



Researchers' Report 2014

Country Profile: Poland



TABLE OF CONTENTS

1. KEY DATA	3
<i>National R&D intensity target.....</i>	3
<i>Key indicators measuring the country's research performance.....</i>	3
<i>Stock of researchers.....</i>	4
2. NATIONAL STRATEGIES.....	4
3. WOMEN IN THE RESEARCH PROFESSION	5
<i>Measures supporting women researchers in top-level positions.....</i>	5
<i>Measures to ensure a representative gender balance.....</i>	6
<i>Parental leave</i>	6
4. OPEN, TRANSPARENT AND MERIT-BASED RECRUITMENT	6
<i>Recruitment system</i>	6
<i>Open recruitment in institutions.....</i>	6
<i>EURAXESS Services Network</i>	7
5. EDUCATION AND TRAINING	7
<i>Measures to attract and train people to become researchers.....</i>	7
<i>Doctoral graduates by gender</i>	8
<i>Funding of doctoral candidates</i>	9
<i>Measures to increase the quality of doctoral training.....</i>	9
<i>Skills agenda for researchers</i>	9
6. WORKING CONDITIONS.....	9
<i>Measures to improve researchers' funding opportunities</i>	9
<i>Remuneration</i>	10
<i>Researchers' Statute</i>	10
<i>'European Charter for Researchers' & 'Code of Conduct for the Recruitment of Researchers'</i>	10
<i>Autonomy of institutions.....</i>	10
<i>Career development.....</i>	11
<i>Social security benefits (sickness, unemployment, old-age)</i>	11
7. COLLABORATION BETWEEN ACADEMIA AND INDUSTRY	11
8. MOBILITY AND INTERNATIONAL ATTRACTIVENESS	13
<i>Measures aimed at attracting and retaining 'leading' national, EU and third country researchers</i>	14
<i>Inward mobility (funding)</i>	14
<i>Outbound mobility.....</i>	15
<i>Promotion of 'dual careers'.....</i>	15
<i>Portability of national grants.....</i>	15
<i>Access to cross-border grants</i>	15

1. Key data

National R&D intensity target

“Poland has set an ambitious national R&D intensity target of 1.7% by 2020. Poland's R&D expenditure has grown slowly in recent years and remains low at 0.77 % of GDP in 2011¹, one of the lowest levels in the EU. Poland's R&D intensity experienced an average annual growth of +1.6% between 2000 and 2011. The average annual increase required to hit the 2020 target is considerably higher at +8.7%. The main weakness remains underinvestment by the private sector. Business R&D expenditure accounts for only 0.2% of GDP. The breakdown of total R&D expenditure by source of funds and sector of performance illustrate reverse shares in comparison to the EU average. In 2010 the government financed more than 60% of total R&D, while business enterprise financed 24.4% of total R&D and performed 26.6% of total R&D.

Compared to countries with a similar catching-up dynamics as Poland, performance is good. However, the shares of R&D financed by and performed by business enterprise have slightly declined over the 2000-2010 period. In the EU as a whole, business enterprise financed more than 50% of total R&D and performed more than 60% of R&D in 2010. Even if Poland's industrial structure was in line with the average industrial structure for OECD countries, there would only be a slight increase in Polish business R&D intensity. This indicates that Poland's business R&D investment is well below average regardless of sectoral specialisation. These indicators do not reflect yet the efforts undertaken recently to increase public R&D spending and to trigger private sector investment in R&D. The 2012 national research budget grew by around 10% and together with funding provided under the EU structural funds (around 20% of the overall budget) this makes it Poland's highest R&D budget so far. A further increase of around 3.5% is foreseen in 2013.

Structural funds are an important source of funding for research and innovation activities. Out of the EUR 67 billion of structural funds allocated to Poland over the 2007-2013 programming period, around EUR 15 billion (22.8% of the total) relate to R&D, ICT, business environment and SMEs. Projects amounting to more than EUR 9 billion have been selected up to the end of 2011, representing a commitment rate of 61.2% (the EU average is 46.6%). Polish applicants for funding under the EU's 7th Framework Programme (FP7) have a success rate of 19%. Over 1500 partners from Poland have been participating in FP7 receiving a total EC financial contribution of EUR 286 million.”²

Key indicators measuring the country's research performance

The figure below presents key indicators measuring Poland's performance on aspects of an open labour market for researchers against a reference group and the EU average³.

¹ In 2012, R&D expenditure was 0.9% (Eurostat, 2014).

² European Commission (2013), “Research and Innovation performance in EU Member States and Associated countries. Innovation Union progress at country level 2013”

³ The values refer to 2013 or the latest year available

Figure 1: Key indicators – Poland



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, UNESCO OECD Eurostat education survey, Innovation Union Scoreboard 2014, MORE2.

Notes: Based on their average innovation performance across 25 indicators, Croatia, Czech Republic, Greece, Hungary, Italy, Lithuania, Malta, Poland, Portugal, Slovakia and Spain show a performance below that of the EU average. These countries are "Moderate innovators"⁴.

Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

Table 1: Human resources – Stock of researchers

Indicator	Poland	EU Average/Total
Head Count per 1 000 active labour force (2011)	5.85	10.55
Head Count (2011)	100723	2545346
FTE per 1 000 active labour force (2011)	3.72	6.75
Full time equivalent (FTE) (2011)	64133	1628127

Source: Deloitte

Data: Eurostat

2. National strategies

The Polish Government has put in place a range of measures aimed at training enough researchers to meet its R&D targets and at promoting attractive employment conditions in public research institutions. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach Poland's R&D targets, to promote attractive working conditions, and to address gender and dual career issues.

Table 2: National strategies

Measure	Description
Building upon knowledge: Science reform for Poland's development(2010)	Since October 2010, a reform of the administration of Polish science has been in force: a package of six legislative acts titled 'Building upon knowledge: Science reform for Poland's development'. The reform set out a clear distribution of powers and tasks in the research sector and modified rules on financing research institutions and rules on

⁴ European Commission (2014), "Innovation Union Scoreboard 2014"

Measure	Description
	research quality assessment.
National Reform Programme (2011)	The National Reform Programme (NRP) of the Republic of Poland correlates the Polish developmental targets with the priorities identified in the Europe 2020 Strategy. It comprised several actions related to Innovation Union commitments, such as: – Modernisation of higher education by increasing the role and quality of research; – Implementing a National Qualifications Framework in the education system; – Promoting cross-sectoral mobility of scientists. The NRP also set out a number of tasks – corresponding to the actions – to be delivered in 2011 to attain the desired goals. A reform of higher education entered into force in October 2011. It placed renewed emphasis on promoting quality by encouraging more competition for public funding, more transparent mechanisms for professional advancement, a better alignment between the skills and competences of graduates and the needs of the economy. The new regulations adopted in 2011 (amendment to the Law on Higher Education, followed by lower-level legal acts, e.g. ministerial regulations, including the Ordinance on the National Qualifications Framework for Higher Education) have reoriented the HE system towards learning outcomes and have formally introduced the NQF-HE. According to the amended Law, all degree and non-degree programmes offered by HEIs must comply with all the regulations relating to the NQF-HE. This applies in particular to learning outcomes for all the programmes (first, second, and third cycle programmes, but also non-degree post-graduate programmes) and other forms of education leading to any diploma or certificate offered by HEIs. These are subject to a requirement to devise and implement pre-defined and verification procedures designed to check whether the intended learning outcomes have been achieved by the students.

Source: Deloitte

3. Women in the research profession

Measures supporting women researchers in top-level positions

In order to tackle the issue of the under-representation of women in science, the Polish government is reforming the structure of its scientific organisations⁵, such as the State Accreditation Committee, the General Council for Science and Higher Education and the Central Commission for Degrees and Titles to guarantee that there are more women in top-level positions.

In addition, the government has initiated a number of programmes to increase the number of women researchers.

Table 3: Measures to increase the number of women in science

Measure	Description
Girls of the Future –In the footsteps of Maria Skłodowska-Curie (ongoing)	This is a competition to support talented young female researchers and promote their scientific achievements. It is open to students in science, natural sciences, technology or medicine, who are involved in research projects or conducting their own research.
L'Oréal Polska Grants for Women in Science Awards (ongoing)	The Polish arm of L'Oréal has been rewarding researchers for 14 years. Each year the programme selects young talents, whose example is to encourage the next generations to undertake research. The condition for participating in the competition, for both PhD students (age limit 35) and postdoctoral students is to be at the final stage of research work. Nominations are evaluated by a jury of eleven leading figures from Polish academia.⁶⁷ The aim of the programme is to promote women and their professional achievements, and to popularise science among the general public. Every year, the programme selects talented young women, whose example encourages others to start scientific careers. Fellows conduct

⁵The reform is still ongoing. For more information, see

http://www.nauka.gov.pl/fileadmin/user_upload/eng/ministry/legal_acts/LAW_on_DEGREES_and_TITLES.pdf

⁶ <http://www.unesco.pl/neste/1/article/1/14-edycja-konkursu-na-stypendia-l8217oreal-polska-dla-kobiet-i-nauki/>

⁷ <http://www.nauka.gov.pl/en/polish-science-news/launch-of-the-competition-for-scholarships-for-women-in-science.html>

Measure	Description
	advanced research in a range of fields, including medicine, biotechnology and biology. On the list of winners there already are 65 women from various academic centres in Poland. Nominations are evaluated by 16 judges - eminent scholars and representatives of Polish science. In 2014, for the first time, the Ministry of Science and Higher Education is an official partner of the competition.
Parent-Bridge Research Grant (POMOST Programme) (ongoing)	The objective of this programme is to enable the best researchers who are raising young children to return to advanced research work and to enable pregnant women to carry out research projects financed from external sources. The programme provides a return grant – for projects carried out by researchers of either gender raising young children.

Source: Deloitte

Measures to ensure a representative gender balance

The amended Law on Higher Education passed in 2011 stipulates that the entities designating members of the General Council for Science and Higher Education shall strive to ensure a gender balance in their submissions. The Law obliges the minister for higher education to make sure that at least 30% of the members of the Polish Accreditation Committee are women. The Law obliges the Committee to strive to ensure a gender balance in its work. The legal requirement to strive to ensure a gender balance applies also to the work of the Central Committee for Degrees and Titles.

Parental leave

In Poland, maternity or child care leave does not prevent female scientists from obtaining a research grant, scientific grant or scholarship. The law⁸ makes it possible to suspend the grant or scholarship and resume it after returning to full professional activity.

For instance, under the Mobility Plus Programme (see chapter 6 “Working conditions”), researchers/scientists are eligible to take a break during the implementation of the Programme for maternity/paternity or child care leave.

4. Open, transparent and merit-based recruitment

Recruitment system

The problems that have hindered the development of Polish science include the direct employment of family members, which consequently block access for other scientists to scientific and academic careers, and lead to a conflict of interest. The Reform of Science for the Development of Poland(2010) introduces a statutory prohibition on employing relatives in a direct superior-subordinate relationship. This is making it possible to build careers based on clear merit-related criteria.

A provision in the amended Law on Higher Education states that all scientific posts in higher education institutions must be filled via competition (Article 118a)⁹ This facilitates scientists’ careers and enables young scientists to have better access to grants (from the National Science Centre (NCN) and the National Centre for Research and Development) through open competitions. Experts from national and foreign science centres are able to participate in the competitions.

Finally, an online advertisement page with information on vacancies at Polish higher education institutions has been created¹⁰. Institutions are required to publish information on all ongoing and scheduled competitions.

Each institution is an autonomous employer with its own personnel and recruitment policies. There is no national legal instrument which would allow interference with the autonomy of Polish institutions.

Open recruitment in institutions

The table below presents information on open recruitment in higher education and public research institutions.

⁸ 2010 Law on financing science concerning young researchers receiving scholarships

⁹http://www.nauka.gov.pl/g2/oryginal/2013_12/d687905792f5ff6a3ecf84d7df4f8e57.pdf

¹⁰Available at: <http://www.euraxess.pl/index.php/strona-glowna>; <http://www.nauka.gov.pl/ministry/job-vacancies-in-poland/>

Table 4: Open recruitment in higher education and public research institutions

Do institutions in the country currently have policies to ...?	Yes/No	Description
– publish job vacancies on relevant national online platforms	Yes	Higher education institutions are obliged to publish job vacancies on the website of the Ministry of Science and Higher Education (dedicated database).
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)	Yes	The Law on Higher Education of 2011 requires Polish higher education institutions to publish job vacancies on the EURAXESS portal.
– publish job vacancies in English	Yes	Job vacancies published on the database of the Ministry of Science and Higher Education must also be published in English.
– systematically establish selection panels	No	Institutions do not have policies to establish selection panels.
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	No	Institutions do not have policies to establish clear rules for the composition of selection panels.
– publish the composition of a selection panel (obliging the recruiting institution)	No	Institutions do not have policies to publish the composition of a selection panel.
– publish the selection criteria together with job advert	No	Institutions do not have policies to publish the selection criteria together with the job advert.
– regulate a minimum time period between vacancy publication and the deadline for applying	No	Institutions do not have policies to regulate a minimum time period between vacancy publication and the deadline for applying.
– place the burden of proof on the employer to prove that the recruitment procedure was open and transparent	No	Institutions do not have policies to place the burden of proof on the employer to prove that the recruitment procedure was open and transparent.
– offer applicants the right to receive adequate feedback	No	Institutions do not have policies offering applicants the right to receive adequate feedback.
– offer applicants the right to appeal	No	Institutions do not have policies offering applicants the right to appeal.

Source: Deloitte

Data: Information provided by national authorities

EURAXESS Services Network

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 143.2 in Poland compared with 39.9 among the Innovation Union reference group and an EU average of 43.7¹¹.

In 2013 Poland ranked second among the countries publishing job vacancies on the portal. It is mainly higher education institutions that publish the vacancies.

Information on entry conditions, transfer of social security and pension contributions, accommodation and administrative assistance is available on the EURAXESS Poland website and in a brochure entitled 'Foreign Researchers' Guide to Poland'.

The links to the EURAXESS Poland portal are posted on the Ministry of Science and Higher Education website, on the National Contact Point for Research Programmes of the EU website, as well as through other websites of organisations dealing with research (such as universities).

5. Education and training

Measures to attract and train people to become researchers

The Polish government funds several doctoral studentships and scholarships to increase the number of students taking science to an advanced (doctoral) level. The table below summarises the key measures introduced by the Polish government to attract and train people to develop a research career.

¹¹ See Figure 1 "Key indicators – Poland"

Table 5: Measures to attract and train people to become researchers

Measure	Description
Act on the National Science Centre (2010)	The National Science Centre (NCN) established the Act on the National Science Centre to guarantee that at least 20% of all Centre funds are earmarked for research conducted by junior scientists.
Diamond Grant (ongoing)	The Diamond Grant is a special career path for one hundred of the most talented students in Poland. The beneficiaries can start scientific research leading to a doctoral degree immediately after getting a bachelor's or engineering degree, without needing to take a master's. These young scientists receive special funds for research, nearly PLN 200 000 (some EUR 48 000). As a result, young students are able to become PhD candidates as early as age 25.
Iuventus Plus Programme (ongoing)	The Programme allows young Polish scientists to have the results of novel research work published in leading international science journals. The Programme is designed to increase the interest of young scientists in conducting research at the highest level and encouraging them to publish their results as well as to contribute significantly to the position of Polish publications in the world rankings.
LIDER Programme (ongoing)	The National Centre for Research and Development (NCBiR) supports the development of researchers, particularly through funding programmes addressed to talented researchers who are starting their scientific careers, of which LIDER is one. The purpose of the LIDER Programme is to help young scientists learn how to plan research on their own, and manage and lead their own research team while carrying out projects with potential for market implementation. The Programme also aims to encourage scientists to cooperate with businesses while performing economically valuable and implementable studies and research, and enhancing mobility and exchange between research sectors, universities and research units. The programme is addressed to individuals under 35 years of age who meet detailed eligibility criteria.
MISTRZ Programme (ongoing)	The objective of the MISTRZ Programme is to support distinguished scholars by awarding them grants designed either to intensify the research they are already conducting or to explore new fields of research. The Programme is addressed to advanced researchers whose attainments so far provide assurance of proper use of the funding, and who are able to effectively combine research with training younger staff. Grants are awarded via a closed competition which covers a different field of science each year. In 2014 the competition is directed to scholars in the Life Sciences ¹² .
Special Doctoral Grants (2011)	Higher education reform in 2011 provided for identifying the most talented young scientists and supporting them in their careers so that they can be a driving force of Polish science. The special doctoral grants of PLN 2 000 (some EUR 500) target 30% of the best doctoral students. Thanks to this financial support the best Polish scientists will be able to focus on their scientific work even more, also taking advantage of other, additional forms of grant for doctoral students.

Source: Deloitte

In 2008, the government introduced an academic programme ("Increasing the number of graduates of degree programmes of key importance for a knowledge-based economy") to increase young students' interest in science, technology, engineering and mathematics (STEM) studies. The programme covers IT studies, biotechnology, environmental protection and mathematics. The best students in these disciplines receive an additional grant of PLN 1 000 (some EUR 240) per month. In addition, the higher education institutions offering this programme are entitled to receive additional money for modernising their curriculum, create jobs and collaborate with representatives of the relevant sector of the economy. An evaluation report was published in 2013¹³.

Doctoral graduates by gender

The table below shows the number of doctoral graduates in Poland by gender as a ratio of the total population.

¹² http://www.fnpp.org.pl/assets/Master-Programme_regulations_since-2013-En.pdf

¹³

http://www.ncbir.pl/gfx/ncbir/pl/defaultopisy/840/2/1/raport_koncowy_z_badiania_ocena_jakosci_i_skuteczności_wybranych_form_w_sparcia_w_ramach_działania_4.1_pokl.pdf

Table 6: Doctoral graduates by gender

Indicator	Poland	EU Average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (2011)	0.5	1.7
Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2011)	0.5	1.6
Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2011)	0.5	1.8

Source: Deloitte

Data: Eurostat

Funding of doctoral candidates

The table below presents the funding scheme accessible to doctoral candidates.

Table 7: Funding opportunities for doctoral candidates

Measure	Description
Stipend/Grant	The Polish government, via the Polish universities, funds approximately 90% of doctoral candidates.

Source: Deloitte

Measures to increase the quality of doctoral training

A financial incentive has been introduced of greater funding for the best 30% of doctoral students. Doctoral programmes are evaluated by the Polish Accreditation Committee as part of an institutional assessment. The procedures for obtaining the doctoral degree have been made more transparent and quality-oriented.

Skills agenda for researchers

Measures to improve researchers' competencies and skills, particularly those of young researchers, are included in the long-term Poland 2030¹⁴ Strategy, the National Development Strategy 2020¹⁵ as well as in the Human Capital Development Strategy¹⁶ adopted in June 2013.

Moreover, the Human Capital Operational Programme¹⁷ (in relation to EU funding) aims to support institutions' staff training activities. Funds available under this programme should help scientists prepare themselves to commercialise their research results.

6. Working conditions

Measures to improve researchers' funding opportunities

More than PLN7.5 billion (some EUR 1.8 billion) was available for science in 2012. An increase of 8% in the national budget for science has been secured for every year until 2015.

In addition, a subsidy of PLN 230 million (some EUR 55 million) was available for 2012 to benefit the Leading National Research Centres (KNOWs) selected via competition. Furthermore, the National Research and Development Centre and the National Science Centre received increased funding (more than PLN1 billion, some EUR 240 million in total) to finance projects and hire a number of young researchers.

The table below summarises key measures to increase funding for Polish researchers.

Table 8: Measures to increase researchers' funding opportunities

Measure	Description
Mobility Plus Programme (ongoing)	This Programme allows Polish scientists to participate in prestigious international research projects, cooperate with international laboratories and institutes, and exchange knowledge. The Programme is a continuation of the concept of the Support for International Mobility of Scientists Programme ¹⁸ . Eligible beneficiaries are scientists

¹⁴ Available at: <http://zds.kprm.gov.pl/dlugookresowa-strategia-rozwoju-kraju>

¹⁵ Available at: http://www.mrr.gov.pl/rozwoj_regionalny/Polityka_rozwoju/SRK_2020/Documents/SRK_2020_112012_1.pdf

¹⁶ Available at: <http://www.mpips.gov.pl/praca/strategie-i-dokumenty-programowe/strategia-rozwoju-kapitalu-ludzkiego-srkl---projekt-z-31072012-r/>

¹⁷ Available at: http://www.efs.gov.pl/Dokumenty/Documents/HCOP_EN_18January2008_final.pdf

¹⁸ This programme (currently in its 2nd edition) provides funding for 6-36 months; it targets young researchers and doctoral students. It aims to advance the careers of grant recipients by bringing them into contact with renowned research centres and outstanding researchers abroad, and to enable them to participate in research utilising equipment and methods unavailable domestically.

Measure	Description
	conducting innovative research in all fields of science. Participants have the possibility of being accompanied abroad by their families.
START Programme (ongoing)	This programme targets young researchers at the outset of their career who have already achieved some success in their field. The stipends serve as recognition of the scientific attainments so far by these young scholars and as an incentive for further growth by enabling them to devote themselves fully to their research. The amount of the one-year stipend is PLN 28 000 (some EUR 7 000).
National Science Centre	
MAESTRO: advanced researchers grants (ongoing)	MAESTRO grants fund the research projects of advanced academics (for at least 36 months and maximum 60 months), including interdisciplinary research which may result in scientific discoveries.
Post-doctoral internships scheme (ongoing)	The post-doctoral internships scheme allows beneficiaries to be employed in an academic unit on a fulltime basis for a period of between 12 and 36 months. The candidate needs to indicate an academic tutor in the unit in which the internship will be carried out.
PRELUDIUM: pre-doctoral grants (ongoing)	PRELUDIUM grants fund research projects of up to 36 months carried out by pre-doctoral researchers starting a scientific career.

Source: Deloitte

Remuneration

In 2011, the Polish government adopted the Long-Term Financial Plan for 2011-2014, which provides for a 30% salary increase for higher education employees, including researchers, over a three-year period, starting from 2013.

For further information, see the country profile on remuneration of researchers from the MORE2 study on the EURAXESS website.¹⁹

Researchers' Statute

Poland provides a 'statute' or equivalent for researchers. Researchers' salary depends on their research grants and activity.

'European Charter for Researchers' & 'Code of Conduct for the Recruitment of Researchers'

The Polish government actively promotes the implementation of the 'Charter & Code' by research institutions and funders²⁰. In Poland there are so far nine institutions that have endorsed the Charter & Code rules. Four of these have been awarded the "HR Excellence in Research" logo for the active implementation of the Charter & Code rules:

- Institute of Plant Genetics of the Polish Academy of Sciences;
- Foundation for Polish Science;
- International Institute of Molecular and Cell Biology;
- Nencki Institute of Experimental Biology of the Polish Academy of Sciences.

The EURAXESS Centres in Poland promote the document among Polish institutions, encouraging them to implement its rules.

Autonomy of institutions

In the Law on Higher Education (2005) (amended in 2011), the Rectors were given greater responsibility for managing academic personnel. The Rectors also received more autonomy to develop the curriculum and the administrative structure as well as to lead the management of their institutions.

Amendments to the Teachers' Charter in 2007 relating to financial conditions for researchers working as academic teachers allows institutions to differentiate between researchers' salaries. Moreover, Leading National Research Centres (KNOWs) are free to decide how to spend the money, e.g. raise salaries or establish special doctoral grants.

¹⁹<http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

²⁰For information on research institutions that have signed the Charter & Code, see <http://www.euraxess.pl/index.php/what-is-euraxess/euraxess-rights?start=1>

The list of Leading National Research Centres was announced in July 2012. KNOW status has been awarded for the years 2012-2017. The laureates of the first edition of the contest were six research centres in the area of science, medicine, pharmaceutical science and the life sciences: the Warsaw Centre of Mathematical Sciences; the *Marian Smoluchowski* Kraków Research Consortium: “Matter-Energy-Future”; the Warsaw Academic Chemical Consortium; the Research Consortium of the Collegium Medicum at the Jagiellonian University and the Institute of Pharmacology of the Polish Academy of Sciences; the Faculty of Pharmacy with the Department of Laboratory Medicine at the Medical University of Gdańsk; and the Centre for Innovative Research in Białystok.

By 2017, each centre with ‘KNOW’ status will receive PLN 50 million (some EUR 11.88 million) of extra co-financing – PLN 10 million per year (some EUR 2.38 million per year). Among other things, the funding will strengthen the centres’ research and development capacity, the development of research staff, the creation of attractive conditions for research work, the building of a strong and visible brand, pay increases for researchers and the employment of foreign scholars in Poland.

In July 2013, the Ministry of Science and Higher Education announced a competition for the second batch, specialising in life sciences, agricultural sciences, forestry and veterinary sciences that will receive additional funding and the National Leading Research Centres (KNOW) status. The results of the competition were announced in May 2014²¹.

Career development

Presently in Poland, the number of older scientists strongly outweighs young highly qualified researchers, preventing the latter from climbing the academic career ladder. This results in an outflow of young scientists from higher education institutions and makes it hard for Polish science to compete with the best global centres. One of the changes introduced in the amended Law on Higher Education (2011) is a regulation stating that the contract of a nominated academic teacher must expire when they turn 65. The age limit for professors is 70.

Social security benefits (sickness, unemployment, old-age)

In Poland there is no legislation dealing exclusively with the social security and supplementary pensions of researchers.

Social security benefits depend on the type of grant agreement, but in general, if the contract between a researcher and the host institution is defined as an employment contract, social security and health insurance contributions are automatically deducted from the wage of the researcher, regardless of nationality.

7. Collaboration between academia and industry

The following table summarises programmes designed to boost collaboration between academia and industry, and to foster doctoral training in cooperation with industry.

Table 9: Collaboration between academia and industry

Measure	Description
A Guide. R&D Commercialisation for Practitioners(2010)	The Ministry of Science and Higher Education has developed ‘A Guide. R&D Commercialisation for Practitioners’ which provides information to practitioners on the commercialisation of research results.
AGH University of Science and Technology	The AGH University of Science and Technology in Krakow is the Polish leader of the European Knowledge and Innovation Community for Sustainable Energy, which aims to create closer links between the worlds of science and business, and support the integration of the knowledge triangle, i.e. higher education, research and innovation. Within the framework of the established Knowledge and Innovation Community, research is being conducted into clean coal technologies, thus increasing the importance of Poland in the international scientific arena in this discipline.

²¹ Available at: <http://www.nauka.gov.pl/en/polish-science-news/ministry-of-science-will-choose-the-new-flagship-of-polish-science.html>

Measure	Description
Amended Law on Higher Education Higher Education (2011)	The amended Law on Higher Education facilitates cooperation between academia and industry, and requires institutions to adapt the curriculum to actual market needs. Thus, higher education students will be supported in finding the right job after graduation. In addition, the law encourages practitioners working in industry to give classes. In this way, not only will students gain extensive theoretical knowledge, but they will also learn about the realities of work in industry. Finally, the law allows academic institutions to set up dedicated firms to commercialise their scientific achievements. The firms must be open to industrial partners interested in collaborating with academia.
Bridge VC Programme (ongoing)	The Bridge VC programme managed by the National Centre for Research and Development (NCRD/NCBiR). It is a pilot venture comprising two components: investment and consulting. For the investment component, the NCRD will conclude up to two agreements on joint cooperation with Venture Capital funds. The partners will be a fund with stable position on the Polish market and/or a fund with stable position on the foreign market (funds registered and operating in the USA, Israel, United Kingdom and Switzerland will be preferred). In the consulting component of the undertaking, NCRD will conclude up to two agreements on joint cooperation with consulting companies specialising in commercialisation of R&D.
BroTech (ongoing)	The objective of the Brotech programme is to raise the efficiency and effectiveness of technology transfer between science and the economy. Its beneficiaries – either scientific entities or micro, small and medium companies willing to carry out projects aimed at commercialisation of research results and technology transfer – can apply for funding for technology transfer consulting services, and purchase of consulting services with regard to industrial property protection and licensing agreements.
INNOTECH Programme (ongoing)	INNOTECH aims to help research entities and businesses carry out innovative projects in various scientific areas and industrial sectors (In-Tech programme path), with a special focus on advanced technologies (Hi-Tech programme path). The paths target two different categories of beneficiary whose projects are co-funded by different public funding instruments: – Hi-Tech grants for Entrepreneurs/SMEs in high and medium-tech industries (advanced technologies); – In-Tech grants for SMEs and large companies: applicants need to build a consortium of scientists with business participation (entrepreneurs and scientist-industrial centres).
Innovation Creator Programme (2008)	The Innovation Creator Programme motivates researchers financially to raise their qualifications in the areas of enterprise, intellectual property management and commercialisation of research results. It also encourages the establishment of a dialogue and improved standards of communication between science and the commercial economy.
KadTech (ongoing)	The main purpose of this programme is to support commercialisation of technologies. It was launched to strengthen the cooperation between businesses and highly qualified experts in science and research. Companies which benefit from this programme are granted funds for hiring a scientist and purchase of so-called innovation encouragement services (e.g. rental of research equipment or obtention of certificates) for innovative projects. The programme is addressed to micro, small and medium companies wishing to carry out projects which consist in the development and/or implementation of technological innovations based on the commercial application of research results.
National Centre for Research and Development	The National Centre for Research and Development (NCBiR) is an intermediary between the worlds of business and science. The Centre ensures that representatives of both communities are consulted about research and development programmes, and that these are constructed in a way that will benefit both parties. The Centre also awards research grants to companies, including those that have not previously invested in research and development. NCBiR supports the commercialisation and other forms of transfer of scientific research results and the management of applied research programmes (BRIDGE VC, Brotech, Kadtech, Innotech and Lider).
Top 500 Innovators Science – Management – Commercialisation Programme (2011)	The ‘Top 500 Innovators Science – Management – Commercialisation Programme’ was launched by the Ministry of Science and Higher Education in 2011, giving 500 scientists and innovators from Poland the opportunity to take part in training sessions and internships relating to commercialisation of research results at the best universities in the USA. The Programme targets researchers and technology transfer employees working at Polish HEIs, research institutions, Polish Academy of Science institutes and the Academic

Measure	Description
	Centre for Technology Transfer.
VENTURES Programme (ongoing)	The Ventures Programme supports the projects of students, graduates and PhD students which have potential for a practical economic application. The 10 th edition was held in 2013 (last call closed on 15 April 2013) ²² . Successful projects receive funding for 1-3 years.

Source: Deloitte

The higher education and science reforms provide for the following improvements in moving towards close collaboration between academia and industry:

Table 10: Reforms with regards to enhancing the collaboration between academia and business

<i>The possibility of involving business representatives in teaching, shaping curricula and evaluating teaching outcomes and the establishment of a council with representatives of local or regional employers and public authorities in the public universities</i>
Higher education institutions in Poland maintain close contacts with local companies. To strengthen and emphasise the practical side of research carried out at universities/research institutes, the amended Law on Higher Education (2011) makes it possible to include practitioners from particular fields in the process of preparing and implementing curricula and evaluating the results. Representatives of business may sign up to conventions with higher education institutions. This facilitates cooperation and helps in adapting the curriculum to the actual needs of the market. It will also be beneficial for both higher education institutions and for students, as it will enhance the chances of their being steered towards the right job after graduation. Another way to promote vocational and technical studies is to let practitioners working in industry give classes, thus conveying to students a realistic understanding of working in their chosen field. This option should partially solve the problem of lack of work experience and make employers more favourably disposed towards these graduates.
<i>University quality assessment systems at universities will take the degree to which a university is embedded into the socio-economic environment into account</i>
A serious problem in Poland is the fragmented nature of science centres, for historical reasons. Prominent scientists and the best laboratories are dispersed all over the country. Poland needs science centres where the knowledge and the appropriate funding are clustered in order radically to raise the level of Polish science. Leading National Research Centres (KNOWs) ²³ have existed since 2012 to play this role. KNOWs will bring together the best scientists, students and doctoral students. The KNOWs were selected via a competition in eight knowledge and education areas: liberal arts, social studies, science, technical studies, medical and health-related studies, life sciences, agriculture and forestry, and art. Each of these areas is to be represented in a given year by at least three KNOWs. The selected centres receive five-year subsidies and will be autonomous in deciding how to spend the money, e.g. on salaries or by establishing special doctoral grants. As a result, the research and teaching potential of these centres is expected to enable them to compete with the best higher education institutions in the world. In July 2013 Ministry of Science and Higher Education announced a competition for the next batch, specialising in life sciences, agricultural sciences, forestry and veterinary sciences to receive additional funding and National Leading Research Centres (KNOW) status. This is the second edition of the competition. The results of the competition were announced in May 2014 ^{24,25}
<i>Intellectual property rights management regimes as well as commercialisation rules are a 'must' for public universities</i>
Most research results obtained at higher education institutions have considerable commercial potential. To encourage scientists to take up such challenges, higher education reforms have focused on the formation of research spin-offs, usually based on an innovative technology or an invention. Both scientists and the institutions may be shareholders via a special purpose vehicle. The higher education institution must also ensure proper protection of the intellectual property and provide rules for managing copyright and related rights, as well as industrial property rights. The Ministry of Science and Higher Education has developed "A Guide. R&D Commercialisation for Practitioners," which provides considerable assistance throughout the procedure of commercialising research results ²⁶ .

Source: Deloitte

8. Mobility and international attractiveness

In 2011, the percentage of doctoral candidates (ISCED 6) who were citizens of another EU-27 Member State was 1.7% in Poland compared to 4.2% among the Innovation Union reference group and an EU average of

²²For more information, see http://www.fnp.org.pl/en/kategoria_szkolenia/stipends-subsidies-grants/

²³Available at: <http://www.nauka.gov.pl/scientific-research/polish-science/science/science/arttykul/the-flagships-of-polish-science-announced/>

²⁴Available at: <http://www.nauka.gov.pl/en/polish-science-news/ministry-of-science-will-choose-the-new-flagship-of-polish-science.html>

²⁵Available at: <http://www.nauka.gov.pl/aktualnosci-ministerstwo/known-y-wybrane.html>

²⁶Available at: www.nauka.gov.pl

7.7%²⁷. In the same year, non-EU doctoral candidates were 1.9% of all doctoral candidates in Poland compared with 5.2% among the Innovation Union reference group and an EU average of 24.2%²⁸.

The Foundation for Polish Science plays a key role in funding mobility and international attractiveness. Historically, it has supported diverse objectives and practically all groups of scientists, some of them very small. In the period to 2012, it rationalised the number of programmes and concentrated on selected phases of an academic career which it considered to be the most important: preparing a doctorate, post-doctoral fellowships, return to Poland after the post-doc, building individual and academic independence and forming one's own research team. In 2008-2012 the number of programmes was reduced from over 20 in 2008 to 15 in 2012. A review of its activities in 2008-2012 provided the basis for Programme Premises for 2013-2016²⁹.

Measures aimed at attracting and retaining 'leading' national, EU and third country researchers

The table below summarises key measures aimed at attracting and retaining leading national, EU and third-country researchers.

Table 11: Measures to attract and retain leading national, EU and third-country researchers

Measure	Description
<i>Foundation for Polish Science's funds</i>	
Alexander von Humboldt Polish Honorary Research Fellowships (ongoing)	The Foundation for Polish Science has been awarding these fellowships to eminent German scholars since 1996. The grantees are invited to carry out the research projects of their choice in Poland in co-operation with their colleagues in their home country. The research stay is 4-6 months and may be split into several periods over three years. At present, the amount of the fellowship is EUR 4000 per month.
IDEAS FOR POLAND Programme (ongoing)	The objective of the IDEAS FOR POLAND Programme is to encourage young, brilliant researchers from all over the world to choose Poland as the place to carry out the research projects that they have been awarded by the ERC. The programme is designed for people whose previous scientific record demonstrates that they are highly independent as researchers and is a guarantee that they will conduct world-class quality research. The subsidies consist of a scientific scholarship for the winner of up to PLN 10 000 (some EUR 2 400) per month.
WELCOME Programme (ongoing)	The overall objective of the WELCOME Programme is to engage outstanding researchers from abroad in creating research teams in Poland and intensify the degree of international cooperation of Polish institutes and universities. The Programme targets foreign researchers with at least a PhD degree who either plan to work in Poland or have established their research teams in Poland no earlier than five years prior to the cut-off date. Polish researchers with at least a PhD degree, who have either have stayed abroad for at least two years and intend to come back to Poland or have already returned to Poland (within the two years prior to the cut-off date), are also eligible to apply. The projects must be of at least three years' envisaged duration.

Source: Deloitte

Inward mobility (funding)

The table below summarises key measures in support of researchers' inward mobility.

Table 12: Measures supporting researchers' inward mobility

Measure	Description
<i>Foundation for Polish Science's funds</i>	
HOMING PLUS Programme (ongoing)	The objective of the HOMING PLUS Programme is to encourage young Polish scholars abroad to return to Poland. The programme is also open to young PhDs who are citizens of other countries but interested in taking up a postdoctoral fellowship in Poland. The project carried out under the programme may last from one to two years.
Research Fellowships for Scholars from CEE Countries (ongoing)	These fellowships target foreign scholars, mainly from Central and East European countries, who are willing to conduct research at Polish scientific institutions. The scholarship grants can cover periods ranging from one to twelve months. The total grant is approximately equivalent to an average monthly salary offered to a person holding a corresponding post in Poland, plus the costs of accommodation at a level not exceeding that of an academic

²⁷ See Figure 1 "Key indicators – Poland"

²⁸ Ibid

²⁹ <http://www.fnp.org.pl/assets/FNP-Programme-Premises-2013-2016.pdf>

Measure	Description
	hostel. In exceptional cases, part of the travel costs may also be covered by the Fund.
TEAM Programme (ongoing)	The overall objective of the TEAM Programme is to increase the commitment of young scientists to research performed by the best teams and in the best laboratories in Poland. The projects may be carried out in one of three main thematic areas: Bio, Info or Techno. The Programme targets research team leaders intending to engage students in the project, PhD students or young PhDs (up to four years after the PhD). The students, PhD students and young PhDs must be selected in an open competition procedure that is carried out at international level. The duration of the projects may range from two to four years.

Source: Deloitte

Outbound mobility

The table below presents the key measures to encourage Polish researchers to carry out research abroad.

Table 13: Measures to encourage researchers to spend some time as a researcher in another country

Measure	Description
Mobility Plus Programme (2010)	The Programme allows Polish scientists to participate in prestigious international research projects. See also chapter 6 "Working conditions".
Foundation for Polish Science's funds	
International PhD Projects Programme (MPD) (Calls for proposals finished in 2010, projects last 4-5 years)	The overall objective of the programme is to increase the level of research carried out in Poland by young scientists during the preparation of their PhD theses. At the same time, the programme aims to intensify the level of international cooperation of the Polish research units. The Foundation covers the stipends for PhD students and research grants, including the costs resulting from international cooperation. The programme targets scientific consortia consisting of at least one Polish and one foreign research unit carrying out common PhD projects.
KOLUMB Programme (ongoing)	Fellowships are awarded to the best young scholars to enable them to stay (from 6 to 12 months) at the world's leading research centres. The stipends are awarded for a stay at one research centre, or in justified instances more than one. Stipendees who would like to extend their stay abroad may seek additional funding on a one-time basis (for three months at most).
KWERENDA Programme (2002-2012)	These were grants awarded to Polish scholars for archive searches abroad as part of original and ground-breaking projects in the field of humanities or social sciences. Eligible candidates were PhD holders. The stipend was awarded once every two years, for a period of up to two months, for a visit to one, or in justified instances more than one, library or archive abroad. The amount of the stipend was determined on a case-by-case basis by the executive board of the Foundation, depending on the place where the stipend was to be used. The average stipend was EUR 2 200 per month. The programme was dropped as part of the rationalisation of the number of programmes funded by the FNP.

Source: Deloitte

Promotion of 'dual careers'

In Poland, the following institutions are involved in the promotion and support of researchers' dual careers:

- The National Science Centre³⁰ with regard to participation in international projects;
- The National Centre for Research and Development³¹;
- The National Contact Point for Research Programmes of the European Union³² with regard to information and training; and
- The Foundation for Polish Science³³ with regard to general support for the researchers.

Portability of national grants

Publicly funded grants or fellowships are not portable to other EU countries.

Access to cross-border grants

The majority of the grants are open to Polish and foreign candidates regardless of their nationality. National legislation requires the recipient of the financial support to be a research institution headquartered in the territory of Poland.

³⁰Available at: <http://www.ncn.gov.pl/?language=en>

³¹Available at: <http://www.ncbr.pl/en/>

³²Available at: <http://en.kpk.gov.pl/>

³³ Available at: <http://www.fnp.org.pl/>