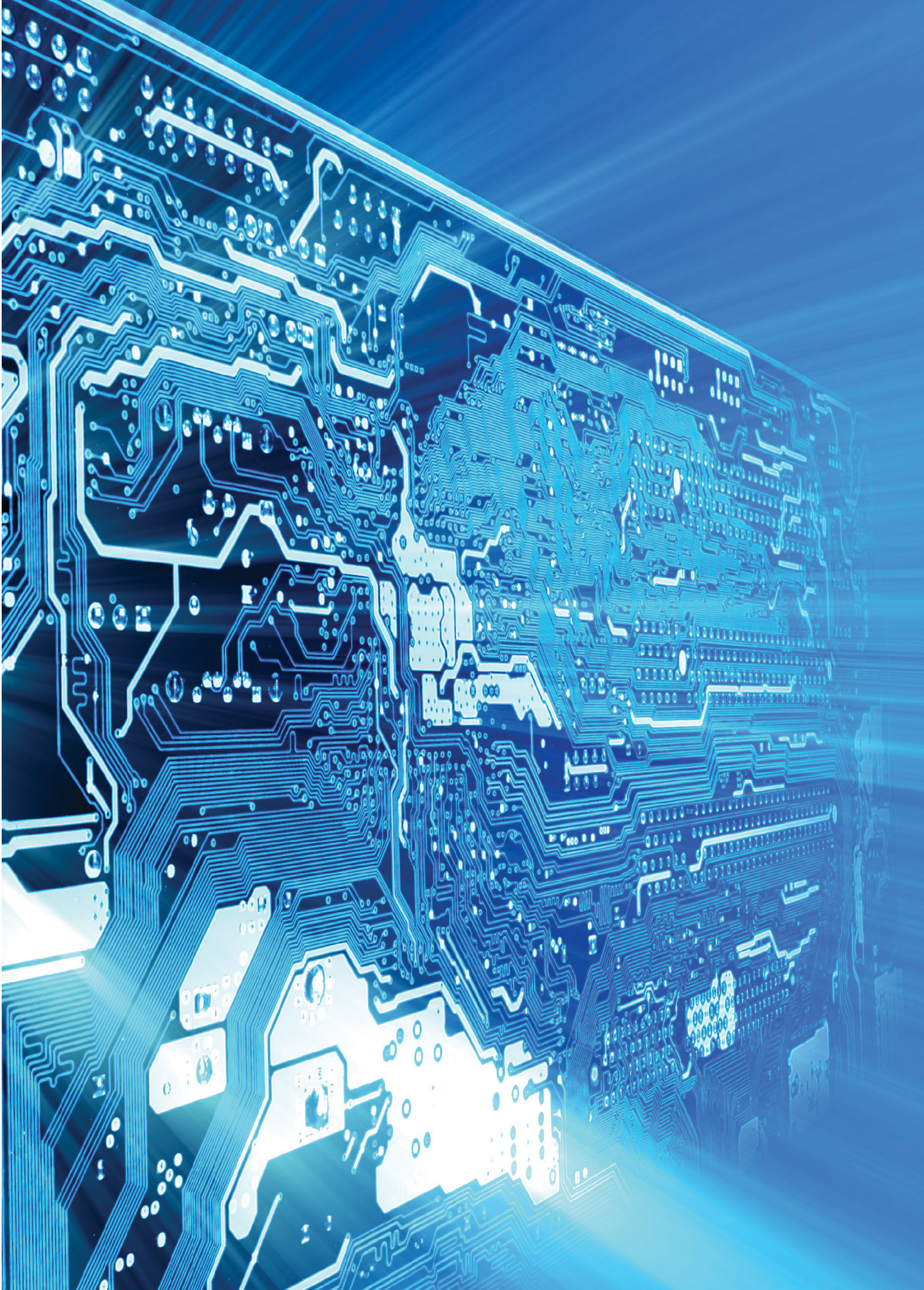
Number of undergoing projects and the value of funding in the particular voivodeships. (Data from the end of 2013)



Voivodeship:	Number of projects:	Total value of the projects (in millions of PLN)
Masovian	1351	8 669 PLN
Lesser Poland	497	2 749 PLN
Silesian	428	2 390 PLN
Lower Silesian	280	2 141 PLN
Greater Poland	366	1 948 PLN
Pomeranian	247	1 589 PLN
Łódź	193	1 103 PLN
Subcarpathian	128	822 PLN
Lublin	137	721 PLN
West Pomeranian	103	392 PLN
Podlaskie	49	343 PLN
Kuyavian-Pomeranian	91	280 PLN
Świętokrzyskie	58	278 PLN
Warmian-Masurian	45	172 PLN
Lubusze	31	105 PLN
Opole	49	103 PLN

Beneficiaries - data from the end of 2013.

TYPE OF BENEFICIARY:	NUMBER OF UNDERGOING PROJECTS:	TOTAL OF ADDITIONAL FUNDING (IN MILLIONS OF PLN)
Public University	1405	10 608
Consortium	813	4 264
Research Institute	477	2 682
PAN Scientific Unit	215	1 368
Small enterprise	226	1 289
Micro enterprise	247	999
Private University	260	863
Large enterprise	158	596
Foundation	37	525
Medium enterprise	179	502
Other	17	98
Association	19	11
TOTAL	4053	23 805



KALENDARIUM



JANUARY 4TH HALF OF THE EU FUNDING FOR SCIENCE HAS BEEN DISTRIBUTED

More than 9 billion PLN from the European funds has been distributed between scientists, universities and entrepreneurs, implementing projects of such nature as: research, infrastructure and higher education didactics development. This record number comprises of 50% of EU funds given to Poland for science and education until 2015. From September 2011, NCRD is charged with distributing them.

JANUARY



JANUARY 23RD 400 MILLIONS FOR PRO-ECOLOGIC TECHNOLOGIES DEVELOPMENT

GEKON - Ecological Concepts Generator - is, for a first time in Poland, a venture that finances innovative and ecological technologies, from research to implementation. The funding will be given for the research, developmental works and the implementation.

FEBRUARY



MARCH 19TH CYBER-OKO (CYBER-EYE) HAS BEEN DUBBED POLISH INVENTION OF 2013

Cyber-eye is a device that has the potential to help the diagnosis and the rehabilitation of comatose patients. It comprises of an infrared camera and specialist programme which can interpret eye movement. It was devised by the scientists from Gdańsk University of Technology.

MARCH

FEBRUARY 11TH EU'S NEW BUDGET: 441 BILLION PLN FOR POLAND

During 2014-2020 period, Poland will be given the total of 105.8 billion EUR (441 billion PLN). 72.9 bn EUR will be allocated for the Cohesion Policy, which is 4 bn more than currently allocated.



JANUARY 17TH NEW EDITION OF TOP 500 INNOVATORS

160 young scientists will soon be tutored in how to successfully commercialise the research results by the world's biggest leaders of innovation.



FEBRUARY 14TH ROUND TABLE MEETING FOR INNOVATION

Dozens of higher education rectors, CEOs and representatives of leading firms interested in cooperation between science and business, incl. Alcatel Lucent, Samsung Electronics, Microsoft, Google, KGHM Polska Miedź S.A., PGNiG S.A., and VOX Capital Group, as well as the laureates of the government program TOP 500 Innovators assembled at a symbolic round table.



JANUARY 21ST 800 MILLION FOR STRATEGMED - THE STRATEGIC PROGRAM FOR MEDICAL SECTOR

STRATEGMED is the first program based on the National Research Program, which was the result of the science reformation. It claims that diseases of affluence are the biggest health threat of upcoming years.



MARCH 5TH INNOVATIVE SOLUTIONS OF POLISH SCIENCE AT CEBIT 2013 EXPO

Polish scientists again presented their projects at the expo, this time joined by beneficiaries of NCRD-funded projects. They were displayed at "LAB" - the stand of the Ministry of Science and Higher Education, where the expo's participants had a chance to explore the innovative solutions of Polish Universities and Institutes.





MAY 8TH
400 MILLION PLN FOR
IT INFRASTRUCTURE
OF SCIENCE

Applications for additional funding are open to scientific units, including those that are a part of a scientific network, scientific or scientific-industrial consortium, universities, units within MAN (Municipal Academic Networks for Science, pol. miejskie akademickie sieci naukowe), Large Capacity Computers' Centre, as well as non-profit organisations working within those units.



JUNE 17TH
THE NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT AT THE 17TH SCIENTIFIC PICNIC

The aim of this venture is to popularise the knowledge from various science disciplines through experiments and tests. This cyclical event is probably the biggest outdoor scientific fixture in the world. The Picnic had almost 200 stands from 21 different countries, presenting almost 1000 various experiments.



APRIL 10TH
FRAUNHOFER MOEZ
BECOMES NCRD PARTNER

The Institute that has signed the contract with NCRD is a part of German Fraunhofer-Gesellschaft, a research organisation converging over 80 scientific research centres. The research fields include: health, nutrition, environment, security, information and communication, transport, energy and production technology. Their partners and commissioners are industrial and service enterprises, as well as public institutions.



JUNE 13TH
NEW TECHNOLOGIES
IN TRANSPORT

During the 4th Region Congress in Swidnica, the annual meeting place for businesses, entrepreneurs and investors with local governments' representatives, the discussion panel for new technologies in transportation took place.



APRIL

MAY

JUNE



MARCH 21ST
NCRD
at TEDxWarsaw

441 TED (Technology, Entertainment, Design) is an interdisciplinary series of conferences that are devoted to "Ideas worth spreading". Independent, locally organised TEDx events are organised all over the world based on this format, with Warsaw hosting for the fourth time.



JUNE 4TH
NEW SYSTEM FOR INNOVATION FUNDING
IN POLAND

Bridge VC program has been commissioned in order to prevent low private capital involvement in R&D sector. It is a new tool in Poland offering public-private support for commercialisation of R&D solutions, using venture capital funding.



JUNE 20TH
SIMS - NEW NCRD'S PROGRAM SUPPORTING RESEARCH IN INFRASTRUCTURE MANAGEMENT

120 scientists, heads of laboratories, and those responsible for planning scientific development in their institutions will take part in the internship programme abroad, held in prestigious universities managing big research infrastructure or firms and research institutes, all within the SIMS project.

APRIL 30TH
HALF A BILLION
FOR AERONAUTICS
INNOVATION

The first edition of InnoLot competition, funding R&D in the aeronautics industry has just begun. The global aeronautic industry is one of the few sectors that is incredibly influenced by Polish researchers and scientists. Many engine components and aeroplanes parts for firms such as General Electric, Pratt & Whitney, Airbus and Boeing have been developed in Poland.





JULY 10TH
POSITIVE PUBLIC
AUCTIONS LAW CHANGES
FAVOURABLE TO SCIENCE

The changes predict the increase of the boundaries which require the use of the act on public auctions for delivery and services from the field of research to the boundaries set up in the EU directive: up to 200,000 EUR for the universities and up to 130,000 EUR for scientific institutes. Thanks to these changes, Polish scientists will have a considerably better research environment.



SEPTEMBER 16TH
NCRD's DIRECTOR
MEETS WITH TAIWANESE
SCIENTISTS

During the meeting, many important matters have been discussed, including mechanisms for financing research by two government agencies - the National Centre for Research and Development and National Science Centre (NSC). The Taiwanese were particularly interested in the private and public R&D funding schemes in Poland.



OCTOBER 28TH
THE 1ST POLISH-AMERICAN
INNOVATION BRIDGE UNDER
THE PATRONAGE OF The Ministry
of Science and Higher Education
of Poland

The Bridge is a joint initiative of the U.S. Consulate General, AGH University of Science and Technology, and The TOP 500 Innovators Association. The venture promotes cooperation of science with business (using the example of the American format), encourages young people to undertake innovative practices and presents diverse aspects of innovative culture's development.



JULY 26TH
POLAND NEEDS
TO STAY FOCUSED
ON INNOVATION

Public spending on R&D, in relation to GDP, has been appropriately levelled. Now it is time to increase private funding – this is the conclusion of the "Commercialisation of research in Poland - barriers and opportunities to overcome them" report.



JULY

AUGUST

SEPTEMBER

OCTOBER



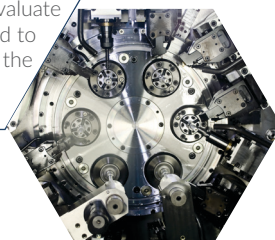
JULY 17TH
YOUNG MILLIONAIRES
OF POLISH SCIENCE

41 young scientists will receive a total of 43 million PLN for their innovative scientific projects. Despite their young age, they will also receive the unique opportunity to manage their own research team. NCRD chose the winners of the "Leader" program, which supports the most innovative projects of young (under 35) scientists and their experience in leading their own research team.



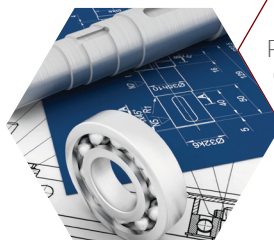
SEPTEMBER 18TH
THE NATIONAL CENTRE
FOR RESEARCH AND DE-
VELOPMENT STAKEHOLDERS
COMMITTEE

Keeping in mind the best interests of the Centre, and the quality of its services, the Stakeholders Committee has been appointed. It will comprise stakeholders groups' representatives, who will give evaluate the Centre's actions. It's aimed to increase the effectiveness of the NCRD



AUGUST 28TH
NCRD AND KGHM:
TOGETHER FOR INNOVATION

200 million PLN will be allocated to the research on compilation and implementation of innovative technologies in the industry of non-ferrous metals. The funding will allow for the increase in the technological and technical level of the Polish non-ferrous metal industry, as well as deepening of Polish involvement in metalwork, metallurgy, processing and new materials.



OCTOBER 26TH
INNOVATIVENESS IN
POLAND SURGES

The Central Statistical Office of Poland has published the newest data on R&D spending in 2012. The spending has reached record levels of 14.4 billion PLN and topped the previous year by almost 23%.

OCTOBER 30TH
NCRD AND WORLD
BANK SIGN
THE CONTRACT

One of the main elements of the contract with the World Bank is the compilation of assumptions for the assessment form to measure the effects of projects co-financed by the NCRD on economic development of the country.



NOVEMBER 8TH
OVER 70 BILLION FOR
EUROPEAN INNOVATIONS
HORIZON 2020

The newly announced EU program is the biggest venture of this type in the world. It's aimed at increasing the competitiveness of European science and improve its position in the global race.



DECEMBER 6TH
50 MILLION PLN FOR
R&D IN THE FIELD OF ROAD
CONSTRUCTION

The National Centre for Research and Development and the General Director for National Roads and Motorways formed a joint venture financing R&D in the field of road construction. Both institutions have pledged to allocate 25 million PLN each.



DECEMBER 16TH
TANGO - COMMON
VENTURE OF NSC AND
NCRD FOR PRACTICAL
UTILISATION OF BASIC
RESEARCH

Tango aims to aid scientific units and universities in introducing modern technologies, products and services to the market, as well as strengthening the cooperation between scientists and entrepreneurs.



NOVEMBER

DECEMBER



NOVEMBER 28TH
NCRD'S DIRECTOR
APPOINTS STAKEHOL-
DERS COMMITTEE

Prof. Krzysztof Jan Kurzydłowski, DSc, Eng., the director of the National Centre for Research and Development has appointed the Stakeholders Committee – a new, independent body, whose task will be to recommend solutions to improve the functioning of the Centre.

DECEMBER 3RD
PROF. LENA KOLARSKA-
BOBIŃSKA IS THE NEW
MINISTER OF SCIENCE AND
HIGHER EDUCATION

The President Bronisław Komorowski has appointed Prof. Lena Kolarska-Bobińska as the new Minister of Science and Higher Education.



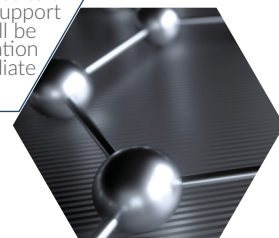
OCTOBER 31ST
COOPERATION AGRE-
EMENT BETWEEN NCRD
AND SINGAPORE AGENCY
FOR SCIENCE, TECHNOLOGY
AND RESEARCH (A*STAR)

The agreement presumes the continuation of the cooperation in R&D. One of the co-planned ventures is to announce and manage the competition for bilateral R&D projects in 2014.



DECEMBER 16TH
NEW FORMULA
FOR SUPPORTING
ENTREPRENEURS IN R&D

The new formula states the requirement for obtaining the funding is for the beneficiary, or their partner, to implement the results of their R&D works. The support for entrepreneurs will be given for implementation of high and intermediate technology.



SELECTED PROJECTS EXECUTED WITH THE HELP OF NCRD FUNDING

The National Centre for Research and Development is currently engaged in the implementation of over 4,000 projects. The Centre's experts work hard every day to support scientists and entrepreneurs effectively and efficiently in their quest to find progressive solutions for our economy.

We have selected three projects we are currently working on to show in greater detail, as they have had a significant impact on both economic and scientific development of Poland in the past year.

Graphene: supermaterial from a pencil

Research on the production methods and the use of the new, incredible material is ongoing all around the world.

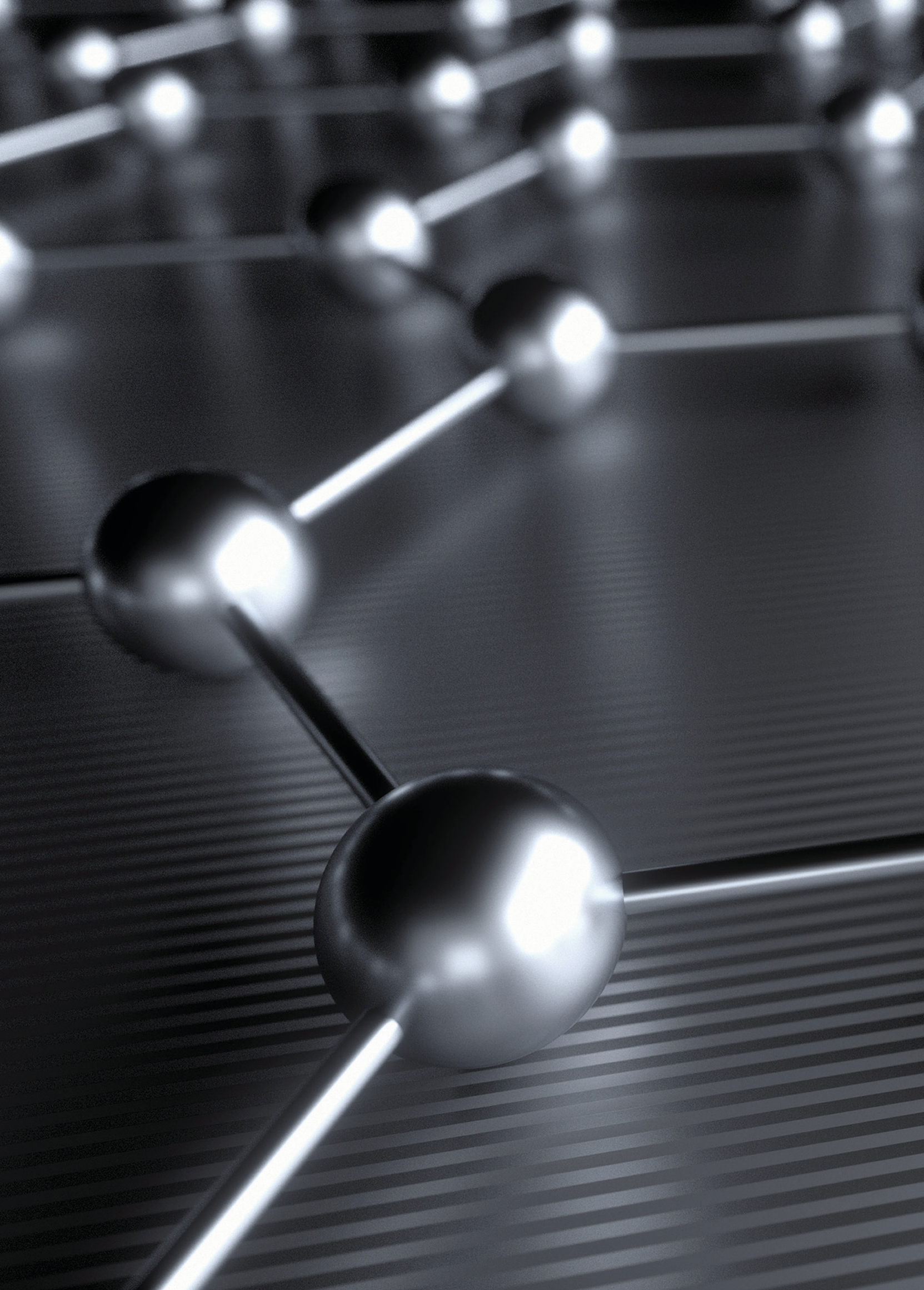
Flaris Lar 1

Funded by NCRD, Flaris Lar 1, has become a sensation during international trade fair in Paris

Robot is a man's best friend

Proteus is a fine example of a successful cooperation of the Polish scientific consortium on the project dealing with high-tech industry, which should culminate in a commercial success - setting up a production line for specialised consumers.





GRAPHENE: Supermaterial from a pencil

As the possibilities for silicon-based electronic development are somewhat limited, many say that it might be the twilight of its domination. Even though the efficiency of silicon microprocessors has been increasing, as per Moore's Law, doubling almost every two years, the possibility of maintaining such a rate seems improbable. In recent decades, reduction of the size of silicon's basic elements, their transistors or their paths has been used as a mean to increase their efficiency, while limiting the energy use.

In 1985 the 1000-nanometer wide paths were considered cutting-edge technology. Intel's newest integrated circuits are produced in 22-nanometer technology. Some of their elements are as thin as two or three atoms of silicon, and thus the potential for a size reduction is slim. In order for electronics to still develop, there needs to be a new material that has more useful properties - silicon's successor, in other words. Graphene seems to fulfil these expectations - its surprising properties may imply that it has the potential to become even more popular than silicon.

Graphene has barely been around for ten years - despite existing in pencils, its properties unknown to scientists. When we write with a pencil, we leave traces of graphite, crystalline carbon, on the paper. In 2004, Andre Geim and Konstantin Novoselov, two physicists from Manchester, had an idea to remove consecutive layers of the powder, using adhesive tape, eventually leaving the final layer, only one atom thick. This led them to a 2-dimensional structure comprised of carbon atoms densely packed in a regular atomic-scale chicken wire (hexagonal) pattern - graphene.

Even though the aforementioned method does not seem particularly complicated, its discovery excited the electronics world and earned the scientists the Nobel Prize. It is unsurprising, taking into consideration the unique properties of graphene which make it a real "supermaterial". First and foremost, it is a great electricity conductor, with electrons having almost 100x the velocity of silicon, as well as a good heat conductor, which facilitates cooling of the circuits. Its mechanical features are also impressive - despite the fact that it is one of the thinnest and lightest materials known to man - a plate with a 1 square kilometre area would weigh less than a kilogram. It appears to be one of the strongest materials known, with a breaking strength over 100 times greater than a hypothetical steel film of the same thickness. Graphene is malleable enough to be bent within 20%, as well as being almost transparent, with 97% light translucency.

All of this makes the production process and potential uses of graphene a popular research subject all over the world. The stakes are high - the new material has incredible potential, but before it is to be reached, many difficulties will occur. For example, the electrons' velocity causes

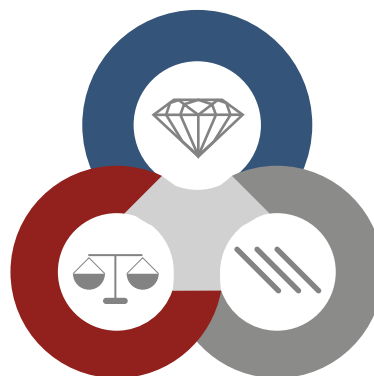
Silicon revolution born in Poland

When a Polish chemist, Jan Czochralski, discovered a method to measure crystallisation rates of metals in 1916, no one suspected he could have a place in the history of technics, as it wasn't until the mid-century when it began to be used to obtain single crystals of semi-conductors, incl. silicon, used to build developing electronics. The Czochralski Method has become a catalyst for semi-conductor revolution: during the next decades, devices with silicon-based chips, ranging from radios to supercomputers, have become integral to our world, influencing our lifestyle so significantly that silicon can be dubbed the most important material of the past century.

the transistors which are made from graphene to be able to switch with almost 200 times higher frequency than the silicon. The design, however, will be difficult, as silicon transistors tend to conduct electricity after the voltage reaches a certain level. If it is not, the electrons remain within the structure - meaning that with voltage control, the transistor can be turned on and off. Graphene does not offer the same solution, as it has remarkably high electron mobility - meaning that it will conduct electricity, regardless of whether the voltage is high enough. Just last year, the proposition to use the negative resistivity phenomena, allowed the graphene circuit to act as a transistor with an incomparably higher speed than the silicon. However, the actual compilation of all the elements into the circuit still seems an optimistic concept, and the mass production of graphene chips is predicted to start in around 10 years time. However, other graphene products can hit the market sooner, due to graphene's extremely wide applications - scientists claim it could be used to develop extra capacious accumulators and batteries, flexible touch screens, and water desalinating filters.

The race to collect graphene-based patents has been joined by Polish scientists, and the 15 projects with the greatest potential have gained additional funding from the National Centre for Research and Development, within the GRAF-TECH programme. The diversity of the initiatives, e.g. working towards graphene-based ink; protecting documents; transparent heating devices to be placed on windows and lenses; and light and spacious hydrogen tanks, filled with graphene composite (as per the talk with prof. Piotr Kula, PhD, head of the GraphRoll project), is the best indicator of versatility of crystalline carbon. The results of the projects will be known in 2016.

Hitherto, the biggest success of Poles – by a group of scientists led by Włodzimierz Strupiński, DSc, Eng.- is the industrial method of production of graphene plates, patented in 2010. The group is the first in the world to obtain the highest quality material, perfect for the production of transistors or diodes, and using just standard machinery. If graphene really is the silicon of 21st century, professor Jan Czocharlski has some worthy heirs.



Graphene plate with a 1km² area would weigh less then a kilogram

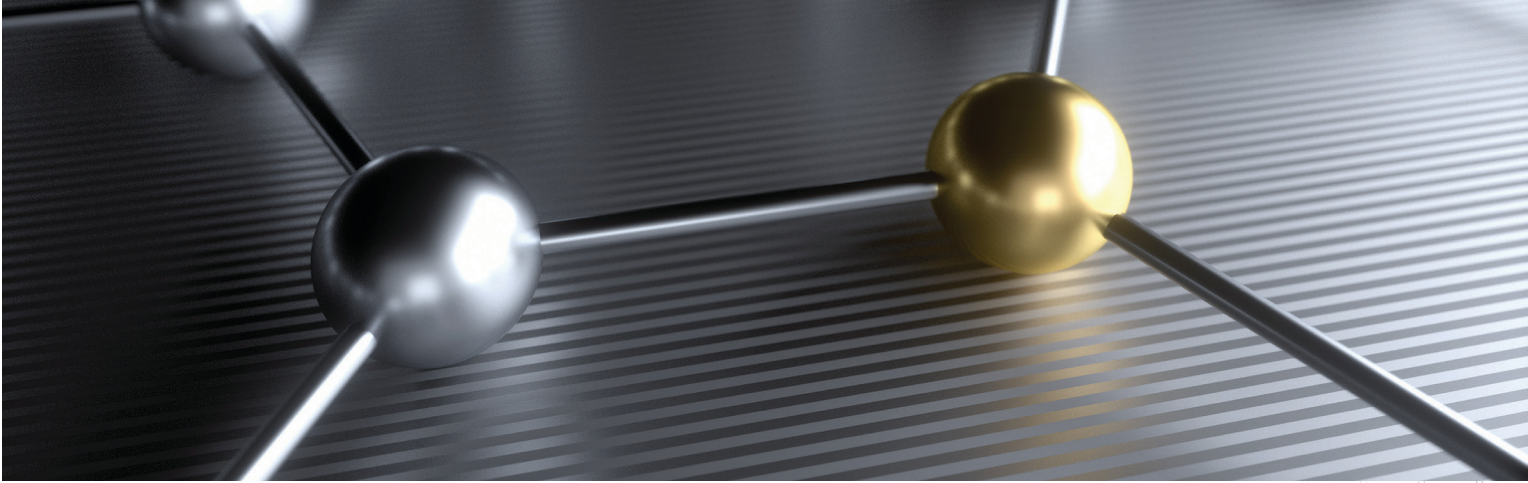
It appears to be one of the strongest materials known, with a breaking strength over 100 times greater than a hypothetical steel film of the same thickness.

Graphene is malleable enough to be bent within 20%, as well as being almost transparent, with 97% light translucency.



Włodzimierz Strupiński, DSc, Eng.

In 2010, a team from the Institute of Electronic Materials Technology (ITME), headed by Włodzimierz Strupiński, DSc, Eng., invented the first ever technology allowing for the production of high quality graphene that is also cheap. Nano Carbon started commercial production and sales in December 2013.



THE LIST OF GRAF-TECH PROJECTS



TITLE OF THE PROJECT	NAME OF THE CONSORTIUM'S LEADER
Ceramic composites with graphene, as cutting tools and parts of the machinery with unique properties - CERGRAF	Warsaw University of Technology
Epitaxial growth of graphene on metallic surfaces - GRAFMET	Institute of Electronic Materials Technology
Graphene magnetic field sensors with industrial applications - Grafmag	Industrial Research Institute for Automation and Measurements PIAP
Graphene pastes and inks for printing conductive paths and layers with applications in documents protection - GRAFINKS	Warsaw University of Technology
Graphene coating of sprockets and plain bearings - Graphtrib	Industrial Research Institute for Automation and Measurements PIAP
Graphene, generation flow sensors - FlowGraf	University of Warsaw
Nanostructured graphene for reversible hydrogen storage - GraphRoll	Technical University of Lodz
Innovative graphene-titanium engine valves with increased usability properties - InGrafti	Motor Transport Institute
Multifunctional graphene biosensor for medical diagnostics - BI-SENSO	West Pomeranian University of Technology
Polyurethane nano-composites containing reduced graphene oxide - PUR-GRAF	Gdańsk University of Technology
Modern, graphene-containing composites based on copper and silver with applications in energy and electronics industries - GRAMCOM	Institute of Electronic Materials Technology
Transparent, graphene-based protective and heating layers on optical elements - OPTICRAF	Institute of Electronic Materials Technology
Ultrafast graphene photodetectors - Photo-graph	Warsaw University of Technology
Ultrafast optical fibre laser based on graphene - UltraGraph	Wrocław University of Technology
Producing inks and printing pastes based on graphene and compiling a method to print on the surfaces, with applications in printed elastic electronics	University of Łódź

HYDROGEN CAR VIABLE IN A MATTER OF 10 YEARS

Talk with Prof. Piotr Kula, DSc, Eng.



**prof. dr hab. inż.
Piotr Kula**

What field does your team work in?

For the past 20 years we've been dealing with hydrogen storing solutions. The Institute of Material Science (at Łódź University of Technology) has been doing simultaneous research on properties of carbon allotropes and their carbon layers. When Andre Geim and Konstantin Novosiolov received the Nobel Prize, we decided to take a look at the new material - and our project is the result of that. We look at the large-scale sheets of polycrystalline graphene. I think that soon enough we will be able to present a graphene the size of a piece of paper, which will be a world-renowned accomplishment. We plan for industrial production technology of this sort to be our final result.

Is the technology truly innovative?

I always say that we do nothing more than developing the technology discovered by a brilliant Polish scientist, Prof. Jan Czochralski. In short, the perfect solution would be if the carbon atoms in graphene, bonded hexagonally, would adjoin themselves to the first hexagon infinitely. Graphene, however, is a very chimeric material and has trouble forming bigger sheets. However, we managed to produce single hexagons with a 3mm diameter. Polycrystalline graphene is made by joining the single sheets (called mono crystals) into the bigger ones. This type of graphene could be applied in the production of carbon material reversibly storing hydrogen, to be used in the construction of hydrogen storing containers. It would be a crucial and novel technology. The biggest issues with the con-

tainers hitherto is their weight, and the safety of the stored hydrogen. Due to the discovery of graphene, which is light and very adsorptive, I believe that in 10 years time the streets will see cars with graphene tanks.

What was the NCRD's role in your project?

The project is being implemented within the GRAF-TECH program, managed by the NCRD, cooperating with Seco/Warwick S.A. consortium. The National Centre allowed us to undertake crucial research on graphene-based products in Polish research centres and successfully inspired businesses to co-finance some of it. Their actions are consistent with EU policies on science within the 2014-2020 period, which see graphene as one of the priorities.

Jan Czochralski

One of the greatest Polish scientists, who greatly influenced the development of modern technics. His mono crystal obtaining method, known as the Czochralski Method, has overreached its times for decades and allowed for the development of electronics. Nowadays all devices contain integrated circuits, diodes and other silicon monocrystal-based elements, obtained by his method. In the special Act, **Polish Sejm dubbed the year 2013 the Year of Jan Czochralski.**







FLARIS LAR 1

Funded by NCRD, Flaris Lar 1 became a sensation at the international trade fair in Paris

The aeronautics industry is one of the most innovative sectors in Poland. The Poles have always been world class: both before WWII and in the late 20th century they created many successful, often visionary constructions. Thanks to the NCRD funding, an ultralight jet plane, which could revolutionise the world market for small jets, has been constructed in Lower Silesia.

The proof of its quality is the fact it was dubbed one of the first biggest innovations at the 50th International Paris Air Show Le Bourget in June

2013, where it premiered. Aeronautics experts were not the only ones expressing particular interest, but also visitors, and, most importantly, potential buyers.

Flaris Lar 1 is a small, ultralight, one-engine "family jet" that can transport 4 people. It has been designed as a personal transportation vehicle, fulfilling the need for fast travel, and, as the inventors claim, could be a competition for car travel. Weighing no more than 700 kg and made



with the pre-preg carbon fibre technology, it runs on a small jet engine PW610 with a 6.5 kN thrust, which allows for 700 km/h maximum velocity. Takeoff weight is 1500 kg, which is approx. 1000 kg less than any other jet available on the market. It has an intercontinental range of 2500 km, and it can reach the maximum altitude of 14,000 meters.

The distinctive shape - the fuselage looking like a drop of water, engine in the rear, half-elliptical wing - and sophisticated aerodynamics guarantee excellent aero-properties. The creators assure that it is extremely easy to pilot, and an amateur pilot license is enough. "We believe that, thanks to its extraordinary features: easy piloting, simple and light construction, and effortless, safe and cheap use, that Flaris Lar 1 will revolutionise the market of small jets" says Rafał Ładziński, co-creator. Reinforced construction of the landing gear, as well as placing the engine over the fuselage allows for takeoff even from grassy airports. It requires only 250 m of unpaved runway and is easy to store, with its small dimensions (wingspan: 8.68 m, length: 8.32 m, height: 2.43 m)

and unique montage of the wings, which can be removed and attached over the jet. Folding and unfolding the wings takes just a few minutes.

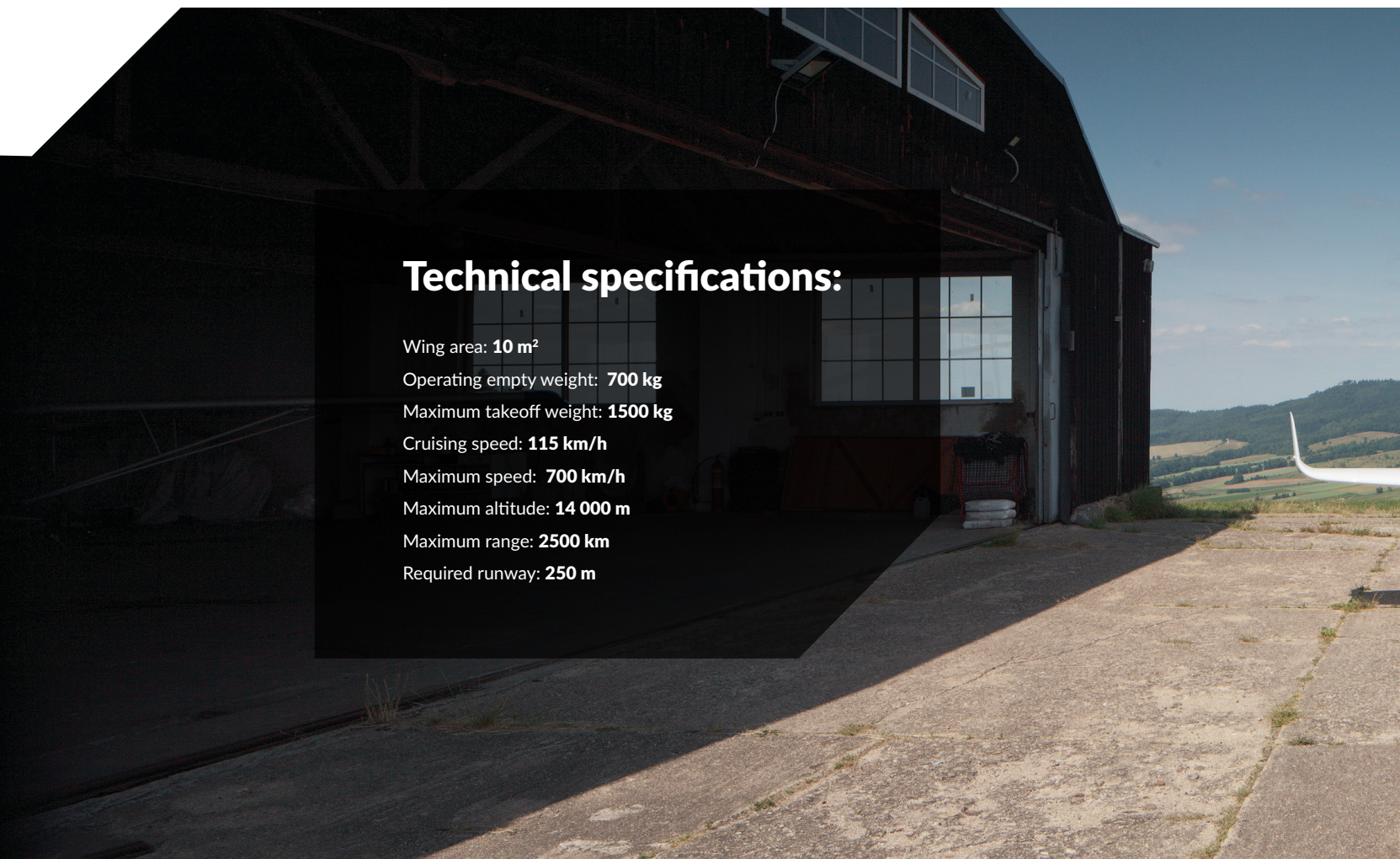
The plane is still on a trial basis. This year will see the takeoff of the first prototype. The project has been already tested by the 400 km/h unmanned demonstrator made in the 1:3 scale.

There are plans to obtain certifications for the first two machines from the Civil Aviation Office, S-1 (experimental planes) category. By the end of 2016 the producer aims to obtain the European CS-23 certificate. Serial production is set to begin this year, starting from 10 machines, followed by dozens more in the coming years. It will be produced by Flaris sp. z o. o., founded in November 2012.



Technical specifications:

Wing area: **10 m²**
Operating empty weight: **700 kg**
Maximum takeoff weight: **1500 kg**
Cruising speed: **115 km/h**
Maximum speed: **700 km/h**
Maximum altitude: **14 000 m**
Maximum range: **2500 km**
Required runway: **250 m**



Andrzej Frydychiewicz, the creator of machines such as PZL-104 Wilga (very popular amongst aero clubs) or the PZL-130 Orlik (used in military training), is also the architect for this project. It is being realised with the cooperation of Warsaw University of Technology, Military University of Technology in Warsaw, Warsaw Institute of Aviation, Air Force Institute of Technology and Wrocław University of Technology.

This extraordinary construction is manufactured by Metal-Master company, owned by Sylwia and Rafał Ładziński. Their enterprise produces modern assembly lines for the production of electric components for cars. Thanks to the Flaris project, supported by the National Centre of Research and Development, with funding from the Operational Program: Innovative Economy, Metal-Master became a manufacturer of aeronautic components, and has the potential to become an important player in the small jets market.



FLARIS
LAR01
feel free

FLARIS LAR I

Rafał Ładziński: the talk



Rafał Ładziński

What is Flaris Lar I?

Flaris is a modern, fast mode of personal transportation for everyone - the only requirement is an amateur pilot licence. It is easy to pilot, very forgiving when it comes to pilot errors, and does not tailspin. Thanks to its unique aerodynamic features it can run on a uneven terrain. It can takeoff from both concrete and grassy airports. It's an alternative to busy motorways, as well as air commute, which requires the time-consuming transfer of passengers to and from the airports (often the transfer takes up more time than the flight itself). Flaris, with its ability to takeoff and land at grassy airports and the velocity of 700 km per hour will make a 2500 km journey quick and enjoyable.



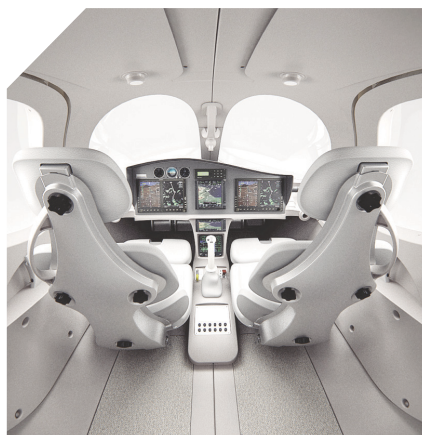
Will a machine so innovative succeed?

Before we started on the project, we did a market analysis and researched the history of "mini-jets" which have been constructed for almost two decades, although without much notable success. On one hand, we understand the struggles of our predecessors, but on the other, we know extremely well what the consumer wants.

Even though we started the work 5 years ago, one of the last ones, we are the first group to start producing single-engine jets designed for personal transportation.

Flaris is not like VLJ planes, which are a miniaturised version of big jets. It was designed from scratch. We stuck to our high standards throughout both the construction of the plane, and during the development of technological processes. Because of that, the construction is unique, and 1000 kg lighter than any VLJs on the market.

The aeronautics world welcomed Flaris with great enthusiasm. It became a sensation during the 50th International Paris Air Show Le Bourget, where it premiered. The trade press described it as the third most important innovation of the show, mentioning the plane alongside constructions such as the Airbus A350 and the Russian SU-35 fighter.



Has the plane sparked any interest from potential buyers?

We get, on average, over a dozen enquiries per week. In the first half of 2014 the air trials and certification of the plane as a "special" will occur. After the first air trials we will start the confirmation of the orders we received, which are in excess of 120.

What was the role of the National Centre for Research and Development in creating Flaris?

The National Centre for Research and Development was the impulse to act. Thanks to the cooperation with NCRD we can perform R&D actions on the construction, and thus, start the multi serial production in the future.







ROBOT

IS A MAN'S BEST FRIEND

Proteus is a fine example of a successful cooperation of the Polish scientific consortium on the project dealing with high-tech industry, which should culminate in a commercial success - setting up a production line for the specialised consumers. The National Centre for Research and Development had a key role in the funding of the project. NCRD's main priority, as a specialised agency performing tasks related to scientific, techno-scientific and innovative policies adopted by the Polish government, is to support Polish enterprises and scientific units in planning and implementing modern solutions and technologies improving and commercialising innovations, and thus benefiting both the Polish economy and society.

Proteus, the integrated support system for the emergency and special services, is being implemented within the research for security and defence of the country, which is one of the NCRD's priorities. The system was constructed with an aim to supply the nation with the highest quality of security during a crisis, e.g. serious accidents and catastrophes, or criminal and terrorist actions. It can be used for almost every type of threat, and its technological advancement allows for greater efficien-

cy than available solutions. It is an operational unit that could replace people in the threat liquidation and removal of its effects, hopefully stimulating a decrease in the emergency services' casualties. The tactical assumptions have been compiled with cooperation from future users: the police, the fire department, EMTs and antiterrorist squads.



NCRD Annual Report 2013

The brain of the system is the mobile centre of command (pol. MCD) built within a truck, where all the operational decisions are made. This is where all the information gathering and processing happens, in order to speed up decision-making processes. The solutions used allow for the integration of all the data collected in the system, which helps with the live reporting of the situation and forwarding the information in the form of analysis or orders to other authorised people. Proteus can be used to solve issues such as the different radio frequencies used by Polish emergency services, which prevents them from communication.

The second truck is the mobile centre of robot operators. It transports the robots to the action scene, and contains the steering post. Last, but not least, are the robots - the most impressive element of the project. They include an unmanned aerial vehicle (AUV) Bąk (MCOR brings the catapult-launcher to UAV), whose main task is the aerial observation of the situation from. The plane is fitted with sensors and cameras, which feed directly to MCOR and MCD. It has a modular construction, which makes it easily adjustable to any situation. It can fly for up to 8 hours, with a maximum altitude of 4,000 meters.

Another piece of the set is a small inspection robot, weighing just over 30 kg, which is used in hard-to-access places. To pojazd o układzie jezdycznym składającym się z czterech niezależnych, stożkowych gąsienic. It gives the robot a velocity of 5 km/h and the ability to overpower most obstacles. It's a recon machine, whose main task is to collect samples of the endangered area, to be analysed by the team. The medium intervention robot is more versatile, weighing 65 kg, with a maximum velocity of 12 km/h. It has an arm that ends with a manipulator that can pick up an item weighing no more than 5 kg. It is equipped with sensors recognising the level of the threat. The third robot in the set is the largest, with so-called extended capacity, with a mass of 300 kg, valve, and an approximate speed of 12 km/h. One of its advantages is a significant load (up to 40 kg) and the possibility of attaching specialist equipment, e.g., a metal cutter or a fire nozzle. The robot can evacuate people from the premises. The set worn by the EMT, fulfilling the role of a radio station - GPS locator, which monitors and sends vital signs and data to the centre of command is less spectacular, although still an extremely important element of Proteus.

Thanks to these modern solutions there is no need to put EMTs lives in danger anymore. The most dangerous situations will be handled by robots, and the flow and integration of information from various sources will allow for optimal decision-making.

Proteus has been designed by the consortium of scientific units led by the Industrial Research Institute for Automation and Measurements PIAP. The works on the project took 5 years, and the total of the budget was 68 million PLN, with almost all of it funded by the NCRD. Apart from PIAP, many organisations such as: The Space Research Centre PAN, The Scientific and Research Centre for Fire Protection, The Institute of Electronic Materials Technology, Poznań University of Technology, Warsaw University of Technology and Military University of Technology took part.

Proteus stands out because of the complementarity of its elements and modular structure. This means that some of the elements are not necessarily used as a whole, but can be added whenever needed. Some of the modules will be used during fire action, and others during chemical contamination. There is also a possibility of multiple Proteuses working together during one action.

Interested entities saw the Proteus in action during the showcase at the National Stadium in September 2013. In order to show what it is capable of, there was a simulation of a crisis situation that was resolved live, using the robot. Many actions were shown: disarming of explosives, putting out a fire, and neutralising toxic waste. The vast majority of demonstration has taken place without any human involvement - their only use was in robot steering.



PROTEUS

Interview with prof. Piotr Szynekarczyk



prof. Piotr Szynekarczyk

What is Proteus?

Proteus is a team consisting of inter-co-operational mobile robots, a command centre, an unmanned aerial vehicle (UAV), sensors, a communication system, and software that manages all the elements. Its task is to support the police, the fire department and other services for public safety. In other words. Proteus is a set of modern technological tools, used to offer support to people who make sure we're safe.

Why was the project started in Poland?

It was made possible mainly because we managed to collect consortia of scientific institutions that were able to design and supply particular elements of construction in our country.

The team from Poznań University of Technology prepared the UAV and command centre's vehicle; the employees of the ITME institute designed a new type of combustible substances' identifying sensor; and PIAP integrated the whole system and supplied the project with mobile robots.

Other members of the consortium include The Space Research Centre PAN, The Scientific and Research Centre for Fire Protection, The Institute of Electronic Materials Technology and Warsaw University of Technology. Without necessary qualifications we wouldn't have been able to achieve what we did.

Have you received any orders?

The works on the project were finalised in the form of a technological demonstrator. The sale of it is obviously impossible. We will, however, directly commercialise particular elements of the system, such as mobile robots or special equipment. Thanks to the experience we gained during our run, we managed to introduce mobile robots to the fire department. The demonstrator itself will undergo modification and personalisation. The sale of the system - in this particular form - will be possible only after being suited to users' needs.

What was the role of NCRD in the project?

NCRD supplied us with 68 million PLN within the OP Innovative Economy; without it, none of this would have been possible.



The Proteus Project consists of many elements managed by the



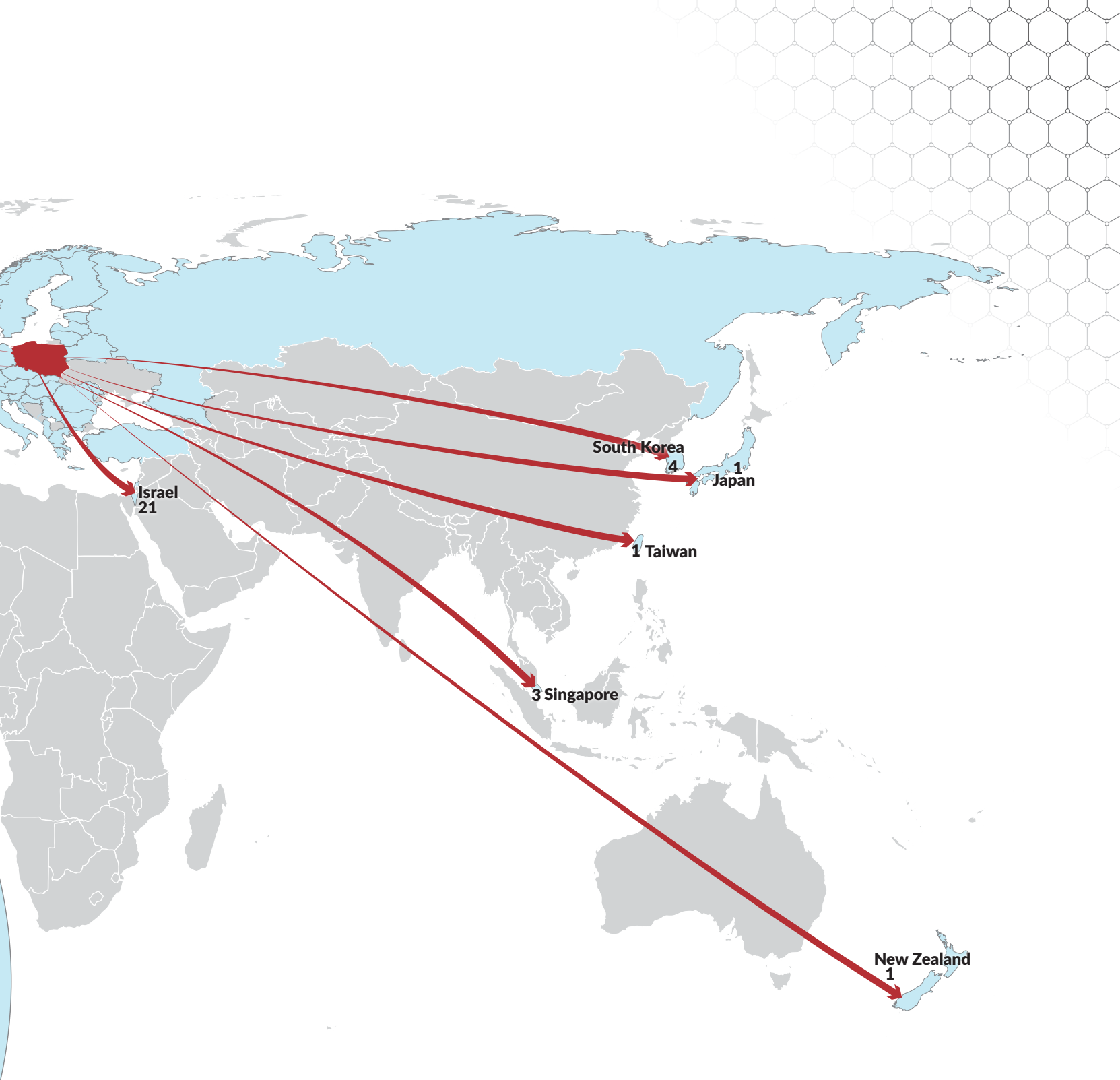


Mobile Centre of Robot Operators (pol. MCOR).



NCBR WORLDWIDE





Bilateral and multidimensional cooperation of **NCRD** with each country within bilateral programs and **EU Framework Programmes** (ERA-NET, ERA-NET PLUS, Joint Ventures, JPI)

PROGRAMMES EXECUTED BY NCRD

PROGRAMMES AND STRATEGIC PROJECTS

ADVANCED TECHNOLOGIES FOR POWER GENERATION

Number of projects

4



Value of additional funding

299,97 million PLN

Total value of funded activities

350,79 million PLN

The implementation of the programme started in 2010 and is scheduled to last until 2015

The programme aims at developing technological solutions to attempt to decrease the negative impact of the energy industry on the environment. The solutions will facilitate the limitation of pollution and thus try to achieve EU targets in Strategy 3x20 (improvement in energy efficiency by 20%, increase of the renewable energy ratio by 20% and reduction of CO2 emissions by 20% by 2020, with 1990 as a base year). The results of the programme will be an important support system for the implementation of research results and technologies based on Poland's main raw fuel – carbon – as well as other available sources of primary energy. The research started in 2010.

4 research activities are currently monitored within the program. The finalisation of the aforementioned activities is scheduled in 2015.

INTERDISCIPLINARY SYSTEM OF INTERACTIVE SCIENTIFIC AND TECHNO-SCIENTIFIC INFORMATION

Number of projects

1



Value of additional funding

67,86 million PLN

Total value of funded activities:

67,86 million PLN

This research activity, with the working name of SYNAT, is aiming to create a universal, open, repository hosting platform, which will enable scientists, academic professionals and members of society to access the knowledge resource network. The task is executed by the scientific network consisting of 16 leading scientific units, which are led by the Interdisciplinary Centre for Mathematical and Computational Modelling at University of Warsaw.

The aim of the programme is to build an integrated network information system for science, technics and cultural heritage in Poland. It will result in an integrated IT system with access to multiple databases, and is designed to be a multifunctional repository of source data designed for accessible, secure and effective sharing of various digital source objects, including text, phonographic, photographic and video materials. Open repository hosting and a communication platform will allow the users to share their own application, information and service software.

IMPROVEMENT OF WORK SAFETY IN MINES

The aim of this project is to develop organisational and technical solutions which minimise threats and improve work safety in mining plants. The research teams' input in this project included: rules of mining works' design or the bases for the measurements and experiments of mine's air parameters for assessing methane and fire threat. The program will also increase work safety in mines by developing a functional wireless communication system for emergency services, as well as a gasometric system that will immediately turn off an electric current during a methane leak.

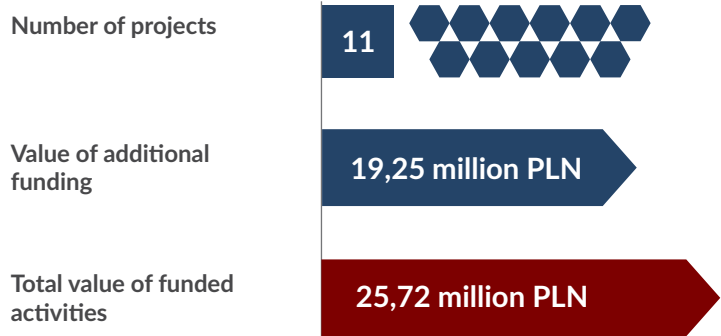
Research activities are achieved by collaboration with enterprises - both Ministry of the

Treasury and large coal companies. Private funding constituted approx. 25% of all costs.

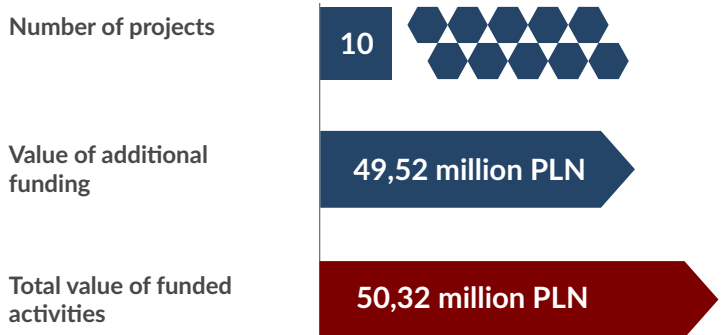
June 2013 saw the results of competitions for implementation of projects: no. 9 - "The calculation of the correlation co-efficient between automatic air speed measurement and averaged value of speed measure by hand anemometer.", no. 11 - "The development of protective wear for mine rescuers.", and no. 12 - "The development of systems for orientation and signalling the direction of crew's retreat on evacuation paths in long roadways." within the strategic project. The total of 3,399,932 PLN was assigned to the aforementioned projects.

The competition for the execution of project no. 10 - "The development of the system for managing fatigue of employees working at underground excavation plants at bituminous coal mines." was announced in September 2013.

11 research activities were monitored throughout 2013.



TECHNOLOGIES AIDING THE DEVELOPMENT OF SAFE NUCLEAR ENERGIES

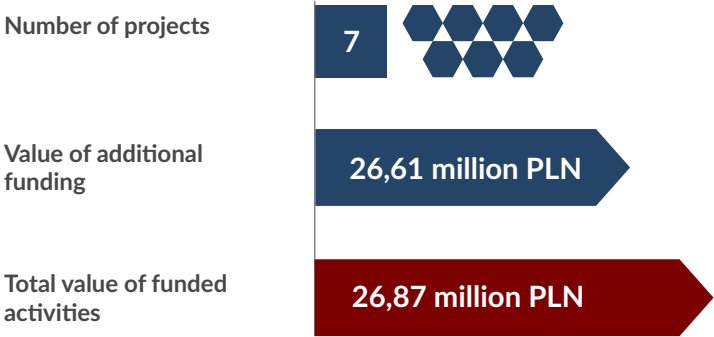


The implementation of the program started in 2010.

This project is the answer to the postulate to increase the energetic safety of the country, regarding nuclear energetics in Poland. Its implementation is closely connected to the implementation of the "Polish Energy Policy until 2030", a document adopted by the government in 2009, and the acceptance of the EU climate and energy package. The project will allow for the convergence of Polish scientific research and worldwide research, as well as the preparation of scientific and engineering staff for the Polish nuclear industry. Its implementation will aim to solve the issues of used nuclear fuel and its radioactive waste. Additionally, it will help to create legal and actual regulations in the context of radiological protection, which will increase the social acceptance of nuclear energy development in Poland.

INTEGRATED SYSTEM FOR DECREASING OPERATIONAL ENERGY USE OF BUILDINGS

This project covers the development of technical and organisational solutions in the context of designing, building and operating both residential and public buildings, attempting to decrease their energy use and increase the use of renewable energy sources in the energy balance. There are 7 research activities within the project: analysis of potential socio-economic implications of the increase of energetic efficiency in ar-



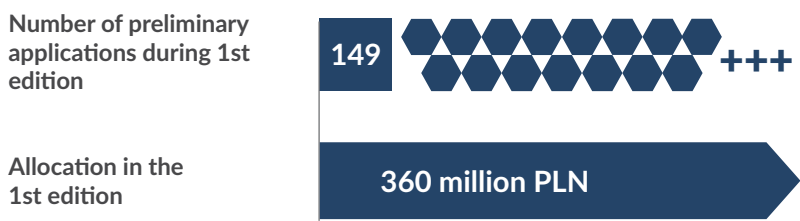
chitecture; development of energetically optimal, typical solutions in terms of structure, materials used and installation of the buildings,, increase of the use of renewable energy sources in architecture, development of heat diagnostics of buildings, optimisation of electric energy use in constructions, analysis of technical and operating requirements for buildings using centralised heat sources. The expected effect of the implementation of this strategic project is the development of energetic effectiveness of the architecture/ construction sector.

5 research activities were monitored in 2013.



STRATEGMED

The program covers the prevention and treatment of diseases of affluence. Its role is to support R&D aimed at use in the areas such as: prevention, diagnostics, therapy and rehabilitation of diseases of affluence, as well as actions that are to prepare the results of research for the implementation. Projects are required to be relevant to one of the four selected areas of medicine: cardiology and cardiac surgery, oncology,



neurology and senses, and regenerative medicine. The programme is to stimulate the growth of innovation and competitiveness of the Polish economy in areas such as biotechnology or biomedical engineering. It will result in the compilation and implementation of new preventative, diagnostic, therapeutic and rehabilitative methods. The main aim is to achieve significant progress in the context of overpowering diseases of affluence and regenerative medicine, based on the R&D results in four areas: cardiology and cardiac surgery, oncology, neurology and senses, and regenerative medicine. 2013 saw the first competition within the STRATEGMED program, with 149 submitted applications

BIOSTRATEG

The program covers five strategic and problematic areas from the industry of natural environment, agriculture and forestry, which resulted directly from the National Research Program, consistent with the directions that high-priority research is currently taking in the European Union and the rest of the world. These include: food safety (both in context of supply and quality); efficient and mindful management of natural resources (with special interest in water economy); prevention and adaptation to climate change (with special interest in agriculture); the protection of biodiversity and sustainable development of agricultural productive space; and forestry and wood economy. The main aim of the programme is the development of knowledge leading to the improve-

ment of Poland's position in R&D concerning this area, as well as the transfer of innovative solutions to the socio-economic sphere.

Within the programme planned for the 2014-2019 period there will be projects consisting of research, development and preparation for implementation. The National Centre for Research and Development is currently preparing to implement the programme.

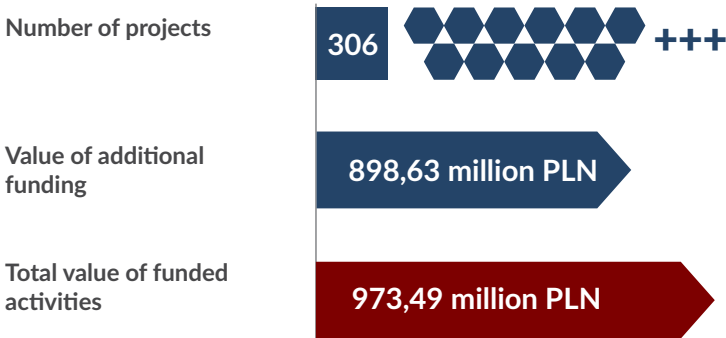
EXECUTION OF PROGRAMMES THAT INCLUDE FUNDING FOR APPLIED RESEARCH



APPLIED RESEARCH PROGRAMME (ARP)

A horizontal programme supporting education industry and enterprises in applied research on various fields of sciences (programme path A) and industries (programme path B).

Applied research is defined as research undertaken to acquire new knowledge, that has particular practical applications and is done by searching for new possible practical applications for the research results, or new solutions that will fulfil previously set targets.



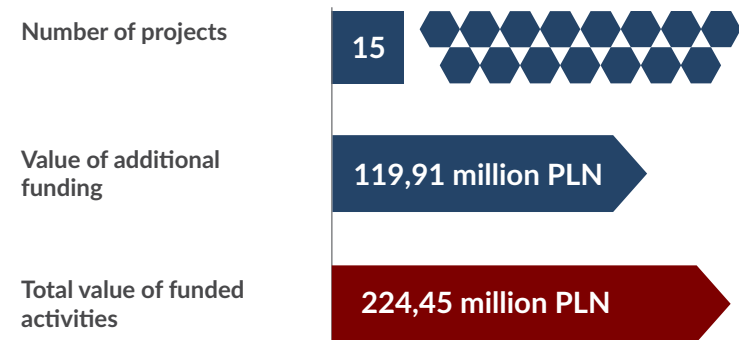
Within the 1st edition of ARP in 2013 we continued to sign new agreements with project executors. We signed 24 agreements totalling 87.6 million PLN. 1st edition saw the Centre financing 225 projects with total additional funding of 679 million PLN.

In 2013 we began the monitoring of the 1st edition projects, which started running in 2012. June 2013 saw the results of the 2nd competition within ARP, in which we gave approx. 308 million PLN to 107 projects. Under the 2nd edition we signed 81 agreements totalling 220 million PLN. The last applications for 3rd edition were opened in December 2013. Available allocation was 200 million PLN. The maximum execution time for the projects is 3 years. The programme is extremely popular, with 2,500 applications in the first two editions, which shows that we managed to answer the needs of scientific circles and an increasingly demanding industry.



BLUE GAS POLISH SHALE GAS

The program is a joint venture of the National Centre for Research and Development and Industrial Development Agency. It is aimed at supporting big, integrated R&D ventures, covering the testing of compiled solution in pilot scale, leading to the creation and commercialisation of modern shale gas extraction technologies. The main task of the program is to develop a technology in the field of extraction of the shale gas in Poland and its implementation in the economic activities of Polish enterprises. The more specific aim is to stimulate investment in R&D realised by the entrepreneurs under this program. The recipients of this program are scientific consortia with an input from the entrepreneurs.



When assessing the application, the main factor taken into consideration was whether the main issue of the project was the compilation of innovative technology for extraction of the shale gas, and whether it would be validated/ tested on the pilot scale, in real-life conditions. The leader of the project is an entrepreneur (who has experience in implementation of new solutions at an industrial scale) interested in implementing the technology that is being developed in his own enterprise. The program is being executed from 2012 until 2022. In may 2013 the 1st edition of Blue Gas competition has been finalised, giving 120 million PLN to 15 projects.

The application process for the 2nd edition was announced in December 2013. Its opening is planned for January 2014. Allocation of the competition totalled in 60 million PLN. The maximum execution time for the projects is 3 years.

The programme is scheduled for 2012-2022 period.



GRAF-TECH PROGRAM SUPPORTING R&D ON USE OF GRAPHENE

The programme's support covers R&D and preparation for the implementation of the results in the products based on the use of unique properties of graphene. The range of potential uses includes: electronics (flexible transparent diodes, touch screens, RF devices, microsystems, photoelectric sensors, so-called "flexible electronics", CMOS transistors), aeronautics and car industry (light carbon composites, hydro-

Number of projects

15



Value of additional funding

65,87 million PLN

Total value of funded activities

71,32 million PLN

gen cells), manufacturing and storing of energy (batteries, super-condensers, solar cells), medicine (DNA analysis, pharmacology, prosthetics, bacteriology), material engineering (light and durable composite materials) and environment preservation (e.g. new pollution sorbents).

The main task of the programme is to increase the competitiveness of the Polish economy by applying the results of the research to compile and implement innovative solutions based on the uses of graphene. The detailed aim is to strengthen the cooperation between scientific units and entrepreneurs interested in using the results in practice and increasing Poland's competitiveness in terms of use of our science in advanced technologies through stimulating the cooperation and integration of subjects researching the uses of graphene.



SOCIAL INNOVATIONS

The program was created in order to support the science industry, its economic environment and non-governmental organisations in undertaking and executing innovative activities and social initiatives, based on the achievements of science and engineering. It is directed at the units that take actions which stimulate social development, as well as societal wellbeing. Its main task is to increase the quality of life, taking under special consideration those groups and areas that truly need innovative solutions and undertaking of new social initiatives.

The detailed aims include the increase in the number of implemented innovative technical solutions and products, services and procedures allowing for solving complex social problems; and the increase of inter-industrial cooperation on the local, regional and national level. The programme's recipients are consortia, which include at least one

scientific unit and at least one entrepreneur, or at least two scientific units with the obligatory participation of a non-government organisation having legal status and its base in Poland. The maximum value of additional funding for one project is 1 million PLN.

In the first quarter of 2013 the 1st edition of the competition was conducted, yielding 76 applications that totalled 61 million PLN. 66 of them qualified for analysis based on merit, with 14 of them actually receiving 9 million PLN funding. 3 contracts have been signed in 2013, with a funding of approx. 1.83 million PLN being distributed.

The 2nd competition was announced in December 2013, and was set to be conducted in first quarter of 2014. Allocation in this competition is 10 million PLN.

The assumptions of the program, as well as the results of the 1st edition have been showcased during a conference on social innovations, organised in October 2013 by the Ministry of Economy.

Number of projects

3



Value of additional funding

1,83 million PLN

Total value of funded activities

1,98 million PLN



THE LEADER

Number of projects

139



Value of additional funding

140,11 million PLN

Total value of funded activities

140,11 million PLN

The programme is aimed at young scientists who want to gain experience in leading the execution of a research project, and increase their skills in building, managing and heading their own research team. The programme also stimulates the cooperation between scientists and entrepreneurs via the execution of activities that have implantation and commercialisation potential. Additionally, it improves inter-industrial and inter-university mobility, as well as the one between scientific units.

The fifth edition of the competition was announced in December 2013. The recruitment will last until March 3rd, 2014. Allocation: 40 million PLN.

IMPROVEMENT OF WORK SAFETY AND WORKING CONDITIONS (2ND STAGE)

The main aim of the programme was to create innovative organisational and technical solutions for the development of human resources and new products, technologies,

Number of projects

77



Value of additional funding

31,5 million PLN

Total value of funded activities

31,5 million PLN

methods and management systems, whose use will help reduce the number of people working in hazardous environments, as well as decrease accidents and occupational diseases resulting in social and economic losses.

The National Centre for Research and Development financed the part B - R&D program - of this project, for which it gave, according to the PBiWP-II/2011 deal from July 7th, 2011, during 2011-2013 period, 31.5 million PLN to the main coordinator and contractor of the program - the Central Institute for Labour Protection - National Research Institute (CIOP-PIB).

NCRD financed 77 projects with a total value of 10.5 million PLN, executed within 6 research initiatives in 2013.

TANGO

The programme is a joint venture of the National Centre for Research and Development and National Science Centre and fulfils the missing role of the implementation, in socio-economic practice, of results obtained from basic research. Its main task is to increase the usage of basic research in innovative processes in economy-related ventures. Its detailed aim is to support innovation in the creation of modern technologies, products and services, as well as supporting the cooperation of scientific units with businesses.

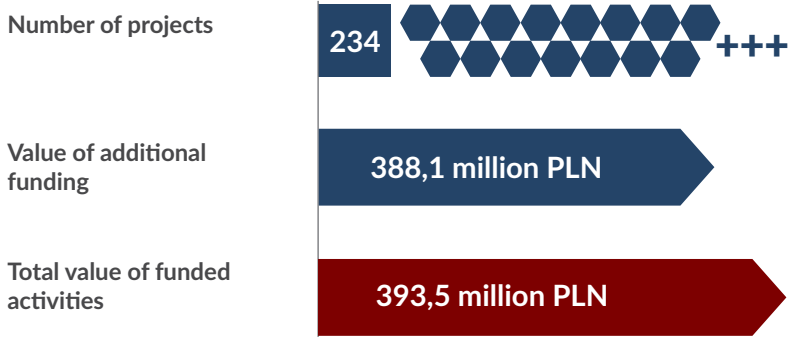
NCBR and NSC signed a cooperation agreement on November 15th, 2013, and started accepting preliminary applications on December 16th. They will be received by NSC by March 17th, 2014, with the use of OSF electronic system.

Allocation in this competition is 40,000,000 PLN.

Allocation in the 1st competition

40 million PLN

R&D PROJECTS



R&D projects include industrial research or developmental works directed at applying in practice, and their planned outcome is to apply obtained results in industrial or social practice. In 2013 the Centre financed 220 projects worth 60.9 million PLN.

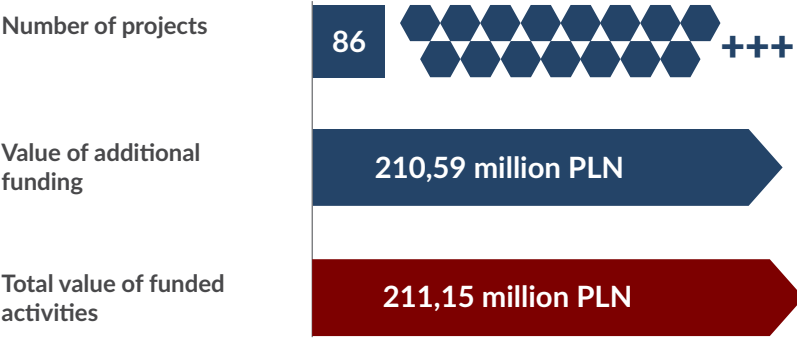
PARTICIPATION IN INTERNATIONAL R&D PROGRAMS



**POLISH-NORWEGIAN
RESEARCH
PROGRAMME**

**POLISH-NORWEGIAN
RESEARCH
PROGRAMME**

The aim of the Polish-Norwegian Research Programme, executed within The Norwegian Financial Mechanism, is to minimise socioeconomic differences and to publicise the bilateral cooperation through popularisation and support of the research projects. The programme assumes financing of the R&D activities in the following areas: environmental protection, climate change (including polar research), health, social sciences and bilateral cooperation, with a special consideration for migration, social consistency, the role of minorities and the social aspect of sustainable development, gender equality and the balance between work and private life, and carbon dioxide capturing and storing. Additionally, the Small Grant Programme will support the research programmes executed by female scientists in the area of technical sciences.



68 applications from the Core 2012 competition (main competition for the five aforementioned thematic areas) and 27 applications from the Small Grant Scheme (SGS, 2012) have been recommended for additional funding in 2013. By the end of the reporting period, 86 contracts have been signed, including 59 from the Core 2012, and 27 from SGS 2012 - totalling approx. 211 million PLN.

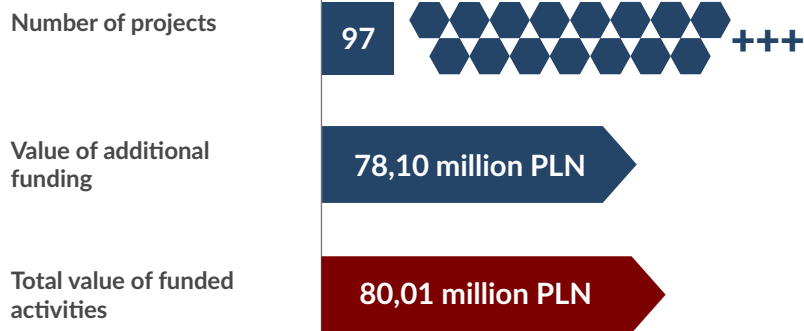
The competition for projects in relation to Carbon Capture and Storage (CCS) was announced in September 2013, set to close the applications on November 15th, 2013. 31 project applications have been sent, with 30 of them fulfilling formal requirements. Per the Norwegian Ministry of Foreign Affairs decision to relocate funding within the Norwegian Financial Mechanism, the amount set for funding of the winning applications has increased from 38 to 68 million euro. Additional money has been allocated for the waiting list projects from the Core 2012 in two areas: "Climate Change, including Polar Research" and "Environment", as well as a winning project from the additional competition (not in previous plans) - "Carbon Capture and Storage".

BILATERAL PROGRAMMES

The NCRD is engaged with various agencies financing research, some of which have recently announced competitions for joint research projects. Information about the partners, areas of cooperation and activities undertaken in 2013 is presented below.

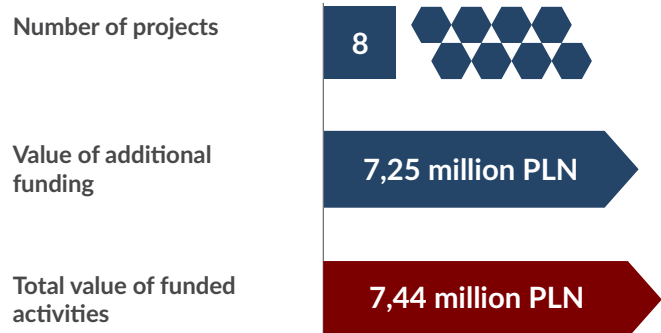
Country	Partner	Area	Activities
Israel	Israel Industry Center for R&D (MATIMOP)	innovative products and technological solutions	Execution of the 3rd competition; 2 signed contracts from the 2nd competition (3,072,000 PLN)
Luxemburg	FNR	ICT	3rd competition announcement (allocation: 750,000 euro) 2nd competition execution (1,000,000 euro) 2 signed contracts from the 1st competition (2,234,000 PLN)
Taiwan	NSC	neurobiology, renewable energy, environment, eco-innovations	1st competition execution (allocation: approx. 900,000 euro) 6 projects recommended for funding

ERA-NET (ERA-NET/ERA-NET+) PROGRAMS



ERA-NET programmes were started in the EU's 6th Framework Programme in 2012, with the ambition of building the European Research Area (ERA) – an area of free flowing knowledge, scientists' mobility, optimal use of tangent points between national research programs of various countries, and tightening of the scientific research cooperation in Europe. The task of this program is a systematic exchange of information and experience between EU member states, identification and analysis of common strategic topics, compilation of joint ventures between national and regional programs in order to translational opening of the infrastructure, as well as creation and implementation of the co-financed general agencies supporting research opportunities.

CORNET



The main task of the international CORNET Initiative (Collective Research NETWORKing) is to promote close cooperation between engaged national/regional subjects (such as ministries and agencies), as well as creating funding opportunities from public (national/regional) funds for research for particular industries. NCRD has been part of the initiative from 2011 and, over the past three years, has run 6 competitions. The competitions are organised twice a year. Up until the end of 2013, 8 contracts have been signed totalling 7,249,644.21 PLN.



EUREKA

Number of projects

49



Value of additional funding

36,64 million PLN

Total value of funded activities

55,62 million PLN

The EUREKA Initiative was set up in 1985, and its main task is to increase innovations, productivity and competitiveness of the European industries. Projects that are a collaboration of at least two different organisations from two different EU member states are funded within the initiative. The projects need to focus on creation and implementation, or significant improvement of existing technology, or implementation of a new product or service. Poland has been a member of the EUREKA Initiative since June 1995.

JOIN VENTURES AND PROGRAMMES

The NCRD is engaged in the cooperation with agencies financing research within which there are announced competitions for joint research projects. Information about the partners, areas of cooperation and activities undertaken in 2013 is presented below.

NCRD's international cooperation within joint ventures and programmes

Name	Area	Activities
JU ENIAC	nano-electronics	Participation in the 8th and 9th competitions (allocation: 500,000 euro each) 6 signed contracts for the projects from 5th and 7th competitions (5,003,000 PLN)
JU ARTEMIS	built-in computer systems	Participation in the 2nd competition (allocation: 2,000,000 euro) 8 signed contracts from the 1st competition (8,785,000 PLN)
EUROSTARS	R&D for SME	Participation in the 10th competition (allocation: 1,000,000 euro) - 11 applications with Polish participants, 1 application recommended for funding Conclusion of the 9th competition - 3 signed contracts (2,352,000 PLN), 2 undergoing signing 1 signed contract for the project from the 8th competition (1,069,000 PLN)
AAL	ICTs for comfort and quality of life for the elderly	Participation in the 6th competition (allocation: 500,000 euro) 5 signed contracts for the projects from the 5th competition (2,325,000 PLN) 1 signed contract for the project from the 2nd competition (309,000 PLN)
BONUS-185	R&D for the Baltic Sea	Conclusion of the Viable Ecosystem and Innovation competitions - 9 applications with Polish participants recommended for funding
JPND	neurodegenerative diseases	Participation in the 3rd competition (allocation: 750,000 euro) Conclusion of the 2nd competition - 2 projects to be financed
JPI HDHL DEDIPAC KH	Diet determinants and physical activity	Participation and conclusion of a competition (250,000 euro) - 4 projects to be financed

FINANCING OF THE R&D WORKS AND THEIR COMMERCIALISATION
IN THE SUBJECTS ABLE TO USE THEIR RESULTS IN PRACTICE



INNOTECH

The programme was set up in November 2011, and it has been implemented since February 2012. Its main task is to support the development of technological innovations, based on the cooperation of the industry with the R&D sector. It aims at increasing the number of created and implemented technological innovations, increasing enterprises' spending on R&D serving the economy, as well as strengthening the cooperation between universities, scientific units from the public sector, and businesses. The programme has been divided into two paths. The In-Tech path is designed for the subjects undertaking industrial and/or developmental research as well as the preparation for the implementation of the results, with the goal of creation and implementation of innovative technologies, products and services, increasing the competitiveness of the Polish economy. The Hi-Tech path is designed for micro-, small and medium enterprises working within the area of advanced technology, that perform industrial and/or developmental research and actions that prepare them for the implementation of the research in the economy.

In the 1st and the 2nd competitions of INNOTECH program, which took place in 2013, we continued to sign contracts with the executors. 1 contract, for the execution and

financing of the project, has been signed in 2013, and 108 in 2012. In total, 109 projects have been monitored in 2013, under the 1st competition of the INNOTECH programme, funding successive stages. Under the 2nd competition, 79 contracts have been signed, with 30 signed in 2012. In total, 109 projects have been monitored in 2013 under the 2nd competition of the INNOTECH program, funding successive stages.

The last recruitment for the 3rd competition was announced in June 2013. In conclusion, 80 decisions have been made totalling approx. 131.5 million PLN in September 2013. Allocation for the 3rd competition was 135 million PLN. The maximum execution time for the projects is 3 years.

One of the most important achievements of the programme is the number of cooperation forms between R&D units (universities, research institutes and PAN scientific units) and enterprises, which was confirmed by the staggering 162 projects executed by scientific consortia in 2013.

It fulfils one of the main tasks of the INNOTECH programme, which is the strengthening of the cooperation of enterprises with universities and research units from the public sector.

Number of projects



Value of additional funding



Total value of funded activities



INNOMED

The programme is being executed with cooperation from the enterprises united under the Polish Technological Platform for Innovative Medicine (pol. Polska Platforma Technologiczna Innowacyjnej Medycyny). The additional funding has been allocated especially for the compilation and preparation to implement the innovative technologies

in relation to discovering and developint innovative drugs and therapies, as well as personalisation of therapy and prevention. The programme has been designed for entrepreneurs or techno-scientific consortia.

Assessment of the applications based on merit was finalised in November 2013. 14 applications have been recommended for funding.

The projects are being financed under the OP Innovative Economy.

Number of projects



Allocation in the 1st competition





INNOLOT

The programme aims to finance R&D works on innovative solutions for aeronautics industry. It's a result of the agreement between NCRD and a group of associations of aeronautic companies representing Polish Aeronautical Technology Platform. It's designed for scientific consortia, that are led by entrepreneurs responsible for obtaining specified technology demonstrators. R&D works on innovative solutions for aeronautics industry in the areas of: Innovative Propulsion System, Innovative Rotorcraft and In-

Number of projects

9



Value of additional funding

105,76 million PLN

Total value of funded activities

183,56 million PLN

novative Plane have obtained funding. Content analysis of 17 applications concluded in October, with 12 recommended for funding. 9 contracts have been signed in 2013 for the financing of the project totalling around 106 million PLN. One of the programme's most important achievements is the high quality of the cooperation between scientific units and entrepreneurs through indirect public aid. 18% of the 1st competition budget is assigned to scientific units' research, which results will be owned by the entrepreneurs. The projects are financed under the OP Innovative Economy.



DEMONSTRATOR+ SUPPORT FOR R&D WORKS IN DEMONSTRATIVE SCALE

This pilot venture of the Centre is executed under two systemic projects within the first priority axis Research & Development of modern technologies:

1. Support for R&D works in demonstrative scale DEMONSTRATOR+ in the TECH area, designed for interdisciplinary direction of research:

- new technologies in energetics
- modern material technologies

2. Support for R&D works in demonstrative scale DEMONSTRATOR+ in the INFO-BIO area, under which the funds will be allocated according to the National Research Programme for interdisciplinary direction of research within:

- advanced information technologies and telecommunication
- natural environment, agriculture and forestry
- diseases of affluence, new drugs and regenerative medicine

The aim of the systemic projects is a pilot scheme of the modern selection and management mechanism for projects on every technological readiness level, which are to test the newly developed technology or product in the demonstrative scale. The systematic project will allow for the testing of modern selection and management mechanisms for projects on the commercialisation of results stage of the research in the context of the new financial perspective of the European Union for the 2014-2020 period. Additionally, the project has an intermediate goal: to strengthen the transfer of research results through supporting R&D works in the new technology or product creation containing the testing of the created solution in a demonstrative scale. It would be directed at entrepreneurs, scientific consortia and research organisations.

140 applications have been received for the allocation of over 400 million PLN.

Projects will be funded under the OP Innovative Economy.

Number of projects

37



Value of additional funding

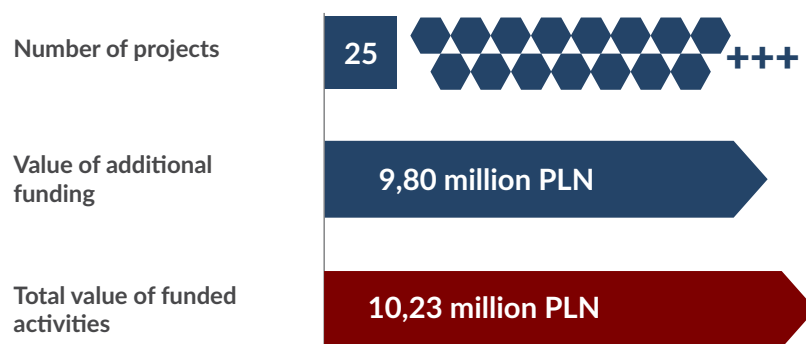
343,00 million PLN

Total value of funded activities

593,00 million PLN



SPIN-TECH is a programme supporting the special purpose vehicles (SPV) created by national scientific units, especially those set up by higher education institutions, with an aim to commercialise the results of the R&D works in accordance with the reviewed Act on higher education. It's addressed to functioning SPVs and national research units



- public universities, research institutes and PAN scientific institutes, which plan on creating them, as well as PJB consortia wanting to start an SPV. The main task of the programme is the intensification of commercialisation of the research results through supporting the SPVs, acting as an intermediary between the public sphere of the R&D and the economy. It will also intensify the transfer of modern technologies from science to economy and accelerate the entrepreneurship development of scientists in Poland, by setting up spin-offs for the SPVs.

The recruitment of the first competition concluded in January 2013. 41 applications were received, with 27 acquiring funding of approx. 11 million PLN. At the end of 2013, 25 contracts have been signed, totalling approx. 9.8 million PLN



The National Centre for Research and Development set up a venture that aims to create an attractive investment environment for the early stages of technology development for private equity. The recruitment for the co-executors of the BRIDGE VC venture started in November 2012. It is a public-private support for commercialisation of R&D results with the participation of capital funds. The recruitment consists of two components. The investment component is a joint execution of the venture by the NCRD and venture capital funds, with whom there are plans to create not more than two public-private funding instruments for the development and commercialisation of products in the hi-tech industry, the way venture capital works. The advice component is a joint execution of the venture by the NCRD and consulting firms that have experience in the commercialisation of R&D, and which will co-supply the consultations for the R&D projects funded by the NCRD.

The total value of the BRIDGE VC is 420 million PLN. Each agreement will total 210 million PLN, with 110 supplied by NCRD and 100 venture capital funds.

The needs of the young entrepreneurs, especially SME, in the field of R&D commercialisation are identified within the BRIDGE. It can be assumed that the project will identify market failures and map the flaws of the public institutions when it comes to the R&D results commercialisation. Obtaining the information will help us to decide whether any new programs dealing with the issue are needed.

BRIDGE Alfa BRIDGE ALFA

The execution of the programme assumes co-financing R&D projects in the early stages of development - proof-of-principle and/or proof-of-concept stages, in order to increase the supply of R&D projects that are attractive to venture capital and/or private equity investors, in the medium-time perspective (less than 5 years). The second aim is to test new types of public intervention instruments maximising the effects of public spending on R&D.

Bridge Alfa is directed at private investors that have an experience in incubating innovative ideas, and are able to supply them with further funding. They can apply for irreclaimable funding from the NCRD for creating an investment vehicle. Through the vehicle they will select ideas that have high commercialisation potential. The budget of

the vehicle can range between 5 and 20 million PLN, and the irreclaimable NCRD funding is 80%. BRIdge Alfa is an innovatory initiative, first and foremost because of its open formula - there is no stiff recruitment procedure, and the applications are assessed by a staff of international and experienced experts. The open recruitment formula allows for NCRD to obtain market expertise on the R&D results commercialisation methods.

BRIDGE Mentor BRIDGE MENTOR

Number of projects

2

Value of additional funding

19,99 million PLN

Total value of funded activities

19,99 million PLN

To pilotażowe przedsięwzięcie, które jest pierwszym w Polsce instrumentem oferującym kompleksowe wspieranie komercjalizacji wyników prac badawczo-rozwojowych. Ich wsparcie będzie odbywało się na podstawie współpracy Narodowego Centrum Badań i Rozwoju z firmami świadczącymi usługi doradztwa biznesowego w zakresie nauk inżynierskich i technicznych oraz nauk medycznych i przyrodniczych.

GO_GLOBAL.PL GO_GLOBAL.PL

The main task of the venture is to support innovative companies commercialising the R&D results in the world market. The detailed aims are: creation of the entry strategy for the world markets; preparation of the developed innovations in accordance with

Number of projects

25

Value of additional funding

4,90 million PLN

Total value of funded activities

5,87 million PLN

the world markets' requirements; and verification of the strategy, especially through assessment performed by the venture capital institutions working in the world markets. The addressees of the venture are micro- and SME, excluding one-person companies. The first stage of the recruitment for 3rd edition of the GO_GLOBAL.PL finished in January 2014. It aims at helping innovative Polish companies that commercialise R&D results to enter the world market.

PATENT PLUS

The programme aims to provide financial support for scientific units and enterprises in the process of applying for international patent protection for their R&D results. Its main task is to increase the protection of industrial intellectual property created in Polish research organisations (scientific units) or created through the cooperation of Polish research facilities with entrepreneurs. It should also help to intensify the commercialisation of the created inventions.

40 million PLN are in the planned budget. 4 competitions, with 10 million PLN allocation each, are to be run. The maximum amount of additional funding is as much as 800,000 PLN. The requirement for the funding is engaging the personal capital, the minimum of 10% of the whole cost. The support is available for covering the costs of two stages:

Stage 1:

- researching the technological level of the area of the invention
- analysis of the economic legitimacy of the patenting of the invention
- creating the commercialisation strategy for the invention

Stage 2:

- submitting the invention via the EPC procedure
- submitting the invention via the PCT procedure
- entering the national stage in the countries (other than Poland) in which the invention is submitted for patenting

The programme Patent+ is a successor of the programme Patent PLUS, which was taken over from the Ministry of Science and Higher Education.

Number of projects

56



Value of additional funding

2,2 million PLN



Total value of funded activities

7,5 million PLN



SPECIAL PURPOSE PROJECTS

Number of projects

82



+++

Value of additional funding

155,66 million PLN



Total value of funded activities

458,12 million PLN



Special purpose projects serve the creation and modernisation of already implemented modern technology. Based on the agreement signed with the Minister of Science and Higher Education, NCRD both finances and manages the special purpose projects. Projects relating to the area that was selected by the applicants are submitted by entrepreneurs or other subjects that have the capability of applying the results in practice.

INITECH

Number of projects

46



+++

Value of additional funding

116,23 million PLN



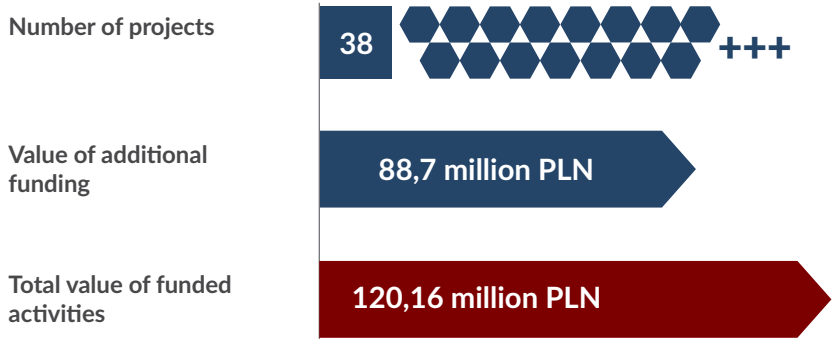
Total value of funded activities

177,49 million PLN



The programme's task is the creation and reinforcement of the techno-scientific cooperation between Polish scientific units and enterprises, leading to the construction of new products and technologies that have high innovative and implementation potential, aimed at application in the economy.

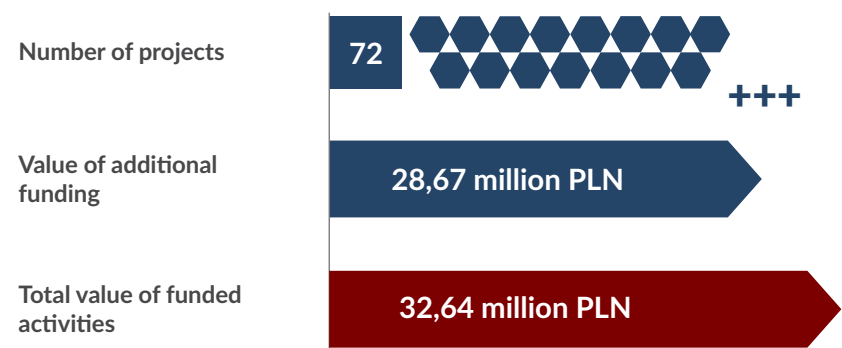
TECHNOLOGICAL INITIATIVE



The Technological Initiative is a programme from the Minister of Science and Higher Education, directed at the development of new products and technologies based on Polish techno-scientific achievements, as well as strengthening the cooperation between scientific and business spheres. The programme has been designed for entrepreneurs and scientific units.

On February 29th, 2008, the Minister of Science and Higher Education assigned the National Centre for Research and Development with the task of financing and monitoring research and special purpose projects, as well as preparation works for implementation, under the Ministry's venture - "Technological Initiative 1". The legal ground for the decision is the Art. 5 Paragraph 1 Subparagraph 4 of the Act on The National Centre for Research and Development, from June 15th, 2007.

INNOVATION CREATOR



The program allows for the execution of projects supporting widely understood commercialisation of R&D. Its task is to increase the activity of public research organisations and entrepreneurs in the context of the commercialisation of knowledge, especially through the development of commercialisation systems for R&D results from public research organisations to enterprises, intensification of informative, educational and training activities concerning the commercialisation of knowledge in public research organisations, and the promotion of entrepreneurship amongst students, graduates and university/scientific units staff. This is to increase the number of commercialised technologies and solutions.



A joint venture from NCRD and KGHM Polska Miedź S.A. The program supports R&D in the non-ferrous metals industry. Its main task is to oversee joint operations for the creation and implementation of modern technologies, devices, materials and products, in order to increase the competitiveness of the Polish non-ferrous metals industry as a part of the global market and global economy. This, in turn, will allow Poland to achieve a leading position, especially in the production of copper.

The strategy is set to improve the efficiency of the production process (investing in new technologies, modernisation of infrastructure), the development of new mining technologies, new solutions in regard to the maintenance system, effective indus-

trial risk management, and the development of the resource base through extraction of ones stuck deep down. The competition is addressed to scientific consortia, understanding that, per the Act on funding science, they include at least one scientific unit that is not an enterprise, and at least one entrepreneur, or at least two scientific units.



GEKON
ECOLOGICAL CONCEPTS
GENERATOR

This is a joint venture of the National Centre for Research and Development and the National Fund for Environmental Protection and Water Management. The task of the program is the development of pro-ecological innovative technologies and their implementation in Polish businesses in five different areas, as follows: environmental aspects of obtaining non-conventional gas; energy efficiency and energy storage; protection and rationalisation of the use of waters; obtaining energy from pure sources; and innovative methods of obtaining fuels, energy or materials from waste, as well as recycling.

Number of projects



Allocation in the
1st competition



The addressees of the program are the entrepreneurs and scientific consortia that have entrepreneurial participants. Applications that deal with creating pro-ecological innovative technology in regard to the aforementioned areas will be accepted. The project consists of two parts: R&D and implementation, and is to be led by an entrepreneur who is interested in implementing the technology developed in their own business. NCRD's funds that are allocated for industrial R&D are going to be used, alongside the partial R&D funding (up to 20% of allocation specifically for funding of Ministry's of Treasury participation) and total implementation funding from the National Fund of Environmental Protection and Water Management.

2013 saw the announcement and organisation of the 1st competition, as well as its formal and content assessment in subsequent stages: preselection, selection and R&D funding assessment. 365 applications have been submitted. The allocation is 200 million PLN, including 100 from NCRD.

ACTIVITIES FOR SECURITY AND DEFENCE OF THE COUNTRY



**ACTIVITIES FOR SECURITY
AND DEFENCE OF THE COUNTRY**

The National Centre for Research and Development, with the agreement of the Minister of National Defence and Minister of the Interior, operates research on security and defence. In competitions for particular research topics, the ventures that have the most actual potential for increasing public safety are funded. The task of the programs and projects is not only to increase the potential of Polish scientific and industrial subjects, but also to pursue technological independence through the creation

of Polish expertise in regard to critical technologies regarding security and defence of the country.

The NCRD funded 377 projects in 2013 that deal with R&D for security and defence of the country, with 106 transferred in 2011 from the Ministry of Science and Higher Education.

In the reporting year 193 contracts have been settled. Competitions for new projects have also been organised. 14 contracts for projects totalling 85,046,000 PLN have been signed within the 2nd part of the concluded Competition no. 3/2013.

Number of projects



Value of additional
funding



Total value of funded
activities

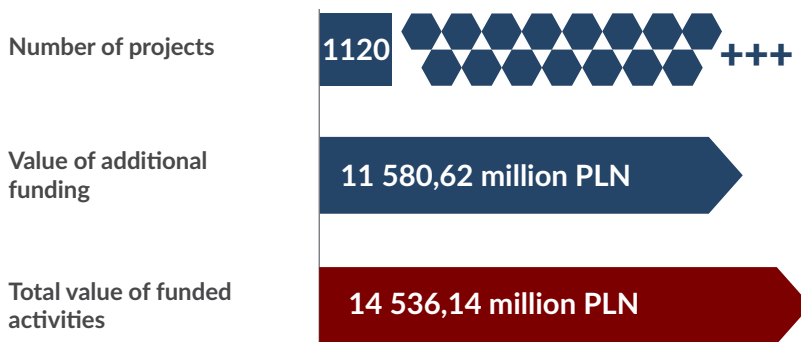


OPERATIONAL PROGRAMME: INNOVATIVE ECONOMY



OPERATIONAL PROGRAMME: INNOVATIVE ECONOMY

The basic assumption of the Operational Programme: Innovative Economy is the development of the Polish economy through supporting enterprises and scientific units doing innovative work. Funding under the OP IE is allocated for innovative R&D actions, use of information and communication technologies, and creation of modern technological solutions. The funding for scientific activities done by enterprises in cooperation with research centres preserves the connection between science and business.



Under the OP Innovative Economy the following is being done:

- Priority no. 1
- Research and development of modern technologies:
- support for research for creating knowledge-based economy
 - strengthening of the staff potential of science
 - support for R&D project for entrepreneurs done by scientific units
 - support for special purpose projects
 - systemic projects of the National Centre for Research and Development

- Priority no. 2
- R&D sphere infrastructure
- development of centres with high researching potential
 - support for creation of common infrastructure for scientific units
 - investments connected to science's IT infrastructure development

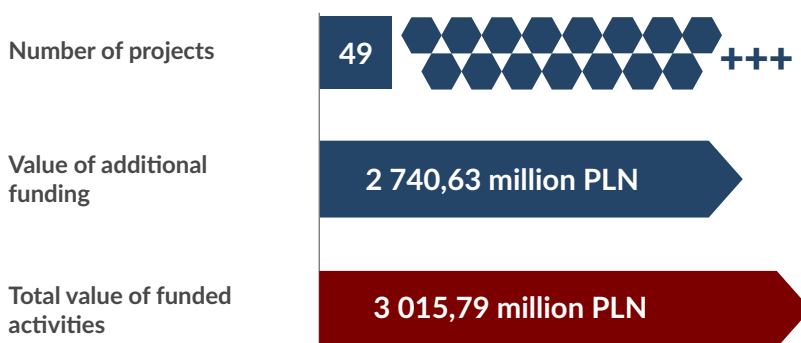
OPERATIONAL PROGRAMME: INFRASTRUCTURE AND ENVIRONMENT



OPERATIONAL PROGRAMME: INFRASTRUCTURE AND ENVIRONMENT

The main task of the Programme is the development of modern academic centres training experts on modern technologies. It has been divided into two intermediate aims:

- the modernisation of higher education infrastructure and increase in the number of students majoring in the priority courses
- increase in the quality of education through applying ICTs



Under 13th Priority many complex investment projects of universities are executed, especially in the construction of universities' infrastructure (modern lecture theatres and laboratories) and modernisation of the existing ones, including purchase of specialist apparatus and other modern solutions applying ICTs in education, as well as making sure the facilities are compatible with the new solutions - including construction or extension of secure, broadband IT networks cooperating with regional and national networks. Only higher education centres (e.g. universities) can apply for the funding under the aforementioned Priority. At the same time, the support is directed at universities that are leading educational centres, which fulfil internationally acclaimed standards, have at least one positive assessment from The Polish Accreditation Committee, have appropriate didactic potential that allows them to run both 1st and 2nd degree courses, and offer courses that will help the economy's competitiveness and attractiveness for investors.

OPERATIONAL PROGRAMME: HUMAN CAPITAL



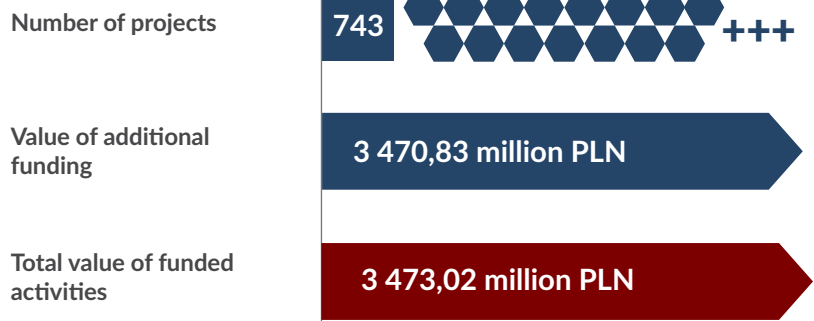
OPERATIONAL PROGRAMME: HUMAN CAPITAL

The 4th Priority of the Operational Programme: Human Capital, whose funding is managed by the National Centre for Research and Development, is concentrating on the quality of higher education institutions and bettering the situation of students and graduates entering the job market. The aim of the support is to advance educational programmes and complement them with innovative elements, increasing the

efficiency of the educational system, and improving the teaching staff, as well as introducing developmental programmes for universities. The students and graduates can gain additional skills and qualifications under the OP HC and thus increase their chances of employment when entering the job market.

Currently the 4th Priority - Higher Education and Science, is executed under OP HC. It includes:

- growth and development of didactic potential of universities and an increase in the number of graduates of majors that are essential for a knowledge-based economy
- development of R&D staff's qualifications and increased awareness of the importance of science in economic development
- improving the didactic potential of the institutions in the areas crucial in regard to targets of the Europe 2020 Strategy





REPORT

Information about NCRD's activities in 2013

INFORMATION ABOUT STRATEGIC PROGRAMMES AND RESEARCH PROJECTS

During the reporting period, the Centre has been financing execution of two strategic programmes under the National Programme of Research and Development, set up on October 30th, 2008 and transferred to the Centre by the Minister of Science and Higher Education. The programmes are as follows:

#	Name of the programme or strategic project	Start date	End date	Number of research activities supervised in 2013
1	Advanced technologies for power generation	May 2010	May 2015	4
2	Interdisciplinary system of interactive scientific and techno-scientific information	August 2010	August 2013	1

There have also been programmes under the National Research Programme from August 16th, 2011

#	Name of the programme or strategic project	Start date	End date	Number of research activities supervised in 2013
1	Prevention and treatment of diseases of affluence - STRATEGMED	Undergoing content analysis of the applications	-	-
2	Natural environment, agriculture and forestry - BIOSTRATEG	Competition scheduled for 2014	-	-

Three strategic research projects were managed by NCRD in 2013

#	Name of the strategic project	Total number of signed contracts within the project	Number of research activities supervised in 2013
1	Technologies aiding the development of safe nuclear energetics	10	10
2	Integrated system for decreasing operational energy use of buildings	7	5
3	Improving of work safety in mines	12	10

Indicators presenting the level of execution of the strategic projects and programmes
The progress is shown by the level of indicator

Name of the programme: **Advanced technologies for power generation**

Time period: May 2010 - May 2015 (60 months)

Indicator level from: **December 21st, 2013**

PROGRESS

Name of the indicator	planned value at the end	level of indicator (%)
Number of completed and started doctorate and habilitation procedures related to the topic by the persons engaged in the research activity	78	84,6%
Number of completed bachelor, engineer and master theses related to the topic of research activity, supervised by the persons engaged in the activity	345	89,9%
Number of publications (categories: A and B, and other listed by the Ministry of Science and Higher Education) resulting from the research activity	568	92,6%
Number of monographs and textbooks or chapters in monographs and textbooks resulting from the research activity	73	69,9%

Name of the programme: **Interdisciplinary system of interactive scientific and techno-scientific information**

Time period: August 2010 - July 2014 (48 months)

Indicator level from: December 31st, 2013

Level of progress: approx. 84%

PROGRESS

name of the indicator	planned value at the end	level of indicator (%)
Number of scientific units engaged in the research activity	16	100
Number of enterprises engaged in the research activity	0	0
Total value of the research activity	67 859 297 zł	87,31
Value of enterprises' input in the research activity	0	0
Number of scientific staff engaged in the research activity	242	123,14
Number of completed bachelor, engineer and master theses, and completed doctorate and habilitation procedures related to the research activity	39	223,08
Number of publications resulting from the research activity in journals under the National Science Indicators	45	93,33
Number of new technological and organisational solutions, installations, devices, system, etc. resulting from the research activity	47	198
Number of submitted patents or utility models and industrial design rights resulting from the research activity	1	500
Number of participants of conferences, seminars, etc. disseminating the results of the research activity	26 602	124,83
Number of laboratories that were modernised during the research activity	5	180

Effects of the execution of the strategic projects are presented by indicators

Name of the programme: Technologies aiding the development of safe nuclear energetics		
PROGRESS		
name of the indicator	planned value at the end	level of indicator (%)
Number of scientific units engaged in the research activity	48	100
Number of enterprises engaged in the research activity	7	114
Total value of the research activity	59 319 520 zł	60
Value of enterprises' input in the research activity	551 870 zł	64
Number of completed bachelor, engineer and master theses and started doctorate and habilitation procedures related to the topic	428	99
Number of publications resulting from the research activity in journals under the National Science Indicators	80	71
Number of new technological and organisational solutions, installations, devices, system, etc. resulting from the research activity	81	71
Number of submitted patents or utility models and industrial design rights resulting from the research activity	40	67
Number of conferences, seminars, etc. disseminating the results of the research activity	7	71
Liczba konferencji, seminariów itp. upowszechniających wyniki zadania badawczego	78	63

Name of the programme: Integrated system for decreasing operational energy use of buildings		
Time period: 2010-2013		
Number of research activities: 7		
PROGRESS		
name of the indicator	planned value at the end	level of indicator (%)
Number of scientific units engaged in the research activity	11	100
Number of enterprises engaged in the research activity	2	100
Total value of the research activity	25 989 580 zł	96,7
Value of enterprises' input in the research activity	1 105 670 zł	97,5
Number of scientific staff engaged in the research activity	175	120
Number of completed bachelor, engineer and master theses, and completed doctorate and habilitation procedures related to the research activity	211	115
Number of publications resulting from the research activity in journals under the National Science Indicators	30	100
Number of new technological and organisational solutions, installations, devices, system, etc. resulting from the research activity	12	100
Number of submitted patents or utility models and industrial design rights resulting from the research activity	2	100
Number of participants of conferences, seminars, etc. disseminating the results of the research activity	2540	250
Number of laboratories that were modernised during the research activity	1	100

Name of the programme: Improving of work safety in mines Time period: 2011-2016 Indicator level from: December 31st, 2013 Data for research activities no. 1-8, from 2011-2014		
PROGRESS		
name of the indicator	planned value at the end	level of indicator (%)
Number of scientific units engaged in the research activity	27	100
Number of enterprises engaged in the research activity	21	95
Total value of the research activity	21 243 300 zł	91
Value of enterprises' input in the research activity	5 393 500 zł	86
Number of scientific staff engaged in the research activity	171	118
Number of international conferences at which the research results were presented	14	121
Number of new technological and organisational solutions, installations, devices, system, etc. resulting from the research activity	37	81
Number of completed bachelor, engineer and master theses related to the topic of research activity	25	88
Number of started doctorate and habilitation procedures related to the topic	7	50
Number of publications resulting from the research activity in journals under the National Science Indicators	24	46
Number of submitted patents or utility models and industrial design rights resulting from the research activity	4	175

Information about industrial intellectual property resulting from the projects, and the value of the revenue from its commercial use

Advanced technologies for power generation

In 2013, within the research activities, the following patent applications have been submitted:

Research activity: Development of technology for high-performance “zero-emission” carbon blocks integrated with CO₂ capture from exhaust fumes The list of submitted patent applications and one utility model application for 2013 (The manufacturers stated that there was no revenue from the commercial use)	
P.403410	Plate heat exchanger with glass surface on the heat exchanger plates.
P.403413	The method of recovery of waste heat from power boilers.
P.403625	The method and the Rankine cycle heated by steam for effective use of waste heat from energetic block.
P.404816	The method of securing the absorber of installation for desulphurisation of exhaust fumes from thermal damage.
P.404905	The method and circuit for removing the NOx and SO2 from the exhaust fumes of nitrogen fertiliser manufacturing.
P.406536	The method of electromagnetic impact on the components of a gas mixture in membrane separation process.
W.121438	Reusable collector for carbonate fuel cells.

Research activity: Development of oxygen combustion technology for pulverised coal-fired and FBC boilers integrated with CO₂ capture

The list of submitted patent applications for 2013
(The manufacturers stated that there was no revenue from the commercial use)

P.403541	The method of oxygen separation from air with the use of wafer tubular perovskite membranes.
P.403652	The method of manufacturing granulates, especially compounds of perovskite structure, in the thermal decomposition process of metal compounds applying FSP apparatus with internal air-heating system.
P.404128	The method of increasing the quality of drying solid fuels, especially in the oxy-fuel combustion process.

Research activity: Development of coal gasification technology for high-performance production of fuels and electric energy

The list of submitted patent applications for 2013
(The manufacturers stated that there was no revenue from the commercial use)

P.405345	Scheme of excavation field of hard coal mine and operating method for capture of coal lodged in depths significantly below excavation level.
P.401180	The method for manufacturing a mouthpiece for forming multichannel monoliths from ceramic or organic materials with interchangeable forming parts.
P.401179	The method for venting of ceramic mass in baler leveraged piston system with movable screen.

Research activity: Development of integrated technologies for manufacturing fuels and energy from biomass, agricultural waste and others

The list of submitted patent applications for 2013
(The manufacturers stated that there was no revenue from the commercial use)

P.402669	Diagnostics system of combustion engine based on Langmuir probe.
P.403290	The method and a device for combined electric energy generation from waste heat from rotary kiln and gas generated in a reactor technologically linked to cyclone heat exchanger.
P.404056	Electrode material and method of electron material procurement in microbiological fuel cell.
P.404601	Heat exchanger with cylindrical built, applicable both for general use, as well as energy generation from low-temperature waste sources. Downdraught reactor for gasification of biomass and waste.
P.405471	Modular device for methane fermentation of organic waste, especially in agriculture.
P.405571	The method and throttle pin for efficiency regulation of gas injector, especially for flow regulation in refrigerator and air conditioning units.

Information on execution of tasks

Subject and monetary value of executed task

Zadanie	Sub-Task	Programme/project	Funds spent on the execution in 2013 (in millions of PLN)
1	2	3	4
Financing of applied research	R&D strategic programmes	Improving of work safety in mines	5 305
		Technologies aiding the development of safe nuclear energetics	17 867
		Advanced technologies for power generation	64 216
		Interdisciplinary system of interactive scientific and techno-scientific information	9 615
		Integrated system for decreasing operational energy use of buildings	1 880
	Execution of programmes that include financing of applied research	PBS	226 307
		Bluegas	26 569
		GRAF-TECH	18 998
		Social Innovations	119
		PBR	60 903
	Support for scientific staff development	The Leader	28 553
	Participation in international R&D programmes	ERA-NET programmes	17 779
		EUROSTARS	3 516
		bilateral programmes	5 069
		other programmes	20 127
	Multiyear Programme: Improvement of work safety and working conditions - 2nd stage		10 500
Financing of R&D works and their results' commercialisation in subjects able to apply them in practice	Innotech	208 078	
	Spintech	4 914	
	Initech	9 072	
	Technological Initiative	1 590	
	Patent Plus	1 452	
	Innovativeness Creato	9 565	
	Go_Global	3 994	
	BRIdge Mentor	2 588	
	Brotech	60	
	Kadtech	11	
	special purpose projects	2 388	
	Execution of activities for security and defence of the country		299 277
NATIONAL PROJECTS TOTAL			1 060 312

Zadanie	Sub-Task	Programme/project	Funds spent on the execution in 2013 (in millions of PLN)
1	2	3	4
Operational Programme: Innovative Economy	Activity 1.1 Support for research for development of knowledge-based economy		300 124
	Activity 1.2 Strengthening of the staff potential of science		91 122
	Activity 1.3 Support for R&D project for enterprises executed by scientific units		211 683
	Activity 1.4 Support for special purpose projects		541 960
	Activity 1.5 Systemic projects of the National Centre for Research and Development		46 775
	Activity 2.1 Development of high research potential centres		481 972
	Activity 2.2 Support for creation of common research infrastructure of scientific units		228 983
	Activity 2.3 Investments connected to science's IT infrastructure development		130 142
	Priority horizontal section 9 Technical support		8 368
Operational Programme: Human Capital	Activity 4.1 Strengthening and development of didactic potential of the universities and increasing the number of graduates of majors that are essential for knowledge-based economy		621 183
	Activity 4.2 Development of R&D staff's qualifications and increase of awareness of importance of science in economic development		30 282
	Activity 4.3 Improving the didactic potential of the institutions in the areas crucial in regard to targets of Europe 2020 Strategy		30 302
Operational Programme: Infrastructure and Environment	8th Priority: Higher education infrastructure		391 525
	9th Priority: Technical support		4 352
The Norwegian Financial Mechanism			55 421
EU CO-FINANCED PROJECTS TOTAL			3 174 194
NCRD TOTAL			4 234 506

The effect of the activities

It needs to be noted that according to the tally of the need of reporting period the documented effects of the activities run by NCRD are connected mainly to operational programmes. It's because the aforementioned programmes had clear and indicators assigned to specific activities, and the data is collected in a timely manner. In the case of the programmes set up by the Centre from 2011, in the system commissioned in the Act on NCRD from April 30th, 2013, because of the brief time period that they have been undergoing, the estimation of the effects is extremely difficult. The programmes and projects set up before the current legislations acted within different rules in relation to supervision and aim monitoring, and thus, rarely had any assigned indicators. Nevertheless, we present the indicators for the following programmes, whose structure allowed for the indicators' analysis: Innotech, Applied Research programme and Patent Plus.

Operational Programme: Infrastructure and Environment

Activity 13.1 Higher Education Infrastructure

Name of the project: Operational Programme: Infrastructure and Environment		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Additional number of places on supported courses	2 000	154
Number of students using supported infrastructure	30 000	126
Number of students using infrastructure created under the projects	15 000	256

Operational Programme: Human Capital

4th Priority: Higher Education and Science

Activity 4.1 - Sub-activity 4.1.1 "Strengthening and development of didactic potential of the universities and increasing the number of graduates of majors that are essential for knowledge-based economy"		
Activity 4.3 "Improving the didactic potential of the institutions in the areas crucial in regard to targets of Europe 2020 Strategy"		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Number of developmental programmes set up by the university under the Priority	400	76,5
Number of higher education establishments that implemented the quality management and quality inspection models under the Priority	120	63,3
Number of students, who completed internships or placements, supported by EFS funds	140 000	34,01
Number of students, who completed internships or placements that lasted at least 3 months	28 000	60,75

Activity 4.1 - Sub-activity 4.1.2 Increasing the number of graduates of majors that are essential for knowledge-based economy		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Number of universities offering extracurricular compensatory classes for 1st year students of courses related to mathematics, life sciences and technics	48	266,67
Number of 1st year students on specialty courses ordered by the minister in charge of higher education	20 800	429,68
Number of graduates of specialty courses (ordered by the minister in charge of higher education) related to mathematics, life sciences and technics	18 000	89,21

Activity 4.2 Development of R&D staff's qualifications and increase of awareness of importance of science in economic development		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Number of R&D sector employees, who completed training in research management and commercialisation of the R&D results under the Activity	9 000	118

Operational Programme: Innovative Economy

Name of the programme: Operational Programme: Innovative Economy		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Number of directly created jobs (EPC)	3 382,57	246
Number of PhD students engaged in the project	2 907,00	118
Number of institutions (scientific units) that are supported	893,00	96
Number of scientific staff engaged in the project	11 281,00	120
Number of companies engaged in the project	1 450,00	63
Number of trainings, workshops, studio visits conducted	2 767,00	65
Number of students engaged in the project	4 758,00	104
Number of created applications or shared IT services	525,00	84
Number of created laboratories	436,00	46
Number of purchased R&D apparatus	8 694,00	50
Number of modernised laboratories	293,00	68

Applied Research Programme

Name of the programme: Applied Research Programme		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Number of enterprises taking part in the Programme (as a co-executor, financier or a subject implementing the R&D results in practice)	247	41
Average number of subjects executing the project under the programme - indicator executed in %	2,84	94

Innotech

Name of the programme: Innotech		
PROGRESS		
name of the indicator	planned value	level of indicator (%)
Number of enterprises taking part in the INNOTECH programme	500	46,8
Number of cooperation forms* between R&D units and enterprises	300	37,3
Number of innovative technological solutions prepared for implementation	300	10,0
Number of new jobs created in the enterprises, including the ones in the R&D departments, during the execution of the project	300	116,9

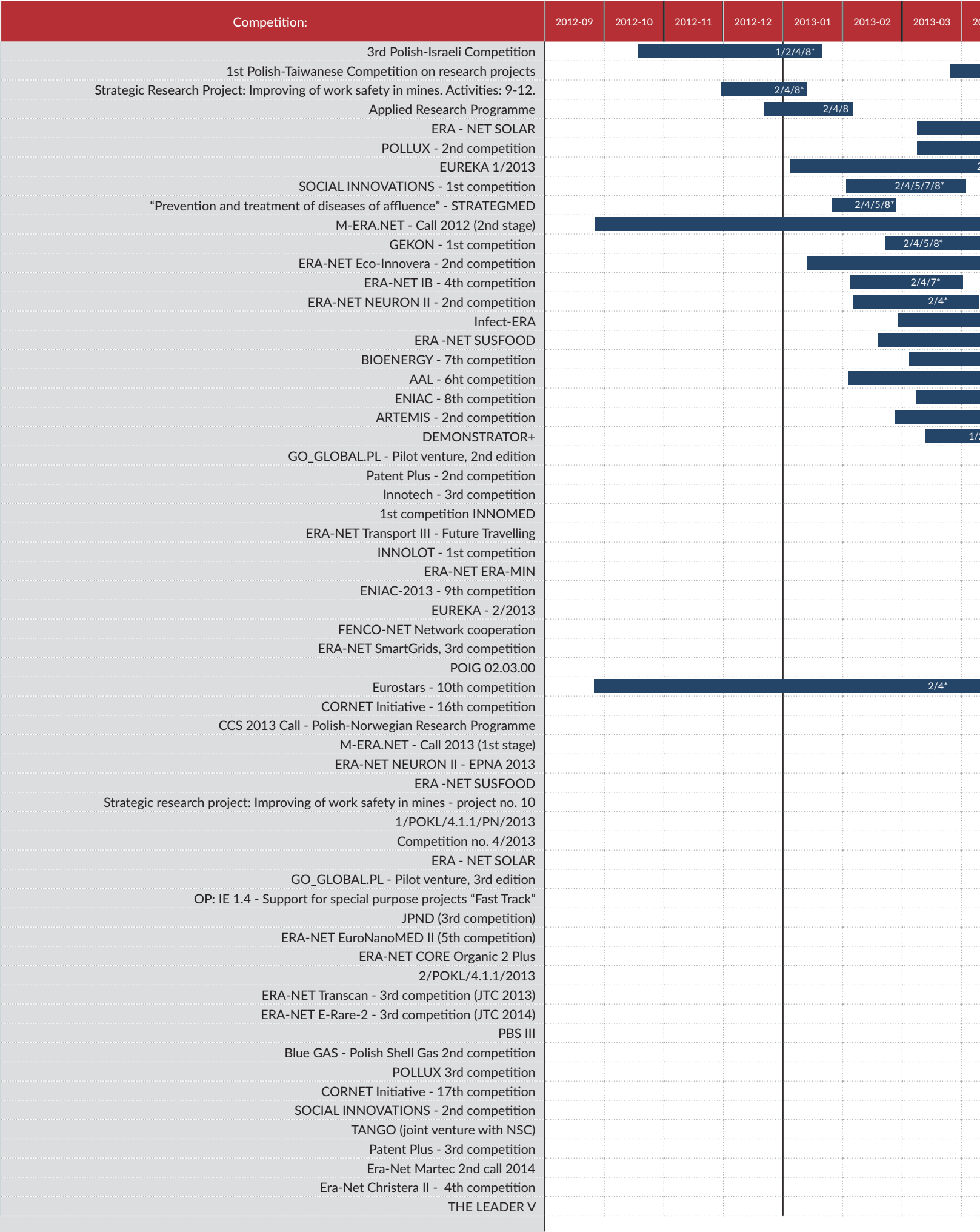
**Cooperation is understood as execution of the content-related tasks in the project. The indicator relates to cooperation between R&D units and entrepreneurs within the execution of the substantive tasks. This type of cooperation can include consortia, as well as different forms of substantive services purchase.*

Subjects mentioned in the Art. 30 Paragraph 3 and 4 of the Act on The National Centre for Research and Development, cooperating on execution of the Centre’s activities and the area of cooperation.

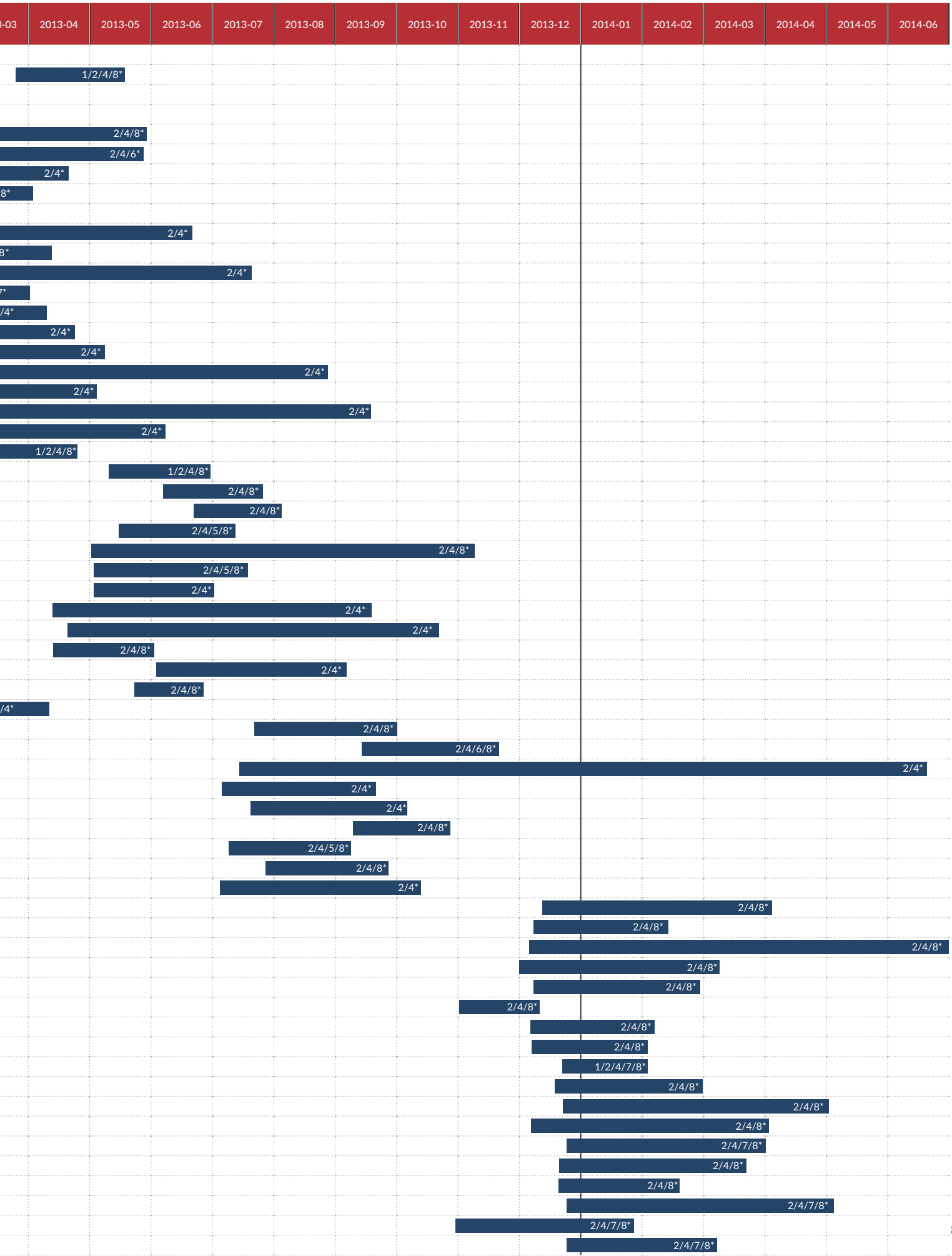
#	Cooperating subject	Area of cooperation
1	Industrial Development Agency	<p>The area of cooperation is the execution of a joint venture - Blue Gas Polish Shell Gas. It aims at development of technology in relation to shell gas extraction in Poland, and its implementation to economic practice, stimulating investment in R&D made by the entrepreneurs taking part in the programme.</p> <p>It's assumed that the total budget, including both private and public funding, will be approx. 1 bn PLN, with Centre's input of 250 million PLN.</p> <p>Under the 1st competition, 15 applications received additional funding of almost 120 million PLN.</p>
2	The General Director for National Roads and Motorways	<p>The cooperation is a result of the agreement signed by NCRD and GDNRM. This joint venture is designed for scientists and entrepreneurs from the architecture/construction industry, who will take up R&D works in order to develop mechanical models in pavement and surface design and methods to assess their efficiency and reliable road network, as well as creation of new solutions effectively protecting the surroundings of the roads, and shaping the infrastructure around them. Both institutions pledged to give 25 million PLN each on projects for increasing road safety and improve the managing system, as well as creation of optimal norms and standards for planning, designing, technologies or actual use of roads in Poland.</p>
3	KGHM Polska Miedź S.A.	<p>The cooperation is a result of the agreement signed by NCRD and KGHM on R&D cooperation in relation to Polish non-ferrous metals industry. The National Centre for Research and Development and KGHM Polska Miedź S. A. pledged to invest 100 million PLN each on research, development, and activities supporting the results' transfer into the non-ferrous metals industry under a joint venture called CuBR. The budget for the first competition is 30 million PLN.</p>
4	The Polish Federation of Engineering Associations FSNT-NOT	<p>Based on three-way agreement between the Ministry of Science and Higher Education, the Polish Federation of Engineering Associations FSNT-NOT, and the National Centre for Research and Development, NCRD accepted the rights and responsibilities related to execution of the agreement between the sides, that were hitherto the Ministry's. NCRD has taken over the supervision of the execution of the 3rd contract for years 2009-2013 between the Ministry and FSNT-NOT. Under aforementioned contract FSNT-NOT has concluded the competition which yielded 497 applications. After the assessment, 199 contracts were signed totalling 63,852,299.45 PLN. All the projects have already concluded, including 98 which bill has been settled. These contracts serve the execution of the special purpose projects. The beneficiaries is the SME sector.</p>

#	Cooperating subject	Area of cooperation
5	National Science Centre	The joint venture TANGO aims at supporting the implementation of the basic research results in the economic and social practice. The programme is designed for scientific units undertaking activities related to practical applications of the basic research results. The recruitment process will last from December 16th, 2013 until March 17th, 2014 in the electronic system. Allocation in the 1st competition is 40 million PLN.
6	The National Fund of Environmental Protection and Water Management (NFEP&WM)	In the dint of the cooperation with the National Fund of Environmental Protection and Water Management, GEKON, a programme aiming at development of pro ecological technologies, such as: increase of energetic efficiency and energy storing, energy generation from pure sources, protection and rationalisation of water use and research on environmental aspects of unconventional gas extraction, has been formed. The budget equals 400 million PLN, 200 million from each partner.
7	The Polish Technological Platform for Innovative Medicine	<p>The subject of the cooperation is the execution of tasks related to innovative medicine sector and INNOMED programme, that was created in the agreement of NCRD and the Polish Technological Platform for Innovative Medicine, signed on June 19th, 2012. The programme is scheduled to run for 10 years.</p> <p>The recruitment for the INNOMED competition was announced on May 10th, 2013. The planned budget equaled 97.5 million PLN. 25 applications have been sent in, totalling in 170 million PLN. The selected ones have not been announced yet. 20 firms from medical industry such as Polpharma S.A., Vitafarm S.A., Selvita S.A., Biofarm Sp. z o. o. and others are co-funding the venture.</p>
8	The Polish Aeronautical Technology Platform	<p>The area of cooperation is the works for aeronautics industry in Poland, under the INNOLOT programme. The budget equals 500 million PLN, with associations covering 40%, and NCRD the remaining 60%. The programme is scheduled for years 2013-2017.</p> <p>The competition, which yielded 17 applications for over 300 million PLN, concluded with 12 projects being approved for over 200 million PLN. The second competition announcement is planned for 2014.</p>

The manner of information sharing about competitions organised by NCRD - a chart



*number in the column presents the information sharing manner: 1 - conference, 2 - publication on a website, 3 - publication in print, 4 - publication in Public Information Bulletin, 5 - training, 6 - workshops, 7 - other, 8 - press advertisement.



PRIVATE INPUT OF THE ENTERPRISES IN THE CONTRACTS SIGNED BY NCRD IN 2013

Programme/competition	Number of signed contracts	Total value of signed contracts	Total value of additional funding	Total of private input	Private input of the entrepreneurs
International	17	19 498	13 024	6 474	6 474
ENIAC	3	2 600	1 837	763	763
ERA NET BIOENERGY	1	257	206	51	51
ERA NET EURONANOMED	1	698	698	0	0
ERA NET KORANET	1	237	189	48	48
EUREKA 2	2	4 338	3 030	1 308	1 308
EUROSTARS	2	1 698	1 199	499	499
JU ARTEMIS	5	6 546	2 957	3 588	3 588
M-ERA.NET	1	1 864	1 707	157	157
Polish-German Cooperation	1	1 260	1 200	60	60
Security and defence	47	762 525	647 458	115 067	110 037
Developmental projects 1N/2013	1	148 350	120 433	27 917	27 917
Developmental projects 3/2012	14	87 457	85 046	2 411	2 411
Developmental projects 4/2013	32	526 718	441 979	84 739	79 709
OP: IE	75	700 822	433 999	266 823	266 823
OP: IE	75	700 822	433 999	266 823	266 823
Strategic programmes	2	2000	2000	800	800
Improving of work safety in mines	2	2000	2000	800	800
National projects - applied research	85	274 939	237 301	37 638	37 638
SOCIAL INNOVATIONS	2	970	836	134	134
Leader 3	2	2 187	2 187	0	0
Leader 4	2	1 864	1 864	0	0
PBS I	17	69 876	63 897	5 979	5 979
PBS II	62	200 043	168 518	31 525	31 525
National projects - commercialisation of R&D	157	1 106 002	673 716	432 286	432 286
DEMONSTRATOR BIO-INFO	19	361 624	194 669	166 955	166 955
DEMONSTRATOR TECH	18	231 870	148 077	83 793	83 793
GO_GLOBAL.PL	5	1 120	976	143	143
GO_GLOBAL.PL II	20	4 754	3 921	833	833
INNOLOT	9	183 564	105 755	77 809	77 809
INNOTECH	1	2 450	2 200	250	250
INNOTECH II	79	317 106	215 074	102 033	102 033
PATENT PLUS	2	985	769	216	216
SPIN-TECH	4	2 528	2 275	253	253
National projects - sector-related	24	265 110	157 929	107 181	107 181

PRIVATE INPUT OF THE ENTERPRISES IN THE CONTRACTS SIGNED BY NCRD IN 2013					
Programme/competition	Number of signed contracts	Total value of signed contracts	Total value of additional funding	Total of private input	Private input of the entrepreneurs
Blue Gas	15	224 452	119 906	104 546	104 546
GRAF-TECH	9	40 659	38 024	2 635	2 635
NOT	19	12 909	4 332	8 578	8 578
NOT	19	12 909	4 332	8 578	8 578
TOTAL	426	3 143 805	2 168 959	974 846	969 816

Information about engaging funds from economic sector, per state at the end of the reporting period in relation to programmes which are mentioned in Article 27 Paragraph 3 of the Act.

Organisational matters

Operating costs of the execution of Centre's tasks

Centre's Office - Operating costs of the execution of selected tasks				
#	Task // subtask	Operating co- sts of the task (in thousands PLN)	incl. investing costs (in thousands PLN)*	incl. costs covered from EU funding (in thousands PLN)**
	TOTAL COST	66 081	1 647	34 106
3.2.	Higher Education	9 388	0	7 979
3.2.2.	Education in higher education	5 669	0	4 818
3.2.4.	Support and expansion of higher education infrastructure	3 719	0	3 161
10.2.	Strengthening of research for practical applications	54 312	1 647	24 121
10.2.1.	Support for applied research, developmental works and R&D results commercialisation	46 771	1 647	17 711
10.2.2.	Expansion of infrastructure for practical applications	7 541	0	6 409
17.3.	Managing of execution and implementation of remaining programmes financed with the non-refundable aid funds	2 381	0	2 006

**funds from investment donations and funds for Centre's investments under the Operational Programmes technical support have been included.*

*** funds from the Norwegian Financial Mechanism (financed under purpose donation from MRR, paragraph 2005), funds from Operational Programmes technical support (financed under purpose donation from the Ministry, paragraph 2008), and refundable funds from European Commission for international programmes have been included.*

Employment records of the Centre's Office

Employment state		
	At the end of 2012	At the end of 2013
TOTAL	251	268
Women	181	189
Men	70	79

Level of execution of yearly financial plan of the Centre^[1]

Level of execution of yearly financial plan of the Centre					
#	Content	Plan according to the budget act	Plan after adjustments	Execution	%
In thousands of PLN					
1	2	3	4	5	6
I	TOTAL REVENUE	4 467 935	4 494 056	4 300 587	95,69%
1	Donations from government	1 704 883	1 670 681	1 614 174	96,62%
1.1	- subjective	36 356	36 356	32 094	88,28%
1.2	- purpose donations*	1 666 529	1 632 327	1 580 433	96,82%
1.3	- donations for investments and investment purchases	1 998	1 998	1 647	82,42%
2	Funds received from European Union	9 738	71 193	52 792	74,15%
3	Other revenue**	2 753 314	2 752 182	2 633 621	95,69%
In thousands of PLN					
1	2	3	4	5	6
II	EXPENDITURE	4 467 935	4 494 056	4 300 587	95,69%
1	Operating costs	72 146	75 418	64 434	85,44%
1.1	- Materials and energy	917	917	487	53,09%
1.2	- Other foreign services	13 646	15 496	10 321	66,60%
1.3	- Salaries	33 302	38 416	35 853	93,33%
	- personal	19 250	20 864	20 538	98,44%
	- impersonal	12 414	15 914	13 766	86,50%
	- other	1 638	1 638	1 549	94,58%
1.4	- Social insurance fees	3 701	4 023	3 625	90,11%
1.5	- Labour Fund fees	534	588	470	80,02%
1.6	- other operating costs	20 046	15 978	13 678	85,60%
2	Capital expenditure	2 048	2 048	1 647	80,41%
3	Expenditure for tasks execution, incl. those given to other subjects*	1 640 427	1 664 408	1 600 885	96,18%
4	Other expenditure**	2 753 314	2 752 182	2 633 621	95,69%

*The revenue 1.2 and expenditure 3 additionally include national funds that are transferred from the Minister of Infrastructure and Development to beneficiaries under the Norwegian Financial Mechanism - Centre has access to those funds based on permission to directly debiting in BGK (a state-owned bank) - added amounts: in column 3 - 9.675 million PLN, in column 4 - 10.5 million PLN, in column 5 - 8.313 million PLN).

** The revenue 3 and expenditure 4 includes european funds, that are transferred from the Minister of Finance to beneficiaries - NCRD can allocate those funds based on permission to directly debiting in BGK (a state-owned bank) according to and act on public finance.

[1] The table is a simplified form of presentation of the level of execution of NCRD's financial plan. Full data is included in the Rb-40 Report.



**NATIONAL
COHESION STRATEGY**



Project co-financed by the European Union under the European Regional Development Fund and European Social Fund



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