

# 2016 Science, Technology and Innovation in Europe







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EU, The world's True Mecca of  
Science, Technology and Innovation



## Foreword

I would like to share with Republic of Korea the excellence of the EU in research, science and innovation as well as the wide range of relevant programmes underway, through the publication of this book.

Science, Technology and Innovation play a pivotal role in shaping industry and the economy in the twenty-first century. They provide instruments to solve many of the economic and social challenges and problems we face today.



In recognition of the importance of science and technology and its strong influence on all walks of life, the European Union (EU) has long emphasised the need for innovation as a vehicle for promoting stable and sustainable economic development and enabling a quantum leap toward a better society.

With just 7% of the world's population, the EU takes up respectively 24% and 32% of the global R&D expenditure and patent applications. This is a result of the EU's persistent and intensive support for science and technology over the long-term. On the back of the abundant knowhow so far accumulated and excellent human resources, the EU is indeed the world's true mecca of science, technology and innovation.

Within the overarching policy objective of providing a solid foundation for the economy as a whole by maintaining excellence in science and research, the EU has launched a new and ambitious research and innovation support programme, "Horizon2020". The programme is aimed at supporting research and innovation projects from 2014 to 2020 on a multilateral basis. It brings together numerous researchers and companies not only from Europe but also from the rest of the world, enabling them to acquire knowledge and expertise in the field of science and technology and to be deeply inter-connected through extensive networks and research grants.

It is equally noteworthy that individual EU Member States have concentrated efforts on developing their own national strategies and programmes tailor-made to their respective national capacity in science, technology and innovation. They are also making ceaseless efforts to provide full support for their researchers and companies, so as for them to play various important roles in the world, beyond national boundaries.

I do hope that the book will pave the way towards opening opportunities for Korean organisations. By further expanding bilateral cooperation in research and innovation the EU and Korea will be able to work together more effectively in jointly tackling the global challenges ahead of us all.

A handwritten signature in black ink, appearing to read 'G. Sabathil'. The signature is fluid and cursive, written on a white background.

**Gerhard Sabathil**

Ambassador, Head of the Delegation of the European Union to the Republic of Korea

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# 1 Why Cooperate with Europe?



# Why Cooperate with Europe?

The European Union is a **world leader in research and innovation**, responsible for 24% of world expenditure on research, 32% of high impact publications and 32% of patent applications.

With the largest internal market in the world the European Union is home to **many of the world's leading innovative companies**, and has a leading position in many fields of knowledge and key technologies such as health, food, renewable energies, environmental technologies and transport. It has untold wealth stemming from its highly educated workforce and its leading talent in cultural and creative industries.

Research and innovation are increasingly **interlinked internationally**. The number of internationally co-authored scientific publications and the mobility of researchers are increasing. Research organisations are establishing offices abroad and companies are investing outside their home countries.

**Global challenges** are important drivers for research and innovation. Our planet has finite resources which need to be cared for sustainably; climate change and infectious diseases do not stop at national borders, food security needs to be ensured across the globe. The European Union are strengthening its dialogues with international partners to build critical mass for tackling these challenges.

**New growth opportunities** come from providing new products and services derived from technological breakthroughs, new processes and business models, non-technological innovation and innovation in the services sector, combined with and driven by creativity, flair and talent, or, in other words, from innovation in its broadest sense.





# 2 EU Science, Technology and Innovation

# **PART 1**

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**EU POLICIES AND  
PROGRAMMES**

# EU Policies and Programmes

## 1 Policies and Strategies

International cooperation in research and innovation contributes to the broader policies of the European Union in supporting the following objectives:

- (a) **Strengthening the Union's excellence and attractiveness in research and innovation as well as its economic and industrial competitiveness** – by creating win-win situations and cooperating on the basis of mutual benefit; by accessing external sources of knowledge; by attracting talent and investment to the Union; by facilitating access to new and emerging markets; and by agreeing on common practices for conducting research and exploiting the results;
- (b) **Tackling global societal challenges** – by developing and deploying effective solutions more rapidly and by optimising the use of research infrastructures; and,
- (c) **Supporting the Union's external policies** – by coordinating closely with enlargement, neighbourhood, trade, Common Foreign and Security Policy, humanitarian aid and development policies and making research and innovation an integral part of a comprehensive package of external action.

'**Science diplomacy**' will use international cooperation in research and innovation as an instrument of soft power and a mechanism for improving relations with key countries and regions. Good international relations may, in turn, facilitate effective cooperation in research and innovation.

This strategy issued in 2012 underlines that enhancing and focusing EU international cooperation requires an **approach which fully captures the global dimension** of research and innovation in all its aspects. This is embedded in Horizon2020, with its stronger focus on international cooperation. Furthermore, beyond Horizon2020 the strategy also focused on strengthening the innovation dimension of international cooperation, developing adequate principles and framework conditions for it, strengthening the engagement with multilateral initiatives and enhancing the synergies with the EU's external policies and the activities of the Member States.



## 2 Programmes and Initiatives

The **Horizon2020 Programme** strongly supports Open Innovation, Open Science, and being Open to the World.

**Open Innovation** is about combining diverse sources of knowledge to innovate, underpinned by networked, multi-collaborative innovation systems and involving researchers, entrepreneurs, investors, users, governments and civil society. Favouring Open Innovation means encouraging the capitalisation of results from European research and innovation. **Open Science** includes moving forward on the need for more open access to research results and the underlying data. It also means the need for new initiatives to strengthen research integrity for policy makers, research funders, research institutions and researchers. **Open to the World** means to engage more in science diplomacy and in global scientific and technological collaboration to remain relevant and competitive, and to lead the way in developing global research and innovation partnerships to address global challenges.

Horizon2020 spans seven years (2014 to 2020), and is the biggest EU Research and Innovation funding programme ever. The Horizon2020 Specific Programme is implemented through two-year work programmes setting out funding opportunities under the different parts through calls for proposals containing topics, and the other actions such as public procurements.

The Horizon2020 legislation underscores the importance of international cooperation as a cross-cutting priority and adopts a dual approach focusing on general opening and targeted international cooperation.

Through the **general opening**, legal entities from across the world can participate in Horizon2020. This is an important tool for enhancing international cooperation and is essential for those parts of Horizon2020 which work primarily on a bottom-up basis. Grants provided by the European Research Council are increasingly recognised as awards for scientific excellence. Participation in the Knowledge and Innovation Communities (KICs) of the European Institute for Innovation and Technology is open to legal entities from across the world. e-Infrastructures have a strong international dimension. The Marie Skłodowska-Curie actions (MSCA) will, during Horizon2020 enable around 15000 researchers from outside Europe to start or pursue their

careers in Europe. In addition, secondments of researchers from Europe to elsewhere in the world are encouraged. It is expected that more than 3500 non-European organisations will have participated in MSCA by 2020.

Complementing the general opening, **targeted international cooperation activities** are included across Horizon2020. For these activities, themes and partners for cooperation are identified upfront and they concern areas where cooperating with international partners creates win-win situations. A full list of targeted international cooperation topics included in the work programmes is available on the Horizon2020 **Participant Portal**: (<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html>)

The fusion research part under the Euratom work programme also includes a very strong component of international cooperation, in particular connected to the European Fusion Roadmap and embodied by the flagship project ITER.

For global challenges in critical areas, international cooperation is better implemented through an increased engagement with international organisations and **multilateral initiatives**. Thus the EU has also enhanced support to multilateral initiatives in areas such as sustainable development, climate change, resource scarcity, biodiversity, health, nano-safety, energy etc.

### **3 Horizon2020 – Work Programme 2016-2017**

This Horizon2020 Work Programme for 2016-17 is completely new in terms of content, building on the achievements of the first Horizon2020 Work Programme which was for 2014-15, and which received an **overwhelmingly positive response with strong demand** from the research and innovation stakeholder communities.

Through this new Work Programme, Horizon2020 will continue to fund researchers and innovators at the cutting edge of their fields working on the latest breakthroughs; it will support projects across the cycle from research to innovation; it will create opportunities to build research teams in Member States where the innovation and research potential is underexploited; it will encourage the training of researchers including exchanges of researchers between industry and academia; it will take a strategic approach to international cooperation in research and innovation; and through a suite of financial instruments it will help to plug the gap

between innovative research and its exploitation.

**Criteria used for selecting the priorities** to be supported in the Work Programme 2016-2017 were: the maximising of EU added value; addressing and anticipating research and innovation key trends and areas of high potential for world-class breakthroughs; providing strong potential for impact and uptake and leverage of industry and SME participation, by addressing the demand side, tackling barriers to innovation and market deployment and uptake, and building collaborations between industry, businesses, universities and research institutions; providing genuinely cross-cutting approaches and embedding key novelties such as covering the full research and innovation cycle, social science and humanities, gender aspects, and climate and sustainable development; improving international cooperation by focusing on key strategic and targeted areas of common interest and mutual benefit.

The Horizon2020 Work Programme 2016-17 comprises **20 parts** which set out the funding opportunities under the different parts of the programme. These describe the overall objectives, the respective calls, and the topics within each call. Each topic describes the specific challenge to be addressed, the scope of the activities to be carried out, and the expected impacts to be achieved.

Proposals can be submitted in the calls for proposals shown on the **Participant Portal**.

**In alignment with the new Commission's agenda**, the Work Programme for 2016-2017 will contribute to the Jobs, Growth and Investment Package helping to strengthen Europe's global competitiveness, create new and sustainable jobs and promote growth. All the calls for proposals and activities will contribute substantially to this policy area as well as contributing in broader terms to one or more of the other policy areas.

#### **4 Joint Activities with South Korea**

EU-South Korean relations are governed by **three key agreements** as well as more specific agreements in several fields. South Korea is the only country with whom the

EU has signed a Framework Agreement (in 2010), a Free Trade Agreement (in 2011) and a Crisis Management Agreement (in 2014).

Cooperation between South Korea and the EU on research and innovation is governed by the **Agreement for Scientific and Technological Cooperation**, which came into force in 2007. In fusion research, Euratom and South Korea are parties to the ITER International Agreement and have a bilateral cooperation agreement on fusion energy, in force since 2006. In fission research, Euratom and South Korea are signatories to the Generation IV International Forum.

In **FP7** collaborative projects, there were 66 participations of entities from South Korea. They took part in 53 projects that had a total budget of €284 million. Most of the projects were in the areas of ICT, Health, Nanotechnologies, Materials and Production technologies, Environment, and Euratom.

So far, under **Horizon2020**, South Korean applicants have submitted 70 proposals involving 82 participations to collaborative actions, leading to 11 successful projects, involving 14 participations, with a success rate of 21.4% (as compared to 11.4% overall). South Korean participants have received €0.3 million from the European Commission and have contributed with €5.4 million. Horizon2020 participation so far is mainly in the areas of ICT, health, energy, climate action, and satellite navigation.

The EC's Joint Research Centre cooperates with South Korean institutions mainly in the fields of health, measurement science, energy and transport, construction standards, nuclear safety and security. In particular, there is a longstanding cooperation on reference measurement methods, materials and measurement data; evaluation and scientific validation of alternative testing methods for regulatory safety assessment of chemicals; and nuclear data measurements.

So far, 7 researchers from South Korea have obtained Individual Fellowships from Marie Skłodowska-Curie Actions (MSCA) under Horizon2020. Furthermore, there are 3 entities from South Korea that participate in MSCA-RISE (International and intersectoral cooperation through R&I staff exchanges) and 5 that participate in MSCA-ITN (Innovative Training Networks).

Both the EU and South Korea emphasise the need to **deepen, scale up and open cooperation** in selected thematic areas.

- In the ICT area, a joint call was launched under the 2016-17 Work Programme of Horizon2020 addressing the topics of 5G communication networks, Internet of Things and brokerage of mobile cloud services. The bilateral ICT cooperation also includes other ICT and 5G policy areas such as standardisation and spectrum management.
- In the non-nuclear energy area, both sides are engaging in twinning activities in the area of technologies and processes for post- and/or pre-combustion CO<sub>2</sub> capture. Initiatives for collaboration between EU projects, selected under the 2016-17 WP of Horizon2020, and endorsed South Korean projects are launched from 2016 onwards.
- In the area of nanotechnology, during 2015 and 2016 both sides cooperate through Nanoreg, the initiative for regulatory testing of nanomaterials.
- In the area of health and bio-medical challenges, cooperation continue in the context of the Global Research Collaboration for Infectious Disease Preparedness<sup>1)</sup>. The EU and South Korea is also participating in the International Rare Diseases Research Consortium<sup>2)</sup> and the International Human Epigenome Consortium<sup>3)</sup>.

In fusion energy research, a bilateral Work Program has been adopted with consolidation and extension of collaborative activities, specific cooperation between the KSTAR and JET programmes, joint exploitation of fusion facilities JET, KSTAR, JT60SA for risk mitigation in ITER delays, discussion on principles of an international networking of facilities in support to ITER, and potential South Korean participation in specific Broader Approach activities.

The European Commission's Joint Research Centre collaborates with South Korean institutions on seismic testing techniques for infrastructures, R&D and standardisation in construction.

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1) [www.glopid-r.org](http://www.glopid-r.org)

2) [www.irdrc.org](http://www.irdrc.org)

3) [www.ihec.org](http://www.ihec.org)

**Potential further areas of future EU-South Korea S&T cooperation** include:

- Nanoelectronics, where the two sides have agreed to exchange roadmaps and pursue with twinning/joint activities in view of exploiting synergies and developing a more intense cooperation.
- Materials modelling, where both sides have agreed to promote cooperation and South Korea's active cooperation with the European Materials Modelling Council, a network of materials modelling stakeholders.
- Satellite navigation, where both sides have agreed to continue promoting joint research activities and partnering.
- Innovative medicine and medical equipment, where cooperation could be strengthened e.g. on Anti-Microbial Resistance, via the existing Joint Programming Initiative<sup>4)</sup>, and the International Initiative for Traumatic Brain Injury Research<sup>5)</sup>.
- Smart Grids and other emerging areas in the energy industry sector, with working level discussions seeking new cooperation opportunities, e.g. through the 'Mission Innovation' initiative on clean energy innovation.

In fission, co-operation could continue under the calls of the Euratom Programme, and future nuclear energy systems will continue to be addressed (including within the Framework Agreement for International Collaboration on R&D of Generation IV Nuclear Energy Systems). In fusion, South Korea and Euratom have roadmaps for the Demonstration Power Station developments; these are also part of the South Korean Fusion Development Plan (2007-36). South Korea might be involved in the European fusion programme and EURO fusion programme, including through consolidation of cooperation between JET and KSTAR tokamaks.

**To support the participation of entities established in South Korea in Horizon2020 projects**, the South Korean government (Ministry of Science, ICT and Future Planning, MSIP and Ministry of Trade, Industry and Energy, MOTIE) regularly co-funds such participation. The mechanism covers all thematic areas of Horizon2020. The two sides

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4) <http://www.jpiamr.eu/>

5) <http://intbir.nih.gov/>

have agreed on early exchange of programme information to enable provision of such co-funding and to allow for monitoring of the cooperation intensity, as well as to continue to support efforts of multiplayers, notably National Contact Points, for facilitating access to information and partnering of R&I stakeholders. Moreover, both sides have agreed to jointly promote the organisation of R&I Days and other matchmaking events to facilitate partnering with both academia and industry.

In addition, the EU-Korea Implementing Arrangement (IA) aims to foster researcher mobility where **European Research Council (ERC) grant holders in Europe have the opportunity to host top researchers from Korea:** ([http://erc.europa.eu/sites/default/files/press\\_release/files/Implementing\\_Arrangement\\_2013.pdf](http://erc.europa.eu/sites/default/files/press_release/files/Implementing_Arrangement_2013.pdf))

Furthermore, the work programme of the bilateral fusion cooperation agreement have as main pillars the collaboration between the world leading tokamaks JET and KSTAR, mapping of bilateral collaborative activities and potential Korean participation in specific Broader Approach activities.





# PART 2

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**HORIZON2020  
IN BRIEF**



European  
Commission

# HORIZON2020

in brief



**The EU Framework Programme  
for Research & Innovation**

*Research and  
Innovation*

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EUROPEAN COMMISSION



# **HORIZON** **2020** in brief

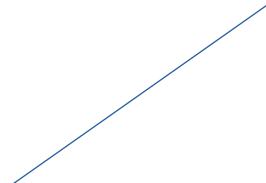
The EU Framework  
Programme for  
Research & Innovation



2014 Directorate-General for Research and Innovation

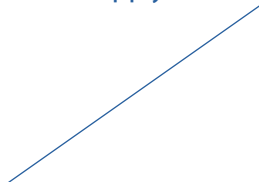


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HORIZON2020

# Introduction

# Introduction

## Horizon2020 – delivering excellent science for Europe

Horizon2020 is the biggest EU research and innovation programme ever. It will lead to more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. Almost €80 billion<sup>1</sup> of funding is available over 7 years (2014 to 2020) – in addition to the private and national public investment that this money will attract.

Horizon2020 has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that investment in research and innovation is essential for Europe's future and so put it at the heart of the Europe 2020 strategy for smart, sustainable and inclusive growth. Horizon2020 is helping to achieve this by coupling research to innovation and focusing on three key areas: excellent science, industrial leadership and societal challenges. The goal is to ensure Europe produces world-class science and technology that drives economic growth.

EU research funding under previous framework programmes has already brought together scientists and industry both within Europe and from around the world to find solutions to a vast array of challenges. Their innovations have improved lives, helped protect the environment and made European industry more sustainable and competitive. Horizon2020 is open to participation by researchers from all over the world.

Their experience has been essential for the development of this pioneering programme – the Commission collected their feedback and took into account recommendations from the Member States and the European Parliament, as well as lessons learned during earlier programmes. The message was clear – make Horizon2020 simpler for users – and it is!

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<sup>1</sup>) All figures are quoted in current prices



# Getting to know Horizon2020

HORIZON2020

# Getting to know Horizon2020

*Excellent science, competitive industry and tackling societal challenges are at the heart of Horizon2020. Targeted funding will help to ensure that the best ideas are brought to the market faster*

*– and are used in our cities, hospitals, factories, shops and homes as quickly as possible.*

## ► Excellent science

Horizon2020 will bolster the EU's position as a world leader in science, attracting the best brains and helping our scientists collaborate and share ideas across Europe. It will help talented people and innovative firms boost Europe's competitiveness, creating jobs along the way, and contributing to a higher standard of living – benefiting everyone.

### Frontier research funded by the European Research Council (ERC)

Horizon2020 will bolster the EU's position as a world leader in science, attracting the best brains and helping our scientists collaborate and share ideas across Europe. It will help talented people and innovative firms boost Europe's competitiveness, creating jobs along the way, and contributing to a higher standard of living – benefiting everyone.

**Funding: €13.095 billion**

### Marie Skłodowska-Curie Actions

Training and career development helps produce leading researchers. Support is offered to young and experienced researchers to reinforce their career and skills through training, or periods of placement in another country or in the private sector. This gives them new knowledge and experience to allow them to reach their full potential.

**Funding: €6.162 billion**

## Future and emerging technologies

Staying at the cutting edge of new technologies will keep Europe competitive and create new, high-skilled jobs – and this means being proactive and thinking one step ahead of the crowd. EU funding is helping to make Europe the best possible environment for responsible and dynamic multi-disciplinary cooperation on new and future technologies.

**Funding: €2.696 billion**

## World-class infrastructure

Research equipment can be so complex and costly that no single research team – or even country – can afford to buy or construct or operate it alone. Examples include: the high powered lasers that serve a diverse research community spanning medicine, materials sciences and biochemistry; specialised high-tech airplanes; or a monitoring station at the bottom of the sea, used for observing climate change.

These can cost millions of euro, and need the skills of the world's top experts. EU funding helps to pool resources for such large-scale projects, and provides Europe's researchers with access to the very latest, state-of-the-art infrastructure – making new and exciting research possible.

**Funding: €2.488 billion**



## ► Industrial leadership

To be the best at what it does, Europe needs to invest in promising and strategic technologies, such as those used in advanced manufacturing and micro-electronics. But public funding alone is not enough: the EU needs to encourage businesses to invest more in research, and target areas where they can work with the public sector to boost innovation.

Businesses gain by becoming more innovative, efficient and competitive. This in turn creates new jobs and market opportunities. Every €1 invested by the EU generates around €13 in added value for business. And increasing investment further to 3 % of GDP by 2020 would create a further 3.7 million jobs!

### Leadership in enabling and industrial technologies

Horizon2020 supports the ground-breaking technologies needed to underpin innovation across all sectors, including information and communication technology (ICT) and space. Key enabling technologies such as advanced manufacturing and materials, biotechnology and nanotechnologies, are at the heart of game-changing products: smart phones, high performance batteries, light vehicles, nanomedicines, smart textiles and many more besides. European manufacturing industry is a key employer providing jobs for 31 million people across Europe.

**Funding: €13.557 billion**

Small and medium enterprises (SMEs) – a key source of jobs and innovation – receive special attention in Horizon2020. They can collaborate in projects as part of a consortium and can receive support through a dedicated instrument designed specifically for highly innovative smaller companies. The integrated and streamlined character of Horizon2020 will boost SME participation to at least 20 % (€8.65 billion) of the total combined budgets of the 'Leadership in enabling and industrial technologies' and the 'Societal Challenges' themes. The SME instrument will be pivotal in achieving this target by providing support to help single SMEs, or consortia of SMEs, assess the market viability of their ideas at the high-risk stage, and then to help them develop these ideas further. Funding is also available for business coaching and guidance on how to identify and attract private investors.

**Funding: At least €3 billion allocated to the SME instrument**

## Access to risk finance

Innovative companies and other organisations often find it difficult to access financing for high-risk new ideas or their development. Horizon2020 helps to fill this “innovation gap” through loans and guarantees, as well as by investing in innovative SMEs and small midcaps. This support acts as a catalyst to attract private finance and venture capital for research and innovation. It is estimated that every €1 the EU invests generates €5 in additional finance.

**Funding: €2.842 billion**

## ► Societal challenges

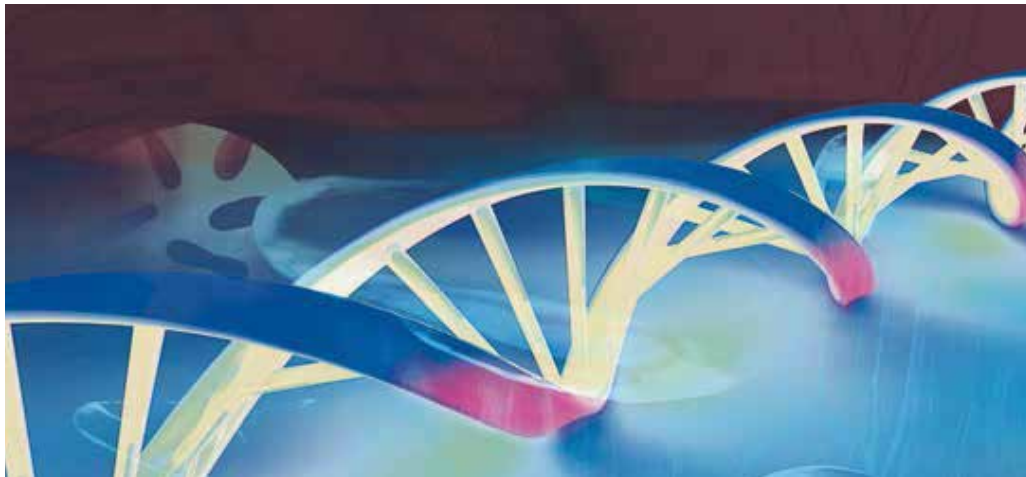
The EU has identified seven priority challenges where targeted investment in research and innovation can have a real impact benefitting the citizen:

- ✿ Health, demographic change and wellbeing
- ✿ Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
- ✿ Secure, clean and efficient energy
- ✿ Smart, green and integrated transport
- ✿ Climate action, environment, resource efficiency and raw materials
- ✿ Europe in a changing world - inclusive, innovative and reflective societies
- ✿ Secure societies - protecting freedom and security of Europe and its citizens.

## Health and wellbeing

Everyone wants a long, happy and healthy life, and scientists are doing their best to make this possible. They are tackling some of the major current health issues as well as emerging threats such as the increasing impact of Alzheimer’s disease, diabetes and antibiotic-resistant ‘superbugs’. Investment in health research and innovation will help us stay active, develop new, safer and more effective treatments and help keep our health and care systems viable. It will give doctors the tools they need for more personalised medicine, and it will step up prevention and treatment of chronic and infectious diseases.

**Funding: €7.472 billion**



## Food security and sustainable use of biological resources

With the world population set to reach nine billion by 2050 we need to find ways to radically change our approach to production, consumption, processing, storage, recycling and waste disposal while minimising the environmental impact. This will include balancing the use of renewable and non-renewable resources from land, seas and oceans, transforming waste into valuable resources, and the sustainable production of food, feedstuffs, bio-based products and bioenergy. In the EU, agriculture and forestry and the food and bio-based industry sectors altogether employ 22 million people and play a key role in rural development and the management of Europe's natural heritage.

**Funding: €3.851 billion**

## Sustainable energy

Energy drives the modern economy but even just maintaining our standard of living requires a huge amount of energy. As the world's second-largest economy, Europe is over-dependent on the rest of the globe for its energy – energy derived from fossil fuels that accelerate climate change. The EU has, therefore, set itself ambitious climate and energy targets. EU funding through Horizon2020 will play a key role in achieving these goals.

**Funding: €5.931 billion**

## Green, integrated mobility

Mobility drives employment, economic growth, prosperity and global trade. It also provides vital links between people and communities. However, today's transport systems and the way we use them are unsustainable. We rely too heavily on shrinking stocks of oil, which makes us less energy secure. And transport-related problems – congestion, road safety, atmospheric pollution – impact on our daily lives and health. To address these issues Horizon2020 is contributing to the creation of a sustainable transport system that is fit for a modern, competitive Europe.

**Funding: €6.339 billion**

## Climate action, environment, resource efficiency and raw materials

The era of never-ending cheap resources is coming to an end: access to raw materials and clean water can no longer be taken for granted. Biodiversity and ecosystems are also under pressure. The solution is to invest now in innovation to support a green economy – an economy that is in sync with the natural environment. Dealing with climate change is a cross-cutting priority in Horizon2020 and accounts for 35 % of the overall budget across the programme.

Waste and water are particular priorities. Waste is currently responsible for 2 % of the EU's greenhouse gas emissions, while boosting growth in the water industry by just 1 % could create up to 20 000 new jobs.

**Funding: €3.081 billion**

## Europe in a changing world - inclusive, innovative and reflective societies

In 2011 around 80 million people were at risk of poverty in Europe. Significant numbers of young people – on whom our future depends – are not in education, work or training. These are just two examples of challenges that threaten the future of Europe and individuals in large sectors of society. Research and innovation can help, which is why Horizon2020 is funding research on new strategies and governance structures to overcome prevailing economic instability and ensure Europe is resilient to future downturns, demographic change and migration

patterns. Funding also supports new forms of innovation such as open innovation, business model innovation, public sector and social innovation to meet social needs. By supporting research and innovation on European heritage, identity, history, culture and Europe's role in the world, the EU is also building 'reflective societies' – in which shared values and their contribution to our joint future are explored.

**Funding: €1.309 billion**



### Secure societies – protecting freedom and security of Europe and its citizens

Today, keeping citizens safe means fighting crime and terrorism, protecting communities from natural and man-made disasters, thwarting cyber-attacks and guarding against illegal trafficking in people, drugs and counterfeit goods. EU research and innovation is developing new technologies to protect our societies, while respecting privacy and upholding fundamental rights – two core values at the heart of EU security research. These technologies have a significant potential to stimulate economic activity through new products and services and create jobs.

**Funding: €1.695 billion**



## ► Spreading excellence and widening participation

Research and innovation are crucial to economic prosperity and so measures are needed to ensure that the innovation performances of all Member States and their regions converge and improve. Experience shows that when economic crises constrain national budgets, disparities in innovation performance across Europe become more apparent. Exploiting the potential of Europe's talent pool and maximising and spreading the benefits of innovation across the Union is therefore the best way to strengthen Europe's competitiveness and its ability to address societal challenges in the future.

Specific measures under Horizon2020 include:

- ✱ 'Teaming' excellent research institutions with lower performing counterparts to create or upgrade centres of excellence
- ✱ 'Twinning' institutions, including staff exchanges, expert visits and training courses
- ✱ Establishing 'ERA Chairs' to attract outstanding academics to highpotential institutions
- ✱ A Policy Support Facility to help improve national and regional research and innovation policies
- ✱ Providing excellent researchers and innovators with better access to international networks
- ✱ Strengthening the transnational networks of National Contact Points to provide information to those seeking support.

**Funding: €816 million**

### Synergies with other policies

A basic premise of the Europe 2020 strategy for smart, sustainable and inclusive growth is that all EU policies should work together to achieve its objectives. As regards research and innovation, the European Structural and Investment Funds are providing complementary support to Horizon2020 to finance the upgrade of scientific infrastructure – from laboratory equipment to supercomputers, to high-speed data networks – and to boost research and innovation capacities where needed.

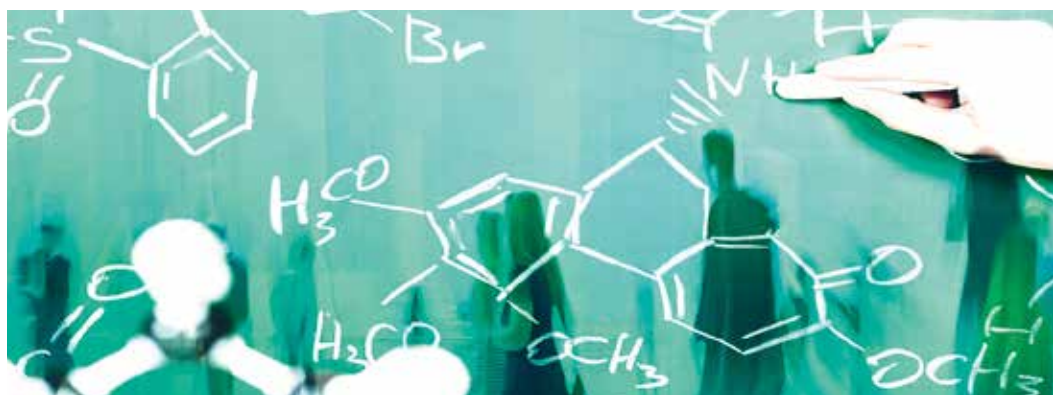
## ► Science with and for society

Effective cooperation between science and society is needed to recruit new talent for science and to marry scientific excellence with social awareness and responsibility. This means understanding the issues from all sides. Horizon2020 is, therefore, supporting projects that involve the citizen in the processes that define the nature of the research that affects their everyday lives. Broader understanding between the specialist and non-specialist communities on objectives and the means for achieving them will maintain scientific excellence and allow society to share ownership of the results.

**Funding: €462 million**

## ► Innovation actions in Horizon2020

Substantial support for innovation is provided throughout Horizon2020 for prototyping, testing, demonstrating, piloting, large-scale product validation and market replication. Significant support to demand side approaches is another important feature, notably pre-commercial and first-commercial public procurement of innovation, as well as regulation to foster innovation and standard-setting. New forms of public sector innovation and social innovation as well as pilot actions for private sector services and products are also covered.



## ► Social Sciences and Humanities

As a cross-cutting issue of broad relevance, Social Sciences and Humanities (SSH) research is fully integrated into each of the general objectives of Horizon2020. Embedding SSH research across Horizon2020 is essential to maximise the returns to society from investment in science and technology. Integrating the socio-economic dimension into the design, development and implementation of research itself and of new technologies can help find solutions to societal problems. Indeed, the idea to focus Horizon2020 around “Challenges” rather than disciplinary fields of research illustrates this new approach.

## ► Nuclear research for all citizens

EU research on nuclear fission focuses on safety and security, medical research, radiation protection, waste management, industrial uses of radiation, and includes many other areas such as the use of radiation in the agricultural sector.

EU research on nuclear fusion aims at demonstrating that fusion can become a viable energy source for large-scale commercial exploitation within a reasonable timeframe, by gathering the efforts of all stakeholders into a unique European joint programme.

**Funding: €1.603 billion**

## ► Science for policy – the role of the Joint Research Centre (JRC)

The Joint Research Centre is the Commission's in-house service providing independent, evidence-based scientific and technical support for EU policies. Its activities are funded through Horizon2020 and many of its actions address the seven societal challenges. Through the research and training programme of the European Atomic Energy Community, the JRC also supports the EU's efforts to strengthen nuclear security, safety and radiation protection.

Further information: <https://ec.europa.eu/jrc/>.

# How it works

HORIZON2020

# How it works

*Horizon2020 is open to everyone. Under Horizon2020 there is only one set of simplified rules and procedures to follow. This means that participants can focus on what is really important: research, innovation and results.*

*This focused approach makes sure new projects get off the ground quickly – and achieve results faster.*

*The rules are designed to guarantee fairness, protect participants and ensure public money is spent appropriately.*

## ► Who may apply?

- ✱ For standard research projects – a consortium of at least three legal entities. Each entity must be established in an EU Member State or an Associated Country.
- ✱ For other programmes – European Research Council (ERC) (p.46), SME Instrument (p.47), the co-funding of national or public sector calls or programmes (p.50), coordination and support (p.51), training and mobility (p.47) – the minimum condition for participation is one legal entity established in a Member State or in an Associated Country.

Additional conditions may apply. Check the Work Programme for details.

In general, legal entities established in any country and international organisations, may participate.

In general, legal entities established in any country and international organisations, may participate.

Agreements between the EU and individual governments have created a number of **associated countries**, where legal entities can participate in Horizon2020 on an equal footing to those of EU Member States.

For a list of associated countries, see <http://bit.ly/H2020AC>.

**Participating legal entities from other countries may also be able to get EU funding in certain circumstances.**

See <http://bit.ly/H2020IPC>.

## ► Action types

### Research and innovation actions

Funding for research projects tackling clearly defined challenges, which can lead to the development of new knowledge or a new technology.

**Who?** Consortia of partners from different countries, industry and academia.

### Innovation actions

Funding is more focused on closer-to-the-market activities. For example, prototyping, testing, demonstrating, piloting, scaling-up etc. if they aim at producing new or improved products or services.

**Who?** Consortia of partners from different countries, industry and academia.

### Coordination and support actions

Funding covers the coordination and networking of research and innovation projects, programmes and policies. Funding for research and innovation per se is covered elsewhere.

**Who?** Single entities or consortia of partners from different countries, industry and academia.

### Frontier research grants – European Research Council

Funding for projects evaluated on the sole criterion of scientific excellence in any field of research, carried out by a single national or multinational research team led by a 'principal investigator'.

**Who?** The ERC funds excellent young, early-career researchers, already independent researchers and senior research leaders. Researchers can be of any nationality and their projects can be in any field of research.



## Support for training and career development – Marie Skłodowska-Curie Actions

Funding for international research fellowships in the public or private sector, research training, staff exchanges.

**Who?** Early stage researchers or experienced researchers (of any nationality), technical staff, national/regional research mobility programmes.

## SME Instrument

This instrument is aimed at highly innovative SMEs with the ambition to develop their growth potential. It offers lump sums for feasibility studies, grants for an innovation project's main phase (demonstration, prototyping, testing, application development...); lastly, the commercialisation phase is supported indirectly through facilitated access to debt and equity financial instruments.

**Who?** Only SMEs can participate. Either a single SME or a consortium of SMEs established in an EU or Associated Country.





## Fast track to innovation

Funding is due to start in 2015 as a pilot action. Continuously open, innovator-driven calls will target innovation projects addressing any technology or societal challenge field. The pilot action will undergo an in-depth assessment half-way through Horizon2020.

**Who?** Industry, including SMEs, with a minimum of three and maximum of five partners and a maximum EU contribution of €3 million per project.

### ► Funding rates

In Horizon2020 there is one single funding rate for all beneficiaries and all activities in the research grants. EU funding covers up to 100 % of all eligible costs for all research and innovation actions. For innovation actions, funding generally covers 70 % of eligible costs, but may increase to 100 % for non-profit organisations. Indirect eligible costs (e.g. administration, communication and infrastructure costs, office supplies) are reimbursed with a 25 % flat rate of the direct eligible costs (those costs directly linked to the action implementation).



## ► Checks and audits

Only coordinators in projects requesting funding from the Union of €500 000 or more will be subject to a financial viability check, in which they must prove that they have the resources to implement the project.

The European Commission audits project participants up to two years after payment of the balance. The audit strategy is focused on risk and fraud prevention.

## ► Access rights

Access rights are a right to use results or background of another participant in a project.

Access rights are enjoyed by participants to implement the project or exploit their results, by the EU for non-commercial policy purposes, and by Member States in the area of Secure Societies for non-commercial policy purposes.

## ► Sharing results while protecting IPR

Each participant must disseminate the results it produces – and therefore owns – as early as possible. Exceptions only apply to protect intellectual property rights (IPR),

security or legitimate interests.

When publishing results in scientific publications, open access to the publication must be ensured. This guarantees that research results funded by EU taxpayers are available for free to everyone.

IPR belongs to the team that generates the results. In very specific circumstances, joint-ownership may apply. Once results have been generated the joint owners may agree on a different ownership system.

## ► Ethics and research

Ethics is an integral part of research and a driver for research excellence. All activities funded under Horizon2020 shall comply with ethical principles and relevant national legislation. The ethical principles include the need to avoid breaches of research integrity, in particular any form of plagiarism, data fabrication or falsification.

## ► Other sources of funding through Horizon2020

Through partnerships, Horizon2020 will develop closer synergies with national and regional programmes, encourage greater private investment in research and innovation, and pool Europe's resources to tackle the biggest challenges.



Over seven years, EU funding of €8 billion will attract €10 billion from the private sector and another €4 billion from EU countries. Most of the funding will go to Joint Technology Initiatives (JTIs). These are run as joint undertakings and organise their own research agenda. JTIs are active in a number of areas of strategic importance for the EU: innovative medicines; fuel cells and hydrogen; cleaner, quieter aircraft; bio-based industries; and electronics manufacturing. An updated list can be found on this webpage <http://bit.ly/H2020Partners>

Public-Public Partnerships also allow public sector organisations in EU Member States to draw up joint research programmes. Areas covered include: support for high-tech SMEs; new treatments for poverty-related diseases; new measurement technologies; and technologies empowering the elderly and disabled to live safely in their own homes.

### Coordination and support actions

- ✳ Calls for proposals between national research programmes (ERA-NET co-fund);
- ✳ Calls for tenders for Pre-Commercial Public Procurements or Public Procurement of Innovative solutions (PCP-PPI co-fund);
- ✳ Mobility programmes (Marie Skłodowska-Curie co-fund).

### European Institute of Innovation and Technology (EIT)

The EIT integrates higher education, research and innovation through the 'Knowledge and Innovation Communities' (KICs) to generate new approaches towards innovation, trigger sustainable growth and competitiveness and promote entrepreneurship. These innovative partnerships must have a long-term vision of at least seven years, and be run with business logic following a results-oriented approach with clear objectives and a focus on achieving economic and social impact to become global players.

**For further information:** <http://eit.europa.eu/>

**Funding:** €2.711 billion

**Who?** Consortia representing research, education and innovation/business.

# Thinking European – and globally

HORIZON2020

# Thinking European – and globally

## ▶ Borderless research

If Europe is to find solutions to societal challenges while boosting growth and competitiveness, it needs a fully functioning network of research excellence – a European Research Area (ERA). This single market for knowledge, research and innovation is being developed with the aid of EU funding and is helping researchers, their knowledge and results to circulate freely across Europe.

The ERA guarantees that knowledge and ideas are shared across Europe, reducing the risk of wasting money on duplicating research – scientists in different European labs carrying out the same research simultaneously. This coordinated approach – encouraged by Horizon2020 – helps to ensure that every euro spent on research is invested strategically.

## ▶ Open to the world

In line with the Union's strategy for international cooperation in research and innovation, Horizon2020 is open to the participation of researchers from across the world. As more research and innovation is performed in international partner countries, it is crucial that Europe is able to access the best researchers and research centres worldwide. Not only does this provide sources of new ideas and expertise, it is also important to ensure that European researchers are able to collaborate worldwide with the best in the field.

Targeted international cooperation activities are included in the societal challenges, enabling and industrial technologies and other relevant parts of Horizon2020. The areas and partners for cooperation are identified in the relevant Work Programme.

**For more information on who is eligible, see p.46.**

# How to apply

HORIZON2020

# How to apply

Work programmes announce the specific research and innovation areas that will be funded. They are accessible through the Participant Portal (<http://bit.ly/H2020PP>) and indicate the timing of forthcoming Calls for Proposals. When ready each Call gives more precise information on the research and innovation issues that applicants for funding should address in their proposals.

Although details on all Calls can also be found in the EU's Official Journal, the Participant Portal goes further. It provides easy-to-follow guidance and all the tools needed to apply for funding and manage projects throughout their lifecycle. It covers every type of research and innovation action.

National Contact Points (<http://bit.ly/H2020NCP>) also provide a wealth of information and individual guidance on Horizon2020. There is at least one in every EU country and some in other countries.

Specific questions can also be sent to the online Research Enquiry Service <http://ec.europa.eu/research/enquiries>.

## Submitting a proposal

Proposals must be submitted before the deadline of the relevant Call. The Participant Portal provides clear instructions. The system is simpler than ever – no more paper! All proposals must be submitted online only.

## Finding partners

Many Calls require a team to have at least three partners. The Participant Portal partner search function helps to identify potential partners with particular competences, facilities or experience.

## Evaluation by experts

After the deadline passes, each proposal is evaluated by a panel of independent experts in the areas covered by the Call. The expert panels score each proposal against a list of criteria (see <http://bit.ly/H2020Eval>). On that basis, the best proposals are selected for funding.



## Grant agreement

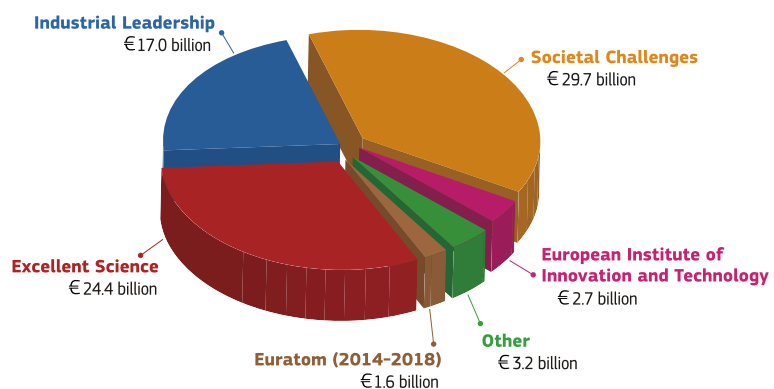
Once a proposal passes the scientific evaluation stage (duration five months), applicants are informed about the outcome. For the proposals which are selected for funding, the European Commission then draws up the grant agreement.

The time limit for signing the grant agreements is generally three months.

The grant agreement confirms the description of the research and innovation activities that will be undertaken, the project duration and budget, rates and costs, rights and obligations, division of roles, rules on suspending and terminating projects, and more.

Then the project can begin!

## Horizon2020 Budget (in current prices 2013)



## Useful links:

### Participant Portal

<http://bit.ly/H2020PP>

### Helpdesk

<http://ec.europa.eu/research/enquiries>

### Learn more about Horizon2020

<http://ec.europa.eu/horizon2020>

### National contact Points (NCPs):

<http://bit.ly/H2020NCP>

### Enterprise Europe Network:

<http://een.ec.europa.eu/>

### Register as an expert:

<http://bit.ly/H2020Experts>

## HOW TO OBTAIN EU PUBLICATIONS

### Free publications:

- one copy:
  - via EU Bookshop (<http://bookshop.europa.eu>);
- more than one copy or posters/maps:
  - from the European Union's representations ([http://ec.europa.eu/represent\\_en.htm](http://ec.europa.eu/represent_en.htm));
  - from the delegations in non-EU countries ([http://eeas.europa.eu/delegations/index\\_en.htm](http://eeas.europa.eu/delegations/index_en.htm));
  - by contacting the Europe Direct service ([http://europa.eu/europedirect/index\\_en.htm](http://europa.eu/europedirect/index_en.htm)) or calling 00 800 6 7 8 9 10 11 (freephone number from anywhere in the EU) (\*).

(\* The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

### Priced publications:

- via EU Bookshop (<http://bookshop.europa.eu>).

### Priced subscriptions:

- via one of the sales agents of the Publications Office of the European Union ([http://publications.europa.eu/others/agents/index\\_en.htm](http://publications.europa.eu/others/agents/index_en.htm)).

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Horizon2020 is the biggest EU research and innovation programme ever. Almost €80 billion of funding is available over seven years (2014 to 2020) – in addition to the private and national public investment that this money will attract. Horizon2020 will help to achieve smart, sustainable and inclusive economic growth. The goal is to ensure Europe produces world-class science and technology, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering solutions to big challenges facing our society. This guide explains the programme in more detail.



[www.ec.europa.eu/horizon2020](http://www.ec.europa.eu/horizon2020)



EU 출판국

doi:10.2777/3719

# PART 3

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**MARIE SKŁODOWSKA-CURIE  
ACTIONS**



European  
Commission



Marie Skłodowska-Curie actions  
A pocket guide:  
**Your passport to a  
successful research career**

Education  
and Culture

European Commission  
Directorate-General for Education and Culture  
Research careers. Marie Skłodowska-Curie actions.  
B-1049 Brussels

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Internet: [ec.europa.eu/msca](http://ec.europa.eu/msca)

[ec.europa.eu/programmes/horizon2020](http://ec.europa.eu/programmes/horizon2020)

[www.facebook.com/Marie.Curie.Actions](https://www.facebook.com/Marie.Curie.Actions)

***EUROPE DIRECT is a service to help you find answers  
to your questions about the European Union.***

Freephone number(\*):

**00 800 6 7 8 9 10 11**

(\* ) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

More information about the European Union is available on the internet  
(<http://europa.eu>).

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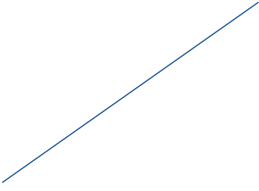
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EUROPEAN COMMISSION



## **MARIE SKŁODOWSKA-CURIE ACTIONS**

A POCKET GUIDE:  
YOUR PASSPORT TO A SUCCESSFUL  
RESEARCH CAREER





## MARIE SKŁODOWSKA-CURIE ACTIONS YOUR PASSPORT TO A SUCCESSFUL RESEARCH CAREER

Investing in innovative research is investing in Europe's future.

The Marie Skłodowska-Curie actions (MSCA) help to fund career development opportunities for researchers at all stages of their careers.

They encourage the development of skills for innovation in all scientific disciplines, through worldwide and cross-sector mobility.

The scheme offers high-quality and innovative research training and knowledge sharing opportunities in the academic and non-academic sectors. A strong emphasis is given to the employability of researchers and the enhancement of transferable skills, entrepreneurship, management and financing of research activities and programmes, management of intellectual property rights, ethical aspects and communication.

**“ Nothing in life  
is to be feared.  
It is only to be  
understood. ”**

Marie Skłodowska-Curie

The MSCA ensure attractive employment and working conditions for researchers. For instance, funded research projects must promote gender balance and equal opportunities in order to counteract previous barriers in these areas.

Funded beneficiaries are also required to undertake public outreach activities to bridge the gap between science and society, raising awareness of the impact of researchers' work on citizens' daily lives.

This booklet is designed to help you decide which MSCA grant is the right one for you.

### **WHICH ACTION?**

Compare the available research funding opportunities at a glance.

» **Page 68**

### **NEED TO KNOW**

Some useful basics before you dive in.

» **Page 70**

### **TRAINING FUTURE GENERATIONS OF RESEARCHERS**

Marie Skłodowska-Curie actions bring together academic and non-academic partners to train early-stage researchers.

#### **INNOVATIVE TRAINING NETWORKS**

» **Section 1**

## **GOING FURTHER IN YOUR RESEARCH CAREER**

Are you a talented researcher looking to undertake research in or outside Europe? Marie Skłodowska-Curie actions can support the next step in your international career.

### **INDIVIDUAL FELLOWSHIPS**

» **Section 2**

## **KNOWLEDGE SHARING ACROSS SECTORS AND BORDERS**

Find out about coordinated short-term postings for research and innovation staff to support the transfer of knowledge and international collaboration.

### **RESEARCH AND INNOVATION STAFF EXCHANGE**

» **Section 3**

## **BROADENING HORIZONS**

Does your organisation fund or manage a doctoral or fellowship programme for researchers? Boost its international dimension with additional funding.

### **CO-FUNDING OF REGIONAL, NATIONAL AND INTERNATIONAL PROGRAMMES**

» **Section 4**

## **SCIENCE CLOSE TO PEOPLE**

People interact with scientists in engaging ways at public events across Europe.

### **EUROPEAN RESEARCHERS' NIGHT**

» **Section 5**



## WHICH ACTION?

RESEARCH FUNDING OPPORTUNITIES IN MARIE SKŁODOWSKA-CURIE ACTIONS

	INDIVIDUALS APPLY	HOST APPLIES
	<b>IF</b> Individual Fellowships	<b>ITN</b> Innovative Training Networks
<b>Aims</b>	Enable talented researchers to work on projects within or outside Europe.	Promote innovative research and doctoral training in Europe. Develop researchers' skills for innovation within and outside academia.
<b>Profile of the researchers</b>	Experienced researchers of any nationality.	Early-stage researchers of any nationality.
<b>Profile of the hosts</b>	Universities, research centres, companies including SMEs, other non-academic sector organisations.	At least 3 partners: universities, research centres, companies including SMEs, other nonacademic sector organisations.
<b>How does it work?</b>	Proposal submitted by researcher in liaison with host. Successful proposals receive up to 2 years' support (additional 1-year return phase in Global fellowships).	Successful proposals from a network receive funding for up to 4 years to cover researcher allowances, as well as the cost of research, training and networking activities.

HOST APPLIES	FUNDER APPLIES
<p style="text-align: center;"><b>RISE</b> Research and Innovation Staff Exchange</p>	<p style="text-align: center;"><b>COFUND</b> Co-funding of regional, national and international programmes</p>
<p>Stimulate more interaction between academia and non-academia, in different countries and sectors. Enhance the international dimension of research and innovation.</p>	<p>Support regional, national or international programmes to foster excellence in human resources development in research and innovation.</p>
<p>All research and innovation staff of the participating organisations.</p>	<p>Early stage researchers in doctoral programmes and experienced researchers in fellowship programmes.</p>
<p>At least 3 partners: universities, research centres, companies including SMEs, other non-academic sector organisations.</p>	<p>Universities, research centres, companies including SMEs, other non-academic sector organisations</p>
<p>A joint research and innovation project implemented by the exchange of individual staff for 1-12 months. The staff members return to their organisation after the secondment to ensure transfer of knowledge.</p>	<p>organisations that fund or manage a doctoral or a fellowship programme receive a fixed amount for each supported researcher as a contribution to the total costs.</p>
<p style="text-align: right;">For further information: <a href="https://ec.europa.eu/msca">ec.europa.eu/msca</a></p>	

# MARIE SKŁODOWSKA-CURIE ACTIONS NEED TO KNOW

## Rights of the fellows

The MSCA provide a new set of rights to granted fellows. They must receive at least a minimum level of allowances. To know more about them, you can consult the Work Programme at the Participant Portal:

[ec.europa.eu/programmes/horizon2020/en/h2020-section/mariesklodowska-curie-actions](https://ec.europa.eu/programmes/horizon2020/en/h2020-section/mariesklodowska-curie-actions)

The EU's policy to make research an attractive career includes two key documents: the European Charter for Researchers and the Code of Conduct for Recruitment.

Downloadable versions are available at:

[ec.europa.eu/euraxess/index.cfm/rights/brochure](https://ec.europa.eu/euraxess/index.cfm/rights/brochure)

## Success stories

Outstanding Marie Skłodowska-Curie fellows working within the best research groups around the world contribute to successful projects with a strong impact on science and society:

[ec.europa.eu/programmes/horizon2020/en/newsroom/551/503](https://ec.europa.eu/programmes/horizon2020/en/newsroom/551/503)

## National Contact Points

The National Contact Point of your country or destination provides assistance and information about Marie Skłodowska-Curie actions:

[ec.europa.eu/research/participants/portal/desktop/en/support/national\\_contact\\_points.html](https://ec.europa.eu/research/participants/portal/desktop/en/support/national_contact_points.html)

## Research Executive Agency (REA)

The REA is an executive agency of the European Commission in charge of implementing Marie Skłodowska-Curie actions. Over the course of your work under a project, the REA will be your main contact point: [ec.europa.eu/rea](https://ec.europa.eu/rea)

## Definitions

**Academic sector:** public or private higher education establishments awarding academic degrees, public or private non-profit research organisations whose primary mission is to pursue research, or international European interest organisations.

**Non-academic sector:** any socio-economic actor not included in the academic sector and fulfilling the requirements of the Horizon2020 Rules for Participation. A possible non-academic profile could be a profit-making organisation involved in research activities such as businesses, SMEs, multi-national companies, as well as NGOs, public sector entities, governmental bodies, charities, etc.

**Early-stage researchers:** researchers with less than 4 years of research experience (full-time equivalent) and who have not been awarded a doctoral degree at the time of their recruitment (ITN, COFUND) or secondment (RISE) by the host organisation.

**Experienced researchers:** in possession of a doctoral degree or at least 4 years of research experience (full-time equivalent) at the time of their proposal submission (IF), recruitment (COFUND) or secondment (RISE) by the host organisation.



**Mobility rules:** researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host beneficiary for more than 12 months in the 3 years immediately prior to their proposal submission (IF), or recruitment by the host organisation (ITN, COFUND). Compulsory national service and/or short stays such as holidays are not taken into account. This rule does not apply for hosting by international European interest organisations or international organisations, as long as the researcher has not spent more than 12 months in the 3 years immediately prior to their recruitment at the same host organisation.

In the Career Restart Panel (IF) and the Reintegration Panel (IF), researchers must not have resided or carried out their main activity in the country of their host organisation for more than 3 years in the 5 years immediately prior to the relevant deadline for submission of proposals.

**Staff members (in RISE):** are early-stage and experienced researchers or administrative, managerial and technical staff supporting the research and innovation activities of the project.

# TRAINING FUTURE GENERATIONS OF RESEARCHERS

INNOVATIVE TRAINING NETWORKS  
(ITN)



# INNOVATIVE TRAINING NETWORKS

Looking for high quality doctoral training that combines scientific excellence with innovation skills to enhance your career prospects?

Innovative Training Networks (ITN) aim to train a new generation of creative, entrepreneurial and innovative early-stage researchers.

The high quality joint research and doctoral training is delivered by international networks that bring together universities, research centres and non-academic organisations (companies, NGOs, charities, etc.) across Europe and beyond. They benefit from collaborating on innovative projects, with access to the best researchers and cutting-edge technologies.

## ITNs can take **one of three forms**:

- » **European Training Networks (ETN):** Joint research training, implemented by at least three partners from in and outside academia. The aim is for the researcher to experience different sectors and develop their transferable skills by working on joint research projects. The organisations should be established in at least three different EU Member States or Associated Countries. Additional participants from any organisation anywhere in the world can also join a network.
- » **European Industrial Doctorates (EID):** Joint doctoral training delivered by at least one academic partner entitled to award doctoral degrees, and at least one partner from outside academia, primarily enterprise. Each participating researcher is enrolled in a doctoral programme and is jointly supervised by supervisors from the academic and non-academic sector, where they spend at least 50% of their time. The aim is for the doctoral candidates to develop skills inside and outside academia that respond to public and private sector needs. The organisations should be established in at least two different EU Member States or Associated Countries. A wider set of partner organisations from anywhere in the world may also complement the training.
- » **European Joint Doctorates (EJD):** A minimum of three academic organisations form a network with the aim of delivering joint, double or multiple degrees. Joint supervision of the research fellow and a joint governance structure are mandatory. The aim is to promote international, intersectoral and multi/interdisciplinary collaboration in doctoral training in Europe. The organisations should be from different EU or Associated Countries. The participation of additional organisations from anywhere in the world, including from the non-academic sector, is encouraged.

The involvement of non-academic organisations is considered relevant for researchers to acquire training beyond the academic world. It will boost excellence in research and innovation by the transfer of knowledge and the creation of interactive collaborations between academic and non-academic organisations.

**Another feature of this action is to provide substantial training modules in key transferable skills common to all fields**, such as entrepreneurship, management and financing of research activities and programmes, management of intellectual

property rights, ethical aspects and communication **to prepare researchers for current and future societal challenges.**

## Who can apply?

The lead **host organisation** submits a proposal in reply to a **call for proposals**. All open calls and related information can be found at the **Participant Portal**:

[ec.europa.eu/research/participants/portal](http://ec.europa.eu/research/participants/portal)

**Individuals** then apply for the specific positions created by these networks, using the Euraxess website: [ec.europa.eu/euraxess](http://ec.europa.eu/euraxess)

## Which topics can be funded?

**Any research field** may qualify for ITN funding, apart from research areas covered by the EURATOM Treaty<sup>1</sup>.

## What does the funding cover?

Grants cover:

- » **Recruitment and mobility** of each researcher for up to **three years** and 100% of costs. Researchers are hired under an employment contract and enjoy full social security coverage.
- » **Research costs, training costs and networking** including for organising joint activities such as conferences.
- » **Management and indirect costs.**

Successful proposals are typically funded for **four years**.

## Who decides?

All ITN projects are selected through **open competition and transparent, independent peer review, using a series of predetermined criteria.**

## How do we apply?

The lead **host organisation** submits a proposal in reply to a **call for proposals**.

All open calls and related information can be found at the **Participant Portal**:

[ec.europa.eu/research/participants/portal](http://ec.europa.eu/research/participants/portal)

<sup>1</sup>) *These fields of research concerning nuclear energy are referred to in article 4 and Annex I of the Euratom Treaty:*  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:084:0001:0112:EN:PDF>

» SECTION 02

GOING FURTHER IN  
YOUR RESEARCH  
CAREER

INDIVIDUAL FELLOWSHIPS  
(IF)



# Individual Fellowships

Are you a talented researcher planning your next career move? Undertaking research in another country is an invaluable way to gain new knowledge and skills, expand your network and advance your career.

Individual Fellowships support the mobility of experienced researchers through European Fellowships and Global Fellowships.

There are **two types** of Individual Fellowships:

### **European Fellowships**

- » Held in EU Member States or Associated Countries
- » Open to researchers either coming to Europe or moving within Europe
- » Researcher funding is for one to two years
- » Can help you restart your research career after a break such as parental leave
- » Can help your reintegration if you are coming back to Europe

### **Global Fellowships**

- » Fund secondments outside Europe for researchers based in the EU or Associated Countries
- » Researcher funding is for two to three years
- » There is a mandatory one-year return period

European and Global Fellowships can also include a **secondment period** of up to three or six months in another organisation in Europe, where this would boost the impact of the fellowship.

### **Who decides?**

The **best, most promising individual researchers** from anywhere in the world are encouraged to apply.

Fellowships are for **experienced researchers**. See definition page 11.

To apply you must submit a **research proposal**, including your CV, in response to the **call for proposals**. The proposal is **written jointly with your chosen host organisation(s)** (a university, a research centre or a company). All open calls and related information can be found at the **Participant Portal**:

[ec.europa.eu/research/participants/portal](https://ec.europa.eu/research/participants/portal)



## Which topics can be funded?

Any **research field** may qualify for IF funding, apart from research areas covered by the EURATOM Treaty<sup>2</sup>.

## What does the funding cover?

The grant is awarded to your **host organisation in Europe**. The grant provides an **allowance to cover your living, travel and family costs**. The **research costs and indirect costs of the host(s)** are also supported.

Successful proposals are typically funded for one to two years. In the case of a Global Fellowship, an additional twelve-month return phase to Europe is also financed.

## Who decides?

All IF projects are selected through **open competition and transparent, independent peer review, using a series of predetermined criteria**.

Your proposal will be evaluated on its **research quality, your future career prospects, and the career development support offered by your host organisation**.

## How do I apply?

You submit a **research proposal, written jointly with your chosen host organisation** in response to the **call for proposals**. All open calls and related information can be found at the **Participant Portal: [ec.europa.eu/research/participants/portal](http://ec.europa.eu/research/participants/portal)**

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<sup>2</sup> These fields of research concerning nuclear energy are referred to in article 4 and Annex I of the Euratom Treaty:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:084:0001:0112:EN:PDF>

# KNOWLEDGE SHARING ACROSS SECTORS AND BORDERS

RESEARCH AND INNOVATION  
STAFF EXCHANGE  
(RISE)



# Research and Innovation Staff Exchange

Collaborative interaction between academic and non-academic sectors can be a powerful catalyst for innovation. The Research and Innovation Staff Exchange (RISE) enables this interaction via staff exchanges among the two sectors. RISE also supports worldwide exchanges, irrespective of the sector.

These exchanges help research staff to develop careers that combine scientific excellence with exposure to international and/or intersectoral settings, contributing to the knowledge economy in Europe.

## Who can apply?

Both academic and non-academic organisations are eligible. In particular, the participation of small and medium-sized enterprises (SMEs) is encouraged.

A RISE partnership is composed of at least three independent participants established in three different countries and must respect one of the following two conditions:

- » Two organisations are located in two different Member States or Associated Countries and one organisation is located in a Third Country, independently from the sector it belongs to, or
- » If all three independent organisations are from Member States or Associated Countries, at least one organisation should be from the academic sector and one from the nonacademic sector.

Above these minimum requirements additional organisations established in Member States or Associated Countries and/or in other Third Countries can participate.

**Partners** get together and propose a **joint research and innovation project**. Proposals should highlight **networking opportunities, sharing of knowledge** and the **skills development** of staff members.

Staff members of **any nationality** and **any career level** can undertake a secondment. An eligible staff member must be engaged in or linked to research and innovation activities for at least six months prior to the secondment.

## Which topics can be funded?

Any **research field** may qualify for RISE funding, apart from research areas covered by the EURATOM Treaty<sup>3</sup>.

## What does the funding cover?

The grant offers appropriate funding for secondments of staff members **for one month to one year** as well as funding to support research, training and networking activity. Funding for a RISE project can last up to **four years**.

## Who decides?

All RISE projects are selected through **open competition and transparent, independent peer review**, using a series of predetermined criteria.

## How do we apply?

Organisations submit a proposal in reply to a **call for proposals**. All open calls and related information can be found at the **Participant Portal: [ec.europa.eu/research/participants/portal](http://ec.europa.eu/research/participants/portal)**

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<sup>3</sup> *These fields of research concerning nuclear energy are referred to in article 4 and Annex I of the Euratom Treaty:*  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:084:0001:01:12:EN:PDF>

» SECTION 04

# BROADENING HORIZONS

CO-FUNDING OF REGIONAL,  
NATIONAL AND INTERNATIONAL  
PROGRAMMES  
(COFUND)



# Co-Funding of regional, national and international programmes(COFUND)

Transnational mobility opens up new horizons for researchers.

COFUND offers additional funding for new or existing regional, national and international programmes for research training and career development. This extra funding enables the greater movement of researchers across borders and research sectors.

## Who can apply?

Applicants for COFUND should be **organisations that fund or manage doctoral programmes or fellowship programmes for researchers**. Each COFUND proposal will have a **sole participant**, e.g. a government ministry, regional authority, funding agency, university, research organisation, research academy or enterprise.

**Individuals** can find open calls and vacancies of co-funded programmes on the Euraxess website: [ec.europa.eu/euraxess](http://ec.europa.eu/euraxess)

## Which topics can be funded?

**Any research field** may qualify for COFUND funding, apart from research areas covered by the EURATOM Treaty<sup>4</sup>.

COFUND programmes can cover several or all research fields or can be restricted to a specific domain. Programmes that prioritise specific research disciplines based on Smart Specialisation Strategies for regional investment will also be supported. For more information about Smart Specialisation Strategies, visit:

[ec.europa.eu/research/regions/index\\_en.cfm?pg=smart\\_specialisation](http://ec.europa.eu/research/regions/index_en.cfm?pg=smart_specialisation)

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<sup>4</sup> *These fields of research concerning nuclear energy are referred to in article 4 and Annex I of the Euratom Treaty:*  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:084:0001:0112:EN:PDF>



## What does the funding cover?

Individuals - **both doctoral candidates and experienced research fellows** - are supported in their research training and career development through the co-funding. Participating organisations receive a fixed amount for each supported researcher as contribution to the researcher's remuneration and to the management of the programme.

**Movement across borders** is a must. **Cross-sectoral mobility** is also encouraged.

Selected programmes will be co-funded for **three to five years**.

## Who decides?

All COFUND projects are selected through **open competition and transparent, independent peer review, using a series of predetermined criteria**. Collaboration with a wider set of partners, including from the non-academic sector, which may provide hosting or secondment opportunities or training in research or transferable skills, as well as innovative elements of the proposed programme, will be positively taken into account during the evaluations.

## How do we apply?

Organisations submit a proposal in reply to a **call for proposals**. All open calls and related information can be found at the **Participant Portal: [ec.europa.eu/research/participants/portal](https://ec.europa.eu/research/participants/portal)**

» SECTION 05

# SCIENCE CLOSE TO PEOPLE

European Researchers' Night  
(NIGHT)



# European Researchers' Night

European Researchers' Nights are public events dedicated to bringing researchers closer to the general public, showcasing the diversity of science and its impact on our daily lives and stimulating young people to embark on scientific careers.

The events showcase what researchers really do for society, in interactive and engaging ways.

The NIGHT has dramatically grown in size and importance since its launch in 2005 in 20 cities in 15 countries. In 2013, this annual research outreach initiative took place in over 300 cities and 33 countries involving almost 1.3 million participants. The NIGHT is organised on the last Friday of September each year.

### **Who can apply?**

**European Researchers' Night** grants may be awarded to **any legal entity**, established in an **EU Member State or Associated Country**. This will usually involve coordinating local, regional, national or international partners.

Possible beneficiary profiles could be private and public research organisations, companies, public authorities, schools, science museums, parent-teacher organisations, EU mobility centres for researchers, foundations and the media.

### **What can be funded?**

Any action or event that boosts **public awareness of the positive role of research in society**, especially among **young people**, is eligible for funding.

### **What does the funding cover?**

You may use the funding to cover **any expenses linked to the organisation of a research outreach event**.

Grants can cover **up to two years**. Their value varies in line with the scale of the events proposed.

Activities that can be supported include:

- » **Hands-on experiments** conducted by researchers
- » **Science shows** with public participation
- » **Debates**
- » **Competitions** (science quizzes, games, puzzles, photo and art contests, etc.)
- » **Workshops** for children
- » **“Researchers’ dating”** (meet researchers and ask them questions)
- » **Science slams**
- » **Guided visits** of labs, research institutes, and other relevant places that are usually closed to the public.

This list is by no means exhaustive... **be creative!**

## **Who decides?**

All **NIGHT** projects are selected through **open competition and transparent, independent peer review, using a series of predetermined criteria.**

## **How do we apply?**

Organisations submit a proposal in reply to a **call for proposals**. Calls can be found at the **Participant Portal**:

<http://ec.europa.eu/research/participants/portal/>

For more useful information, check out the **European Researchers’ Night website**: [ec.europa.eu/researchersnight](http://ec.europa.eu/researchersnight)



European Commission

Marie Skłodowska-Curie actions - A pocket guide: Your passport to a successful research career

Luxembourg: Publications Office of the European Union

2014 – 32 pp. – 10.5 x 14.8 cm

ISBN 978-92-79-35061-0

doi:10.2766/65630

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## Marie Skłodowska-Curie actions

Research training and career development; international and intersectoral mobility; partnerships between academic and non-academic organisations; doctoral programmes; staff exchanges; outreach activities. The EU's Marie Skłodowska-Curie actions fund all kinds of opportunities for researchers. So which is the right Marie Skłodowska-Curie action for you? This starter booklet gives you just enough information to make the right choice.











# 3 EU Member States Science, Technology and Innovation

# PART 1

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## AUSTRIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016

# AUSTRIA



## Country Outline

- GDP: 337,286 mil. euros (Eurostat 2015)
- GDP per Capita: 39,100 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Energy, Environment, Agriculture

## Contact Information

- Name: Prof. Dr.-Ing. Gi Eun Kim
- Phone no. / E-mail: (+82)10-4281-5629 / gkeun@skuniv.ac.kr

Austria belongs to the EU countries with one of the highest GERD/GDP rates, which is 2.88% in 2014. This is significantly higher than the EU average of 2.06%. Austria has made great strides/progress in its capacity for innovation in the past fifteen years. This is also evidenced/supported by the higher export of medium- and high-tech goods, the expanding share of the workforce with/having university degrees, and the increased international publishing activities of universities.

Proportion of the GDP devoted to R&D:

- 2.88% (€ 9.32 billion euros)
- Public sector 38.7%
- Domestic businesses enterprise sector: 44.5%
- Foreign sources: 16.4% (multinational corporations, returns from EU research framework programs)

Universities, Campuses, research institutes

- 22 state universities, 13 private universities, 21 universities of applied sciences
- 20 research and technology organizations (RTOs)
- Austrian universities are among the top 10 % of universities worldwide

## 1. Policies and Strategies in Science, Technology and Innovation

### Research Policy Goals

Since 2000 the Austrian governments have taken comprehensive measures to strengthen the competitiveness of the Austrian economy. The National Reform Programmes comprise mainly R&D-related measures already initiated, planned or started before and / or outside the NRP and the NRP rather puts them into a new context. After the elections in September 2008, the federal government basically adhered to the seven reform priorities laid down in 2005. Similar holds for the strategy and work undertaken by new government coalition which started end of 2013. The NRP as well as all implementation reports are available for download on the website of the EC.

With respect to R&D and innovation the following objectives have been set out in the NRP:

- To develop a comprehensive research strategy for 2020
- To prepare a national action plan to enlarge the career opportunities and mobility of researchers
- To support cross-border research co-operation by enabling transnational programmes among EU Member States
- To promote the participation in European research infrastructure
- To define 'priority regions' for international co-operation beyond the EU.

The objective to raise R&D investment to 3% of GDP by 2010 has been undisputed and is confirmed in the second NRP.

The government programme 2008-2013 defined the following goals for Austria's R&D policy:

- To increase the share of national R&D expenditure to 3% by 2010 and to aim for 4% by 2020. Through additional public funding a further increase of private R&D spending with a special focus on SME and the attraction of industrial research headquarters should be triggered. In fact, however, the government refrained from the 4% objective and defined 3.76% until 2020 as new goal.
- To develop a comprehensive national R&D policy strategy and to improve efficiency and coherence of R&D public funding based on the results of the 'system evaluation' which finished in mid-2009. The national R&D strategy was published early 2011.
- To reform the institutional funding for non-university research institutions by introducing multiannual budgets based on performance targets. This reform is not yet accomplished.
- To develop human resource by a set of new and existing measures, with a special focus on young and female researchers as well as on mobility. New career models shall be developed and implemented at Austrian public universities and a quantitative target has been set for tertiary education, i.e. to increase expenditures to 2% of GDP.
- To foster international co-operation of all Austrian research performers especially within the European Union.

- To strengthen basic research as the necessary prerequisite for innovation through an 'initiative for excellence'.
- To support mission-oriented research which aims at solving societal problems, e.g. climate change, aging of society, migration etc.
- To further develop the Austrian public universities after the University Act 2002 and to improve universities' research infrastructure.

The national R&D&I strategy, which was published in March 2011, reflects these long-term targets. However, it “downsized” the 4% goal to a more realistic, but still ambitious, target to invest 3.76% of GDP for R&D in the year 2020 (with a public/private split of 1:2), 2% of GDP for the tertiary sector and 1% of GDP for basic research.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
Austrian Research Promotion Agency	<ul style="list-style-type: none"> <li>▪ General openness for international participation</li> <li>▪ RTD cooperation project (within all thematic programmes): international participation possible:               <ul style="list-style-type: none"> <li>▪ up to 20% of budget or 400,000€ (650,000 SGD)</li> </ul> </li> <li>▪ Dedicated programme for international cooperation under preparation (available 2015)</li> <li>▪ FFG is the hub of the Austrian National Contact Points (NCPs) for Horizon2020, offering training, coaching and consultancy for applicants and project participant</li> <li>▪ COMET – Competence Centres for Excellent Technologies  <a href="https://www.ffg.at/en/comet-competence-centers-excellent-technologies">https://www.ffg.at/en/comet-competence-centers-excellent-technologies</a> </li> </ul>
Others	<ul style="list-style-type: none"> <li>▪ <a href="http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/at/country?section=InternationalisationOfSTCooperation&amp;subsection=Instruments">http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/at/country?section=InternationalisationOfSTCooperation&amp;subsection=Instruments</a></li> </ul>

### 3. Joint Activities with Korea in 2016

#### List of Programmes of Activities with RoK in 2015

*\* Similar joint activities are planned also in 2016.*

Programme Title	Contents
Austrian Research Promotion Agency: Activity A	<ul style="list-style-type: none"> <li>▪ Signing of Cooperation Agreement between KIAT and FFG 6 March 2015</li> <li>▪ KIAT and FFG wish to undertake a sustained effort to promote and facilitate joint RTI activities and in particular applied RTI projects between companies, corporations, research organizations and institutions and universities from Austria and from Korea.</li> </ul>
Austrian Research Promotion Agency: Activity B	<ul style="list-style-type: none"> <li>▪ KOREA EUREKA DAY 20-22 May 2015; Seoul</li> <li>▪ Delegations and Match Making in Korea: FFG promotes 2015 KOREA EUREKA DAY in Austria and encourages R&amp;D experts from companies, research institutes or universities to participate in the international conference. KIAT prepares a match making event with Korean R&amp;D entities for the Austrian delegations</li> </ul>
Austrian Research Promotion Agency: Activity C	<ul style="list-style-type: none"> <li>▪ Delegations and Match Making in Austria November 2015</li> <li>▪ KIAT mobilises R&amp;D experts from companies or research institutes or universities for technical visits and match making in Austria in November 2015. FFG mobilises Austrian R&amp;D entities for match making with Korean R&amp;D delegations in November 2015.</li> <li>▪ The support of relevant stakeholders or multipliers will be sought, such as for example KOTRA, KOSEAA, Austrian Economic Chamber.</li> </ul>





# PART 2

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## BELGIUM

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# BELGIUM



## Country Outline

- GDP: 409,407 mil. euros (Eurostat 2015)
- GDP per Capita: 36,500 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Chemistry, Pharmaceuticals, Space

## Contact Information

- Name / Position: Ms. Margarida Freire / Head of Dept Federal, Interfederal and International Coordination
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Belgium is a federal country with a federal government. The federated entities are communities and regions which bear the primary responsibility for science, technology, education and economic policies. As such, they control the main levers for innovation policy. Several responsibilities remain at the federal level: space; polar research; international programmes and institutes; fiscal measures (taxes); scientific research institutes regarding own competences; access to other federal competences (labour market, social security, scientific visa, regulatory framework, etc.).

There is no hierarchy of powers between the federal government and the other authorities. The governance of the Belgian research system reflects the federal structure of the country. The Federal Science Policy office (BelSPO) coordinates science policy at the federal level and runs the bodies where the different Belgian authorities meet in order to agree on international science policy issues of common interest. The regions and communities coordinate their own specific policies through the regional governments and agencies.

*Source: ANNUAL REPORT ON S&T INDICATORS FOR BELGIUM 2013, BELSPO ERAWATCH Country Reports 2013: Belgium, Michele Cincera, 2014*

## 1. Policies and Strategies in Science, Technology and Innovation

*(source: RIO Country report 2014: Belgium, Duchêne, V.; ERAWATCH Country Reports 2013: Belgium, Michele Cincera, 2014)*

Research and innovation policy in Belgium is designed and implemented in a multi-level governance framework involving the Federal Government and autonomous regional and (linguistic) community governments.

Belgium, although not among the innovation leaders in the EU, is placed fifth in the second tier of 'innovation followers' in the Innovation Union Scoreboard 2015 (European Commission, 2014) and, over the last five years, has achieved moderate growth in terms of innovation performance. The country has a strong, internationally competitive research infrastructure (especially its universities and a handful of major research facilities) driven by globally connected and highly productive workforce. At

the same time, the business sector in Belgium is more active than the EU28 average in terms of both financing and performance of research and development (R&D). A small number of foreign owned companies play a key role in underpinning this strong performance with the R&D investments of a few large companies in a limited number of sectors and mostly managed overseas, making significant impact on the R&D performance. The country is characterised by a relatively large share of SMEs. Belgian SMEs are highly innovative and have the highest absorptive capacity in the EU in terms of employment of highly skilled labour force.

The Belgian authorities are strongly committed to and participate in European initiatives, especially the EU Horizon2020 for R&D, and related initiatives such as ESFRI (on research infrastructures). In a number of cases, this commitment matches national challenges or priorities, such as the implementation of the European Partnership for Researchers in both Communities, which should contribute to attract and retain qualified human resources. With regard to cross-border cooperation, Belgium is actively engaged in a range of initiatives, which include bilateral agreements, joint-R&D projects and shared research infrastructures.

In Belgium, although there is no national strategy, each region/community has its own multi-annual plan that covers research and innovation (either as a sub-element of an overall plan or as a specific strategy). In each region / community, a new strategy is actually being re-defined, following the new Government Agreements of Autumn 2014.

The multi-annual plans that are running in 2016 are namely: the Flanders in Action initiative (VIA)/ PACT 2020; the Brussels-Capital Regional Innovation Plan (PRI 2006) updated in 2012; the Walloon "Marshall Plan 4.0" completed recently by the Research Strategy 2011-2015 and the Wallonia-Brussels partnership for researchers, both adopted by the Wallonia-Brussels Federation and the Walloon Region in 2011.

The key R&I relevant aspects of Belgium's National Reform Programme 2015 can be summarized as follows.

- **Increased fiscal support for R&D**

The fiscal support policy for R&D was intensified in 2013, particularly with regard to the payroll tax exemption for researchers (an increase from 75% to 80% as from 1 July 2013).

- **Unitary Patent Protection**

The European Agreement of 19 February 2013 on the Unified Patent Court (UPC) was ratified by the Federal Parliament. The UPC Agreement constitutes a crucial step in the development of the European patent with unitary effect, as intended in regulation 1257/2012 of 7/2/2012, implementing enhanced cooperation in the area of the creation of unitary patent protection.

- **Strengthening and diversifying funding schemes**

Competitive clusters, with additional support for public/private partnerships, specific programmes focusing on SMEs, particularly as regards to cooperation with research centres and knowledge transfer and "green support" to young innovative enterprises; to R&D programmes on thematic priorities of the Research Strategy. Smart specialization.

Paths aimed at speeding up the transition from innovation to market for companies that are not proactive as regards innovation and do not develop new products, processes or services by themselves, but implement or use them.

- **Reindustrialisation, KETs and technology deployment**

To support re-industrialisation, the Belgian authorities also aim to strengthen the ecosystem around innovative large companies and SMEs in order to improve the competitive position of the indigenous industry in global value chains.

## 2. National Programmes and Initiatives

Programme Title	Contents
STEREO III <a href="http://eo.belspo.be">http://eo.belspo.be</a>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Belgian R&amp;I programme open to international partner(s)</li> <li>▪ Funding Organisation: Belgian Science Policy Office (BELSPO)</li> <li>▪ Call Opening/Closing Date: nearly 1 call/year</li> <li>▪ Participation Qualification: open to universities, public scientific institutions and non-profit research institutions</li> <li>▪ Project Duration: small projects (1-3 years), big projects (4-5 years)</li> <li>▪ Funding Scale and Funding Scheme: a maximum of 20% of the STEREO budget may be earmarked for foreign teams per project</li> <li>▪ Research Fields: Earth observation</li> <li>▪ Matching fund from Korean government: the foreign partners co-finance the project by matching the STEREO III under a parallel funding arrangement</li> </ul>

# BELGIUM

<p>Programme BRAIN-be  <a href="http://www.belspo.be/BRAIN-be">www.belspo.be/BRAIN-be</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research</li> <li>▪ Funding Organisation: Belgian Science Policy Office (BELSPO)</li> <li>▪ Call Opening/Closing Date: every year; expressions of interest see deadline on the website</li> <li>▪ Participation Qualification: call is intended for Belgian institutions. Projects with non-Belgian universities or public research institutes are possible when offering an added value to the project and to the progress of Belgian expertise.</li> <li>▪ Project Duration: 2 or 4 years (please check call text on the website)</li> <li>▪ Funding Scale and Funding Scheme: co-funding; 15 million €/year for interdisciplinary network research projects - between 400 k€ to 1 M€ per project</li> <li>▪ Research Fields: network projects in three thematic axis: (1) ecosystems, biodiversity, evolution; (4) federal public strategies; (6) management of collections.</li> </ul>
<p>Federal Research Programme Drugs  <a href="http://www.belspo.be">www.belspo.be</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research</li> <li>▪ Funding Organisation: Belgian Science Policy Office (BELSPO)</li> <li>▪ Call Opening/Closing Date: every year (opening in April; closing in June)</li> <li>▪ Participation Qualification: open to collaboration with researchers in other countries on a co-funding basis</li> <li>▪ Project Duration: average is 2 years</li> <li>▪ Funding Scale and Funding Scheme: 250.000€ per project</li> <li>▪ Research Fields: social sciences and humanities and life sciences. Each year specific topics are selected for the call.</li> <li>▪ Matching fund from Korean government: No</li> <li>▪ Others: foreign research fundable up to 20% of total budget of proposal/project</li> </ul>
<p>Scholarships for Excellence program – IN.WBI  <a href="http://www.wbi.be">http://www.wbi.be</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Mobility</li> <li>▪ Funding Organisation: Wallonia-Brussels-International (WBI)</li> <li>▪ Call Opening/Closing Date: for doctorate or post-doctorate scholarships for a duration of minimum 1 year, deadline is 1/03/2016 (academic year 2016-2017); for research scholarships, 3 times a year (please check website)</li> <li>▪ Participation Qualification: foreign nationals with a diploma from a foreign institution of higher education of Master II level or an equivalent education at Master II level or who hold the title of doctor or foreign researchers</li> <li>▪ Project Duration: 1 to 3 months</li> <li>▪ Funding Scale and Funding Scheme: please check website</li> <li>▪ Research Fields: particularly focused on sectors of the Marshall Plan 4.0: transport, logistics, life sciences &amp; aviation-space. Other fields may also be considered.</li> </ul>

<p>Several PhD and postdoctoral fellowships and other grants from the FWO <a href="http://www.fwo.be">www.fwo.be</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Mobility</li> <li>▪ Funding Organisation: The Research Foundation - Flanders (FWO)</li> <li>▪ Call Opening/Closing Date: several dates</li> <li>▪ Participation Qualification: please check website</li> <li>▪ Project Duration: various durations possible</li> <li>▪ Funding Scale and Funding Scheme: please check website</li> <li>▪ Research Fields: all</li> <li>▪ Others: support to ground-breaking fundamental research at universities of the Flemish Community. FWO stimulates international cooperation and international mobility by giving researchers the opportunity to gain experience or work as members of international research groups or by attracting researchers from abroad.</li> </ul>
<p>Strategic Basic Research Programme (SBO) <a href="http://www.fwo.be/en/fellowships-funding/research-projects/sbo-projects/">http://www.fwo.be/en/fellowships-funding/research-projects/sbo-projects/</a></p>	<ul style="list-style-type: none"> <li>▪ Funding Organisation: The Research Foundation - Flanders (FWO)</li> <li>▪ Call Opening/Closing Date: 19/01/2016 – 11/04/2016</li> <li>▪ Participation Qualification: SBO project proposal should be submitted by at least one "Flemish R&amp;D actor" (definition available on the website). Proposal may include one or more R&amp;D actors from outside Flanders. In this case, up to 20% of the proposed budget can be supported.</li> <li>▪ Project Duration: 2 to 4 years</li> <li>▪ Funding Scale and Funding Scheme: typical budget of a funded SBO-project in practice amounts to the order of 2,5 million €</li> <li>▪ Research Fields: all</li> <li>▪ Others: the SBO project team is expected to carry out high-quality basic research as well as to have a clear vision of the potential for utilisation and to undertake active efforts to achieve the effective transfer, the exploitation and the utilisation of the research results by economic or social actors.</li> </ul>
<p>Innovation mandates (IM) <a href="http://www.iwt.be/english/funding/">www.iwt.be/english/funding/</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research</li> <li>▪ Funding Organisation: Agency for Innovation by Science and Technology (IWT)</li> <li>▪ Call Opening/Closing Date: 16/10/15 - 07/03/16</li> <li>▪ Participation Qualification: open to anyone who holds a PhD</li> <li>▪ Project Duration: around 2 years</li> <li>▪ Funding Scale and Funding Scheme: there are various types of mandates: spin-off mandates that are 100% funded by IWT for up to 2 years; Innovation mandates involving cooperation with existing companies</li> <li>▪ Research Fields: all</li> <li>▪ Others: the ultimate goal of the mandates is to bridge the gap between academia and industry and to help researchers move into the business world</li> </ul>

<p>Applied Biomedical Research (TBM)  <a href="http://www.iwt.be/english/funding/">www.iwt.be/english/funding/</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research</li> <li>▪ Funding Organisation: Agency for Innovation by Science and Technology (IWT)</li> <li>▪ Call Opening/Closing Date: 21/01/16 - 29/02/16</li> <li>▪ Participation Qualification: non-Flemish non-profit R&amp;D players can be included in the consortium as co-applicants</li> <li>▪ Project Duration: 2 to 4 years</li> <li>▪ Funding Scale and Funding Scheme: overall budget for non-Flemish actors may not exceed 20% of overall budget. Project budget between €250,000 and €1,000,000</li> <li>▪ Research Fields: biomedical research</li> <li>▪ Others: focuses on niche in biomedical research: advanced application-driven research with pronounced societal applicability but limited potential for industry</li> </ul>
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### 3. Joint Activities with Korea in 2016

Not Applicable

### 4. Others

Most of the research in Belgium takes places in eleven universities, covering both basic and applied research in all scientific domains. They are listed on <http://www.studyinlanders.be/en/institutions/> for Flanders-Brussels and on <http://www.studyinbelgium.be/en/institutions> for Wallonia-Brussels. The list below provides the contacts of several institutes and (strategic) research centres in specific scientific domains.

Organisation Name	Detailed information
<p>Belgian Nuclear Research Centre (SCK-CEN)  <a href="http://www.sckcen.be">http://www.sckcen.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research organisation</li> <li>▪ Major Research Area/Product: nuclear science and technology and ionising radiation</li> <li>▪ Contact Information: Services, consultancy and R&amp;D, <a href="mailto:business@sckcen.be">business@sckcen.be</a></li> </ul>

<p>Von Karman Institute for Fluid Dynamics (VKI)  <a href="http://www.vki.ac.be">www.vki.ac.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research and education organisation</li> <li>▪ Major Research Area/Product: theoretical and experimental fluid dynamics including numerical methods</li> <li>▪ Contact Information: <a href="mailto:secretariat@vki.ac.be">secretariat@vki.ac.be</a></li> </ul>
<p>Cenaero  <a href="http://www.cenaero.be">www.cenaero.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research organisation</li> <li>▪ Major Research Area/Product: aeronautics</li> <li>▪ Contact Information: <a href="mailto:info@cenaero.be">info@cenaero.be</a></li> </ul>
<p>Flanders Institute for Biotechnology (VIB)  <a href="http://www.vib.be">www.vib.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research organisation</li> <li>▪ Major Research Area/Product: life sciences</li> <li>▪ Contact Information: <a href="mailto:info@vib.be">info@vib.be</a></li> </ul>
<p>Interuniversity Micro-Electronics Centre (IMEC)  <a href="http://www2.imec.be">www2.imec.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research organisation</li> <li>▪ Major Research Area/Product: semiconductor technology, nanoelectronics, nanotechnology, design methods and technologies for ICT systems</li> <li>▪ Contact Information: <a href="mailto:info@imec.be">info@imec.be</a></li> </ul>
<p>iMinds  <a href="http://www.iminds.be">www.iminds.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research organisation</li> <li>▪ Major Research Area/Product: ICT, Media, Health, Energy, Smart Cities and Manufacturing</li> <li>▪ Contact Information: <a href="mailto:info@iminds.be">info@iminds.be</a></li> </ul>
<p>VITO  <a href="https://vito.be">https://vito.be</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research organisation</li> <li>▪ Major Research Area/Product: energy, materials, chemistry, health and land use (including earth observation)</li> <li>▪ Contact Information: Tel. + 32 14 33 55 11</li> </ul>
<p>Competitiveness Clusters in Wallonia</p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Competitiveness clusters in various fields</li> <li>▪ Major Research Area/Product: transport and logistics (<a href="http://www.logisticsinwallonia.be">www.logisticsinwallonia.be</a>), aerospace (<a href="http://www.skywin.be">www.skywin.be</a>), green chemistry and durable materials (<a href="http://www.greenwin.be">www.greenwin.be</a>), biotechnology and health (<a href="http://www.biowin.org">www.biowin.org</a>), food industry (<a href="http://www.wagralim.be">www.wagralim.be</a>), mechanical engineering (<a href="http://www.polemecatech.be">www.polemecatech.be</a>)</li> <li>▪ Contact Information: <a href="mailto:info@logisticsinwallonia.be">info@logisticsinwallonia.be</a>, <a href="mailto:contact@greenwin.be">contact@greenwin.be</a>, <a href="mailto:contact@biowin.org">contact@biowin.org</a>, <a href="mailto:info@wagralim.be">info@wagralim.be</a>, <a href="mailto:info@polemecatech.be">info@polemecatech.be</a></li> </ul>



# PART 3

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## BULGARIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016

# BULGARIA



## Country Outline

- GDP: 44,162 mil. euros (Eurostat 2015)
- GDP per Capita: 6,100 euros (Eurostat 2015)

## Contact Information

- Organisation: Embassy of Bulgaria
- Name / Position: Mr. Panko Panov / Deputy Head of Mission
- Phone no. / e-mail: (+82) 2-794-8625 / pankov@mfabg

47 universities operate in Bulgaria, fostering its scientific and technological know-how. The country has a strong tradition in mathematics, astronomy, physics, nuclear technology and sciences-oriented education, and has significant experience in medical and pharmaceutical research. The Bulgarian Academy of Sciences (BAS), the leading scientific institution in the country, employs most of Bulgaria's researchers working in its numerous branches.

## 1. Policies and Strategies in Science, Technology and Innovation

The Bulgarian government approved a 10-year plan for funding three main areas of scientific development - Innovative potential sciences (biotechnology, healthcare technology, alternative energy sources, nanotechnology and communications); Sustainable development sciences (ecology) and scientific studies for the support of industry. It has planned an increase of scientific spending from 0.4 to 0.6% of GDP.

## 2. National Programmes and Initiatives

The National Development Programme of Bulgaria 2020 (NDP BG 2020) is the leading strategic and programming document detailing the objectives of the development of the science and technology policies of the country. Bulgaria is in the first half of the ranking of countries worldwide in following areas: Biology & Biochemistry, Chemistry, Earth Science, Physics, Material Science, Engineering Sciences, Botany & Zoology, Pharmacology & Toxicology.

## 3. Joint Activities with Korea in 2016

- A. New trends in Cyber Security and Perspective for the Korea-Bulgarian Cooperation
- B. Sensor system in KIST(Korea Institute of Science & Technology)
- C. Digital holography as a 3D-imaging and metrological tool
- D. Biomedical Photonics and Perspective for the Korea-Bulgaria

# PART 4

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## CROATIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# CROATIA



## Country Outline

- GDP: 43,897 mil. euros (Eurostat 2015)
- GDP per Capita: 10,400 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Food, Agriculture and Fisheries Transport, Construction and Humanities

## Contact Information

- Organisation: Ministry of Science, Education and Sports
- Name / Position: Mr. Vedran Mornar / Minister of Science, Education and Sports
- Phone no. : (+38) 5 1 4569 000

Croatia recognizes science as developmental priorities that can enable its long-term social stability, economic prosperity and secure cultural identity. The quality of science and technology in Croatia is monitored by the Ministry of Science, Education and Sports, the National Science Council and the National Council for higher Education. There are five types of institutions which carry out the scientific and research activities in Croatia:

1. public institutes
2. institutions of higher education
3. other research legal entities
4. independent commercial institutes
5. corporate industrial institutes

Source: [http://ec.europa.eu/invest-in-research/pdf/download\\_en/psi\\_countryprofile\\_croatia.pdf](http://ec.europa.eu/invest-in-research/pdf/download_en/psi_countryprofile_croatia.pdf)

## 1. Policies and Strategies in Science, Technology and Innovation

Since 2000 Croatia has been in the process of reforming the organisation of research, science and innovation in the country. In particular since the accession negotiations on the research and science were opened and then provisionally closed in October 2006 Croatia has been engaging in reforms in line with the EU actions and targets established under the EU policy for R&I (participation in EU research programmes, European Research Area, and the Innovation Union). Despite the efforts taken, R&I capacity is still weak and requires many more actions if it is to become a real driver for economic growth and competitiveness.

Since the new government took office in 2011 several actions and strategies have been announced but only a few have been adopted. Thus it is difficult to assess the reforms undertaken and whether or not the expected impact is being achieved.

The amendments to the Act on the Croatian Science Foundation and the Act on Science and Higher Education marked the beginning of a series of announced reforms. The Acts bring changes in the financing and governance system of public research activities aimed at increasing the efficiency of the R&D system. The Croatian Qualifications Framework Act, adopted in the beginning of 2013, also constitutes an important step in improving scientists' qualifications.

The first reform relates to the new model of financing scientific activities introducing performance-based funding based on multi-annual research programmes established at the level of research institutes and universities and the level of funding based on performance indicators for the first time. Besides performance funding, the funding of research projects/grants continues but is based on stricter peer-review criteria which should result in the funding of a smaller number of high-quality projects (about 800 compared to 2500 projects per year previously). In terms of governance project funding is shifted from the MSES to the Croatian Science Foundation which will act as an independent body applying a rigid evaluation process.

On the 20th of December 2012 the government adopted an Action Plan on Science and Society aiming at a more systematic approach to science as a social value, promoting and rebalancing gender and ensuring good communication about science with the citizens. The announced Strategies for Education, Science and Technology and for Innovation are to be adopted by the summer of 2014. As both strategies propose actions to valorize the results of research efforts which, as explained above is Croatia's major weakness, those are the improvements that should be made and implemented as a matter of priority. For example it is well known that the research infrastructure in Croatia is outdated and that state-of-the-art equipment is lacking. In this context, in April 2014, the adoption of a Roadmap on Infrastructures according to the European Strategic Forum on Research Infrastructures (ESFRI) will be welcomed. Finally the biggest change will come from the fact that since the 1st of July 2013 Croatia has become a Member State. This gives full access to the Structural Funds but will also step up monitoring by the EC of the announced reforms, notably through preparation of the National Reform Programme on all policies, including R&I, to strengthen its competitiveness. (Research and Innovation performance in Croatia, Country Profile 2014, DG R&I, European Commission)

*Source: [http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2014/iuc\\_progress\\_report\\_2014.pdf#view=fit&pagemode=none](http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2014/iuc_progress_report_2014.pdf#view=fit&pagemode=none)*

## 2. National Programmes and Initiatives

Not Applicable

## 3. Joint Activities with Korea in 2016

Not Applicable

## 4. Others

Organisation Name	Detailed information
Croatian science foundation <a href="http://www.hrzz.hr/">http://www.hrzz.hr/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research foundation</li> <li>▪ Major Research Area/Product: all areas</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Future Plans/Strategy: promotes science for the economic growth and encouraging employment</li> <li>▪ Contact Information: Hrvoje Mataković, PhD, Executive Director Phone: +385 51 228 690 E-mail: <a href="mailto:hmatakovic@hrzz.hr">hmatakovic@hrzz.hr</a></li> </ul>
Croatian Institute of Technology Ltd. <a href="http://europski-fondovi.eu/">http://europski-fondovi.eu/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research institute</li> <li>▪ Major Research Area/Product: all areas</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Future Plans/Strategy:               <ol style="list-style-type: none"> <li>1. supporting and guiding Croatian researches aimed at development and technology</li> <li>2. monitoring, analyzing and anticipating the effect of global technological movements in the Republic of Croatia</li> <li>3. giving advice and support in the area of intellectual property and technology transfer</li> <li>4. promoting participation in European research and development projects</li> <li>5. Promoting Croatian technological production and research and development potential in the EU and other countries.</li> </ol> </li> <li>▪ Contact Information: Phone +385 1 5494 721. Fax +385 1 5494 720</li> <li>▪ Information on HIT can be found in Ministry of Science, Education and Sports site:  <a href="http://public.mzos.hr/Default.aspx?art=9070&amp;sec=3201">http://public.mzos.hr/Default.aspx?art=9070&amp;sec=3201</a> </li> </ul>

\*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.

# PART 5

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## CYPRUS

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# CYPRUS



## Country Outline

- GDP: 17,421 mil. euros (Eurostat 2015)
- GDP per Capita: 20,600 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Energy, Food, Built Environment, Transport, Health, ICT, Environment

## Contact Information

- Name / Position: Mr. Savvas Zannetos / Planning Officer
- Phone no. / e-mail: (+357) 22602874 / szannetos@dgepcd.gov.cy

The RTDI system in Cyprus is relatively new and is evolving with the aim to increase efficiency and modernize the government, research and productive sector cooperation.

Recently a systematic effort was initiated in order (a) to evaluate the current research and innovation system and procedures in Cyprus and to give recommendations for its adjustment and upgrading it to become more effective and efficient and (b) to adopt explicit multiannual RTDI priorities. The National Committee for Research, Innovation and Technological Development (NCRITD), established by the Council of Ministers, in September 2013, was entrusted with the task to evaluate the current research and innovation system and procedures in Cyprus and to give recommendations for its adjustment and upgrading to become more effective and efficient. The study was submitted to the President of the Republic in March 2014.

R&D expenditure GERD/GDP is among the lowest in the EU with 0.47% or €83.3 million in 2012 (latest available data) and is slightly decreasing compared to 2011. In the National Reform Programme 2013 Cyprus set an R&D intensity target of 0.5% for 2020. This target was set taking seriously into consideration the particularities of Cyprus in terms of both the size of the research community as well as the orientation of the economy in low value added products and services (lack of big manufacturing firms) and the very small size and low involvement of Cypriot enterprises and firms in research and innovation activities in terms of participation and expenditure on R&D and innovation.

## 1. Policies and Strategies in Science, Technology and Innovation

The Smart Specialisation Strategy for Cyprus, an ex-ante conditionality for the absorption of European Structural and Investment Funds for R&I, was initiated in mid-2013 by DG EPCD and was adopted by the Council of Ministers in March 2015. An extensive analysis of the national R&I priorities has been conducted with the aim of maximizing the knowledge based development potential of the Cyprus economy through targeted support to research and innovation in the sectors where Cyprus has a competitive advantage. The sectors identified through this process are



Tourism, Energy, Agriculture/Food Industry, Construction, Shipping, Health, and ICT and Environment as horizontal priorities.

## 2. National Programmes and Initiatives

As mentioned above a new Strategy was adopted by the Council of Ministers in March 2015. The strategy includes a pillar called “Extraversion” that specifically aims at boosting international cooperation that foreign research entities can participate in projects as partners of Cypriot Contractors.

## 3. Joint Activities with Korea in 2016

Not Applicable



## 4. Others

Most of the research in Cyprus takes place in the research centres within the universities. Moreover, there are also several specialized research centres and knowledge institutes outside of universities. However none of the Key Research Organisations has active STI cooperation programmes with RoK.

### Key Research Organisations and Companies

Organisation Name	Detailed information
Research Promotion Foundation <a href="http://www.research.org.cy/">http://www.research.org.cy/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Foundation</li> <li>▪ RPF promotes the development of scientific and technological research in Cyprus, and provides funding</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Contact Information: Tel: +357 22 205000 / Fax: +357 22 205001 Email: <a href="mailto:ipe@research.org.cy">ipe@research.org.cy</a></li> </ul>
Cyprus Institution <a href="http://www.cyi.ac.cy/">http://www.cyi.ac.cy/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Institute</li> <li>▪ Major Research Area/Product: Energy, Environment and Water, Archaeology Computation-based Science and Technology</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Contact Information: <a href="mailto:info@cyi.ac.cy">info@cyi.ac.cy</a></li> </ul>
Cyprus International Institute <a href="http://www.hsph.harvard.edu/cyprus">www.hsph.harvard.edu/cyprus</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Environment and Public Health</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Contact Information : <a href="mailto:lenia.josephides@cut.ac.cy">lenia.josephides@cut.ac.cy</a></li> </ul>
Agricultural Research Centre <a href="http://www.ari.gov.cy">www.ari.gov.cy</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Institute</li> <li>▪ Major Research Area/Product: Agriculture</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Contact Information : <a href="mailto:info@ari.gov.cy">info@ari.gov.cy</a></li> </ul>
Cyprus Institute of Neurology and Genetics <a href="http://www.cing.ac.cy">www.cing.ac.cy</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Institute</li> <li>▪ Major Research Area/Product: Health and Genetics</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Contact Information : <a href="mailto:enquiries@cing.ac.cy">enquiries@cing.ac.cy</a></li> </ul>
University of Cyprus <a href="http://www.ucy.ac.cy">www.ucy.ac.cy</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Contact Information : +357 22894288</li> </ul>
Cyprus University of Technology <a href="http://www.cut.ac.cy">www.cut.ac.cy</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Contact Information : +357 25002500</li> </ul>

\*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.

# PART 6

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## CZECH REPUBLIC

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# CZECH REPUBLIC



## Country Outline

- GDP: 163,948 mil. euros (Eurostat 2015)
- GDP per Capita: 15,600 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Nanotechnologies, Molecular Medicine, Biotechnology, Optics and Laser Research

## Contact Information

- Organisation: Embassy of Czech Republic
- Name / Position: Mr. Kvetoslav Sulek / Head of Economic and Commercial Section
- e-mail: soul@mzv.cz

Research and development in the Czech Republic has a long tradition.

Czech universities and research institutions train qualified young experts and conduct excellent research in international comparison. In total, more than 91 024 students were studying at Czech technical universities in 2014/2015 academic year. In recent years, large research infrastructures arise with the use of the EU structural funds. Czech gross expenditures on research and development and innovation represented 2% GDP in 2014 - 0,1% Higher than the overall EU28 average. Czech research outputs are used across the globe and industries. Among the latest achievements with Czech laboratories contribution can be named the antiviral compound prepared in collaboration with IOHCB in Prague.

## 1. Policies and Strategies in Science, Technology and Innovation

The responsible state institution for financing and administrating of the R&D is the Ministry of Education, Youth and Sports. However the Research, Development and Innovation Council defines strategic visions for the future and estimates the budget (acting under direct responsibility of the Prime Minister). In the field of applies research the Technology Agency of the Czech Republic was recently established to streamline the governmental support in the applied research while the Czech Science Foundation finances the basic research. The Academy of Sciences of the Czech Republic encompasses 54 public research institutions. However important research is conducted at universities.

## 2. National Programmes and Initiatives

Czech support of applied research is conducted by The Technology Agency of the Czech Republic. The Czech Science Foundation supports all disciplines of basic research. CzechInvest – Investment and business development agency of the Czech Republic administrates investment incentives available to investors launching technological centers in the Czech Republic.

### List of National Programmes open to the world

Programme Title	Contents
DELTA PROGRAMME <a href="http://www.tacr.cz">www.tacr.cz</a>	<ul style="list-style-type: none"> <li>Programme for the support of collaboration in applied research and experimental development through joint projects and technological innovation agencies.</li> <li>Funding Organisation: The Technology Agency of the Czech Republic</li> <li>Project Duration: The planned duration of the DELTA programme is 6 years (2014-2019)</li> <li>Next call exclusively for cooperation with Korea to be announced in first half of 2016</li> </ul>
INVESTMENT INCENTIVES FOR TECHNOLOGY CENTERS <a href="http://www.czechinvest.org">www.czechinvest.org</a>	<ul style="list-style-type: none"> <li>Programme for the support of investments into company technology centres.</li> <li>Funding Organisation: Ministry of Industry and Trade of the Czech Republic via CzechInvest.</li> </ul>
THE CZECH SCIENCE FOUNDATIO <a href="http://www.gacr.cz">www.gacr.cz</a>	<ul style="list-style-type: none"> <li>Bilateral cooperation with National Research Foundation of Korea (NRF).</li> </ul>

## 3. Joint Activities with Korea in 2016

### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
Czech-Korean Technology Day	<ul style="list-style-type: none"> <li>Networking of representatives of Czech and Korean research institutes held on 2015-02-25 in Seoul.</li> <li>Representatives of 16 Czech research institutions and universities presented the oppourtinies for Czech-Korean reasearch collaboration.</li> </ul>

## 4. Others

### Key Research Organisations and Companies

Organisation Name	Detailed information
CEITEC – Central European Institute of Technology <a href="http://www.ceitec.eu">www.ceitec.eu</a>	CEITEC is a scientific center in the fields of Life Sciences, Advanced Materials and Technologies whose aim is to establish itself as a recognized centre for basic as well as applied research. The research is divided into 61 groups and 7 programmes : <ol style="list-style-type: none"> <li>1. Advanced Nanotechnologies and Microtechnologies,</li> <li>2. 2. Advanced Materials</li> <li>3. Structural Biology</li> <li>4. Genomics and Proteomics of Plant Systems</li> <li>5. Molecular Medicine,</li> <li>6. Brain and Mind Research</li> <li>7. Molecular Veterinary Medicine.</li> </ol>
Institute of Physics AS CR, projects ELI Beamlines & HiLASE <a href="http://www.citt.cz">www.citt.cz</a>	ELI Beamlines is a cutting-edge user facility delivering ultrashort laser pulses. The HiLASE project focuses on the development of high-repetition lasers and laser systems that will find use in industry, in small and medium scale research laboratories.
Technical University of Ostrava – IT4Innovations National Supercomputing Center <a href="http://www.it4i.cz">www.it4i.cz</a>	The IT4Innovation National Supercomputing Center conducts research and provides state-of-the-art technologies and services in the fields of high performance computing and embedded systems.
The International Clinical Research Center – FNUSA – ICRC <a href="http://www.fnusa-icrc.org">www.fnusa-icrc.org</a>	The International Clinical Research Center of St. Anne’s Univesity Hospital in Brno (FNUSA) is a new generation Science and Research center focusing on finding new methods and medicaments for the effective prevention, early diagnostics and individualized treatment of cardiovascular and neurological diseases. These are among the most widespread diseases in modern society.

# PART 7

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## DENMARK

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# DENMARK



## Country Outline

- GDP: 266,245 mil. euros (Eurostat 2015)
- GDP per Capita: 46,900 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Pharmaceutical, Biotech, Medtech, Clean Tech, ICT, Food, Agriculture

## Contact Information

- Organisation: Embassy of Denmark
- Name / Position: Mr. Torben Orla Nielsen / Innovation & Research Counsellor
- Phone no. / e-mail: (+82) 2-795-4187 (EXT. 410) / torbni@um.dk

Public and private investments in research and development (R&D) have maintained a high level in Denmark, being one of six countries in the world, which invests more than three percent of GDP on R&D. The scientific base in Denmark is strong with several world class universities. When it comes to scientific publications, Denmark ranks third in comparison with OECD countries in both citations per publication and scientific publications in relation to the size of the country. Today, Denmark exceeds the world average by 35% for the "10 % most highly cited publications (the top decile)".

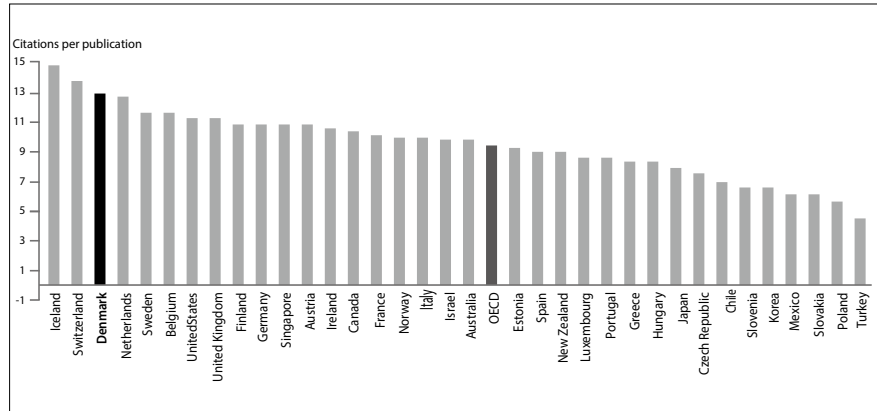
According to the Innovation Union Scoreboard 2015, Denmark is ranked as the second most innovative country in the European Union.

## 1. Policies and Strategies in Science, Technology and Innovation

The Ministry of Higher Education and Science is the main policy-formulating and funding public body in Denmark with The Danish Agency for Science, Technology and Innovation (DASTI) as the operational body within Policy development, Statistics and analyses and Implementation of funds to research, technology development and innovation. All universities in Denmark are public. In 2006 The Danish university sector underwent a major restructuring where most research institutions were merged with universities. This means that the vast majority of public research today are being conducted at universities and research capacity at Danish universities are relatively high.

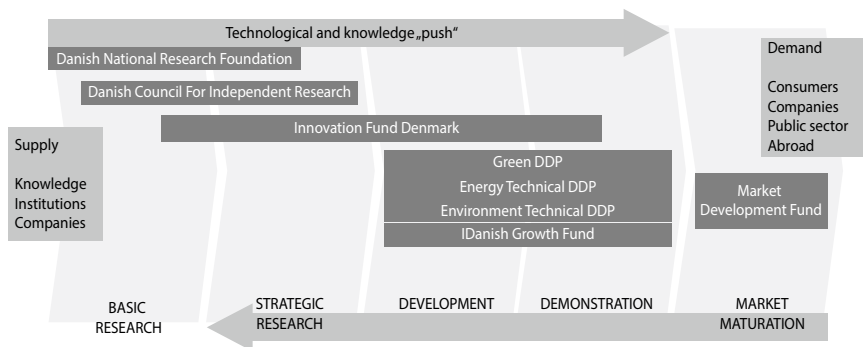


Figure 1. Citations per Publication, OECD, 2008 – 2012



In 2014, the Innovation Fund Denmark (IDF) was created as a result of a merging between three national funding bodies creating one single fund with a consolidated mission, vision and objective enacted in national law. The new Board of Directors consists of a combination of corporate and scientific members, securing scientific background but with a potential to succeed for the market. It is an important goal for the Ministry of Higher Education and Science to secure the great investments in research so that it shall be fruitful. Therefore the purpose of IDF is funding within science and technology in order to boost research and facilitate innovative solutions for the benefit of growth and employment in Denmark.

Figure 2



The new and simplified structure shown in figure 2 of the funding system is more flexible and focuses on closer cooperation between the public and private sector.

The main four public funding sources for research and Innovation are:

- **Innovation Fund Denmark**  
Grants EURO 210 millions in 2015 for activities within strategic research, tech. & innovation
- **The Danish Council for Independent Research**  
Grants EURO 160 millions in 2015 to research based on the researchers' own initiatives
- **The Danish National Research Foundation**  
Grants EURO 65 millions in 2015 to basic research primarily of Centres of Excellence
- **Universities' basic funding**  
EURO 1,200 millions per year (In addition, funding for education based on output)

In addition to public funds, a number of private foundations provide research funding. The private foundations contribute in average of 250 million Euro yearly. Major private research funding organisations are Novo Nordisk, Carlsberg and Lundbeck.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
Korean-Danish Joint funds	<ul style="list-style-type: none"> <li>▪ Outline: The call will be supporting mobility and expenses of researchers preparing applications for funding of Research &amp; Innovation.</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: Innovation Fund Denmark &amp; NRF</li> <li>▪ Nationalities: Korean &amp; Danish researchers can apply</li> <li>▪ What is funded: Research Network activities Joint fund of 0.5 mill EURO</li> <li>▪ Duration: 1 years / Deadline: June 15, 2016</li> <li>▪ Web page: <a href="http://www.nrf.re.kr/nrf_tot_cms/board/biz_notice/view.jsp?show_no=170&amp;check_no=169&amp;c_relation=biz&amp;c_relation2=0&amp;c_no=291&amp;c_now_tab=1&amp;page=1&amp;NTS_NO=68154">http://www.nrf.re.kr/nrf_tot_cms/board/biz_notice/view.jsp?show_no=170&amp;check_no=169&amp;c_relation=biz&amp;c_relation2=0&amp;c_no=291&amp;c_now_tab=1&amp;page=1&amp;NTS_NO=68154</a></li> </ul>

International Network Program	<ul style="list-style-type: none"> <li>▪ Outline: Support to networking and matchmaking initiatives seeking to identify potential of bilateral research collaboration.</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: Danish Agency for Science, Technology and Innovation</li> <li>▪ Nationalities: Denmark, China, India, Israel, Japan, USA and South Korea.</li> <li>▪ What is funded: workshops and conferences, international travel and research stay, DKK 200.000</li> <li>▪ Duration: Up to a year / Deadline: August 2016</li> <li>▪ Web page: <a href="http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/eu-and-international-funding-programmes/international-cooperation/international-network-programme-1">http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/eu-and-international-funding-programmes/international-cooperation/international-network-programme-1</a></li> </ul>
Innovation Fund Denmark	<ul style="list-style-type: none"> <li>▪ Outline: The fund invests in the development of new knowledge and technology creating growth and employment in Denmark.</li> <li>▪ Research Fields: Strategic research, technology and innovation.</li> <li>▪ Organisation: Innovation Fund Denmark</li> <li>▪ Nationalities: Danish researchers and companies in cooperation with researchers of any other nationality</li> <li>▪ What is funded: <ul style="list-style-type: none"> <li>• Projects related to research &amp; technology development</li> <li>• Targeted opportunities for small and medium sized enterprises</li> </ul> </li> <li>▪ Duration: Depends on the funding instrument</li> <li>▪ Deadline: Depends on the funding instrument</li> <li>▪ Web page: <a href="http://en.innovationsfonden.dk/">http://en.innovationsfonden.dk/</a></li> </ul>
The Industrial PhD & Postdoc	<ul style="list-style-type: none"> <li>▪ Outline: An Industrial PhD or Postdoc project is a candidate hired by a company and enrolled at a university at the same time.</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: Innovation Fund Denmark</li> <li>▪ Nationalities: All nationalities employed in a Danish company.</li> <li>▪ What is funded: Subsidy for wage, supervising etc.</li> <li>▪ Duration: Industrial PhD: 3 years, Industrial postdoc: 1 -3 years</li> <li>▪ Deadline: Industrial PhD: January, May &amp; September</li> <li>▪ Web page: <a href="http://en.innovationsfonden.dk/how-we-help/introduce-new-knowledge-into-your-company/">http://en.innovationsfonden.dk/how-we-help/introduce-new-knowledge-into-your-company/</a></li> </ul>

The Danish Council for Independent Research	<ul style="list-style-type: none"> <li>▪ Outline: Research activities, that are based on the researchers' own initiatives and for internationalisation of Danish research</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: The Danish Council for Independent Research</li> <li>▪ Nationalities: Application is not restricted by citizenship.</li> <li>▪ What is funded: Individual Postdoctoral Grants</li> <li>▪ Research projects from DKK 1,800,000 to DKK 8,300,000 excl. overhead</li> <li>▪ Duration: Individual Postdoctoral : 3 years</li> <li>▪ Research projects: 5 years / Deadline: Spring and autumn</li> <li>▪ Web page: <a href="http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/dff-the-danish-council-for-independent-research">http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/dff-the-danish-council-for-independent-research</a></li> </ul>
DFF Mobilix (Cofunded by EU)	<ul style="list-style-type: none"> <li>▪ Outline: Mobility grants aim to enable young researchers, to carry out research in Denmark as well as abroad.</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: The Danish Council for Independent Research</li> <li>▪ Nationalities: All nationalities affiliated to a Danish university</li> <li>▪ What is funded: DKK 2,500,000 including overhead.</li> <li>▪ Duration: 24 months / Deadline: April</li> <li>▪ Web page: <a href="http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/dff-the-danish-council-for-independent-research">http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/dff-the-danish-council-for-independent-research</a></li> </ul>
Sapere Aude Programme	<ul style="list-style-type: none"> <li>▪ Outline: Sapere Aude, is a talent development programme for - the young elite researchers.</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: The Danish Council for Independent Research</li> <li>▪ Nationalities: All nationalities but the research must benefit Danish research.</li> <li>▪ What is funded: Grants: DKK 4,900,000 to 8,300,000, excl. overhead</li> <li>▪ Duration: 4 to 5 years / Deadline: Autumn</li> <li>▪ Web page: <a href="http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/dff-sapere-aude">http://ufm.dk/en/research-and-innovation/funding-programmes-for-research-and-innovation/find-danish-funding-programmes/dff-sapere-aude</a></li> </ul>
Centres of Excellence	<ul style="list-style-type: none"> <li>▪ Outline: Supports Center of Excellence (CoE) for top researchers with a lifetime of up to 10 years.</li> <li>▪ Several of the centres are headed by a foreign researcher and 60 pct. of the postdocs and 40 pct. of the PhD are recruited from abroad.</li> <li>▪ Research Fields: All</li> <li>▪ Organisation: Danish National Research Foundation</li> <li>▪ Nationalities: All nationalities</li> <li>▪ What is funded: Centres of Excellence</li> <li>▪ Duration: From 6-10 years / Deadline: June 5, 2016</li> <li>▪ Web page: <a href="http://dg.dk/en/2015/10/30/9th-application-round-for-new-centers-of-excellence-the-call-is-out-now/">http://dg.dk/en/2015/10/30/9th-application-round-for-new-centers-of-excellence-the-call-is-out-now/</a></li> </ul>

### 3. Joint Activities with Korea in 2016

Programme Title	Contents
INNOVATION CAMPS and RESEARCH-BASED DELEGATIONS	
International Electronic Vehicle Expo (IEVE) – Danish delegation	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: 18-24 March</li> <li>- Venue: Jeju island</li> <li>▪ Major topic or agenda: Electronic Vehicle</li> </ul>
Smart Building Innovation Camp	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: October 24 - 28</li> <li>- Venue: Seoul and Sungdo</li> <li>▪ Major topic or agenda: Smart Building / Architecture</li> <li>▪ Target Participants: Group of Danish and Korean stakeholders will participate</li> </ul>
Gaming & Playware Innovation Camp	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: June 13 - 16</li> <li>- Venue: Seoul &amp; Pangyo</li> <li>▪ Major topic or agenda: Gaming &amp; Playware</li> <li>▪ Target Participants: Group of Danish and Korean stakeholders will participate</li> </ul>
BioKorea	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: March 30 to April 1, 2016</li> <li>- Venue: COEX</li> <li>▪ Major topic or agenda: Biotech, Pharmaceuticals</li> <li>▪ Target participants: A delegation of Danish SMEs will participate</li> </ul>
RESEARCH WORKSHOPS	
Arctic	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: April 11-12, 2016</li> <li>- Venue: KOPRI (Korea Polar Research Institute)</li> <li>▪ Major topic or agenda: from Application</li> <li>▪ Target participants: University of Copenhagen &amp; KOPRI</li> </ul>
Societal Challenges	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: April 18-20, 2016</li> <li>- Venue: Denmark</li> <li>▪ Major topic or agenda: TBA</li> <li>▪ Target participants: University of Copenhagen &amp; Yonsei University</li> </ul>
Entrepreneurship	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline</li> <li>- Date: October 23 - 28</li> <li>- Venue: Yonsei University</li> <li>▪ Major topic or agenda: Entrepreneurship</li> <li>▪ Target participants: Copenhagen Business School (CBS), University of Copenhagen, Yonsei University, Yes Foundation</li> </ul>

## 4. Others

### Key Research Organisations

Organisation Name	Detailed information
Innovation Centre Denmark, Seoul <a href="http://icdk.um.dk">icdk.um.dk</a>	<ul style="list-style-type: none"> <li>▪ Innovation Centre Denmark facilitates collaboration between Danish and Korean Universities, research institutions and tech companies.</li> <li>▪ Maria Skou <a href="mailto:marisk@um.dk">marisk@um.dk</a> / Torben Orla Nielsen <a href="mailto:torbni@um.dk">torbni@um.dk</a></li> </ul>
DASTI (Danish Agency for Science Technology & Innovation) <a href="http://www.ufm.dk">www.ufm.dk</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Government Agency under Ministry of Higher Education and Science Major Activities with Korea: Funding IC DK Seoul (See above), INP</li> <li>▪ Future Plans: Joint EUREKA call with KIAT</li> </ul>
Innovation Fund Denmark <a href="http://www.Innovationsfonden.dk">www.Innovationsfonden.dk</a>	<ul style="list-style-type: none"> <li>▪ The main funding body in Denmark for research and innovation within: Applied research, Experimental development, Demonstration &amp; market development</li> <li>▪ Grants for 210 million EURO in 2015</li> <li>▪ Responsible for funding for Korea-Danish joint research call, EUREKA, Eurostars</li> </ul>
University of Copenhagen <a href="http://www.ku.dk">www.ku.dk</a>	<ul style="list-style-type: none"> <li>▪ Main University in Copenhagen area. Research and exchange programmes with: Yonsei, SNU, EWha, Korea University</li> <li>▪ Top 100 University (ARWU, QS)</li> </ul>
Technical University of Denmark – DTU <a href="http://www.dtu.dk">www.dtu.dk</a>	<ul style="list-style-type: none"> <li>▪ Leading European technical university. Member of Eurotech Universities with EPFL, TUM, TU Eindhoven &amp; DTU</li> <li>▪ Strong strategic alliance with KAIST including joint research</li> </ul>
University of Southern Denmark <a href="http://www.sdu.dk">www.sdu.dk</a>	<ul style="list-style-type: none"> <li>▪ 20% international students.</li> <li>▪ Comprehensive University within Top 50 of young universities</li> </ul>
Copenhagen Business School <a href="http://www.cbs.dk">www.cbs.dk</a>	<ul style="list-style-type: none"> <li>▪ Top 3 - Business Schools (Eduniversal)</li> <li>▪ Largest Business school in Europe</li> </ul>
IT University <a href="http://www.itu.dk">www.itu.dk</a>	<ul style="list-style-type: none"> <li>▪ University dedicated in digital technology</li> <li>▪ 20% international students</li> </ul>
Aarhus University	<ul style="list-style-type: none"> <li>▪ Top 100 University (ARWU, QS)</li> <li>▪ Research collaboration with KOPRI, IALEI, SNU, KAIST and KIST</li> </ul>
Aalborg University	<ul style="list-style-type: none"> <li>▪ Top 50 of young universities (QS)</li> </ul>
Innovation Networks (Clusters)	<p>Selected cluster organisations in Denmark:</p> <ul style="list-style-type: none"> <li>▪ Innovation Network InnoBYG - construction (<a href="http://www.innobyg.dk">www.innobyg.dk</a>)</li> <li>▪ The Danish ICT Innovation Network – InfinIT (<a href="http://www.infinitt.dk/">http://www.infinitt.dk/</a>)</li> <li>▪ RoboCluster (<a href="http://www.robocluster.dk/">http://www.robocluster.dk/</a>)</li> <li>▪ Danish Sound Technology Network (<a href="http://www.lydteknologi.dk/">http://www.lydteknologi.dk/</a>)</li> <li>▪ Danish Lighting Innovation Network (<a href="http://www.dansklys.dk/">http://www.dansklys.dk/</a>)</li> <li>▪ Innovation Network for Biotech (<a href="http://www.biopeople.dk/">http://www.biopeople.dk/</a>)</li> <li>▪ Innovation Network for Environmental Techn (<a href="http://inno-mt.dk/">http://inno-mt.dk/</a>)</li> <li>▪ Clean Cluster (<a href="http://cleancluster.com/">http://cleancluster.com/</a>)</li> <li>▪ Welfare Tech (<a href="http://www.welfaretech.dk/">http://www.welfaretech.dk/</a>)</li> <li>▪ MedTech Innovation (<a href="http://www.mtic.dk/">http://www.mtic.dk/</a>)</li> </ul>

# PART 8

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## ESTONIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# ESTONIA



## Country Outline

- GDP: 20,461 mil. euros (Eurostat 2015)
- GDP per Capita: 15,600 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Information and Communication Technology, Health Technologies and Services, More Effective Use of Resources

## Contact Information

- Organisation: Ministry of Education and Research
- Name / Position: Mr. Taivo Raud / Head of Research Policy Department
- Phone no. / e-mail: (+372) 735-0134 / Taivo.Raud@hm.ee

In the last decade Estonian society and the economy have developed rapidly as a whole; as a result of the economic crisis, the structure of the economy is also changing. Ensuring further development requires increasing the attention paid to achieving a better position in the international value chain and to increasing the welfare of people living in Estonia. Estonia's R&D strategy "Knowledge-based Estonia" determines the directions for the development of research and development and innovation, on the basis of which one of the most important and central fields of activity in Estonian society can be managed in a more interconnected manner, where public financial resources can be better applied, and the competitiveness of the state and the welfare of the population can be increased.

## 1. Policies and Strategies in Science, Technology and Innovation

The overall aim of the development of RDI is to create favourable conditions for an increase in productivity and in the standard of living, for good-quality education and culture, and for the sustainable development of Estonia. Our strategy "Knowledge based Estonia" establishes four main objectives for Estonia.

- 1) Research in Estonia is of a high level and diverse. It is internationally competitive and visible, and covers the main fields of higher education and culture. The network of research institutions operates efficiently. The infrastructure is modern. A new generation of researchers and innovators is ensured. Estonia is an attractive place for research and development, and a researcher career is popular.
- 2) Research and development (RD) functions in the interests of the Estonian society and economy. It proceeds from the needs of society and the economy, and prioritizes research applications. Research institutions are motivated to undertake



applied research and for productive cooperation with enterprises and government authorities. The state is smart in commissioning applied research and development. Research carried out for socioeconomic objectives is efficiently organized.

3) RD makes the structure of the economy more knowledge-intensive. RDI investments selected and managed by the smart specialisation method encourage the development of growth areas at heightened pace. The share of knowledge intensive entrepreneurship in the economy and the added value of exports will increase significantly. The selected growth areas are:

1. Information and communication technology (ICT), horizontally through other sectors
2. Health technologies and services
3. More effective use of resources

4) Estonia is active and visible in international RDI cooperation. Cross-border cooperation helps to solve the tasks that Estonia, and the world as a whole, is facing. Estonia participates as a partner in the initiatives of the European Research Area, (incl. in the joint programming of research), European innovation partnerships, initiatives in the Baltic and Nordic region, and international research infrastructures. Enterprises have access to the world's newest RDI results, and cooperation opportunities and infrastructures are open to them.

Whereas the former strategies have focused mainly on the development of our RDI capacity, the objective of the present strategy is to use the created potential for the development and economic growth of Estonia. Priorities are set on the basis of the new, smart specialisation method. In order for the cross-field coordination to work more smoothly, a number of management and monitoring issues have been detailed.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
<p>Programme Internationalization of Research</p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research / Mobility / Bi- and multilateral cooperation/ Joint Programming Initiatives</li> <li>▪ Funding Organisation: European Regional Development Fund and Estonian national budget</li> <li>▪ Program duration 2011-2015; new program starting in the end of 2015.</li> <li>▪ Participation Qualification: Proposals are expected from Estonian public institutions (universities, state agencies), international partners have a chance to participate through cooperation of those institutions. E.g there was bilateral mobility support between Estonian and Taiwan researched during 2012-2015.</li> <li>▪ Project Duration: Up to 5 years</li> <li>▪ Funding Scale and Funding Scheme: Total budget 12.63 mil. euros; no self-financing commitments for partners</li> <li>▪ Research Fields: All fields</li> </ul>
<p>R&amp;D funding and mobility opportunities for researchers in Estonia</p>	<ul style="list-style-type: none"> <li>▪ There are several programmes which fund the personal research grants as a postdoctoral grant, an exploratory research grant, a start-up research grant and top-performing researchers grant to carry out research in Estonia.</li> <li>▪ Please find more information about the grants from <a href="http://researchinestonia.eu/funding/">http://researchinestonia.eu/funding/</a> (information will be up-dated regularly)</li> <li>▪ In case you are looking for a practical information on professional and daily life, as well as information on job and funding opportunities visit <a href="http://www.euraxess.ee">www.euraxess.ee</a>. EURAXESS Network gives information and assistance to researchers (PhD students, postdoctoral scholars, researchers, and other academic staff) wishing to come to Estonia or for those looking for jobs in research abroad.</li> </ul>
<p>Study opportunities and scholarships for international students in Estonia</p>	<ul style="list-style-type: none"> <li>▪ 2015 more than 100 degree programmes offered by Estonian higher education institutions are fully taught in English. Academic year 2014/2015, Estonia hosts nearly 2,900 international degree students, more than 1100 exchange students and ca 400 participants of summer or winter schools.</li> <li>▪ STUDY IN ESTONIA is a cooperation platform of institutions of higher education in Estonia to increase visibility of Estonia as an attractive study destination and promote the possibilities for studying for international students.</li> <li>▪ Please find detail information about scholarships for international students and about study programmes in English from <a href="http://www.studyinestonia.ee/">http://www.studyinestonia.ee/</a></li> <li>▪ Most of scholarships provided by Estonian universities and government are for Master and PhD students, however there are some support schemes available for Bachelor students as well.</li> </ul>

### 3. Joint Activities with Korea in 2016

Not Applicable

### 4. Others

#### Key Research Organisations and Companies

Organisation Name	Detailed information
<p>University of Tartu <a href="http://www.ut.ee">www.ut.ee</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation Type : Research funding agency</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Future Plans/Strategy: foster basic and applied R&amp;D, support researchers, encourage international co-operation and co-ordinate, implement national and international training, perform educational and research programmes, and analyze Estonian R&amp;D.</li> <li>▪ Contact Information: Andres Koppel, Head of Estonian Research Council, phone +372 731 7340, email andres.koppel@etag.ee</li> <li>▪ Organisation Type: Public University</li> <li>▪ Major Research Area: multidisciplinary Major Activities with Korea:</li> </ul> <p><b>1) Entrepreneurship agreements</b> Licence agreement „Lactobacillus fermentum ME-3“ with Namyang Dairy Products Co., Hyang Rim Corporation.</p> <ul style="list-style-type: none"> <li>▪ South Korean Maeil Dairies Co. is using a strain of probiotic lactic acid bacteria Lactobacillus Fermentum ME-3, developed by the University of Tartu (Prof. Marika Mikelsaar), in its Pure series of products. Maeil Dairies Co. has used the bacteria under a non-exclusive license agreement, which allowed the right of use to be granted to other companies of the same region.</li> <li>▪ Licensing options for strain are available for other companies, as well.</li> </ul> <p><b>2) Studies and teaching</b></p> <ul style="list-style-type: none"> <li>▪ Student exchange Licensing options for strain are available for other companies, as well.</li> <li>▪ Scholarship scheme for incoming mobility for students and scholars under Erasmus Mundus Action 2 project IDEAS - Innovation and Design for Euro-Asian Scholars.</li> <li>▪ Faculty and research visits, guest lecturers and teaching staff from Korea.</li> <li>▪ Korean language tuition. Courses on Korean culture and society at the Centre for Oriental studies of the University of Tartu, supported by the Korean Foundation.</li> </ul>

University of Tartu  
[www.ut.ee](http://www.ut.ee)

#### Future Plans:

The University of Tartu is interested in reinforcing the cooperation with the Republic of Korea in the fields of research, technology, innovation and entrepreneurship. The two links for developing the cooperation main centers actively engaged in the cooperation with Korea presently are:

- The Center for Asian and Emerging Markets Research (CAEMR) of the University of Tartu. CAEMR conducts research and disseminates knowledge on Asian and emerging markets in co-operation with Estonian and foreign research centers, enterprises and public sectors, provides study programs and offers consulting to enterprises and public sector.
- The Centre for Oriental Studies of the University of Tartu.

#### Contact Information:

##### Mr. Indrek Ots

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Lossi St. 3, 51003 TARTU / Phone: (+372) 737 5614

##### Ms. Reesi Lepa

Head of International Cooperation  
Rectors Strategy Office University of Tartu  
Ülikooli 18, 50090 TARTU / Phone: (+372) 737 6123

#### Others:

##### UT research strengths mapped for Samsung Group in 2013:

- Comprehensive knowledge and experience in the field of material technology and materials research (solids and organics). UT Institute of Physics and the Institute of Chemistry has driven research in luminophore development and other related topics such as light polarisation issues and nanotechnology (carbon nanotubes and their applications). Recent advances also include plasmonic nanostructures and their applications (solar cells, luminescence enhancement etc.).
- Battery technology: recent advances in nanostructured carbon electrode development has led to the development of almost market-ready ultra-high capacity condensators that could be further developed into energy storage devices. Alternatively, also zinc-air type battery technologies are actively researched and developed at UT.
- Memory management: Research and development of memristor-type devices based on high quality ALD process is well established at the University of Tartu. Devices with improved data retention, lowered power consumption and extended lifetime are developed. Ultra thin oxide layer deposition technique is being developed with applications also in the field of nanoscale condensators (for RAM).

University of Tartu  
[www.ut.ee](http://www.ut.ee)

- Big data / artificial intelligence:

a) Mobility Lab of the University of Tartu has more than 10 years of experience in using mobile positioning and call detail record (CDR) data for analysis of human spatial behaviour and applications in planning, public administration, GIS, marketing, social behaviour studies, public security and emergency management, Genetics, transportation and tourism studies. In cooperation with Spin-off Company Positium LBS data processing algorithms and data management service Positium data Mediator has been developed to enrich tracking data from telephones with connecting theories and methods of social science and tools of computer science. Algorithms about travel behaviour, genetic variance in behaviour, spatial mobility and consumer behaviour can be used in developing better applications for smartphones and servers supporting smartphone solutions.

b) A research consortium consisting of the UT Institute of Computer Science and selected companies is developing technologies in the area of "Location Based Big Data". The overall goal is to improve the quality and speed of individual mobile positioning based data stream processing for real time computing and visualisation.

For this purpose we develop and test time-critical computing algorithms using different positioning data streams, for instance: a) Network assisted GPS tracking; b) Call Detail Record (CDR); c) Anonymous Bulk Location Data (ABLD). The algorithms and data management frameworks, which help to develop a new generation of mobile positioning based computing and visualisation solutions, have a significant potential for future ICT based services. Private and public sector can use such algorithms and data management frameworks for device monitoring tools, decision support systems, navigation or logistical tools in conceptual, analytical or software level.

- Korean Festival in Tartu in 2012: <http://www.ut.ee/en/korean-festival>, in cooperation with Korean Foundation and Pusan National University.
- Organisation Type: Public University
- Major Research Area/Product: Educational research in Global Education Area, Developing joint curriculum "Global Education" for higher education
- Major Activities with Korea: Joint research, exchange students, university teachers and researchers.
- Future Plans: Carrying out joint Global Education Curriculum, research in Education, including teacher education
- Contact Information: Prof. Priit Reiska, Vice Rector for Academic Affairs, [priit.reiska@tlu.ee](mailto:priit.reiska@tlu.ee)

<p>Tallinn University <a href="http://www.tlu.ee">www.tlu.ee</a></p>	<ul style="list-style-type: none"> <li>▪ Tallinn University's cooperation projects with Korean research organisations and universities:</li> <li>a) Grant support for the "Employment of Teaching Staff for Korean Language" The Korea Foundation</li> <li>b) Research project "Global Studies on Teacher Education" with Oulu University, Finland (leader) and Chungbuk National University, Korea</li> <li>c) "KE-LeGe (KOR-EU Leaders for Global Education)" - The consortium for the KE-LeGE, Leaders for Global Education, project consists of four universities. Central Ostrobothnia, University of Applied Sciences and University of Oulu (Finland), University of Innsbruck (Austria) and University of Tallinn (Estonia). Three universities from the Korean consortium: Chungbuk National University, Suncheon National University and Korea University. Major activities for this three year project are: 1) exchange of 40 undergraduate students with focus on pedagogy from each consortium, 2) mobility program for 24 EU faculty members and 9 members, and 3) development of courses for global education. Korea students will spend 5 months at hosting institutes taking courses in global education, English, and the local language as part of cultural learning, and teaching practice at local schools. EU students will have a similar 4-month experience supported by local universities and communities.</li> </ul>
<p>Tallinn University of Technology <a href="http://www.ttu.ee/en/">http://www.ttu.ee/en/</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation Type: Public University</li> <li>▪ Major Research Area/Product: Engineering and technology, natural and exact sciences, social sciences</li> <li>▪ Major Activities with Korea: Student/researcher exchange, research cooperation</li> <li>▪ Future Plans: Student/Researcher exchange, cooperation projects (research, industry relations)</li> <li>▪ Contact Information: Mr. Reijo Karu, Head of Division for International Cooperation, international Relations Office e-mail: reijo.karu@ttu.ee / phone: (+372) 620 3503</li> </ul>
<p>Estonian University of Life Sciences <a href="http://www.emu.ee">www.emu.ee</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation Type: Public University</li> <li>▪ Major Research Area/Product: Agriculture, veterinary and animal science, forestry, food science, environmental science, renewable energy, rural economics, plant science</li> <li>▪ Future Plans: Development of bioeconomy research</li> <li>▪ Contact Information: Estonian University of Life Sciences, Kreutzwaldi 1, 51014 Tartu, Estonia / e-mail: info@emu.ee</li> </ul>

*\*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.*

# PART 9

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## FINLAND

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# FINLAND



## Country Outline

- GDP: 207,220 mil. euros (Eurostat 2015)
- GDP per Capita: 37,800 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Health, Forest and Environmental Sciences, ICT, Bioeconomy, Mobile Technologies, Cleantech, Renewable Energies, Sustainable and Urban Development, Smart Cities and Sustainability

## Contact Information

- Name / Position: Ms. Heini Korhonen / Embassy of Finland in Seoul
- Phone no. / e-mail: (+82) 2-732-6737 / Sanomat.SEO@formin.fi

**Finland** is a Northern European country which invests heavily in research and innovation (3,31 % of GDP in 2013). It is assessed by the Innovation Union Scoreboard as one of the European innovation leaders. With an efficient education and training system, skilled workforce, and stable institutions Finland is one of the world's most competitive economies. Finland has a strong specialization in ICT and it is moving fast towards digital economy. Other main focus areas include clean technologies, health care and bioeconomy. 16 % of the country is covered by forests providing resources for the wood and paper industry and for recreational activities and tourism. The first Finnish Bioenergy strategy from 2014 sets the course for a low carbon and resource efficient society and sustainable economy. The national research and innovation strategy encourages renewal of economies and setting up of new business start-ups. The Government is also increasing emphasis on the importance of service and creative sectors including marketing, design, branding and other consumer focused value creating activities.

## 1. Policies and Strategies in Science, Technology and Innovation

### Key figures, 2013

Economic and environmental performance	FIN	OECD	Gross domestic expenditure on R&D	FIN	OECD
<b>Labour productivity</b>			<b>GERD</b>		
GDP per hour worked, USD PPP, 2013	51.3	47.7	Million USD PPP, 2012	7,530	1,107,398
(annual growth rate, 2008-13)	(-0.3)	(+0.8)	As a% of total OECD, 2012	0.7	100
<b>Green productivity</b>			<b>GERD intensity and growth</b>		
GDP per unit of CO <sub>2</sub> emitted, USD, 2011	3.1	3.0	As a% of GDP, 2012	3.55	2.40
(annual growth rate, 2007-11)	(+4.6)	(+1.8)	(annual growth rate, 2007-12)	(-0.3)	(+2.0)
<b>Green demand</b>			<b>GERD publicly Financed</b>		
GDP per unit of CO <sub>2</sub> emitted, USD, 2011	3.1	3.0	As a% of GDP, 2012	0.95	0.77
(annual growth rate, 2007-11)	(+4.0)	(+1.6)	(annual growth rate, 2007-12)	(+1.7)	(+2.8)

Source: OECD STI Policy Outlook 2014



### **Finland invests in knowledge-based competence**

The Government Programme stresses the role of research as the foundation of knowledge and know-how. In return it promotes sustainable economic growth and immaterial as well as material welfare. In 2013, research and development expenditure represented 3.31 % of the gross domestic product (GPD) and that of public research funding was around 1 %.

The aim of science policy in Finland is to:

- support diversity and diversification of higher education institutions and to enhance the impact of higher education, research and societal outreach of them
- strengthen collaboration and agree on division of work between higher education institutions and research institutes
- further develop national research infrastructure policies
- increase internationality

The development of scientific research is based on the Development Plan for Education and Research, the Government Programme, governmental resolutions and policy outlined by the Research and Innovation Council. The Science Policy Division in the Ministry of Education and Culture is the responsible body for science policy issues.

Research and Innovation Council

Chaired by the Prime Minister

[http://www.minedu.fi/OPM/Tiede/tutkimus-\\_ja\\_innovaationeuvosto/?lang=en](http://www.minedu.fi/OPM/Tiede/tutkimus-_ja_innovaationeuvosto/?lang=en)

Latest Research and Innovation Policy Guidelines in English: Please check the web site.

### **Finland offers a competitive business environment**

The World Economic Forum's Global Competitiveness Report (2015-2016) has ranked Finland as the eighth most competitive nation in the world and as one of the innovation driven nations. According to the Nordic Growth Entrepreneurship Review 2012 Finland has the best framework conditions for entrepreneurship in Nordic countries. Finland is an easy operating environment for businesses with minimal bureaucracy and stable and competitive economy. In the Innovation Union Scoreboard 2015 Sweden, Denmark, Finland and Germany are the four innovation leaders in the European Union.

Finland's innovation policy guidelines include the Research and Innovation Council's policy guidelines, the underlying innovation strategy priorities, the Government Program, and separate decisions taken by the Government on innovation policy. Innovation policy has four focus areas for spurring renewal and growth in the Finnish business and industry:

- bioeconomy
- cleantech
- digitalization
- the health sector

The Government is also increasing emphasis on the importance of service and creative sectors, including marketing, design, branding and other consumer focused value creating activities and business models as sources for economic growth.

The Ministry of Employment and the Economy is responsible for most decisions on innovation policy. Development of Finland's innovation system is coordinated by the Research and Innovation Council led by the Prime Minister. The two main organizations regarding STI sector under the ministry are 1) VTT The technical Research Centre of Finland Ltd. and 2) Tekes – the Finnish Funding Agency for Innovations.

More about the ministry's innovation policy:

[http://www.tem.fi/en/innovations/innovation\\_policy/national\\_innovation\\_policy\\_guidelines](http://www.tem.fi/en/innovations/innovation_policy/national_innovation_policy_guidelines)

Tekes – the Finnish Funding Agency for Innovation is the main publicly funded expert organization for financing research, development and innovation in Finland. Tekes' budget for research and innovation was 488 million euros in 2015. Tekes' mission is to renew industries, increase the value added and productivity, improve the quality of working life, as well as boost exports and generate employment and wellbeing. Wide-ranging innovation activities are boosted in research communities, industry and service sectors. Tekes promotes a broad-based view on innovation: besides funding technological breakthroughs, the significance of service-related, design, business, and social innovations is emphasized. Digitalization as well as intangibility and value creation influence widely on all fields.

The service offering includes:

- Disruptive and pioneering business projects that originate from customers' own initiatives
- The main focus areas of substance based funding are the common services offered together with strategic partners
- Joint programmes
- Comprehensive service packages that support innovation, growth and internationalization as a whole
- Services for developing businesses' competences and capabilities and support their growth into international markets
- Investments in venture capital funds through Tekes Venture Capital Ltd

Currently Tekes implements 20 innovation programs. Programs are open to international cooperation. Tekes' funding is targeted on organizations and industries that are based in Finland. Korean partners are expected to secure their own national co-funding.

More about Tekes programmes:

<http://www.tekes.fi/en/programmes-and-services/tekes-programmes/>

### **Finland's innovation clusters and regional innovation activities**

The Strategic Centres for Science, Technology and Innovation (SHOK Centres) support the long-term development of research and innovation activities pursued by the strong sectors of Finnish business life. In addition to companies, the SHOK Centres' research programmes are also being implemented by universities and research institutes.

Through the Innovative Cities (INKA) programme and growth agreements, the twelve largest urban regions and the government join forces to enhance the selected urban regions' preconditions for developing into attractive local innovation hubs.

The Centres for Economic Development, Transport and the Environment (ELY Centres) offer performance guidance for innovation environments, growth and business development that draw on the regions' specific strengths.

More information: [http://www.tem.fi/en/innovations/strategic\\_centres\\_and\\_clusters](http://www.tem.fi/en/innovations/strategic_centres_and_clusters)

## 2. National Programmes and Initiatives

The main actors on this field in Finland are Tekes, the Finnish Funding Agency for Innovation, and the Academy of Finland.

### List of National Programmes open to the world

Programme Title	Contents
<p>Tekes <a href="http://www.tekes.fi">www.tekes.fi</a></p>	<p>Currently Tekes the Finnish Funding Agency for Innovation implements 20 innovation programs. Programs are open to international cooperation. Tekes' funding is targeted on organizations and industries that are based in Finland. Korean (like other foreign) partners are expected to agree on their joint English project plans with their Finnish partners and to secure national co-funding.</p> <p>Program examples:</p> <ul style="list-style-type: none"> <li>• Bits of Health (2014-2018)</li> <li>• 5th Gear (2014-2019)</li> <li>• Industrial Internet (2014-2019)</li> </ul> <p>Cooperation Type: funding targets joint research or innovation activities and may include mobility between participating RIs, universities or companies</p> <p>Funding Organisation: Tekes in partnership with Korean/other foreign funding organisations</p> <p>Call Opening/Closing Date: varies according to programs.</p> <p>Calls are announced on Tekes web site:  <a href="http://www.tekes.fi/en/whats-going-on/application-schedules/">http://www.tekes.fi/en/whats-going-on/application-schedules/</a>            More information: <a href="http://www.tekes.fi/en/programmes-and-services/tekes-programmes/">http://www.tekes.fi/en/programmes-and-services/tekes-programmes/</a></p> <p>Tekes and KETEP, the Korea Institute of Energy Technology Evaluation and Planning, have an agreement by which they promote joint Finnish-Korean research, innovation projects and demonstration projects in the area of green energy technologies.</p> <p>Tekes and KIAT, the Korea Institute for the Advancement of Technology, have an agreement by which they stimulate Finnish-Korean research and innovation projects and cooperation in multinational projects such as EU RTI programs and EUREKA.</p> <p>Tekes Contacts: Ms. Marita Paasi,            e-mail: <a href="mailto:marita.paasi@tekes.fi">marita.paasi@tekes.fi</a> / Tel. (+358) 295055724</p>

<p>EUREKA <a href="http://www.tekes.fi">www.tekes.fi</a></p>	<p>As an associate member of the European Collaboration Scheme EUREKA, South Korea is invited to form bilateral and multilateral research projects with EUREKA countries. Companies from Finland and companies from South Korea can form consortia in the area of innovation, industrial and service development and research. The companies will be supported by their respective National Funding Agencies in these joint activities</p> <p>Tekes contact: Mr. Tom Warras, National Eureka Project Coordinator tom.warras@tekes.fi, Tel. (+358) 295 055 839</p>
<p>FiDiPro <a href="http://www.tekes.fi">www.tekes.fi</a></p>	<p>FiDiPro – Finland Distinguished Professor Programme offers funding to projects recruiting highly merited international researchers in Finnish universities and research institutes to create long-term collaboration in science and technology. The applicant is a Finnish university or RI which co-operates with and invites a researcher from abroad.</p> <p><a href="http://www.tekes.fi/en/programmes-and-services/grow-and-go-global/fidipro/">http://www.tekes.fi/en/programmes-and-services/grow-and-go-global/fidipro/</a></p>
<p>Academy of Finland <a href="http://www.aka.fi">www.aka.fi</a></p>	<p>The Academy of Finland and the National Research Foundation of Korea (NRF) have an agreement that enables the two organisations to organise joint calls to provide funding for Finnish-Korean research projects. In 2012, funding was granted to two joint research projects in nanoscience and two in ICT. The total funding amount was approximately EUR 1 million.</p>
<p>Finnish Government Scholarship Pool <a href="http://www.studyinfinland.fi">www.studyinfinland.fi</a></p>	<p>The Academy of Finland and the National Research Foundation of Korea (NRF) have an agreement that enables the two organisations to organise joint calls to provide funding for Finnish-Korean research projects. In 2012, funding was granted to two joint research projects in nanoscience and two in ICT. The total funding amount was approximately EUR 1 million.</p>

### 3. Joint Activities with Korea in 2016

Not Applicable

### 4. Others

#### Research Institutes

Research.fi is a gateway to Finnish education, research and innovation activities. The portal offers an overall picture of administration and actors in the field. On these pages you will find basic information and key statistics on the Finnish educational system, research environments and funding as well as innovation activities. The

portal will also guide you to in-depth background information on the webpages of these Finnish actors.

By their volume of research funding the largest research institutes are the VTT Technical Research Centre of Finland in the administrative sector of the Ministry of Employment and the Economy, the Finnish Forest Research Institute and MTT Agrifood Research Finland in the administrative sector of the Ministry of Agriculture and Forestry as well as the National Institute for Health and Welfare in the administrative sector of the Ministry of Social Affairs and Health.

Please find the links to all of the research institutes in Finland here:

<http://www.research.fi/>

### Universities

Please find the links to all 14 Finnish universities here:

<http://www.minedu.fi/OPM/Koulutus/yliopistokoulutus/yliopistot/?lang=en>

### Universities of Applied Sciences (Polytechnics)

Please find the links to all 24 UAS here:

<http://www.minedu.fi/OPM/Koulutus/ammattikorkeakoulutus/ammattikorkeakoulut/?lang=en>

### Key Research Organisations and Companies

Organisation Name	Detailed information
VTT Technical Research Centre of Finland Ltd. <a href="http://www.vtt.fi">www.vtt.fi</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Non-profit and state-owned limited company</li> <li>▪ Major Research Area/Product: Multitechnological R&amp;D&amp;I organization</li> <li>▪ Major Activities with Korea: Branch office VTT Korea, collaboration with research institutes and universities as well as industry</li> <li>▪ Future Plans: Strengthen the co-operation</li> <li>▪ Contact Information: Mr. Mikko Sallinen, Mikko.Sallinen@vtt.fi</li> <li>▪ +358 40 7235263, +82 10-5384 4634</li> </ul>
Aalto University <a href="http://www.aalto.fi">www.aalto.fi</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Activities with Korea: several partner universities (student and staff exchange, STI projects)</li> <li>▪ Korea Advanced Institute of Science and Technology KAIST, Chungnam National University, and Gwangju Institute of Science and Technology are partnering with Aalto in EU Erasmus Mundus Action 2 project "Technologies for Information and Communication Europe-East Asia Mobilities" (2014-2018).</li> <li>▪ Future Plans: new partners, a lot of potential seen in several fields (health &amp; wellbeing technologies)</li> </ul>

*\*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.*

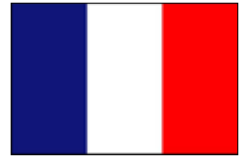
# PART 10

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## FRANCE

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# FRANCE



## Country Outline

- GDP: 2,181,064 mil. euros (Eurostat 2015)
- GDP per Capita: 32,800 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Aeronautics or Space Automobiles and Transport Technologies, Chemistry and Nanotechnology, IG, Agronomy, Health Sciences, Ocean Sciences

## Contact Information

- Organisation: French Embassy in Korea
- Name / Position: Dr. Yann MOREAU / Attaché for Science and Higher Education Cooperation
- Phone no. / e-mail: (+82) 02 317 8531 / ccfscience@institutfrancais-seoul.com

France is a major R&D country. It ranks sixth among world countries for gross domestic expenditure in R&D. France has a large science base, at the same time, it is equipped with large world-class research infrastructures. Moreover, France is well connected with European countries and non-European countries. With EUR 48.1 billion of global R&D expenses representing 17 % of EU total in 2014 France is a major player in the EU. It ranks second behind Germany.

## 1. Policies and Strategies in Science, Technology and Innovation

In recent years France has substantially reformed its R&I system – new funding and evaluation agencies and mechanisms, “pôles de compétitivité” policy, more autonomy for universities, amplified research tax credit (CIR), innovation tax credit, “Investissements d’Avenir” program and increased funding for the valorization of public research results.

Enshrined in law, the National Research Strategy (S.N.R.) was decided on July 2013. It is developed in line with that of the European Union and identifies a limited number of scientific and technological priorities to meet the major challenges of the coming decades. The S.N.R. is based on a consultation with the scientific and academic community and the socio-economic world. It was finalized in the summer of 2014. The government will present it together with the National Strategy for Higher Education to the parliament every five years.

The S.N.R. aims for several objectives, which are the followings:

- Meet the scientific, technological, environmental and societal challenges which France will face in the coming decades by defining a limited number of scientific and technological priorities.



- Reaffirm the role of state strategist in guidance and programming of research while promoting cooperation with all public and private stakeholders in research.
- Strengthen the link with the Horizon2020 program developed by the European Union for 2014-2020 which also aims to meet the economic and societal challenges.
- Promote basic research as the essential foundation for the development of a high- level science.

Enhance the results of research by promoting innovation, technology transfer, capacity of expertise and support to public policies, the development of scientific, technical and industrial culture.

The S.N.R. has therefore worked from the 10 main societal challenges:

- Simple resource management and climate change adaptation
- Clean, safe and effective energy
- Stimulate industrial renewal
- Health and wellness
- Food security and demographic challenge
- Mobility and sustainable urban systems
- Information and communication society
- Innovative, integrative and adaptive societies
- Spatial ambition for Europe
- Freedom and security in Europe, for its citizens and its residents

To involve the widest scientific community and its economic and social partners to reflect on these 10 challenges nearly 400 experts have been mobilized and distributed within ten workshops (one for each challenge). Their origin: science and technology public institutions, ministries involved in research (defense, industry, health, agriculture, foreign affairs) and the world of business.

The High Council of the Evaluation of Research and Higher Education which is an independent administrative authority is now in charge of the evaluation of research and higher education.

The National Plan for Innovation presented on November 2013 has three priorities: foster the culture of innovation in higher education, encourage exchanges between public and private laboratories, and establish consistent priorities.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
<p>Programme Hubert Curien (PHC) Star in Korea  <a href="http://www.campusfrance.org/fr/star">http://www.campusfrance.org/fr/star</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Mobility, International scientific and technological exchanges</li> <li>▪ Funding Organisation:               <ul style="list-style-type: none"> <li>- France: Ministry of Foreign Affairs and International Development (MAEDI)</li> <li>- Korea: Ministry of Science, ICT and Future Planning</li> </ul> </li> <li>▪ Call Opening/Closing Date: December to January (2 months)</li> <li>▪ Participation Qualification: researcher, post-doctoral fellow or doctoral student</li> <li>▪ Project Duration: 2 years</li> <li>▪ Funding Scale and Funding Scheme:               <ul style="list-style-type: none"> <li>- researcher exchange: travel and stay expenses</li> <li>- organization of international workshops: mobility and logistics</li> <li>- Funding depends on the demand, on average 10 000€ per year for the French side</li> <li>- Funding is allocated on an annual basis at the beginning of each year. The second payment is dependent on the approval of an interim report submitted by the project leader to the MAEDI.</li> </ul> </li> <li>▪ Research Fields:               <ul style="list-style-type: none"> <li>- New materials and nanotechnologies</li> <li>- Life and health sciences and biotechnologies</li> <li>- Information and communication sciences and technologies</li> <li>- Basic sciences, Aeronautics and space sciences</li> <li>- Societal technology</li> <li>- Environmental sciences</li> </ul> </li> <li>▪ Matching fund from Korean government: 15 million won per year for the Korean side</li> </ul>

<p>Bio Asia  <a href="http://www.campusfrance.org/sites/default/files/bio-asie-uk.pdf">http://www.campusfrance.org/sites/default/files/bio-asie-uk.pdf</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Mobility, International scientific and technological exchanges</li> <li>▪ Funding Organization: French Ministry of Foreign Affairs and International Development (MAEDI)</li> <li>▪ Call Opening/Closing Date: June to August (2 months)</li> <li>▪ Project Duration: 2 years</li> <li>▪ Funding Scale and Funding Scheme: <ul style="list-style-type: none"> <li>- Researcher exchange: travel and stay expenses</li> <li>- Organization of international workshops: mobility and logistics</li> <li>- 40 000 € for two years (i.e. 20 000 € per project per year)</li> <li>- No minimum grant amounts are being fixed. Funding is allocated on an annual basis at the beginning of each year. The second payment is dependent on the approval of an interim report submitted by the project leader to the MAEDI.</li> </ul> </li> <li>▪ Research Fields: All topics related to life science, biotechnologies, health and food security. Priority topics for 2014 are as follows: biodiversity conservation; biotechnologies applied to health, sustainable cosmetics or food security.</li> <li>▪ Matching fund from Korean government: no</li> </ul>
<p>STIC Asia  <a href="http://www.campusfrance.org/sites/default/files/stic-asie-uk.pdf">http://www.campusfrance.org/sites/default/files/stic-asie-uk.pdf</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Mobility, International scientific and technological exchanges</li> <li>▪ Funding Organization: French Ministry of Foreign Affairs and International Development (MAEDI)</li> <li>▪ Call Opening/Closing Date: June to August (2 months )</li> <li>▪ Project Duration: 2 years</li> <li>▪ Funding Scale and Funding Scheme: <ul style="list-style-type: none"> <li>- Researcher exchange: travel and stay expenses</li> <li>- Organization of international workshops: mobility and logistics</li> <li>- 40,000 € for two years (i.e. 20,000 € per project per year)</li> <li>- No minimum grant amounts are being fixed. Funding is allocated on an annual basis at the beginning of each year. The second payment is dependent on the approval of an interim report submitted by the project leader to the MAEDI.</li> </ul> </li> <li>▪ Research Fields: All topics in the areas of research and innovation related to ICT. Priority topics for 2014 are as follows: environment &amp; disaster risk reduction; urban and rural ICT; ICT and energy efficiency; geomatics, computer modelling for health.</li> <li>▪ Matching fund from Korean government: no</li> </ul>

### 3. Joint Activities with Korea in 2016

#### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
Winter School of CNRS-Ewha International Research Centre	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: Jan. 25 (Mon) - Jan. 28 (Thu), 2016</li> <li>- Venue: Ewha Women's University, Seoul</li> </ul> </li> <li>▪ Major topic or agenda: Functional advanced materials</li> <li>▪ Target Participants: graduate students, researchers and professors</li> </ul>
IBS CNRS RNA Symposium	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: Mar. 21 (Mon) – Mar. 22 (Tue), 2016</li> <li>- Venue: Seoul National University, Center for RNA Research, IBS, Seoul</li> </ul> </li> <li>▪ Major topic or agenda: Functional advanced RNA studies</li> <li>▪ Target Participants: graduate students, researchers and professors</li> </ul>
Annual Regional Meeting of Pasteur Institute network	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: Apr., 2016 / Venue: Institute Pasteur of Korea, Pangyo</li> </ul> </li> <li>▪ Major topic or agenda: Health sciences and drugs</li> <li>▪ Target Participants: graduate students, researchers and professors</li> </ul>
KIOST – IFREMER Symposium	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: To be announced</li> <li>- Venue: Korea Institute of Ocean Science and Technology (KIOST), Ansan</li> </ul> </li> <li>▪ Major topic or agenda: Underwater Exploration Technologies and marine Environmental Issues</li> <li>▪ Target Participants: graduate students, researchers and professors</li> </ul>
« Souvenir de Séoul II » Exhibition	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: To be announced / Venue: Korea University Museum, Seoul</li> </ul> </li> <li>▪ Major topic or agenda: French Korean relationship history</li> <li>▪ Target Participants: any public</li> </ul>
“9000 km for one robot” Challenge	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: Jan. to Apr., 2016</li> <li>- Venue: Gwacheon National Science Museum, Seoul &amp; Universcience, Paris</li> </ul> </li> <li>▪ Major topic or agenda: Co-construction of a robot between two French and Korean teams</li> <li>▪ Target Participants: pupils, students, makers, researchers and professors</li> </ul>
“Créative France” Lectures Series	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline               <ul style="list-style-type: none"> <li>- Date: Mar. to Dec., 2016</li> <li>Venue: Kyobo Life Insurance building, Seoul</li> </ul> </li> <li>▪ Major topic or agenda: French award-winning personalities including scientists lectures series</li> <li>▪ Target Participants: any public</li> </ul>

France-Korea Symposium for Higher Education and Research	<ul style="list-style-type: none"> <li>▪ Activity (Program) Outline           <ul style="list-style-type: none"> <li>- Date: Oct. 17 (Mon), 2016</li> <li>- Venue: To be announced</li> </ul> </li> <li>▪ Major topic or agenda: Results and prospects for higher education and research between France and Korea (first biennial meeting)</li> <li>▪ Target Participants: graduate students, researchers and professors</li> </ul>
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## 4. Others

### Key Research Organisations and Companies

Organisation Name	Detailed information
CNRS <a href="http://www.cnrs.fr">www.cnrs.fr</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Public organization under the responsibility of the French Ministry of Education and Research</li> <li>▪ Major Research Area: All fields of science, technology and society: mathematics, natural sciences, life sciences, humanities and social sciences, environmental sciences, engineering sciences</li> <li>▪ Major Activities with Korea: Physics and chemistry</li> </ul>
Institut Pasteur <a href="http://www.pasteur.fr">www.pasteur.fr</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Private international research institute</li> <li>▪ Major Research Area/Product: Science, medicine and public health</li> <li>▪ Major Activities with Korea: Institute Pasteur Korea (<a href="http://www.ip-korea.org/">www.ip-korea.org/</a>)</li> </ul>
CEA <a href="http://www.cea.fr">www.cea.fr</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Government-funded technological research organisation</li> <li>▪ Major Research Area/Product: Alternative Energies and Atomic Energy</li> <li>▪ Major Activities with Korea: Korea Atomic Research Institute (KAERI), Korea Institute of Energy Research (KIER) and Korea Institute of Science and Technology (KISTI) agreements</li> </ul>
Ifremer <a href="http://www.ifremer.fr">www.ifremer.fr</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Government-funded technological research organisation</li> <li>▪ Major Research Area/ Product: Oceans, Environment and Fisheries</li> <li>▪ Major Activities with Korea: Korea Institute of Ocean Science and Technology (KIOST)</li> </ul>
Université Pierre et Marie Curie <a href="http://www.upmc.fr">www.upmc.fr</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Modeling &amp; Engineering; Energy, Matter &amp; the Universe; Living Earth &amp; Environment; Life &amp; Health</li> <li>▪ Major Activities with Korea: International Research Networks (GDRI) Functional material for organic optics, electronics and devices (FUNMOOD) with Yonsei Univ., Hannam Univ., Ewha Womans Univ., Seoul National Univ. and Seoul Women's Univ.</li> </ul>

<p>Université Paris Sud <a href="http://www.u-psud.fr">www.u-psud.fr</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Mathematics and physics, chemistry and biology, pharmaceutical, medical research, social sciences</li> <li>▪ Major Activities with Korea: International Associated Laboratory (LIA) France Korea Particle Physics Laboratory (FKPPL) with KISTI, KIRAMS, Chonnam National Univ., Ewha Womans Univ., Gangneung National Univ., SungKyunKwan Univ., Pohang Accelerator Lab.</li> </ul>
<p>Université Blaise Pascal <a href="http://www.univ-bpclermont.fr">www.univ-bpclermont.fr</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Natural sciences and technology, sports science and engineering</li> <li>▪ Major Activities with Korea: International Associated Laboratory (LIA) France Korea particle physics laboratory (LIA FK-PPL) see above</li> </ul>
<p>Université de Grenoble-Alpes <a href="http://www.univ-grenoble-alpes.fr">www.univ-grenoble-alpes.fr</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: particle physics, condensed matter physics, crystallography, electrochemistry, geosciences, ecology and computer science</li> <li>▪ Major Activities with Korea: International Associated Laboratory (LIA) Center for Photonics and Nanostructure (CPN) with KIST, KAIST, Seoul National Univ., Chungnam National Univ. and Busan National Univ.; International Research Networks (GDRI) Nano and Microsystems (NAMIS) with Seoul National Univ.</li> </ul>
<p>Université de Montpellier <a href="http://www.umontpellier.fr">www.umontpellier.fr</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: space exploration, robotics, environmental engineering, chronic diseases, biotechnology</li> <li>▪ Major Activities with Korea: International Associated Laboratory (LIA) Center for Photonics and Nanostructure (CPN) see above; International Research Networks (GDRI) Nano and Microsystems (NAMIS) with Seoul National Univ.</li> </ul>
<p>Strasbourg University <a href="http://www.unistra.fr">www.unistra.fr</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: ITC, nanotechnology, material science, health science and plant science</li> <li>▪ Major Activities with Korea: International Associated Laboratory (LIA) Center for Photonics and Nanostructure (CPN) see above; International Research Networks (GDRI) Nano and Microsystems (NAMIS) see above</li> </ul>
<p>Strasbourg University <a href="http://www.unistra.fr">www.unistra.fr</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Biology, biotechnology, medicine, chemistry, physics, materials, space science</li> <li>▪ Major Activities with Korea: International Associated Laboratory (LIA) Functional nanostructures : morphology, nanoelectronics and ultrafast optics(NANOFUNC) with Ewha Womans Univ., Seoul National Univ. and Ulsan Univ.; International Research Networks (GDRI) Functional material for organic optics, electronics and devices (FUN MOOD) see above</li> </ul>

*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.*

# PART 11

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## GERMANY

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# GERMANY



## Country Outline

- GDP: 3,025,900 mil. euros (Eurostat 2015)
- GDP per Capita: 37,100 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Automotive & Traffic Technologies, Aviation Technologies, Biotechnology, Energy Technologies, Environmental Technology, Health Research, Humanities, Information & Communication Technologies, Maritime Technologies, Materials Technology, Medical Technologies, Natural Sciences, Nanotechnology, Optical Technologies, Photonics, Plants, Production Technologies, Security Research, Services, Social Sciences, Space Technology

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Germany is a land of science and research. The development of innovative technologies and products is an important foundation of the German economy. Germany invests roughly 80 billion euros a year in R&D, two thirds of which are coming from the private sector. In 2013 Germany invested 2,85% of GDP in R&D meaning that the 3% objective of the Europe 2020 Strategy has nearly been reached. Germany is thus among the countries leading in the field with a very high R&D intensity. Alongside R&D resources the number of people working in R&D is the most important indicator of R&D resources. More than half a million people work in this area in Germany – in business, in research institutions and at universities.

Germany offers various research locations: universities, non-university research institutes, companies and institutions run by federal or state authorities. All in all there are about 800 publicly funded research institutions. Additionally more than a quarter of all industrial enterprises in Germany are active in research including many SMEs. The automotive industry, the electrical industry, the chemicals and pharmaceuticals sector and engineering companies all have a high demand for R&D personnel. Close cooperation between science and industry in research and development is one of the traditional strengths of the German innovation system

## 1. Policies and Strategies in Science, Technology and Innovation

### High-Tech Strategy

Research, development and innovation form the sustenance for Germany's prosperity and competitiveness. Viable solutions for environmentally friendly energy, efficient health care, sustainable mobility, secure communication and secure production cannot be developed without progress in science and technology. To better approach the urgent challenges of our time the German government



launched the High-Tech Strategy in 2006 which was further developed in 2010 and 2014 as a comprehensive, interdepartmental innovation strategy.

“The new High-Tech Strategy – Innovations for Germany” of 2014 aims to strengthen growth and prosperity in Germany by accelerating the extension from scientific discovery to practical application. It focuses on the most urgent tasks of the future. It is concentrating on research subjects that are of especially relevant to societies and to future growth and prosperity:

- Digital economy and society
- Sustainable business and energy
- Innovative workplace
- Healthy life
- Intelligent mobility
- Civil security

### Internationalisation Strategy

The challenges Germany is facing are also concerned by other countries in Europe and countries across the world. That is why the German Federal Government adopted a strategy for the internationalization of science and research in 2008 as a response to the challenges of globalization like climate change, questions of nutrition and food production, securing our future energy supply, combating poverty and infectious diseases. In our globalized world scientific and technological progress are no longer achievable by individual countries but depend on cooperation and the exchange of ideas with leading international experts. The four main goals of the internationalization strategy are: The cooperation with global leaders (1) developing international innovation potentials (2) intensifying the cooperation with developing countries in education, research and development on a long-term basis and (3) solving global challenges with international responsibilities.

## 2. National Programmes and Initiatives

The German research landscape is diverse and multifaceted. Germany is the home of nearly 400 higher education institutions, more than half of which are universities of applied sciences. Universities and other higher education institutions offer a broad spectrum of research activities including basic research, applied research and development.

Two examples of academies of sciences and humanities are the National Academy of Sciences Leopoldina ([www.leopoldina.org/en/](http://www.leopoldina.org/en/)) and acatech – National Academy of Science and Engineering ([www.acatech.de/uk](http://www.acatech.de/uk)). Founded in 1652 Leopoldina is one of the oldest academies of science in the world. In 2008 it was appointed as National Academy of Sciences and it provides academic advice to both policymakers and society as a whole. Acatech – the National Academy of Science and Engineering – represents the interests of German science and technology communities at home and abroad. It provides scientific opinion and recommendation to policymakers and society.

Besides the academic field non-university research institutes play an important role in Germany. The following table gives an overview of the German Research Organisations as well as the Research Funding Organisations including information about activities in international cooperation and funding programmes.

Institution	Contents
<p>Max Planck Society (MPG)  <a href="http://www.mpg.de/en">www.mpg.de/en</a></p>	<ul style="list-style-type: none"> <li>▪ Currently, the MPG operates 83 institutes.</li> <li>▪ The Max Planck institutes (MPI) carry out basic research in the life sciences, natural sciences and the social and the humanities. Research must meet the Max Planck Society's excellence criteria.</li> <li>▪ 18 Nobel laureates have emerged from the ranks of MPG scientists.</li> <li>▪ Instruments of international cooperation: <ul style="list-style-type: none"> <li>▪ Max Planck Centres. 14 Max Planck Centres worldwide. Two of them are located in Korea: The Max Planck POSTECH Centre for Attosecond Science and the Max Planck POSTECH Centre for Complex Phase Materials.</li> <li>▪ MPG Partner Groups. More than 40 MPG Partner Groups worldwide. One Partner Group is located in Korea: The MPI for molecular biomedicine cooperates with the Partner Group at Ulsan National Institute of Science and Technology (UNIST).</li> <li>▪ German Max Planck Institutes cooperate in at least 30 projects with Korean Partners.</li> <li>▪ Funding Programmes: Foreign Visiting Researchers at Max Planck Institutes, Head of a Max Planck Research Group at a Max Planck Institute, Individual Doctoral Projects at Max Planck Institutes, International Max Planck Research Schools, Max Planck grants for Advanced Postdoctoral Training.</li> </ul> </li> </ul>

# GERMANY

<p>Fraunhofer Society (FhG)  <a href="http://www.fraunhofer.de/en.html">www.fraunhofer.de/en.html</a>  <a href="http://www.fraunhofer.kr">www.fraunhofer.kr</a></p>	<ul style="list-style-type: none"> <li>▪ Fraunhofer is Europe's largest application-oriented research organisation with 67 research institutes.</li> <li>▪ Research focus: health, security, communication, energy and the environment</li> <li>▪ Fraunhofer Institutes are cooperating with partners worldwide.</li> <li>▪ Many Fraunhofer Institutes have cooperation projects with Korean partners with a focus on ICT and Micro-electronics, display technologies, energy and life sciences. For example Fraunhofer Institutes ISE, IZI, IKTS etc. operate research projects with Korean counterparts, such as city of Seoul, Chonnam National University or ETRI.</li> <li>▪ Fraunhofer Representative Office in Seoul</li> <li>▪ Funding Programmes: Fraunhofer Attract, Fraunhofer Bessel Research Award, Individual Doctoral Projects at Fraunhofer Institutes</li> </ul>
<p>Helmholtz Association of German Research Centres  <a href="http://www.helmholtz.de/en">www.helmholtz.de/en</a></p>	<ul style="list-style-type: none"> <li>▪ Helmholtz is Germany's largest research organisation.</li> <li>▪ Interdisciplinary research which contributes to solving the great challenges facing society, science and industry</li> <li>▪ Almost all of the 18 Helmholtz research centres are cooperating with Korean partners.</li> <li>▪ 6 research fields: Energy; Earth and Environment; Health; Key Technologies; Matter; Aeronautics, Space and Transport</li> <li>▪ 3 International Offices: Brussels, Moscow, Beijing</li> <li>▪ Funding Programmes: Helmholtz Postdoc Programme, Helmholtz Young Investigators Group, Individual PhD Thesis at Helmholtz Centres, International Helmholtz Research Schools and Graduate Schools</li> </ul>
<p>Leibniz Association  <a href="http://www.leibniz-gemeinschaft.de/en/">www.leibniz-gemeinschaft.de/en/</a></p>	<ul style="list-style-type: none"> <li>▪ 89 non-university research institutes are part of the Leibniz Science Association.</li> <li>▪ The Leibniz Association is divided into five sections: humanities and educational research; economics, social sciences, spatial research; life sciences; mathematics, natural sciences and engineering and environmental research.</li> <li>▪ In 2013, Leibniz institutions were involved in more than 4,500 international cooperation in 111 different countries. There are many cooperation projects with partners in Korea.</li> <li>▪ Funding Programmes: International Visiting Scholars at Leibniz Institutes, Leibniz DAAD Research Fellowships, Leibniz Graduate School</li> </ul>

<p>Alexander von Humboldt Foundation (AvH)  <a href="http://www.humboldt-foundation.de">www.humboldt-foundation.de</a></p>	<ul style="list-style-type: none"> <li>▪ The Humboldt Foundation promotes academic cooperation between excellent scientists and scholars from Germany and abroad.</li> <li>▪ It grants more than 700 fellowships and awards per year with the aim of bringing excellent scientists and scholars from all over the world to Germany to collaborate and work together.</li> <li>▪ The alumni network of the AvH is outstanding. Over 200 Korean Alumni are members of the Humboldt Club Korea and the Humboldt Society in Korea. Ambassador Scientist in Korea: Prof. Kim Kang-sik from Aerospace University in Seoul.</li> <li>▪ Every year the Humboldt Foundation organises two major colloquia abroad. One of those colloquia was held in Seoul in November 2015.</li> <li>▪ Funding Programmes: Alexander von Humboldt Professorship, Anneliese Maier Research Award, Fraunhofer-Bessel Research Award, Friedrich Wilhelm Bessel Research Award, Georg Forster Research Award, Georg Forster Research Fellowship for Experienced Researchers, Georg Forster Research Fellowship for Postdoctoral Researchers, Sofija Kovalevskaja Award</li> </ul>
<p>German Academic Exchange Service (DAAD)  <a href="http://www.daad.de/en/">www.daad.de/en/</a>  <a href="http://www.daad.or.kr">www.daad.or.kr</a></p>	<ul style="list-style-type: none"> <li>▪ The DAAD is the organisation of German higher education institutions and their student bodies. It is devoted to internationalising the academic and scientific research system.</li> <li>▪ The DAAD provides scholarships for students and researchers.</li> <li>▪ 70 branch offices and Information Centres worldwide.</li> <li>▪ There is one DAAD Information Centre in Seoul, Korea.</li> <li>▪ Funding Programmes: Bilateral Exchange of Academics, Leibniz DAAD Research Fellowships, Re-invitation Programme for Former Scholarship Holders, Research Fellowships in Space, Aeronautics, Energy and Transportation Research, Research Grants for Doctoral Candidates and Young Academics and Scientists, Research Stays for University Academics and Scientists</li> </ul>
<p>German Research Foundation (DFG)  <a href="http://www.dfg.de/en/">www.dfg.de/en/</a></p>	<ul style="list-style-type: none"> <li>▪ The DFG is a self-governing research funding organisation, which is largely funded by the state.</li> <li>▪ It funds research projects at universities and other research institutions in all branches.</li> <li>▪ Korean Partner: NRF</li> <li>▪ Funding Programmes: Clusters of Excellence, Collaborative Research Centres, Emmy Noether Programme, Graduate Schools, Grants to Support the Initiation of International Collaboration, Heisenberg Programme: Fellowship/Professorship, Mercator Fellowship, Research Grants, and Research Training Groups</li> </ul>

### 3. Joint Activities with Korea in 2016

Many German Universities as well as many institutes of the Fraunhofer Society, the Helmholtz Association, the Leibniz Association and the Max Planck Society and other research organisations are cooperating on individual project basis with Korean partners.

On the government level there is a tradition of supporting international bilateral research cooperation between Germany and Korea through the instrument of bilateral calls. Examples are listed in the table below.

#### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
Bilateral German-Korean Mobility Programme	<ul style="list-style-type: none"> <li>▪ Annual call since 2007</li> <li>▪ Last call December 2014 call:</li> <li>▪ -German side: Health research, Environmental Technology, Information Technology</li> <li>▪ -Korean side: BT, ET, IT, <a href="http://www.bmbf.de/foerderungen/25533.php">www.bmbf.de/foerderungen/25533.php</a></li> <li>▪ About 20 projects currently funded.</li> <li>▪ Budget: Up to 20.000 Euro per project from the German side</li> <li>▪ Requirement: Bilateral programme, Korean and German partners are required.</li> <li>▪ Hosting agencies: German Federal Ministry for Education and Research (BMBF), Korean Ministry of Science, ICT and Future Planning (MSIP)</li> <li>▪ Supporting agencies: The International Bureau of the DLR (German side), National Research Foundation (Korean side)</li> <li>▪ <a href="http://www.internationales-buero.de">www.internationales-buero.de</a>, <a href="http://www.nrf.re.kr">www.nrf.re.kr</a></li> </ul>
Bilateral University Cooperation Programme	<ul style="list-style-type: none"> <li>▪ Korean-German bilateral continuation of a former call for joint research structures in the Asian Pacific Research Area (APRA)</li> <li>▪ Pilot call in 2012</li> <li>▪ Open to research fields addressed within the German High-Tech Strategy.</li> <li>▪ 2013: Three bilateral projects with Korea started in January 2013</li> <li>▪ Budget: 100.000 Euro per year and project</li> <li>▪ Hosting agencies: German Federal Ministry for Education and Research (BMBF), Korean Ministry of Science, ICT and Future Planning (MSIP)</li> <li>▪ Supporting agencies: The International Bureau of the DLR (German side), National Research Foundation (Korean side)</li> <li>▪ <a href="http://www.internationales-buero.de">www.internationales-buero.de</a>, <a href="http://www.nrf.re.kr">www.nrf.re.kr</a></li> </ul>

Bilateral programme for joint R&D projects for SMEs

- First German-Korean call for joint R&D projects for SMEs in July 2014
- Second call September 2015
- Joint R&D projects, focusing on developing innovative products and applications in all technological and application areas
- Open for SMEs
- German Federal Ministry for Economic Affairs and Energy (BMWi), Korean Ministry of Technology, Industry and Energy (MOTIE)
- Agencies: Aif Project GmbH, Korean Institute for the Advancement of Technology (KIAT)
- [www.zim-bmwi.de](http://www.zim-bmwi.de), [www.kiat.or.kr](http://www.kiat.or.kr)

## 4. Others

Not Applicable



# PART 12

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## GREECE

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# GREECE



## Country Outline

- GDP: 176,023 mil. euros (Eurostat 2015)
- GDP per Capita: 16,200 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: ICT, Health, Agro-Food Including Fisheries and Aquaculture, Marine Science and Technology, Micro-Nano Electronics

## Contact Information

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## 1. Policies and Strategies in Science, Technology and Innovation

A new Operational Programme for Entrepreneurship, Competitiveness and Innovation 2014-2020, based on the National Research and Innovation Smart Specialization Strategy has been developed. In parallel 13 Regional Operational Programmes (one for each of the 13 Greek regions) including research and innovation items have been adopted as well. In line with the European practices a National Road Map for research infrastructures is at stake for the same time frame.

In Greece the efforts to mobilize key players not only through the development and support of structures that promote research and innovation but also through financial support for research in the public and private sector led to an improvement of the country's overall performance. However it was not possible to reduce the gap from the European average or to achieve the national targets with domestic expenditure on Research and Development (R&D). The total gross domestic expenditure on research as a percentage of Gross Domestic Product (GDP) increased from 0.57% in 2003 to 0.80% in 2013 while the relevant EU-28 indicator increased during the same period from 1.85% to 2.06 %. This increase was mainly due to the fall of national GDP during this period as well as due to the full activation of funding through the NSRF 2007-2013.

The Greek Research, Technological Development and Innovation (RTDI) System shows strengths including good performance in co-financed EU Framework Programmes, a substantial Greek representation in international research networks and projects of the European Research Infrastructure Road Map, a strong Greek



research community abroad, manpower quality and 'islands' of excellence in the public research institutions and the private sector, and also successful Greek presence regarding scientific publications (above the EU average). On the other hand the main weaknesses include low participation of the private sector to the research effort, extremely low performance in patent filing as well as underperformance in risk financing and venture capital. Recent economic crisis has dramatically affected some critical aspects of the Greek RTDI system such as research careers and opportunities, leading to severe brain drain of junior and senior scientists to advanced countries in Europe, in the US and beyond.

Responding to the current situation the Smart Specialization Strategy (RIS3) was inspired by the vision of Greece that gives priority to people and society with high quality of life and low environmental footprint and envisaged Greek cultural heritage and creation. The objective of RIS3 is the targeted reform of the country's productive sector having as main driving forces RTDI activities in order to better balance the existing regional disparities and to create sustainable employment to the benefit of people and society preserving environment and culture. In the new emerging era the innovation policy goes beyond the simple strengthening of research and technological development in businesses and the research fabric. It aims to support the improvement of the innovation system as a whole. Components of the this whole are the human factor producing the new knowledge, the firms, especially those who experiment on new ideas, technologies and business models to grow and become more competitive, and a system that creates and diffuses new knowledge removing the barriers to innovation.

Research bodies (Universities and Research Centres) have an important role to play in ensuring the robustness of RIS3 as they form the dynamic and internationally recognized part of the national innovation system and they provide the broad technological base that is necessary for innovations. One of the concerns of the strategy is not to trap the spectrum of activities of research institutions through sectoral specialization but to ensure their mobilization towards the new business model of the country, increasing the synergies between public and private investments.

On the other hand the emergence of new innovative firms and the strengthening of those who currently persist and are distinguished internationally are important in

order for the country not to “not invent here, exploit elsewhere”. Key factor in this effort is the encouragement of risk taking attitudes and the identification of opportunities arising from the uncertainty of RTDI activities. In this direction the “learning from failure” process is also element of RIS3. Thus RIS3 ensures the development of all RTDI types:

- Innovation from the “market needs” (demand driven)
- Innovation from scientific curiosity (curiosity-driven) and
- Innovation produced to fulfill strategic mission (mission-led)

To achieve the vision the country has set a target in the context of the Medium Term Fiscal Strategy and the National Reform Program that investments in research will reach 1.2% of GDP in 2020 starting from 0.80% in 2013. Respectively business investment in research is expected to rise from 0.27% of GDP in 2013 to around 0.38% of GDP in 2020. These targets could be amended upwards in the mid-term revision of RIS3.

Through the process of entrepreneurial discovery carried out so far, the National RIS3 identifies 8 priority sectors as follows:

- Agrofood
- Life Sciences & Health – Medicine
- Information and Communication Technologies
- Energy
- Environment and Sustainable Development
- Transport and logistics
- Materials - Construction
- Culture - Tourism - Cultural & Creative Industries.

The most important financial tools for the implementation of RIS3 are the European Structural and Investment Funds.

## 2. National Programmes and Initiatives

### BILATERAL R&D AGREEMENTS

#### About

Bilateral research agreements aim to enhance cross-border research collaboration.

#### Trends and background

Bilateral research agreements are a well-established practice for Greece. Although at first their budgets were relatively small and participants were mainly academics, lately calls of significant larger budget (around 5 M€) have been launched with the participation of enterprises (cases of China, Israel, Greece).

The following specific agreements have been launched since 2009:

- Bilateral Cooperation with France (2009)
- Bilateral Cooperation with France2 (2013)
- Bilateral Cooperation with Hungary (2009)
- Bilateral Cooperation with Turkey (2011-12)
- Bilateral Cooperation with Turkey2 (2013-15)
- Bilateral Cooperation with Romania (2012)
- Bilateral Cooperation with Czech Republic (2011-13)
- Bilateral Cooperation with Slovakia (2011-12)
- Bilateral Cooperation with Germany (2013-2015)
- Bilateral Cooperation with China (2012-2015)
- Bilateral Cooperation with Israel (2013-2015)

#### Instruments

Bilateral research agreements mainly support networking and visits as well as the implementation of common research projects. The research areas selected for funding are chosen on the basis of the common interests. Selected areas are for example ICT, biotechnology, life-sciences, agro-food, fisheries, marine sciences, agriculture, health, renewable energy, energy saving and environment. Collaboration with Romania includes research on cultural heritage. The beneficiaries of agreements are enterprises, universities, technological institutes, research and technological organizations and public organizations.

**Target population:** Enterprises, Universities, PRIs

**Budget / Cost estimate:** USD 31.3 million ppp (EUR 23 million)

EUROPEAN R&D  
COOPERATION  
(P2P cooperation)

#### **About**

The Government supports the Greek participants to the Joint Initiative ERA-NETS and INCO-NETS (7th Framework programme and Horizon2020) in specific thematic areas. The main objectives are to facilitate the networking of Greek research teams and dynamic SMEs in terms of European and International Cooperation in specific sectors and the exchange of technological know-how and best practice.

#### **Instruments**

The beneficiaries are universities, technological institutes, research and technological organizations, enterprises and public organizations which participate successfully to evaluation procedures of Joint Actions and Calls of the respective Networks.

**Target population:** Universities, PRIs

#### **Budget / Cost estimate**

Proposal for 16,000,000 (EUR million) through the new operational programme 2014-2020

The currently supported ERANETS by the Greek side are: COFASP, ERANET-MED, ERANET-RUS-PLUS, E-RARE, EURONANOMED, TRANSCAN, PRIMA, FLAG-ERA.

#### **ERA-NET Cofund action "FLAG-ERA II"**

The main objectives of "FLAG-ERA II" will be to coordinate national and regional research programmes to fund Partnership Projects (PPs) of the two EU FET Flagships Initiatives (GRAPHENE and Human Brain Project) through a joint transnational call for proposals and other joint activities between the participating funding agencies in support of the two Flagships. Partnering Projects will allow researchers to complement the current Flagship projects and to collaborate towards the achievement of their vision.

The Greek Government (Ministry of Education, Research and Religious Affairs) intends to participate in "FLAG-ERA II" in order to support the participation of Greek Organizations in international collaborative projects that are expected to become Partnership Projects (PPs) for the GRAPHENE Flagship.

Greece's contribution to the Joint Transnational Call for GRAPHENE PPs will amount to approximately 700,000€

In addition Greece participates in JU-EXSEL without national funding. Furthermore Greek participation in others JTIs and JPIs is under consideration.

**About**

The Corallia Clusters Initiative was established in Greece for the management and development of Innovation Clusters, in knowledge-intensive and exports-oriented technology segments, where Greece has the capacity to build sustainable innovation ecosystems. In those clusters, Corallia acts as Cluster Facilitator implementing targeted support actions, which involve all innovation ecosystem actors.

**Trends and background**

- Corallia has supported, up to date, the development and facilitation of three highly-specialised Innovation Clusters with more than 152 members (SMEs, large companies, international design centres, startups, universities) that collaborate towards the development and growth of the respective industries: the mi-Cluster (nano/microelectronics-based systems and applications cluster); the si-Cluster (space technologies and applications cluster); and the gi-Cluster (gaming and creative technologies & applications cluster). Additionally, Corallia and GSRT have performed preparatory actions and has contributed to the kick-off of clusters in other sectors.
  - The National Programme also pushes forward the hyper-concentration of industrial members of clusters in thematic Business Innovation Centres (BICs) in order to accelerate synergies, the bonding of cluster members and establish reference points for the thematic sectors it supports. Corallia is a full member of the world-leading network EBN, was awarded with the EU|BIC certificate and internationally recognised as a quality-certified business support organisation, which dedicates its efforts and resources to help entrepreneurs with innovative ideas to turn those ideas into viable, successful and sustainable businesses.
  - Aiming at intensifying cluster and network collaboration across borders and sectoral boundaries Corallia is also one of the founding members of three European Strategic Cluster Partnerships in the fields of semiconductors, space and creative industries, that are established under an initiative supported by the European Commission. These partnerships, representing more than 2,000 companies and partner institutions including many SMEs, share a joint strategy to promote cross-sectoral cooperation and facilitate SME internationalisation in new “rising star” areas. They implement a number of coordinated support actions in order to unleash the innovative capacity of SMEs, improve their performance and increase their competitiveness as well as nurture cross-sectoral innovation through the development of new industrial competitive value-chains based on the combination of competences of SMEs. In this respect, Corallia has implemented a significant number of internationalisation activities (roadshows, exhibitions, etc.) including roadshows to Korea (2007).
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NATIONAL CLUSTERS DEVELOPMENT - PROGRAMME CORALLIA	<p><b>Instruments</b></p> <p>Example: <i>"Phase-2 Microelectronics" programme</i></p> <p>The aim of the project was to support the Microelectronics and Embedded Systems cluster in Greece in order to become a tangible world-class competitive cluster that would attract Foreign Direct Investment, leverage talented human capital, and fuel growth and development at National and EU level.</p> <p>The assessment of the programme certified that the members of the cluster showed even higher growth rates compared to the targets already set in turnover (+145.3%), exports (+108.4%), employment (+69.7%), patent applications (+177.2%), investments from private sector (+269.3%) and joint PhDs in collaboration with the Academia (+106.0%).</p>
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### 3. Joint Activities with Korea in 2016

Joint Bilateral activities with Korea are not currently implemented.

However Greece cooperates with Korean in R&D issues in the context of the EU Framework Programmes for Research, Technological Development and innovation, by participating research institutions/enterprises of both countries in joint projects. Specifically under the European Union's Research and Innovation funding programme for 2007-2013 (FP7) participants from Greece and the Republic of Korea cooperated in 15 projects. The majority of those projects (10) were under the Cooperation programme while the others were under the Capacities programme.

Within the current E.U. Research and Innovation programme (Horizon2020) multiple collaborations between partners from Greece and the Republic of Korea have already been formed. Specifically there are 3 ongoing projects involving Greek and Republic of Korea beneficiaries under the policy sectors "Industrial Leadership" and "Societal Challenges".

### 4. Others

In order to promote cooperation between Korea and Greece in various areas including S&T meeting was held in Athens with delegations from the two countries on 30/4/2013.

A detailed description of all Research & Technological Organizations under the supervision of GSRT is provided in the following link:

[http://www.gsrt.gr/Financing/Files/ProPeFiles74/Entypo%20GGET%20EU\\_white.pdf](http://www.gsrt.gr/Financing/Files/ProPeFiles74/Entypo%20GGET%20EU_white.pdf)

# PART 13

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## HUNGARY

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# HUNGARY



## Country Outline

- GDP: 108,748 mil. euros (Eurostat 2015)
- GDP per Capita: 10,100 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Automotive Industry, Pharma Industry, ICT, Biotechnology

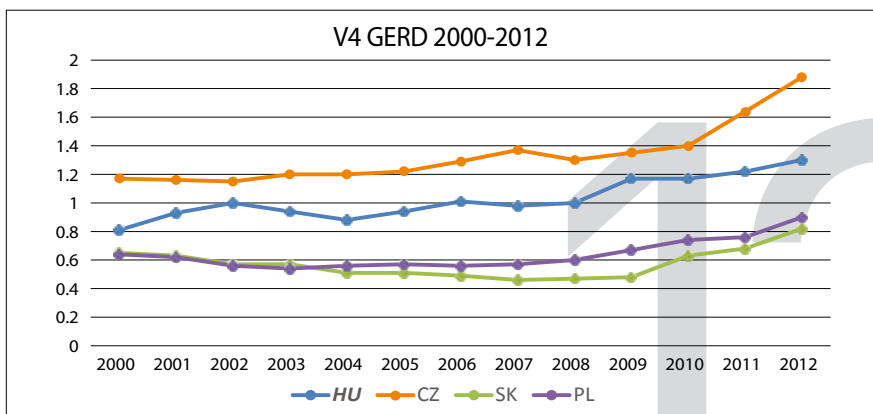
## Contact Information

- Name / Position: Dr. Antal Nikodémus, Head of Department for Science Diplomacy / Ministry of Foreign Affairs and Trade
- e-mail: Antal.Nikodemus@mfa.gov.hu

Hungary was the first country from the Eastern Bloc that established diplomatic relations with South-Korea. Since 1989 bilateral cooperation has increased rapidly, with business partnership becoming a key dimension of our relationship. South-Korean companies have invested more than USD 2bn and employed 25 thousand people in Hungary. Large enterprises, such as Samsung or Hankook Tire, are regarded as stable investors with a strong commitment to the country. KDB (Korean Development Bank) brought its regional centre to Hungary. According to data compiled by the Hungarian Central Statistical Office (KSH), South Korea was 35th on the ranking of Hungary's export partners and 19th regarding imports in 2013. Korean statistics show that in 2013 Hungary ranked as 35th and 61st concerning the volume of Korean exports and imports, respectively. In Central and Eastern Europe, however, Hungary is Korea's third largest trade partner.

## Research and Development

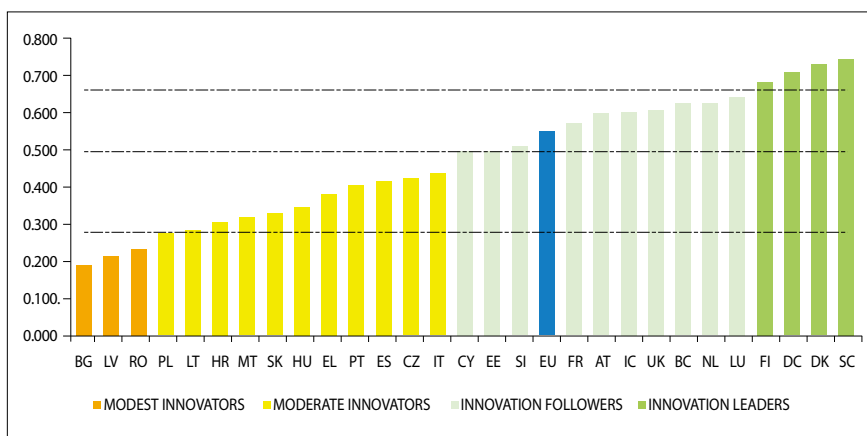
In Hungary the Gross Domestic Expenditure on R&D (GERD) is increasing constantly. The GERD / GDP ratio in 2013 reached 1.44 per cent – the highest figure in the past two decades – but still below the 2.02 (2013) per cent average of the European Union.





Since 2008 there has been a positive trend as the proportion of R&D expenditure from the business sector has increased rapidly and now exceeds the public resources. In countries leading innovation in the European Union - also in the United States and Japan - companies fund the majority of investments related to research and development and innovation.

The performance of the EU national innovation systems is measured by the Summary Innovation Index, which is a composite indicator obtained by aggregation of 25 indicators. The Member States are classified into four performance groups based on their average innovation performance. The figure below shows Hungary's position in the moderate innovators group compared to other Member States.

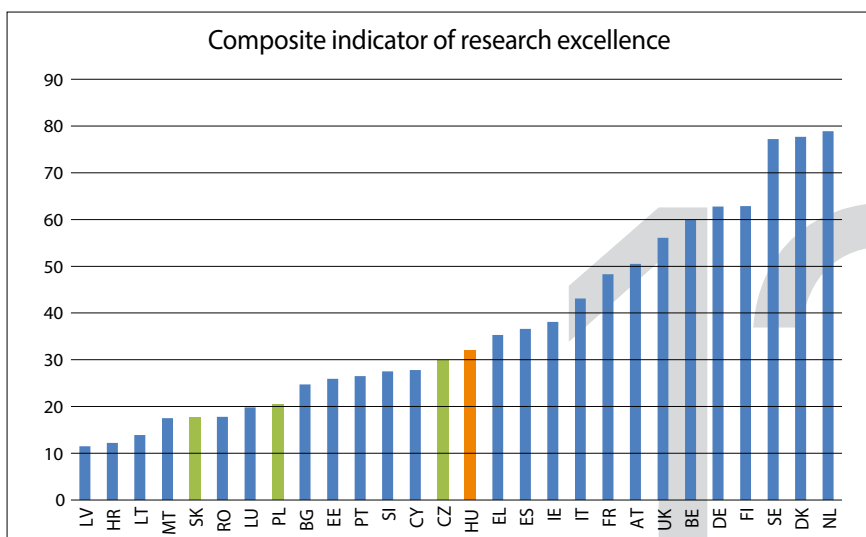


The research and development sector has maintained and even strengthened its scientific standards in some science fields. This is also reflected by the participation data of the 7th Framework Programme: among the new Member States the second highest number of successful applications was submitted from Hungary, after Poland, meaning that Hungary won the second highest amount of funding. However, if the whole European Union is taken as the benchmark, then these results are more modest in proportion to the population and with regard to the success rate of participants.

(See chart below: Participation of EU13 countries in FP7 –Source: MIRRIS, Interim report, Spring 2014)

	Population in million inhabitants	Number of beneficiaries	Million Euros captured	Success rate beneficiaries	Success rate in Euros	Number of beneficiaries per million inhabitants	Euros per inhabitant	Euros per beneficiary
BG	7.30	585.00	83.00	16.40	10.30	80.14	11.37	141880.34
CY	0.80	357.00	63.00	15.60	10.60	446.25	78.75	176470.59
CZ	10.50	1100.00	200.00	19.90	14.70	104.76	19.05	181818.18
EE	1.30	412.00	68.00	21.20	15.40	316.92	52.31	165048.54
<b>HU</b>	<b>9.90</b>	<b>1260.00</b>	<b>220.00</b>	<b>20.30</b>	<b>14.70</b>	<b>127.27</b>	<b>22.22</b>	<b>174603.17</b>
LT	3.00	350.00	48.00	20.10	14.80	116.67	16.00	137142.86
LV	2.00	249.00	30.00	21.70	11.60	124.50	15.00	120481.93
MT	0.40	153.00	14.00	19.30	10.30	382.50	35.00	91503.27
PL	38.50	1834.00	344.00	18.50	12.10	47.64	8.94	187568.16
RO	21.30	862.00	119.00	14.60	8.50	40.47	5.59	138051.04
SI	2.00	717.00	131.00	15.90	11.40	358.50	65.50	182705.72
SK	5.40	401.00	62.00	18.30	11.80	74.26	11.48	154613.47
EU12	102.40	8280.00	1382.00	18.48	12.18	80.86	13.50	166908.21
EU27	504.70	90237.00	29291.00	21.70	19.30	178.79	58.04	324600.77
HR	4.40	317.00	59.00	17.10	10.50	72.05	13.41	186119.87
EU28	509.10	90554.00	29350.00			177.87	57.65	324116.00

In Horizon2020 the main condition of successful participation is high-level excellence. A composite indicator is developed to measure the research excellence in Europe, meaning the effects of the European and national policies on the modernization of research institutions, the vitality of the research environment and the quality of research outputs in both basic and applied research. According to the research excellence indicator Hungary has the highest value among the countries of our region.



## 1. Policies and Strategies in Science, Technology and Innovation

The Hungarian Government adopted the National Research and Development and Innovation (2013-2020) Strategy (RDI strategy) – Investment in the Future in July 2013.

The RDI strategy sets the goal of renewing and strengthening the innovation system as a whole by strengthening the knowledge bases, knowledge diffusion and knowledge utilization. A policy mix serves the purpose of advancing the objectives of the strategy: the direct instruments (more than 2 billion EUR is dedicated to R&D&I in the Economic Development and Innovation Operative Programme 2014-2020), the indirect instruments (tax allowances in particular for the intramural R&D activity) and the demand-side instruments. The systematic interventions are directed to support the completion of the national innovation system through encouraging inter-sectorial relationships, networking or developing policy management, official acts or services.

The goal of the strategy is expressed by quantified objectives complying with the undertakings of the National Reform Programme submitted to the European Commission in 2011 and elaborated in relation to the Europe 2020 strategy:

Hungary will increase its gross domestic expenditure on R&D to 1.8% by 2020 and to 3% by 2030. As a complementary objective, the business enterprise expenditure on R&D will rise to 1.2% by 2020. Additional quantified objectives based on the main components of the strategy complement the overall vision: During the seven years of the strategy in Hungary, by 2020:

- +30 larger research and technological development groups will join the “world’s elite”;
- +30 R&D research centres of large global companies will be established/strengthened;
- +30 R&D intensive macro-regional medium-sized enterprises will produce and provide services;
- +300 RDI and growth oriented small enterprises (“gazelles”) will find their place in the global market
- +1000 innovative start-ups will get the funding required for starting their activities; many innovative supplier companies with national decision making centres will provide services to the multinational companies that have already been established or will be established in Hungary.

(The “+” marking in the objectives listed above indicates the new, additional capacities to be introduced in the national innovation system compared with the current status.)

## 2. National Programmes and Initiatives

1) The objective of the Momentum (Lendület) Program focuses on the renewal of the research teams of the Academy and participating universities via attracting outstanding researchers from abroad or keeping them in Hungary. The Momentum program aims to halt the emigration of young researchers, promotes career possibilities, and increases the competitiveness of HAS's (Hungarian Academy of Sciences) research institutes and participating universities. The mission of the Momentum Program is to support excellence and mobility. The HUF 400 million allocated for new Momentum projects in 2014-2015 allows for approximately 8-12 new Momentum research teams. Momentum financial funding may extend to a maximum of 5 years.

Researchers with a scientific degree are invited to submit applications to head new Momentum research teams in two categories:

1. Researcher at the outset of her/his independent research career, who may successfully apply to ERC for research funding in the "Starting" or "Consolidator" categories,
2. Researcher with an independent research career in progress, who may successfully apply to ERC for research funding in the "Consolidator", or Advanced categories.

For more information please visit: [http://mta.hu/data/cikk/13/00/9/cikk\\_130009/MTA\\_LENDULET\\_2015\\_EN.pdf](http://mta.hu/data/cikk/13/00/9/cikk_130009/MTA_LENDULET_2015_EN.pdf)

2) Through the Balassi Institute, the Hungarian Scholarship Board Office (MÖB) offers scholarships for foreign students and lecturers in higher education institutions as well as research fellows who intend to gain further professional experience in Hungarian higher education institutions or research institutes.

For more information please visit: Call for applications 2014/2015

<http://www.scholarship.hu/LinkClick.aspx?fileticket=72ygUOXJzI%3d&tabid=184&language=hu-HU>

3) The Stipendium Hungaricum scholarship was established to provide support for foreign students studying in Hungarian higher education institutions. Based on the Eastern Opening, the program primarily finances the studies of students from Far East countries, Central Asian countries, Arabic countries and from the Western Balkans. 736 students from 30 countries study at 20 Hungarian universities in the 2014/15 academic year. The scholarship provides: free visa, no tuition fees,

dormitory room or cca. €100 for rent, healthcare, cca. €130 for undergraduate/master students or cca. €320 for PhD students.

For more information please visit: <http://www.campushungary.org/study-in-hungary-menu/stipendium-hungaricum>

### 3. Joint Activities with Korea in 2016

#### 1) KSP (Knowledge Sharing Programme) Hungary

Korea's Knowledge Sharing Program (KSP) is a policy research and consultation program which utilizes Korea's knowledge and experiences to assist the development of partner countries. Based on a MoU signed by the two governments the KSP with Hungary started in 2013 in the following fields: crisis management; industrialisation and export promotion; knowledge-based economy; economic development strategy; and human resources development. The main priority of the first year of KSP was to stimulate FDI by Hungarian enterprises. During the continuation of KSP the policy discussion will go on along the priority areas. The programme may lay the foundation for future joint activities in the field of R&D&I.

#### 2) Participation in EUREKA cooperation

After the successful EU Presidency, Hungary has taken over the chairmanship of the EUREKA initiative in a critical period, when all Member States have been affected by the economic crisis and when investments in research, development and innovation have been more vital than ever. EUREKA is an intergovernmental organisation for market-driven industrial R&D, integrates over 40 pan-European economies, but also includes Israel, South Korea, and Canada. Based on mutual benefit, EUREKA develops association agreements with countries of other continents. South Korea was the first country to join EUREKA as an associate in 2009. On the occasion of the Ministerial Conference of the Hungarian EUREKA chairmanship the Statement of Renewal of the Partnership Agreement between the EUREKA Initiative and the Republic of Korea was signed in June 2012. Hungarian and South Korean small and medium-sized enterprises, large industry, universities and research institutes have the possibility to conduct international, market-oriented research and innovation through EUREKA.

The developments carried out within the EUREKA projects are supported to various extents by all Member States. Some of them - including Hungary - have established a separate EUREKA allocation (budget) to co-finance the successful EUREKA projects, while other countries use the existing competition systems for the partial financing of

the EUREKA projects.

For more information please visit: <http://www.nih.gov.hu/international-activity/international/eureka/hungarian-participation>

### 3) Relevance of biotechnology, pharma industry, brain research

Brain research is of high societal and economical interest in all Member States of the EU, including Hungary. World Health Organization (WHO) data indicate that brain disorders together account for one-third of the burden of all diseases in the wealthy part of the world. The Hungarian Government decided to launch a national research program called “Hungarian Brain Research Program” (HBRP) with a budget of HUF 12 billion (€40 million), for a period of four years (2013-2017). The European Brain Prize holder, Professor Tamás Freund is leading the program. He is directing Hungarian participation in the FET (Future and Emerging Technologies) Flagship program “Human Brain Project” launched by the European Commission. Pharmaceutical Research, Bionic and Infobionic Research are parts of the programme. It also has to be noted that Samsung is the Korean company that has the second biggest R&D budget over the world and since it has manufacturing facilities in Hungary it could be an option to enhance the cooperation via R&D-based activities established or jointly carried out by Samsung Hungary and Samsung Korea.

**Richter:** a 114 year old innovation-driven pharmaceutical company involved in manufacturing, research and development, sales and marketing, Richter is a main actor among the Hungarian stakeholders in the Brain Research Programme. Richter is ready to establish cooperation with Korean partners in pharmaceutical research based on biotechnology.

## 4. Others

### Key Research Organisations and Companies

Organisation Name	Detailed information
Gedeon Richter <a href="https://www.richter.hu">https://www.richter.hu</a>	<ul style="list-style-type: none"><li>▪ Organisation type: University/Research Organisations/SME/company: Gedeon Richter Plc.</li><li>▪ Major Research Area/Product: The portfolio covers almost all important therapeutic areas, including gynecology, central nervous system, and cardiovascular.</li><li>▪ Major Activities with Korea: on-going dialogues with Korean partners</li><li>▪ Future Plans: strengthen cooperation with Korean partners</li><li>▪ Contact Information: t.pazmany@richter.hu</li></ul>

# PART 14

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## IRELAND

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# IRELAND



## Country Outline

- GDP: 214,623 mil. euros (Eurostat 2015)
- GDP per Capita: 46,200 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Immunology, Animal and Dairy, Nanoscience, Computer Science and Materials Sciences

## Contact Information

- Organisation: Embassy of Ireland
- Name / Position: Mr. David Murphy / Deputy Head of Mission
- Phone no. / e-mail: (+82) 2-721-7212 / seoulembassy@dfa.ie

The importance of investment in science, technology and innovation to Ireland's ongoing and future economic and social development has been well recognised by the Irish Government. The increase in investments over the last decade and a half has resulted in the build-up of a very strong science base which has yielded results in terms of economic and societal impact.

Globally, Ireland is ranked:

- 1st in the world for the availability of skilled labour  
[Source: IMD World Competitiveness Yearbook];
- 8th in the Global Innovation Index 2015 (out of 141 countries)  
[Source: Cornell University, INSEAD and WIPO 2014]
- 13th in the world for university-industry collaboration on R&D  
[Source: Global Competitiveness Report 2013-2014]

Ireland is ranked 6th in the world for citations per thousand populations  
[Source: Thomson Reuters international citation rankings].

Ireland's scientific output is now of leading international quality in a number of areas:

- 3rd in immunology,
- 3rd in animal and dairy,
- 2nd in nanotechnology and
- 3rd in materials science.

[Source: Thomson Reuters Essential Science Indicators]

Ireland is ranked first in the EU according to the most recent review of the "Performance of Innovators" [Source: European Commission Innovation Union Scoreboard 2015], which measures the rate at which firms are involved in innovative activities, providing a subsequent increase in linked employment growth.



## 1. Policies and Strategies in Science, Technology and Innovation

In Ireland the policy of investing in our science base has had a very positive impact on our industrial development and highlights how research, development and innovation contribute significantly to job creation and economic prosperity.

It has been based on an ambitious two-pronged strategy:

- (1) In Ireland the policy of investing in our science base has had a very positive impact on our industrial development and highlights how research, development and innovation contribute significantly to job creation and economic prosperity.

Science Foundation Ireland supports investment in academic researchers, cutting-edge technologies and competitive enterprises in the fields of ICT, health and life sciences, energy and manufacturing competitiveness. This includes the funding of oriented basic and applied research, as well as public engagement to promote science, technology, engineering and maths. In collaboration with industry, SFI has to date funded twelve national research centres. Each of these centres of excellence is targeted towards strategic areas of importance to Ireland with a focus on delivering scientific excellence with economic and societal impact - Pharma, Big Data, Medical Devices, Nanotechnology/Materials, Marine Renewable Energy, Food for Health/Functional Foods, Perinatal Research, Applied Geosciences, Software, Digital Content, Telecommunications and Medical Devices.

- (2) Direct support to the enterprise sector to help individual companies to build their capacity for research and development

Enterprise Ireland supports three categories of investments:

- (i) Transforming Research Development and Innovation activity in companies
- (ii) Encouraging Industry Collaboration between industry and third level sector research organisations and
- (iii) Commercialising the outputs of research

In addition, Ireland operates an R&D tax credit scheme to encourage additional business expenditure on Research and Development by foreign owned and indigenous companies.

## 2. National Programmes and Initiatives

Science Foundation Ireland has a suite of programmes aimed at supporting science, technology, maths and engineering research in Ireland. Each SFI programme has a variable funding level depending on the focus. Ireland does not have specific programmes targeted at Korea however there are a range of programmes which can facilitate interactions (both industry and academic) with Korean counterparts.

### List of National Programmes open to the world

Programme Title	Contents
SFI Industry Fellowships	<ul style="list-style-type: none"> <li>▪ The purpose of the Industry Fellowships Programme is to facilitate the placement of researchers in industry or academia to stimulate excellence through knowledge transfer and training. Fellowships will enable access for researchers to new technology pathways and standards and will facilitate training in the use of specialist research infrastructure. Fellowships can be awarded to academic researchers wishing to spend time in industry worldwide or to individuals from industry anywhere in the world (including Ireland) wishing to spend time in an eligible Irish Research Body.</li> <li>▪ Funding Organisation: Science Foundation Ireland</li> <li>▪ Call Opening/Closing Date: Rolling call with two review periods</li> <li>▪ Participation Qualification: Please review call document for eligibility criteria</li> <li>▪ Project Duration: 12 months full time/24 months part time</li> <li>▪ Funding Scale and Funding Scheme: up to €120,000 direct costs per fellowship</li> <li>▪ Research Fields: Science, Technology, Engineering and Maths</li> </ul> <p>Website: <a href="http://www.sfi.ie/funding/funding-calls/programmes-for-industry.html">http://www.sfi.ie/funding/funding-calls/programmes-for-industry.html</a>            Email: <a href="mailto:industry.fellowship@sfi.ie">industry.fellowship@sfi.ie</a></p>
SFI Partnerships	<p>The SFI Partnerships Scheme provides a flexible funding mechanism intended to support ambitious research projects of scale between industry and academia. The scheme provides an opportunity for industry to engage with world class academic researchers and have access to infrastructure and intellectual property using a shared risk funding model in which SFI matches the investment made by industry. A key feature of the Partnerships Scheme is the recognition that collaboration with industry must be responsive and flexible. For this reason, the scheme employs adaptive partnership models that have been developed to meet industry partner needs.</p>

SFI Partnerships	<ul style="list-style-type: none"> <li>▪ Funding Organisation: Science Foundation Ireland</li> <li>▪ Call Opening/Closing Date: Rolling Call</li> <li>▪ Participation Qualification: Please review call document for eligibility criteria</li> <li>▪ Project Duration: Various</li> <li>▪ Funding Scale and Funding Scheme: There are no set funding scales, however the programme is targeted at projects of scale</li> <li>▪ Research Fields: Science, Technology, Engineering and Maths</li> </ul> <p>Website: <a href="http://www.sfi.ie/funding/funding-calls/open-calls/sfi-partnerships.html">www.sfi.ie/funding/funding-calls/open-calls/sfi-partnerships.html</a>            Email: <a href="mailto:partnerships@sfi.ie">partnerships@sfi.ie</a></p>
SFI Research Centres	<p>These are world-leading, large-scale Research Centres with a major economic impact for Ireland. They consolidate research activities across higher education institutes to create a critical mass of internationally leading researchers in strategic areas which will lay the foundation for effective and productive academic and industrial partnerships. SFI Research Centres can receive €1-5 million a year in direct costs. SFI funds up to 70% of the overall Research Centre budget. A minimum of 30% of the budget must be secured from industry partners, at least one-third of which must be cash.</p> <p>SFI currently funds 12 Research Centres in areas of strategic importance. See <a href="http://www.sfi.ie/investments-achievements/sfi-research-centres/">http://www.sfi.ie/investments-achievements/sfi-research-centres/</a> for details on each Centre.</p> <ul style="list-style-type: none"> <li>▪ Funding Organisation: Science Foundation Ireland</li> <li>▪ Call Opening/Closing Date: Fixed Call – currently closed</li> <li>▪ Participation Qualification: Please review call document for eligibility criteria</li> <li>▪ Project Duration: Up to 6 years</li> <li>▪ Funding Scale and Funding Scheme: €1-5m per year direct costs</li> <li>▪ Research Fields: Science, Technology, Engineering and Maths</li> </ul>
SFI Research Centre Spokes	<p>The SFI Spokes Programme provides a mechanism to allow new industry and academic partners to join the existing 12 SFI Research Centres.</p> <ul style="list-style-type: none"> <li>▪ Funding Organisation: Science Foundation Ireland</li> <li>▪ Call Opening/Closing Date: Fixed Call and Rolling calls</li> <li>▪ Participation Qualification: Please review call document for eligibility criteria</li> <li>▪ Project Duration: minimum 12 months, maximum 60 months</li> <li>▪ Funding Scale and Funding Scheme: no funding scale, no maximum award limit</li> <li>▪ Research Fields: Science, Technology, Engineering and Maths</li> </ul>

<p>The President of Ireland Future Research Leaders Programme</p>	<p>The Future Research Leaders Programme a recruitment-only programme designed to attract to Ireland outstanding new and emerging research leaders in both scientific and engineering domains, where candidates may have both academic and/or industry relevant backgrounds with a focus on research excellence with impact. The programme aims to address current gaps in leadership, methodologies and skill sets in specific discipline areas.</p> <ul style="list-style-type: none"> <li>▪ Funding organisation: Science Foundation Ireland</li> <li>▪ Call Opening/Closing Date: Fixed call - currently open, deadline for submission of application, 08th April 2016</li> <li>▪ Participation Qualification: Please review call document for eligibility criteria</li> <li>▪ Project Duration: Up to 5 years</li> <li>▪ Funding Scale and Funding Scheme: Up to €1m in direct costs.</li> <li>▪ Research Fields: Science and Engineering</li> </ul> <p>Website: <a href="http://www.sfi.ie/funding/funding-calls/open-calls/the-president-of-ireland-future-research-leaders-programme.html">http://www.sfi.ie/funding/funding-calls/open-calls/the-president-of-ireland-future-research-leaders-programme.html</a>  Email: <a href="mailto:FRL@sfi.ie">FRL@sfi.ie</a>.</p>
<p>SFI Academic Led Programmes</p>	<p>SFI's suite of programmes supports research that has the potential for economic and societal impact. Academic led programmes such as the SFI Investigators Programme address crucial research questions that expand educational projects and career opportunities in Ireland, in science and engineering and prepare the research community to lead and win in Horizon2020 and other non-exchequer funding programmes. SFI also has a range of programmes to attract leading researchers to Ireland at various career stages, from early-career researchers through to world-leading professors.</p> <p>Full details on all programmes may be viewed at <a href="http://www.sfi.ie/funding/funding-calls/open-calls/">http://www.sfi.ie/funding/funding-calls/open-calls/</a></p>

### 3. Joint Activities with Korea in 2016

While there are no joint government programmes, there are ongoing collaborations between Science Foundation Ireland (SFI) funded researchers and Korean researchers.

## 4. Others

### Knowledge Transfer Ireland (KTI)

<http://www.knowledgetransferireland.com/>

Knowledge Transfer Ireland (KTI) takes a national perspective on the knowledge transfer (KT) system in Ireland. Its mission is to support business and the research base to maximise innovation from State funded research by getting technology, ideas and expertise into the hands of business, swiftly and easily for the benefit of the public and the economy.

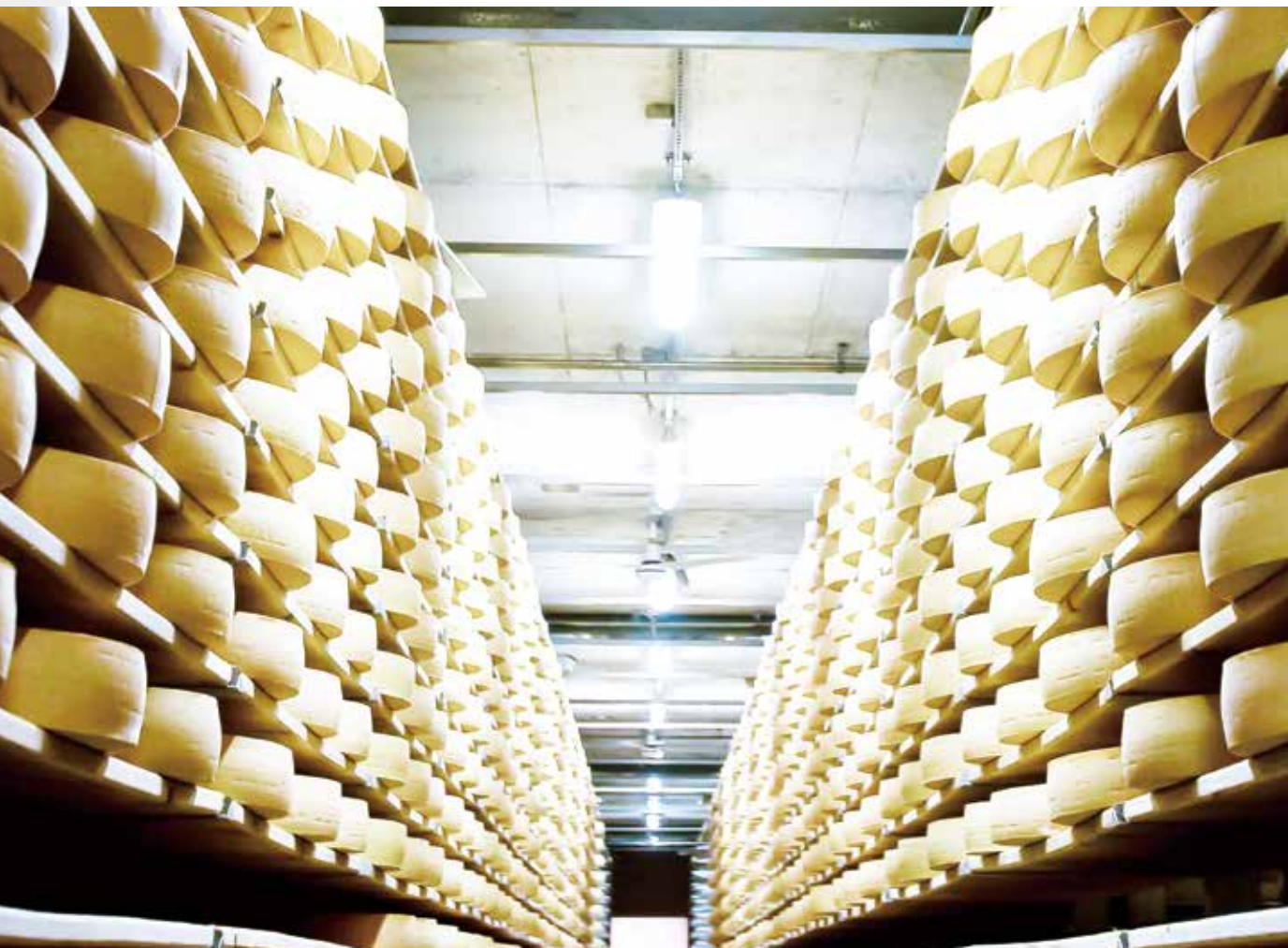
KTI enables business to leverage the commercial potential of Irish research and innovation through connecting businesses with cutting-edge research, expertise and opportunities, making it easier to find technology, IP and expertise in Ireland from our Higher Education Institutes (HEI's) and State research organisations and to find the right people to talk to.

KTI takes the guesswork out of knowledge transfer through providing a predictable knowledge transfer system for Ireland. KTI works with business, investors, research funders and Technology Transfer Offices (TTO's) which focus on the commercialization of University expertise to review, recommend and implement changes to the way in which Ireland approaches managing IP and contracting.

KTI directly supports the development of Ireland's knowledge transfer infrastructure. Through engagement with business, investors and technology transfer offices to shape practice. And through allocating and managing funding to support knowledge transfer offices within Ireland's HEIs and State funded research organisations our objective is to provide the capacity and capability to deliver first class service for research commercialisation.

## Key Research Organisations and Companies

Organisation Name	Detailed information
National Directory of Research Centres	<ul style="list-style-type: none"><li>▪ Organisation type: National Intellectual Property (IP) Protocol Organisation</li><li>▪ Major Research Area/Product: KTI works with Ireland's Universities, Institutes of Technology and other publicly funded research organisations and research funding agencies to make it easy for business and investors to access technology, IP and expertise</li><li>▪ Major Activities with Korea: N/A</li><li>▪ Future Plans: N/A</li><li>▪ Contact Information: <a href="http://www.knowledgetransferireland.com/">http://www.knowledgetransferireland.com/</a></li></ul>



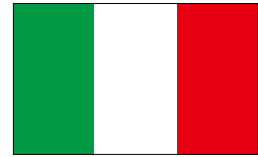
# PART 15

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## ITALY

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# ITALY



## Country Outline

- GDP: 1,636,372 mil. euros (Eurostat 2015)
- GDP per Capita: 26,900 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Life Sciences, Biotechnology, Aerospace, Aeronautics, Biomedicine, Engineering, Food sciences, Oil industry, Microelectronics, Physics, Material Sciences, Advanced Materials, ICT, Robotics, Environment and Energy, Transportation, Automotive

## Contact Information

- Organisation: Embassy of Italian Republic
- Name / Position: Prof. Francesco Canganella / Science and Technology Counsellor
- Phone no. / e-mail: (+82) 2-750-0240 / seoul.science@esteri.it

The public research system with HERD (High Education Research and Development) of 0.36% and GOVERD (Government Expenditure on R&D) of 0.19% of GDP in 2012 performs the greater part of R&D. Higher education and PRIs contribute to innovation in a number of ways but their co-operation with business firms need to be improved. In order to improve public research performance a reform of funding mechanisms for and management of universities was approved in 2010 by Parliament and is being implemented. The reform of the PRIs under MIUR has also recently been undertaken.

Various initiatives aim at bridging the gap between academia and industry. Technological districts and high technology poles as well as public-private laboratories are established in different parts of the country. The National Innovation Fund (FNI) was created in 2012 by MiSE to facilitate the financing of innovative projects based on the exploitation of industrial designs and patterns. In addition the Innovation Package introduced in 2011 supports the patenting activity of SMEs. The National Technology Platforms and Industrial Innovation Network (RIDITT) were set up in 2010 to ensure dissemination of innovation and technology between research system and enterprises.

Italy is addressing various cross-cutting research issues considered crucial for enhancing economic growth, e.g. research on the natural and cultural heritage and on the complex systems of smart cities.

Moreover Italy has improved its Revealed Technological Advantage (RTA) in environment-related technologies over the past decade and will soon develop a specialization if this trend continues.



## 1. Policies and Strategies in Science, Technology and Innovation

**STI policy governance:** The Ministry for Economic Development (MISE) is in charge of industrial innovation and the Ministry for Education, University and Research (MIUR) is responsible for the national education system including higher education but also for promoting research at national and international level. The National Agency for the Evaluation of Universities and Research Institutes (ANVUR) has operated under MIUR since 2010.

**Science policy:** The public research system with HERD of 0.36% and GOVERD of 0.19% of GDP in 2012 performs the greater part of R&D. Higher education and PRIs contribute to innovation in a number of ways but their co-operation with business firms needs to be improved. In order to improve public research performance a reform of funding mechanisms for and management of universities was approved in 2010 by Parliament and is being implemented. The reform of the PRIs under MIUR has also recently been undertaken.

**Business R&D and innovation:** As in other OECD countries there has been a shift towards indirect funding of R&D in recent years. As stated in the National Reform Programme 2011 for 2011/12 tax incentives have been strengthened for research commissioned by firms to universities and PRIs as well as for research developed in collaboration with them.

**Public-sector innovation:** The e-Government Plan 2012 of the Department for Public Administration defines a set of digital innovation projects to modernize the public administration, to make it more efficient and transparent and to improve the quality of services and reduce costs. The plan sets out some 80 projects and 27 targets to be achieved by 2013.

**Knowledge flows and commercialization:** Various initiatives aim at bridging the gap between academia and industry. Technological districts and high technology poles as well as public-private laboratories are established in different parts of the country. The National Innovation Fund (FNI) was created in 2012 by MiSE to facilitate the financing of innovative projects based on the exploitation of industrial designs and patterns. In addition the Innovation Package introduced in 2011 supports the patenting activity of SMEs. The National Technology Platforms and Industrial Innovation Network (RIDITT) were set up in 2010 to ensure dissemination of innovation and technology between research system and enterprises.

**Globalisation:** The Strategy for the Internationalization of Italian Research (SIRIT 2010-15) integrates the national research priorities notably the EU's 2020 Strategy. Italy actively participates in EU R&D programmes, the European Strategy Forum on Research Infrastructures (ESFRI) and other European initiatives such as EUREKA (for international S&T cooperation) and Erasmus (for mobility of students and researchers).

**Emerging technologies:** Italy is addressing various cross-cutting research issues considered crucial for enhancing economic growth, e.g. research on the natural and cultural heritage and on the complex systems of smart cities.

**Green innovation:** Italy has improved its RTA in environment-related technologies over the past decade and will soon develop a specialization if this trend continues. The government provides a number of incentives for renewable energy production. The Energy Account (Conto Energia) initiative promotes solar photovoltaic and a Kyoto Fund was set up to finance measures to reduce greenhouse gas emissions. Green Certificates (CV) promote electrical energy produced from renewable sources and White Certificates – energy efficiency labels (TEE) – encourage energy-saving measures. A package of fiscal incentives for energy efficiency interventions in existing and new buildings was approved by Parliament in 2011.

## 2. National Programmes and Initiatives

The last National Research Plan for the period 2011–2013 identified several thematic priorities for the national research policy. These include energy, sustainable mobility, the environment, and 'made in Italy' – a programme promoting the industrial sectors that characterized national productivity. The Plan aimed to promote research by strengthening business sector co-operation with the public sector and supporting the internationalisation of research.

The Industry 2015 programme (2006-15) sets out to support business networks and industrial innovation projects and includes a fund for enterprise finance. However the National Reform Programme 2011-12 requires general policies to have a small impact on the national budget. The country's south and SMEs have attracted special attention in STI strategies and policies. The National Strategic Framework 2007-13 includes the National Operational Programme (PON) Research and Competitiveness 2007-13 funded by the European Regional Development Fund (ERDF) and by the

national Revolving Fund (Fondo di Rotazione) which is of high importance for regional cohesion and competitiveness.

To put the economy on a sustainable growth path based on sound macroeconomic fundamentals the Italian government has embarked since 2011 on a substantial process of fiscal consolidation and structural reform. Innovation will be crucial for boosting competitiveness and sustainable growth in the longer term. Although many indicators point to a modest level of STI activity attention is being given to increasing it. In 2013 GERD (Gross Expenditure on R&D) was just 1.27% of GDP about half of the OECD average and more in line with the R&D intensity of emerging economies. The business sector performs only around half of GERD a low share for an advanced economy. At 0.66% of GDP BERD lags behind the OECD average with business sector innovation performance varying across firms and regions. In fact a segment of innovative firms, including flexible SMEs, coexists with many non-innovative firms operating at low levels of productivity. Moreover much R&D and innovation capacity is concentrated in northern and central regions of the country. The low share of industry-financed public R&D is indicative of weak industry-science linkages. Venture capital is in short supply and the patenting rate of young firms is low. In general Italy tends to perform better on indicators of non-R&D-based innovation (for example, it leads in Community designs).

### 3. Joint Activities with Korea in 2016

#### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
Bilateral symposium on Landslides and landscape monitoring	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline: March/KIGAM</li> <li>▪ Major topic or agenda: landscape management, landslides monitoring and preventive actions</li> <li>▪ Target Participants: Private and public research bodies, scientists, students, National research agencies, governmental institutions</li> </ul>
Bilateral symposium on management of hydrosystems and related environments	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline: April/DIGIST</li> <li>▪ Major topic or agenda: hydrosystems management, environmental engineering, landscape monitoring</li> <li>▪ Target Participants: Private and public research bodies, scientists, students, National research agencies, governmental institutions</li> </ul>

Bilateral symposium on grapheme and other innovative materials	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline: April/Hanyang University</li> <li>▪ Major topic or agenda: nanotechnologies, advanced materials, grapheme, fullerene, ICT</li> <li>▪ Target Participants: Private and public research bodies, scientists, students, National research agencies, governmental institutions</li> </ul>
Bilateral symposium on astrophysics	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline: June/Sejong University</li> <li>▪ Major topic or agenda: astrophysics, space</li> <li>▪ Target Participants: Private and public research bodies, scientists, students, National research agencies, governmental institutions</li> </ul>
Bilateral symposium on atomic clocks	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline: July/KRISS</li> <li>▪ Major topic or agenda: metrology, atomic clocks, industrial applications, basic science</li> <li>▪ Target Participants: Private and public research bodies, scientists, students, National research agencies, governmental institutions</li> </ul>
Bilateral symposium on plant biotechnology and active phyto-extracts	<ul style="list-style-type: none"> <li>▪ Activity (Programme) Outline: TBD/KARI</li> <li>▪ Major topic or agenda: biotechnologies, plant physiology, phyto-derivatives, anti-oxidants, nutraceuticals, functional food</li> <li>▪ Target Participants: Private and public research bodies, scientists, students, National research agencies, governmental institutions</li> </ul>

**Joint labs:**

- CNR/Hanyang University - Membrane technologies and applications
- ENEA/KIST - Fuel Cells and Hydrogen applications

**Other bilateral projects:**

- ISMAR-CNR/KIOST-NRF - Marine biology, climate changes and coral-associated microbial communities
- Polytechnic of Milano/ Gwangju Institute of Science and Technology - Nanostructured Target for Laser-Driven Ion Acceleration and High-Field Plasmonics

## 4. Others

Below are the institutions and corporations located in Korea or conducting the collaboration study with Korea.

## Key Research Organisations and Companies

Organisation Name	Detailed information
National Research Council <a href="http://www.cnr.it">www.cnr.it</a>	<ul style="list-style-type: none"> <li>Organisation type: Research Organisation</li> <li>Major Research Area : All basic sciences and applied sciences</li> <li>Major Activities with Korea: Joint projects, joint labs, MoUs</li> <li>Future Plans: Expand research collaboration and technology transfer opportunities at a bilateral level</li> <li>Contact Information: <a href="mailto:virginia.codanunziante@cnr.it">virginia.codanunziante@cnr.it</a></li> </ul>
Italian Institute of Technology <a href="http://www.iit.it">www.iit.it</a>	<ul style="list-style-type: none"> <li>Organisation type: Research Organisation</li> <li>Major Research Area/Product: Applied sciences</li> <li>Major Activities with Korea: MoU</li> <li>Future Plans: Expand research collaboration and technology transfer</li> <li>Contact Information: <a href="mailto:Francesca.Cagnoni@iit.it">Francesca.Cagnoni@iit.it</a></li> </ul>
National Institute of Metrology <a href="http://www.inrim.it">www.inrim.it</a>	<ul style="list-style-type: none"> <li>Organisation type: Research Organisation</li> <li>Major Research Area/Product: Basic and applied sciences regarding metrology</li> <li>Major Activities with Korea: MoU</li> <li>Future Plans: Expand research collaboration and technology transfer</li> <li>Contact Information: <a href="mailto:inrim@inrim.it">inrim@inrim.it</a></li> </ul>
Stazione Zoologica di Napoli <a href="http://www.szn.it">www.szn.it</a>	<ul style="list-style-type: none"> <li>Organisation type: Research Organisation</li> <li>Major Research Area/Product: Marine sciences</li> <li>Major Activities with Korea: MoU</li> <li>Future Plans: Expand research collaboration and technology transfer</li> <li>Contact Information: <a href="mailto:stazione.zoologica@szn.it">stazione.zoologica@szn.it</a></li> </ul>
Politecnico di Milano <a href="http://www.polimi.it">www.polimi.it</a>	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area/Product: Basic and applied sciences/Education</li> <li>Major Activities with Korea: MoU, joint projects, research collaborations</li> <li>Future Plans: Expand research collaboration, education, and technology transfer</li> <li>Contact Information: <a href="mailto:marco.imperadori@polimi.it">marco.imperadori@polimi.it</a></li> </ul>
Politecnico di Torino <a href="http://www.polito.it">www.polito.it</a>	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area/Product: Basic and applied sciences/Education</li> <li>Major Activities with Korea: MoU, joint projects, research collaborations</li> <li>Future Plans: Expand research collaboration, education, and technology transfer</li> <li>Contact Information: <a href="mailto:enrico.macii@polito.it">enrico.macii@polito.it</a></li> </ul>
University of Bologna <a href="http://www.unibo.it">www.unibo.it</a>	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area/Product: Basic and applied sciences/Education</li> <li>Major Activities with Korea: MoU, joint projects, research collaborations</li> <li>Future Plans: Expand research collaboration, education, and technology transfer</li> <li>Contact Information: <a href="mailto:verdiana.bandini@unibo.it">verdiana.bandini@unibo.it</a></li> </ul>

<p>University of Udine, Department of Agriculture <a href="http://www.uniud.it">www.uniud.it</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Basic and applied sciences/Education</li> <li>▪ Major Activities with Korea: MoJ</li> <li>▪ Future Plans: Expand research collaboration, education, and technology transfer</li> <li>▪ Contact Information: <a href="mailto:paolo.ceccon@uniud.it">paolo.ceccon@uniud.it</a></li> </ul>
<p>University of Milano <a href="http://www.unimi.it">www.unimi.it</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Basic and applied sciences/Education</li> <li>▪ Major Activities with Korea: Joint projects, research collaborations</li> <li>▪ Future Plans: Expand research collaboration and technology transfer</li> <li>▪ Contact Information: <a href="mailto:angela.bassoli@unimi.it">angela.bassoli@unimi.it</a></li> </ul>
<p>University of Gastronomic Sciences <a href="http://www.unisg.it">www.unisg.it</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: Basic and applied sciences/Education</li> <li>▪ Major Activities with Korea: Joint projects, research collaborations</li> <li>▪ Future Plans: Expand research collaboration and technology transfer</li> <li>▪ Contact Information: <a href="mailto:g.morini@unisg.it">g.morini@unisg.it</a></li> </ul>
<p>ICRA <a href="http://www.icra.it">www.icra.it</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Institute</li> <li>▪ Major Research Area/Product: Basic and applied sciences</li> <li>▪ Major Activities with Korea: MoJ, joint projects, research collaborations</li> <li>▪ Future Plans: Expand research collaboration and technology transfer</li> <li>▪ Contact Information: <a href="mailto:Ruffini@icra.it">Ruffini@icra.it</a></li> </ul>
<p>STmicroelectronics <a href="http://www.st.com">www.st.com</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: SME</li> <li>▪ Major Research Area/Product: Microelectronics for automotive, mobile and telecommunication industries</li> <li>▪ Major Activities with Korea: Marketing, product development, manufacturing and design</li> <li>▪ Future Plans: Expand research collaboration, technology transfer, and business</li> <li>▪ Contact Information: <a href="mailto:nunzio.abbate@st.com">nunzio.abbate@st.com</a></li> </ul>
<p>Valvitalia <a href="http://www.valvitalia.com">www.valvitalia.com</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation Type: SME</li> <li>▪ Major Research Area/Product: Equipments and components intended for the petroleum, water, natural gas industries, and petrochemical industry as well as electrical power stations</li> <li>▪ Major Activities with Korea: Marketing, sales</li> <li>▪ Future Plans: Expand research collaboration, technology transfer, and business</li> <li>▪ Contact Information: <a href="mailto:aldo.nonna@valvitalia.com">aldo.nonna@valvitalia.com</a></li> </ul>
<p>Indena <a href="http://www.indena.com">www.indena.com</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: SME</li> <li>▪ Major Research Area/Product: Active principles derived from plants, for use in the pharmaceutical, health-food and personal care industries</li> <li>▪ Major Activities with Korea: Marketing, sales</li> <li>▪ Future Plans: Expand research collaboration, and business</li> <li>▪ Contact Information: <a href="mailto:paolo.morazzoni@indena.com">paolo.morazzoni@indena.com</a></li> </ul>

\*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.

# PART 16

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## LATVIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# LATVIA



## Country Outline

- GDP: 24,378 mil. euros (Eurostat 2015)
- GDP per Capita: 12,300 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Knowledge-Based Bio-Economics, Bio-Medicine, Medical Technologies, Bio-Pharmacy and Biotechnologies, Advanced Materials, Technologies and Engineering Systems, Smart Energy, Information and Communication Technologies

## Contact Information

- Name: Inga Jekabsone
- Phone no. / e-mail: (+371) 67047963 / inga.jekabsone@izm.gov.lv

Latvia is a country with strong scientific traditions. The future goals for research in Latvia as defined in the Smart Specialization Strategy are to specialize in bioeconomy, biomedicine, biopharmacy, biotechnology, smart materials and technology, engineering systems, smart energetics and information and communication technology. Current reforms of research and development sector aim to increase the R&D potential by 2020 by consolidation of its research potential in 20 internationally competitive institutes which are integrated with higher education and industry. In result high technology products share in Latvia's exports are gradually increasing from 4.8 % in 2010 up to 9.2 % in 2014. The goal of public R&D investments is to increase the total R&D investment up to 1.5 % of GDP in 2020. These investments should also include an increase in private R&D funding from 25 % currently to 48 % in 2020.

## 1. Policies and Strategies in Science, Technology and Innovation

Latvian National Innovation Strategy, called 'RIS3', has such priorities:

- 1) High added value products
- 2) Productive Innovation System
- 3) Energy Efficiency
- 4) Modern ICT
- 5) Modern education
- 6) The knowledge base (Bio-economy; Biomedicine, medical technologies, biopharmacy and biotechnology; Smart materials, technology and engineering, Smart energy; ICT)
- 7) Polycentric development



## Facts and figures about Latvian research

Number of Scientific institutions	21 state funded Research Institutes
Excellence of Latvian research institution	15 internationally competitive scientific institutes
Number of researchers	7,939 researchers, 23 % of them are working in businesses and industries
Investment in Research	In 2014 162.8 mil. EUR were invested in R&D; that is 16.7% more than in 2013. R&D expenditure is 0.68 % of GDP (the target goal in 2020 is 1.5 %).
PhD holders	Amongst the population between to age of 25 – 34 1 % are PhD holders (considerable increase over the previous years).
Gender equality in research	56 % of all PhD graduates in 2015 are women. The proportion of female researchers in 2012 is 53% (the highest rate in the EU, average in the EU is 33%).
STEM	Students in STEM fields (natural sciences, computer sciences, math, engineering, manufacturing and construction) are defined as a priority: 2015/2016 state owned higher education institutions had 91% of all students in STEM and 69% of all students in STEM studying in state funded study places.
Mobility in higher education	In 2015/16 foreign students constitute 8% of all students (constant increase over previous years)
Strengths sides in research	Latvia internationally is recognised by Natural Science & Mathematics and Life Sciences & Medicine

## 2. National Programmes and Initiatives

Latvia has over 50 intergovernmental and interdepartmental agreements on cooperation in education and science. Most of them provide grants for students, researchers and faculty members from European and other countries. Based on these agreements every year about 50 students, researchers and teachers use the opportunity to study, do research or work in Latvian universities or take part in summer courses. The Agreement between the Government of the Republic of Latvia and the Government of the Republic of Korea on Cooperation in the fields of culture, education, youth and sports encourages direct cooperation between universities and research and educational institutions of their respective countries.

### List of National Programmes open to the world

Programme Title	Contents
Scholarships: Latvian fellowships for research work <a href="http://www.viaa.gov.lv/eng/international_cooperation/scholarships_gov/latvian_scholarships/">http://www.viaa.gov.lv/eng/international_cooperation/scholarships_gov/latvian_scholarships/</a>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research / Mobility / Individual Funding</li> <li>▪ Funding Organisation: State Education Development Agency</li> <li>▪ Call Opening/Closing Date: around 1st April each year</li> <li>▪ Participation Qualification: Master Diploma, including transcript (if the PhD degree is not obtained yet) or PhD diploma</li> <li>▪ Project Duration: up to 3 months</li> <li>▪ Funding Scale and Funding Scheme: fellowship is 30.00 EUR per day and max. 300.00 EUR for accommodation per month</li> <li>▪ Research Fields: All areas</li> </ul>
Scholarships for Studies <a href="http://www.viaa.gov.lv/eng/international_cooperation/scholarships_gov/latvian_scholarships/">http://www.viaa.gov.lv/eng/international_cooperation/scholarships_gov/latvian_scholarships/</a>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research / Mobility / Individual Funding</li> <li>▪ Funding Organisation: State Education Development Agency</li> <li>▪ Call Opening/Closing Date: around 1st April each year</li> <li>▪ Participation Qualification: completed at least one year of first level higher education</li> <li>▪ Project Duration: up to 11 months</li> <li>▪ Funding Scale and Funding Scheme: 500 EUR/month for Bachelor and Master's studies and 670 EUR/month for Doctoral studies</li> <li>▪ Research Fields: All areas</li> </ul>

### 3. Joint Activities with Korea in 2016

Not Applicable

### 4. Others

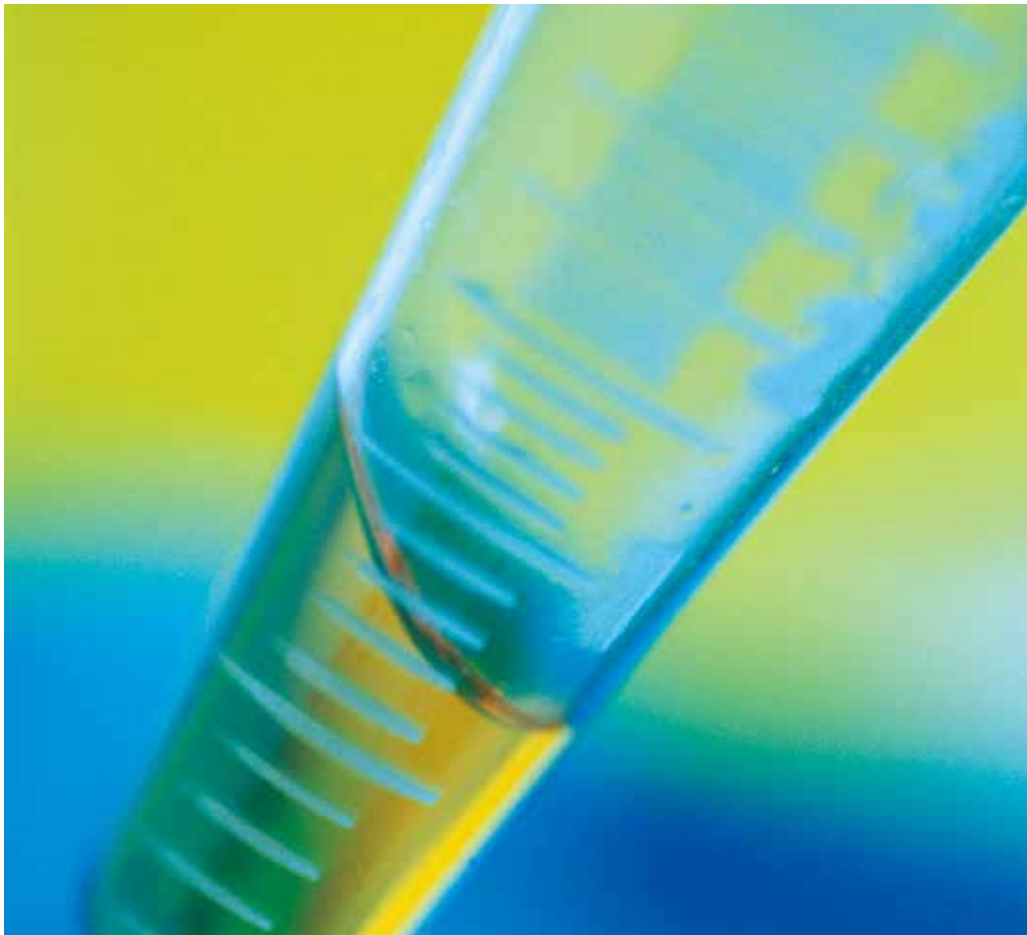
#### Key Research Organisations and Companies

Organisation Name	Detailed information
<p>University of Latvia <a href="http://www.lu.lv">www.lu.lv</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University &amp; Research institutes</li> <li>▪ Major Research Area/Product: The University of Latvia with its 14,000 students, 13 faculties and more than 20 research institutes is the largest research university in the Baltic States with major research fields in Natural Sciences, Humanities, Medicine, Education and Social Sciences. It is the only higher education institution in Latvia that is ranked in QS World Top Universities ranking.</li> <li>▪ Major Activities with Korea: University of Latvia has concluded bilateral cooperation agreements with following universities in South Korea: Kyungpook National University, University of Incheon, Pukyong National University. In 2014/2015 15 exchange students from these universities study at the UL. For local students the UL offers to study Asian Studies, including Korean regional studies module (e.g. courses like 'Contemporary Korean Society', 'Philosophical and Religious Streams in Korea') at both bachelor and master levels. It is possible to study Korean language at 4 different levels of difficulty. In 2010, in cooperation with Embassy of South Korea in Stockholm the "Korean Days" were organized. In July 2015 the student-sportsmen of the UL will participate in the Summer Universiade in Gwangju, Korea.</li> <li>▪ Future Plans: UL plans to intensify the exchange of students and staff by preparing proposal for Erasmus+ mobility scheme with several South Korean universities.</li> <li>▪ Contact Information: <a href="http://www.lu.lv">www.lu.lv</a>, International Relations Department / <a href="mailto:ad@lu.lv">ad@lu.lv</a></li> </ul>

<p>Riga Technical University <a href="http://www.rtu.lv/en/">http://www.rtu.lv/en/</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University &amp; Research institutes</li> <li>▪ Major Research Area/Product: Riga Technical University (RTU) is the largest university in Latvia and leading engineering university in Baltic States with more than 15 000 students in nine faculties. RTU offers engineering and business programmes, e.g. Business Management, Civil Engineering, Chemistry, Chemical Technology, Mechanics, Computer Systems, Telecommunications, Aviation Transport, Power Engineering, Medical Engineering, Applied Linguistics, at bachelor, master and doctoral level fully in English. Modern laboratories and approaches in all engineering, natural science and business study programmes. Students from more than 50 countries. Multicultural Environment at the university campus and all university faculties.</li> </ul>
<p>Riga Technical University <a href="http://www.rtu.lv/en/">http://www.rtu.lv/en/</a></p>	<ul style="list-style-type: none"> <li>▪ Major Activities with Korea: Riga Technical University has bilateral cooperation agreements with following universities in South Korea: Kyungpook National University, Pukyong National University, Kongju National University, Handong Global University. Riga Technical University has been working with exchange students from Korea since the year 2007. In the year 2011/2012 there were 6 students from Korea. In the year 2012/2013 and 2013/2014 there were 9 students each year. In the year 2014/2015 there are 15 students from Korea (14 exchange students in different programmes at all levels and 1 full degree student in the study programme Medical Engineering and Physics).</li> <li>▪ Future Plans: Riga Technical University has submitted a mobility proposal in the framework of Erasmus+ KA1 international mobility with Kyungpook National University to implement approximately 6 student/staff mobility's with South Korea.</li> <li>▪ Contact Information: RTU Foreign Students Department Address: 1 Kalku Street, Riga LV-1658, Latvia Phone. + 371 67089766 Fax. + 371 67089020 E-mail: <a href="mailto:info@rtuasd.lv">info@rtuasd.lv</a> <a href="http://www.fsd.rtu.lv">www.fsd.rtu.lv</a></li> </ul>



<p>The Institute of Solid State Physics University of Latvia  <a href="http://www.cfi.lu.lv/eng/">http://www.cfi.lu.lv/eng/</a></p>	<ul style="list-style-type: none"> <li>▪ Organization type: Research institute</li> <li>▪ Major Research Area/Product:  The Institute of Solid State Physics is one of the largest institutes in Latvia. The main field of its research is material science, with emphasis on nanoscience and nanotechnology of new advanced functional materials, with a special focus on materials applicable for sustainable energetics. The Institute is modern and well-run. A major concern of its management and staff is regarding further development, which is understood as the realisation of important and up-to date research topics, ongoing collaboration with other national and international centres and continuous involvement of the young generation in the performed work. The Institute is a national coordinator and leader in several projects. It has an active International Supervisory Board consisting of internationally recognised experts. The mission of the Institute is to carry out high-level scientific activity, and to use its knowledge in the fields of education and innovation.</li> <li>▪ Contact Information:  8 Kengaraga street, Riga, LV-1063, Latvia  Phone. +371 67 187 816 / Fax. +371 67 132 778  E-mail: <a href="mailto:issp@cfi.lu.lv">issp@cfi.lu.lv</a></li> </ul>
<p>Latvian Institute of Organic Synthesis  <a href="http://www.osi.lv/en/">http://www.osi.lv/en/</a></p>	<ul style="list-style-type: none"> <li>▪ Organization type: Research institute</li> <li>▪ Major Research Area/Product: The Latvian Institute of Organic Synthesis (IOS) is a large research unit devoted mainly to drug discovery. IOS received the best score (5) among all Research Organizations in Latvia in "Research Evaluation Exercise" which was a part of the international assessment "Latvia in Innovation System Review and Research Assessment Exercise". IOS develops very important activities in the fields of chemistry, pharmacy, pharmacology and biology. The work of the Institute resulted in a high number of patents, which are hold together with industrial partners. Several drugs developed at IOS are on the market. However beside the synthetic work driven by the need to fulfill the capital risks investors basic research is nevertheless performed. A very large number of doctoral students are being trained and educated at IOS.</li> <li>▪ Contact Information:  Latvian Institute of Organic Synthesis  VAT: LV90002111653  Aizkraukles 21, LV-1006, Riga, Latvia  Tel. +371 67014801 / Fax. +371 67550338  Email: <a href="mailto:sinta@osi.lv">sinta@osi.lv</a></li> </ul>



# 16

# PART 17

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## LITHUANIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# LITHUANIA



## Country Outline

- GDP: 37,124 mil. euros (Eurostat 2015)
- GDP per Capita: 12,800 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Health Technologies and Biotechnology, Novel Production Processes, Materials and Technologies, Agro-Innovation and Food Technologies

## Contact Information

- Name / Position: Ms. Kristina Babelytė-Labanauskė / Head, Technology and Innovation Division, Ministry of Education and Science of the Republic of Lithuania
- Phone no. : (+370) 5 2191220

The major share of R&D in Lithuania is funded by the public sector and carried out by public research institutions. Investments in the five integrated science, study and business centres – ‘valleys’ - over 2007-2013 was meant to constitute the most important instrument for concentrating research, study and knowledge-intensive business potential in specific geographical areas with common or interrelated infrastructure, geared towards building a knowledge economy and thus enhancing Lithuania’s economic competitiveness.

Lithuania’s Progress Strategy “Lithuania 2030” approved by the Seimas (Parliament) of Lithuania in 2012 has set out a vision for the country wherein changes will take place resulting in Smart society, Smart economy, and Smart governance. Lithuania’s Progress Strategy cogently states that success will follow those that will be ready to timely adapt to changes, embrace innovations and boldly take competition challenges.

With the initiative for the EU countries’ design of their research and innovation strategies for smart specialisation (RIS3) with the aim of implementing economic transformation agendas, in 2012 a process for defining national R&I ‘smart specialisation’ priorities in Lithuania was launched.

## 1. Policies and Strategies in Science, Technology and Innovation

Lithuania with a population of approximately 3 million is the seventh smallest country in the EU. However Lithuania spends a respectful share of its GDP on the public investments in R&D. One of the main goals of STI policy is to reach the R&D target of 1.9% of GDP by 2020. The Lithuanian Progress Strategy 2030 projects that Lithuania should be 15th in the EU28 according to BERD/GDP figures by 2020, and 10th – by 2030. Moreover, R&D is done by universities, research institutions and private businesses.



### Main Figures about Lithuania

<ul style="list-style-type: none"> <li>23 universities and 23 colleges</li> </ul>	<ul style="list-style-type: none"> <li>200,000 students for 3 million population</li> </ul>
<ul style="list-style-type: none"> <li>5 Valleys -integrated Science and Business Centres</li> </ul>	<ul style="list-style-type: none"> <li>10,7%scientists involved in business and industry</li> </ul>
<ul style="list-style-type: none"> <li>35 science institution</li> </ul>	<ul style="list-style-type: none"> <li>Over 18,000 researchers working in various fields</li> </ul>
<ul style="list-style-type: none"> <li>5 Integrated science, research and business centres</li> </ul>	<ul style="list-style-type: none"> <li>Globally recognized achievements in physics, laser, biotech, IT</li> </ul>

### Science, Technology and Innovation fields of 5 valleys

<ul style="list-style-type: none"> <li>Santara</li> </ul>	<ul style="list-style-type: none"> <li>Biotechnologies, innovative medicine, biopharmacy, ecosystems, ICT, laser and lighttechnologies, nanotechnologies, semiconductors technologies and electronics, civil engineering.</li> </ul>
<ul style="list-style-type: none"> <li>Sauletekis</li> </ul>	
<ul style="list-style-type: none"> <li>Nemunas</li> </ul>	<ul style="list-style-type: none"> <li>Agro biotechnologies, bioenergy and forestry, food technologies, safety and wellness, sustainable chemistry and pharmacy, mechatronics, future energy and ICT.</li> </ul>
<ul style="list-style-type: none"> <li>Santaka</li> </ul>	
<ul style="list-style-type: none"> <li>Maritime Valley</li> </ul>	<ul style="list-style-type: none"> <li>Maritime technologies and maritime environment.</li> </ul>

### Structure and main actors of the Science, Technology and Innovation system

Since joining the EU, Science, Technology and Innovation policy has rapidly grown in importance. The breakthrough was achieved after the Government reached an agreement to invest a significant amount of funding (10% of the total EU structural assistance for 2007-2013) into research. In 2008, the Government of the Republic of Lithuania adopted a resolution on the establishment of five integrated centres of science, studies and business ("Valleys"). The aim is to concentrate the scientific research, studies and knowledge intensive business potential in specific geographical areas. Valley means concentration (totality of entities) of the capacities in research, studies and knowledge-intensive business generally in one area, with common or interrelated infrastructure, geared towards building knowledge economy and thus enhancing Lithuania's economic competitiveness.

## STI priority areas and priorities.

Priority areas	Priorities (sub-fields in which tangible structural changes can be expected)
Energy and sustainable environment	<ul style="list-style-type: none"> <li>▪ Smart systems for generators, grids and users energy efficiency, diagnosis, monitoring, accounting and management</li> <li>▪ Energy and fuel production from biomass or waste, storage and disposal of waste</li> <li>▪ Smart low energy buildings development and maintenance technology – digital construction</li> <li>▪ Solar energy equipment and their use for power, heat and cool production</li> </ul>
Health technologies and biotechnology	<ul style="list-style-type: none"> <li>▪ Molecular technologies for medicine and biopharmacy</li> <li>▪ Intelligent applied technologies for personal and public health</li> <li>▪ Advanced medical engineering for early diagnostics and treatment</li> </ul>
Agricultural	<ul style="list-style-type: none"> <li>▪ Safer food / Functional food</li> </ul>
innovation and food technologies	<ul style="list-style-type: none"> <li>▪ Innovative development, improvement and processing of bioresources (biorefinery)</li> </ul>
New processes, materials and technologies for industry	<ul style="list-style-type: none"> <li>▪ Photonic and laser technologies</li> <li>▪ Functional materials and coatings</li> <li>▪ Construction and composite materials</li> <li>▪ Flexible technological systems for product design and manufacturing</li> </ul>
Transport, logistics and ICT	<ul style="list-style-type: none"> <li>▪ Intelligent transport systems and information as well as communication technologies</li> <li>▪ Models/technologies for management of the international transport corridors and integration of different types of transport</li> <li>▪ Technologies for developing advanced e-content and information interoperability</li> <li>▪ Solutions and services for ICT infrastructure and cloud computing</li> </ul>
Inclusive and creative society	<ul style="list-style-type: none"> <li>▪ Modern learning technologies and processes</li> <li>▪ Technologies and processes for breakthrough innovations</li> </ul>

## Main policy documents

Seimas of the Republic of Lithuania (the Parliament) approved the **National Progress Strategy 'Lithuania 2030'** in May 2012. The National Progress Strategy 'Lithuania 2030' indicates a long-term vision for Lithuania and lists priorities for change in three key areas named Smart Economy, Smart Society and Smart Governance. On the basis of 'Lithuania 2030', on 28 November 2012 the Government approved the National Progress Programme for Lithuania for the period 2014-2020 (NPP). This Programme will provide a basis for the European Structural Funds support for the next programming period. The investment priorities concerning research and innovation policy are discussed in the priority fields of 'Smart Economy' and 'Smart Society'. It is projected that at least 11.44% of all NPP (national and EU SF) funds will

be invested into the development of the networked economy, oriented towards the creation of higher value added. The policy focus is on innovation networks and research collaboration, joining global networks and entering global value chains as well as fostering innovation in business and demand for innovation. Another 14.23% of funds will be invested in education, culture and basic research (e.g. mobility, research infrastructures, competitive research funding, etc.).

**The Lithuanian Innovation Development Programme for 2014-2020** was approved by the Resolution of the Government of the Republic of Lithuania on the 18th of December 2013. The strategic goal of the Programme is creating effective innovation system to increase competitiveness and innovation performance. The Programme aims to achieve better commercialisation of R&D results.

**The National Programme for the Development of Studies, Research and Experimental (social and cultural) Development for 2013–2020** was adopted on 5 December 2012. This Programme is aimed at strengthening the country's competitiveness and increasing welfare by developing the study, R&D and innovation systems. The strategic objective of the Programme is to encourage the sustainable development of people and society which improves the country's competitiveness and creates conditions for innovation by developing higher education and implementing studies, R&D development.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
Support to Research Activities of Scientists and other Researchers (Global Grant) <a href="http://www.lmt.lt/en/rnd/grant.html">www.lmt.lt/en/rnd/grant.html</a>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Research projects led either by individual researchers or research group</li> <li>▪ Funding Organisation: Research Council of Lithuania</li> <li>▪ Call Opening/Closing Date: Next call expected in 2nd half of 2015</li> <li>▪ Participation Qualification: Different participation qualifications for young and advanced researchers; different participation qualifications for Social Sciences and Humanities and natural and Technical Sciences groups</li> <li>▪ Project Duration: Up to 48 months</li> <li>▪ Funding Scale and Funding Scheme: Implementation costs can be covered up to 330,000 € (including indirect costs); Grant Agreements are signed with Host institution</li> <li>▪ Research Fields: Any / Matching fund from Korean government: No</li> </ul>

<p>Postdoctoral fellowships  <a href="http://www.postdoc.lt/en/news">www.postdoc.lt/en/news</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Research projects leaded by individual post-docs. Any higher education institution, research institute, research centre or other research establishments and enterprises in Lithuania can act as a Host Institution</li> <li>▪ Funding Organisation: Research Council of Lithuania</li> <li>▪ Call Opening/Closing Date: Next call expected 1st half of 2015</li> <li>▪ Participation Qualification: Young researchers awarded a Ph.D. degree within the period of 3 years (maternal and childcare leave are not taken into account)</li> <li>▪ Project Duration: Up to 24 months</li> <li>▪ Funding Scale and Funding Scheme: Implementation costs can be covered up to 100,000 € (including indirect costs); Grant agreements are signed with Host institution</li> <li>▪ Research Fields: Any / Matching fund from Korean government: No</li> </ul>
<p>Exchange of research ideas  <a href="http://www.lmt.lt/en">www.lmt.lt/en</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Short term visits to Lithuanian higher education and research institution</li> <li>▪ Funding Organisation: Research Council of Lithuania</li> <li>▪ Call Opening/Closing Date: First call expected 2nd half of 2015</li> </ul>
<p>Exchange of research ideas  <a href="http://www.lmt.lt/en">www.lmt.lt/en</a></p>	<ul style="list-style-type: none"> <li>▪ Funding Scale and Funding Scheme: Implementation costs will differ by the duration and aim of the visit; In case of incoming visits, application provider will be Lithuanian institution; Grant agreements will be signed with Host institution</li> <li>▪ Research Fields: Any / Matching fund from Korean government: No</li> </ul>
<p>Brain Gain and Reintegration  <a href="http://www.lmt.lt/en">www.lmt.lt/en</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Individual research projects</li> <li>▪ Funding Organisation: Research Council of Lithuania</li> <li>▪ Call Opening/Closing Date: First call expected 2nd half of 2015</li> <li>▪ Funding Scale and Funding Scheme: Implementation costs will be covered up to 140,000 € (including indirect costs); Grant agreements will be signed with Host institution</li> <li>▪ Research Fields: Any / Matching fund from Korean government: N</li> </ul>

### Researcher teams' projects

Researcher teams' projects are intended as a way for a researcher or a group of researchers to obtain funding for their own scientific research in the field the Research Council of Lithuania calls for. The funding is granted for project proposals selected by holding public tender, encompassing areas of humanitarian, societal, physics, biomedical as well as technologies and agriculture sciences. However other types of proposals can be accepted as well under certain circumstances (i.e. aimed at international collaboration or technological development of research teams).

### National Research Programmes

The goal of National Research Programmes (NRP) is to initiate scientific research for definite problems concentrating national research potential and fuelling it with appropriate funding. Each Programme is a sum of research, methodologies and measures all tailored to a specific theme providing most optimal conditions for a country to solve strategically important problems. In order to focus on the most competent research approaches and to promote Lithuanian research competitiveness the funding under these Programmes are given to the winning tenders in a public competition.

## 3. Joint Activities with Korea in 2016

### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
Mykolas Romeris University <a href="http://www.mruni.eu/en/">http://www.mruni.eu/en/</a>	<ul style="list-style-type: none"> <li>▪ Organisation Type: University</li> <li>▪ Major Research Area/Product: Law, economics and finance, political sciences and management, social technologies, business and media</li> <li>▪ Major Activities with Korea: Implementation of joint study bachelor's degree programme "Informatics and Digital Contents", development of joint study master's degree programme "Visual Content and Informatics", student mobility and staff training programmes, Korean language courses and culture lectures</li> <li>▪ Contact Information: Rasa Vilnienė / Head of Asian center Tel. (+370) 5 2714543 / e-mail: asiancentre@mruni.eu</li> </ul>
Kaunas University of Technology (ktu.edu)	<ul style="list-style-type: none"> <li>▪ Organisation Type: University / Research</li> <li>▪ Major Research Area: Physical, technological, social, biomedical sciences and humanities</li> <li>▪ Major Activities with Korea: Studies, research, professional development, know-how transfer, Smart environments and information technology, Sustainable growth and social-cultural development, Technologies for sustainable development and energy</li> <li>▪ Contact Information: Director Assoc. Prof. Leonas Balasevičius / Department of Research Affairs Tel. (+370) 37 300 702 / e-mail: leonas.balasevicius@ktu.lt</li> </ul>
Vilnius Gediminas Technical University <a href="http://www.vgtu.lt/index.php?lang=2">http://www.vgtu.lt/index.php?lang=2</a>	<ul style="list-style-type: none"> <li>▪ Organisation Type: University / Research</li> <li>▪ Major Areas: architecture, business management, IT, civil engineering, electronics, mechanical engineering and creative industries, IT</li> <li>▪ Major Activities with Korean HEIs: students mobility for studies and placements, staff mobility</li> <li>▪ Future Plans: development of student mobility, include Korean partner institutions into Erasmus+ application, development of partnership activities with aforementioned Research institutions</li> <li>▪ Contact information: Director Aušra Peledienė / International Relations Office / Tel. (+370) 5 274 4958 / e-mail: ausra.pelediene@vgtu.lt</li> </ul>

<p>Vilnius University <a href="http://www.vu.lt/en/">http://www.vu.lt/en/</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation Type: University</li> <li>▪ Major Areas: Law, history, chemistry, mathematics and informatics, economics, political sciences, biochemistry, biotechnology, theoretical physics and astronomy</li> <li>▪ Major Activities with Korean HEIs: Korean language courses, students mobility, staff mobility, researchers mobility, joint research projects, joint events in the field of research</li> <li>▪ Contact information: Leva Skinder, Marketing Officer International Programmes and Relations Office Universiteto 3, LT-01513 Vilnius Tel. (+370) 5 268 7156 / e-mail: ieva.skinder@cr.vu.lt</li> </ul>
<p>National Cancer Institute <a href="http://www.nvi.lt/index.php?-1330073846">http://www.nvi.lt/index.php?-1330073846</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation Type: Institute</li> <li>▪ Major Areas: Scientific research in oncology and related fields</li> <li>▪ Major Activities with Korean HEIs: Working on cooperation agreement with Yonsei Cancer Center / Yonsei University College of Medicine</li> <li>▪ Future Plans: To sign cooperation agreement on May 2015</li> <li>▪ Contact information: Ph. D. Vydmantas Atkočius Deputy Director for Science and Education Tel. (+370) 5 219 0960 / e-mail: Vydmantas.Atkocius@nvi.lt</li> </ul>

## 4. Others

### Key Research Organisations and Companies

Organisation Name	Detailed information
<p>Lithuanian Research Centre for Agriculture and Forestry <a href="http://www.lammc.lt/">http://www.lammc.lt/</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Centre</li> <li>▪ Major Research Area/Product: Agriculture and Forestry</li> <li>▪ Contact Information: phone: +370 347 37271/37057 / fax: +370 347 37096 / e-mail: lammc@lammc.lt, <a href="http://www.lammc.lt">http://www.lammc.lt</a></li> </ul>
<p>Lithuanian Energy Institute <a href="http://www.lei.lt">http://www.lei.lt</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Institute</li> <li>▪ Major Research Area/Product: Hydrogen and fuel cells, enegy, and biofuel</li> <li>▪ Contact Information: Director Sigita Rimkevičius, dr phone: +370-37-401924 / email: sigita.Rimkevicius@lei.lt</li> </ul>
<p>Nature Research Centre <a href="http://www.gamtostyrimai.lt/lt/pages/view/?id=2">http://www.gamtostyrimai.lt/lt/pages/view/?id=2</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Centre</li> <li>▪ Major Research Area/Product: ecology, botany, mycology, microbiology, virology, zoology, parasitology and geosciences</li> <li>▪ Contact Information: Scientific secretary Dr. Jurgita Sorokaite phone : +370 (85) 272 93 25 / email : jurgita.sorokaite@gamtostyrimai.lt</li> </ul>
<p>Center for Physical Sciences and Technology <a href="http://www.ftmc.lt">http://www.ftmc.lt</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research Centre</li> <li>▪ Major Research Area/Product: laser technologies, optoelectronics, nuclear physics, organic chemistry, bio and nanotechnologies, electrochemical material science, functional materials, and electronics</li> <li>▪ Contact Information: phone: (+370 5) 264 9211, 266 1640/1643, Fax: (+370 5) 260 2317 / e-mail office@ftmc.lt</li> </ul>

# PART 18

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## LUXEMBOURG

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# LUXEMBOURG



## Country Outline

- GDP: 52,113 mil. euros (Eurostat 2015)
- GDP per Capita: 91,600 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Environment

## 1. Policies and Strategies in Science, Technology and Innovation

### Key figures, 2013

Economic and environmental performance	LUX	OECD	Gross domestic expenditure on R&D	LUX	OECD
<b>Labour productivity</b>			<b>GERD</b>		
GDP per hour worked, USD ppp, 2013 (annual growth rate, 2008-13)	85.1 (-0.8)	47.7 (+0.8)	Million USD ppp, 2011 As a % of total OECD, 2011	692 0.1	1,107,398 100
<b>Green productivity</b>			<b>GERD intensity and growth</b>		
GDP per unit of CO <sub>2</sub> , emitted, USD, 2011 (annual growth rate, 2007-11)	4.0 (+3.2)	3.0 (+1.8)	As a % of GDP, 2012 (annual growth rate, 2007-11)	1.46 (-1.9)	2.40 (+2.0)
<b>Green demand</b>			<b>GERD publicly financed</b>		
NNI per unit of CO <sub>2</sub> , emitted, USD, 2011 (annual growth rate, 2007-11)	4.0 (-0.5)	3.0 (+1.6)	As a % of GDP, 2012 (annual growth rate, 2007-11)	0.44 (+8.5)	0.77 (+2.8)

Source: OECD STI Policy Outlook 2014

The steady increase in the public R&D budget between 2000 and 2009 reflects the government's resolve to make investment in RDI part of a long-term policy for Luxembourg's economic development and diversification. The country's national RDI strategy is founded on multi-annual planning and focuses on targeted priorities. Following the establishment of the public research centres (PRCs) and of the university between 1987 and 2003 key steps have included the OECD review of Luxembourg's national research system in 2006 and a Foresight Study in 2006, 2007 that identified the thematic domains which now make up the CORE public research funding programme. A major outcome of the OECD review was the recommendation to implement performance contracts between the ministry and the National Research Fund (FNR), the university, the PRCs and Luxinnovation. Two important draft laws are currently in the legislative process, with adoption expected in 2014:



- The first one aims to consolidate the public research organisations with, in particular, the merger of the Tudor and Lippmann Public Research Centres. This merger should allow for the building of critical mass in areas with major prospects for cooperation with Luxembourgish industry such as materials and sustainable development with some less-promising research subjects being discontinued.
- The second one aims to reform FNR which allocates funds on a competitive basis. This reform targets better valorisation of research results notably through enabling actions to support 'proof-of-concept'. In this context a reform of the FNR's researchers training scheme (AFR) is foreseen. It will foster inter-sectoral (public/private) mobility. Many initiatives have been developed to foster private R&D, public-private cooperation, innovation and entrepreneurship:
  - The law of 5 June 2009 provides state aid for the private sector with a special focus on SMEs and services-sector innovation. The law of 18 February 2010 provides public aid to the private sector in the field of eco-innovation. The law on Intellectual Property (IP) tax incentives (21 December 2007) encourages companies to patent and licence the results of their R&D work, and also fosters spinoffs and start-ups based on IP.
  - Measures to encourage the development of small innovative companies include: IP/ spin-off requirements in PRCs' performance contracts, the creation of a Master's degree in Entrepreneurship and Innovation, the setting up of business incubators, a partnership with a business accelerator located in Silicon Valley (Plug and Play Tech Centre) in order to help start-ups in Luxembourg to gain access to the United States market.
  - The massive (EUR 565 million) infrastructure project Cité des Sciences aims at reinforcing relations between research, education and innovation, by hosting on one site all of Luxembourg's major public R&D institutes, as well as private and start-up companies, a new technical school, the university campus, the national archives and some cultural centres. It will provide facilities for public-private partnerships and a business incubator.
  - Luxembourg has set up a cluster programme around five thematic clusters (in materials, ICT, space, bio-health, and eco-innovation). This policy was reinforced in 2013, with new missions given to clusters in relation to internationalisation and business developments as well as the setting up of a new cluster in the automotive field.

Moreover the new government announced its intention to put in place a process to enable public research organisations and firms to develop common research agendas focused on middle- and long-term targets.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world.

Programme Title	Contents
<p>Luxembourg National Research Fund (FNR)'s CORE  <a href="http://www.fnr.lu/funding-instruments/core">http://www.fnr.lu/funding-instruments/core</a></p>	<ul style="list-style-type: none"> <li>▪ Programme definition: It is the central programme of the FNR as well as a multi-annual thematic research programme.</li> <li>▪ Cooperation Type: Research Funding</li> <li>▪ Funding Organisation: Luxembourg National Research Fund</li> <li>▪ Call Opening/Closing Date: 2016 annual call deadline is 21 April 2016</li> <li>▪ Participation Qualification: Early career stage researchers and principal investigators; Public institutions performing research in Luxembourg</li> <li>▪ Project Duration: 2 to 3 years</li> <li>▪ Funding Scale and Funding Scheme: The total budget allocated to the CORE programme for the period 2014-2017 is EUR 70 million</li> <li>▪ Research Fields: Innovation in Services (IS), Sustainable Resource Management in Luxembourg (SR), New Functional and Intelligent Materials and Surfaces and New Sensing Applications (MS), Biomedical and Health Sciences (BM), Societal Challenges (SC)</li> </ul>

## 3. Joint Activities with Korea in 2016

Not Applicable.



## 4. Others

### Key Research Organisations and Companies

Organisation Name	Detailed information
Luxembourg Institute of Science and Technology <a href="http://www.list.lu/">http://www.list.lu/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research centre</li> <li>▪ Major Research Area/Product : environment, IT, materials</li> <li>▪ Major Activities with Korea: None</li> <li>▪ Future Plans/Strategy: contribute to Luxembourg's reputation, participate in the socio-economic development</li> <li>▪ Contact Information: Phone +352 275 888 1, Fax: +352 275 885, email info@list.lu</li> </ul>

\* The organisations/companies should be present in RoK or having active cooperation programmes with RoK.



# PART 19

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## MALTA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# MALTA



## Country Outline

- GDP: 8,806 mil. euros (Eurostat 2015)
- GDP per Capita: 20,400 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: ICT, Tourism Product Development, Maritime Services, Aviation and Aerospace, Health (with a focus on healthy living and Active ageing and E-health), Resource-Efficient Buildings, High Value-Added Manufacturing with a Focus on Processes and Design and Aquaculture

## Contact Information

- Organisation: Council for Science & Technology
- Name: Dr. James Foden
- E-mail: james.foden@gov.mt

With preparations for Malta's accession to the EU in 2004 research increased a lot and the research policy in Malta gained substantial momentum. Malta's vision is to place research and innovation (R&I) at the heart of the Maltese economy in order to spur knowledge-driven and value-added growth and to sustain improvements in the overall quality of life.

The first Maltese national strategy for R&I was developed in 2007 with its main thrust being the development of a research framework and building research capacity in the areas of human resources and infrastructure. The strategy had a strong business orientation emphasising the importance of collaboration between industry and academia as well as the exploitation of research results for economic benefit.

In February 2014 a new National R&I Strategy 2020 was formally published. This builds upon the previous strategic plan introducing a number of new elements whilst retaining the same underpinning vision. The strategy articulates three main goals as follows: (1) building a comprehensive R&I ecosystem, (2) developing a stronger knowledge base, and (3) smart specialisation.

In Malta the business sector is the largest R&D performer accounting for 60% of GERD while the higher education sector accounted for 36% of GERD in 2012. R&D expenditure by public research organisations is just over 3% of GERD.

Industry in Malta consists of a small number of large foreign-owned manufacturing enterprises and a large number of indigenous SMEs which undertake little R&D. Most of this research is undertaken in the pharmaceuticals and electronics sectors, as well as service-oriented sectors such as consultancy and information programming activities. Malta has one public university, the University of Malta, which has an old pedigree and traces its origins back to the 16th century. It is the main research performer in the academic sector with its research activity focused on Social Sciences followed by Medical Sciences, Engineering, Humanities and Natural Sciences in that order.

Many of the developments in the research and innovation system in recent years relate to the availability of funding with the introduction by Malta Enterprise of a number of schemes in 2009 and 2010. Concurrently national funding for the R&I programme administered by the MCST more than doubled over the period 2009 to 2011. Funding schemes for PhD grants were also introduced utilising both national and EU finance.

ERDF funding was also leveraged to strengthen the research infrastructure at the University of Malta with significant funds being allocated to the development of a number of laboratories.

*\*Source: 'ERAWATCH Country Reports 2013: Malta'*

## 1. Policies and Strategies in Science, Technology and Innovation

Malta's new National Research and Innovation Strategy 2020, launched in June 2014, sets out the national strategy for the forthcoming seven year period. The ultimate goal of this Strategy remains that of embedding research and innovation at the heart of the Maltese economy to spur knowledge-driven and value-added growth and to sustain improvements in the quality of life.

The Mission of this strategy is to provide an enabling framework for achieving this vision building up on past achievements as well as lessons learnt along the way. This Strategy and its implementation do not provide all the building blocks of a knowledge-based economy by themselves but are a crucial step towards this. The achievement of this stated Mission depends on putting in place the necessary 'building blocks' identified as the three goals of:

- a) A comprehensive R&I support ecosystem - The achievement of this goal would be an important building block towards Malta's transformation to a knowledge economy as it would facilitate innovative ventures to take shape and flourish. This support ecosystem would be independent of thematic specialisations thus providing a baseline level of support for all players and embedding flexibility to support any new specialisation areas which emerge over time.
- b) Investing in a stronger knowledge base - The achievement of the second goal is to be seen as a longer-term investment the fruits of which may or may not be reaped within the timeframes of this Strategy. This goal balances the overarching orientation of this Strategy towards close-to-market R&D and innovation by

building capacity and excellence in the earlier stages of the R&D process. Given the magnitude of investments required and resource limitations, priority should be focused on identified thematic specialisations.

- c) Smart, flexible specialisation - This goal targets the establishment of a knowledgebased economy by prioritising its achievement in a number of thematic areas. It is a very innovation-oriented approach which however does not exclude the involvement of research activities. In addition the prioritisation of long-term investments in a stronger knowledge base in identified thematic areas serves to embed stronger foundations over the longer term thus consolidating the knowledge base of these thematic areas.

The Strategy can be accessed at:

[http://www.mcst.gov.mt/sites/default/files/pa\\_documents/strategy\\_visual\\_27\\_5.pdf](http://www.mcst.gov.mt/sites/default/files/pa_documents/strategy_visual_27_5.pdf)

The Strategy also includes the mechanism for communication management and co-design of implementing measures among different stakeholders, knowledge based policy design as well as monitoring and review. To this end the Strategy identifies a set of seven indicators (balanced between input and output indicators) to monitor performance in implementing the Strategy effectively. One of the targets set in this Strategy is the EU2020 R&D expenditure target for Malta which has been fixed at 2%. The latest figures available on Eurostat indicate a final figure for R&D expenditure of 0.87% 2012 and a 0.85% provisional figure for 2013.

Further to the finalisation of the new R&I Strategy Malta is presently in the process of developing a roadmap through an R&I action plan which will align existing and planned efforts towards the achievement of the Strategy's objectives including the achievement of Malta's new target for R&D and the specialisation areas. Work on the Action Plan started in late 2013 through an initial information gathering exercise was followed up with bilateral meetings with all relevant stakeholders. The measures in the action plan will reflect government's financial commitments to R&D over the coming years. The R&I Action Plan will be finalised by mid-2015 and will be regularly updated and recalibrated to reflect changing circumstances. Nonetheless it will retain its focus on the overall goal of the Strategy's objectives and targets. Within this context discussions are ongoing on the piloting of actions under smart specialisation.



## 2. National Programmes and Initiatives

The Malta Council for Science and Technology manages the national R&I funds. FUSION, the R&I Programme, aims to raise the level and profile of locally funded research and ingrain research and innovation at the heart of the Maltese economy to spur knowledge-driven and value-added growth and sustain improvements in quality of life. FUSION is composed of two main programmes:

### a) Commercialisation Voucher Programme

Commercialization is the fundamental aim of the Malta Council for Science and Technology's research and innovation fund. This programme supports the assessment of such commercialization potential prior to the actual undertaking of any research and development. This Programme consists of 6 different Vouchers covering IP Check, Market Research & Product Development Costing, Economic Impact & Risk Profile, Business Plan, Initial Patent Application and Investors' Meetings. A number of Service Providers have been selected through an open call to undertake such consultancy services.

### b) Technology Development Programme (TDP)

The focus of the Programme is to fund the actual development of the research and innovation proposal with the possibility of having a prototype of the proposed solution. This programme will build on the outcomes of the first five vouchers covered by the Commercialization Voucher Programme. Projects would typically have a duration of between one and three years, with a project value ranging between €50,000 and €200,000.

The funding is available for local public, academic, and private sector stakeholders. International partners are welcome to participate in projects but are not eligible for funding from the National Programme.

Webpage: <http://www.mcst.gov.mt/fusionri-programme>

## List of National Programmes open to the world

Programme Title	Contents
National R&I Funding Programme ('Fusion') <a href="http://www.mcst.gov.mt/national-funding/ri-programme/current-ri-programme">www.mcst.gov.mt/national-funding/ri-programme/current-ri-programme</a>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Research Funding</li> <li>▪ Funding Organisation: Malta Council for Science and Technology</li> <li>▪ Call Opening/Closing Date: Commercialisation Voucher programme (January-February and May-June); Technology Development Programme (open call)</li> <li>▪ Participation Qualification: Independent scientific evaluation, commercialisation potential, research implementation through consortium</li> <li>▪ Project Duration: Voucher Programme (6 months), TDP (1-3 years)</li> <li>▪ Funding Scale and Funding Scheme: National Funding Scheme.</li> <li>▪ TDP up to €200,000</li> <li>▪ Research Fields: Aligned with Malta's Smart Specialisation Areas</li> <li>▪ Matching fund from Korean government : No</li> </ul>

## 3. Joint Activities with Korea in 2016

Not Applicable

## 4. Others

### Key Research Organisations and Companies

Programme Title	Contents
Malta Life Sciences Park <a href="http://www.lifesciencespark.com/">www.lifesciencespark.com/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: Research centre</li> <li>▪ Major Research Area/Product: mechanical engineering, physical sciences, electronic engineering, chemical engineering and occupational health</li> <li>▪ Major Activities with Korea: No</li> <li>▪ Contact Information: Phone (+356) 2542 0000, e-mail: <a href="mailto:info@lifesciencespark.com">info@lifesciencespark.com</a></li> </ul>
University of Malta <a href="http://www.um.edu.mt/research/">http://www.um.edu.mt/research/</a>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: biology, chemistry, geosciences, mathematics, physics, statistics and operations research</li> <li>▪ Major Activities with Korea: No</li> <li>▪ Contact Information: Phone (+356) 2340 2340, Fax (+356) 2340 2342</li> </ul>

*\*The organisations/companies should be present in RoK or having active cooperation programmes with Ro*

# PART 20

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## NETHERLANDS

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# NETHERLANDS



## Country Outline

- GDP: 678,572 mil. euros (Eurostat 2015)
- GDP per Capita: 40,100 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: High Tech Systems & Materials, Water, Chemistry, Agro-food, Horticulture, Energy, Creative Industry, Logistics, and Life Science

## Contact Information

- Organisation: Embassy of the Kingdom of the Netherlands
- Name / Position: Mr. Peter Wijnhuizen / Senior Officer for Innovation, Technology & Science
- Phone no. / e-mail: (+82) 2-311-8600 / pw@nost-korea.com

The Netherlands is one of the most competitive and innovative countries worldwide. As 'innovation leader' it ranks 4th in the Global Innovation Index and 8th in the Global Competitiveness Index. The Brainport region around Eindhoven (home of Philips) was declared the 'World's Most Intelligent Community' in 2011. Wageningen UR (WUR) holds a leading position worldwide in agro-food and life sciences research. The Netherlands is also home to ESTEC (European Space Research and Technology Centre), the technical heart of the European Space Agency.

## 1. Policies and Strategies in Science, Technology and Innovation

### Science Policy

The Ministry of Education, Culture and Science (Min. OC&W) focuses on scientific research and education. It is responsible for funding basic research and for the public research infrastructure. The policies of the Min. OC&W's are implemented by agencies and research institutes that fall under its remit.

November 2014, the government's new white paper on science was released: "Vision for Science 2025. Choices for the Future." It identifies three challenges that the Netherlands need to tackle in order to maintain a leading position: increasing international competition, the need for closer ties between sciences on the one hand and society and industry on the other, and the increasing pressure on the Dutch scientist.

Science in the Netherlands is funded from several different sources:

- The private sector funds around half of all research in the Netherlands mainly its own in-house research but also research performed by public research institutions (universities and public-private institutions).
- The government funds a little over a third of the total. Some government funding is channelled through intermediary organisations like NWO, KNAW and RVO.
- Other national funding sources: public institutions' own resources and public private funds (Health Funds).
- Foreign funding source, via foreign companies and EU research funding, particularly under Horizon2020.

### **Innovation policy**

Innovation policy is closely related to science policy. The Ministry of Economic Affairs (EZ) bears primary responsibility for innovation policy in the Netherlands. It focuses on fostering knowledge development in companies and on collaboration between research institutions and companies.

The core of the policy is the government's plan to make targeted investments in nine leading sectors of the economy. The idea is to tackle problems hampering growth in these sectors. The cooperation between enterprises, scientific institutions, regions and the government will be continued within a new financial framework. The government has chosen nine sectors in which the Netherlands excels as a result of its geography and history: water, agro-food, horticulture, high-tech systems & materials, life sciences, chemicals, energy, logistics and creative industries.

Over the next few years the government plans to tackle administrative problems. This will involve improving professional education, removing obstacles to trade, strengthening the infrastructure, scrapping unnecessary rules and ensuring easier access for knowledge workers. In addition, 1.5 billion euros of research funding will be targeted at the nine leading sectors across the entire government budget. Entrepreneurs, the authorities and research institutions in each sector have drawn up their joint research agendas.

Cooperation between enterprises, knowledge institutes and the government will be important. It will take place in so called Topconsortia for Knowledge and Innovation (TKI) with research initiatives in the chain from basic research to market innovations.

It is the ambition of the government that TKI's will spend some € 500 million from 2015 onwards of which 40 percent is privately funded.

In 2014, Dutch companies and research institutes spent over 13 billion euros on R&D. Companies and higher education institutes increased their spending on R&D while public research institutes spent less. The government invested just over 4 billion euro in R&D via direct and indirect funding. Most direct funding goes via intermediary organisations (like NWO and RVO). Indirect funding are tax incentives whereby the Dutch government pays a proportion of the wage costs and other costs (e.g. equipment) associated with research and development. The total R&D expenditures in the Netherlands in 2014 amounted to 2 percent of Dutch GDP.

For more detailed information, please visit:

- <http://www.rathenau.nl/en/web-specials/the-dutch-science-system.html>
- <http://www.government.nl/files/documents-and-publications/reports/2014/12/08/2025-vision-for-science-choices-for-the-future/visie-wetenschap-eng-web.pdf>
- <http://www.government.nl/issues/entrepreneurship-and-innovation/investing-intop-sectors>
- <http://www.government.nl/files/documents-and-publications/reports/2012/08/30/quality-in-diversity/2212-1025-qualityindiversity-web2.pdf>
- <http://www.government.nl/documents-and-publications/leaflets/2012/04/17/thescience-system-in-the-netherlands.html>

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
Horizon2020	<a href="http://ec.europa.eu/programmes/horizon2020/">http://ec.europa.eu/programmes/horizon2020/</a>
	<a href="http://www.eurekanetwork.org/clusters">http://www.eurekanetwork.org/clusters</a>
Eurostars2	<a href="https://www.eurostars-eureka.eu/">https://www.eurostars-eureka.eu/</a>
WBSO/RDA	Tax incentive for companies and institutes located in the Netherland for costs related to R&D (e.g. wages and equipment). <a href="http://english.rvo.nl/subsidies-programmes/wbso-rd-tax-credit-andrda-research-and-development-allowance">http://english.rvo.nl/subsidies-programmes/wbso-rd-tax-credit-andrda-research-and-development-allowance</a>

### 3. Joint Activities with Korea in 2016

#### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
*PIB Off Wind	In the field of wind energy 12 Dutch wind energy related organisations have formed a consortium. With the assistance of the Dutch government this consortium is actively seeking for cooperation with Korea. In 2014 and in 2015, 6 missions have been organized.
PIB High Tech	Ten companies developing and producing tools and equipment for the semiconductor industry have formed a consortium. With the support of the Dutch government, they are looking for cooperation in Korea. In 2015, two missions have come to Korea; in 2016 we are expecting another at least three.

*\*Partners for International Business (PIB) = focuses on group of companies which want to enter a foreign market jointly. Research institutes can be part of the group. The ministry of foreign Affairs has initiated this program in order to eliminate trade and investment barriers. This allows entrepreneurs capitalize on opportunities.*

### 4. Others

#### Key Research Organisations and Companies

Organisation Name	Detailed information
Energy Center Netherlands <a href="http://www.ecn.nl/home">www.ecn.nl/home</a>	ECN has been researching sustainable energy use for decades. It develops innovative solutions for specific energy requirements. ECN also does research commissioned by government authorities and companies into the impact of energy use and energy production on the environment. Main topics include: solar energy, wind energy, energy efficiency/saving and biomass.
Netherlands Organisation for Applied Scientific Research(TNO) <a href="http://www.tno.nl">www.tno.nl</a>	TNO is an independent research organisation that employs some 3,000 specialists. It focuses on transitions or changes in five social themes: <ul style="list-style-type: none"> <li>- Industry: from economic stagnation to growth in high-technology industry</li> <li>- Healthy Living: from illness and treatment to health and behaviour</li> <li>- Defence, Safety &amp; Security: from a wide range of threats to controllable risks</li> <li>- Urbanization: from urbanization bottlenecks to urban vitality</li> <li>- Energy: from conventional sources to sustainable energy systems.</li> </ul>
WUR <a href="https://www.wageningenur.nl">https://www.wageningenur.nl</a>	WUR is collaboration between Wageningen University and the DLO foundation. It has a staff of 6,500 and 10,000 students from over 100 countries. The domain of Wageningen UR consists of three related core areas: Food and food production, living environment and health, lifestyle and livelihood.

<p>Maritime Research Institute Netherlands (MARIN)  <a href="http://www.marin.nl/">www.marin.nl/</a></p>	<p>MARIN is a research organization founded in 1929 by the Dutch government and industry. The organization is specialized in offshore technology. As early as 1970, MARIN extended its activities to include nautical research and training. For this purpose a modern Vessel Traffic Simulator and two full-mission simulators are available today. At present, approximately 350 people work at MARIN with turnover of 42 million EURO.</p>
<p>Netherlands Aerospace Centre (NLR)  <a href="http://www.nlr.org/">http://www.nlr.org/</a></p>	<p>NLR is a research organisation founded in 1919 by the Dutch government. It was focused on developing civil aviation, but in 1937, the organization turned into a foundation which conducted scientific research for the national aircraft industry. Now NLR has responded to public concern for sustainable, safe and efficient air transport, carrying out numerous projects with national and international collaborations. In 2015, NLR and Saemangeum Development and Investment Agency have made a MoU to establish a Dutch research institute. The Korean government has secured 6.65million EURO for 5 years to build the research institute. Various international seminars will be held at Saemangeum after the establishment of the research institute.</p>
<p>DELTAIRES  <a href="https://www.deltaires.nl/en">https://www.deltaires.nl/en</a></p>	<p>Deltares is an independent institute for applied research in the field of water and subsurface. It works on smart solutions, innovations and applications for people, environment and society. The main focus is on deltas, coastal regions and river basins. The institute works closely with governments, businesses, research institutes and universities domestically and internationally. In 2015, Deltares and Korea Institute of Civil Engineering and Building Technology (KICT) has signed a MoU to increase cooperation between vegetation patchiness and river hydraulics.</p>
<p>Dutch Polymer Institute(DPI)  <a href="http://www.polymers.nl/">http://www.polymers.nl/</a></p>	<p>DPI is an international collaborative platform for industrially relevant research in the field of polymers. It was established in 1997, and it is widely recognized independent institute that specialises in bringing together industrial needs and academic capabilities in a world-class pre-competitive research programme.</p>
<p>Brainport  <a href="http://www.brainport.nl/en">http://www.brainport.nl/en</a></p>	<p>Brainport is an innovative high-tech region, responsible for a quarter of all private investment in R&amp;D in the Netherlands. Brainport generates 37 percent of all patents registered in the Netherlands each year. Focus areas are renewable energy, safe mobility and smart remote care.</p>
<p>Holst Centre  <a href="http://www.holstcentre.com/">http://www.holstcentre.com/</a></p>	<p>Holst Centre is an independent open-innovation R&amp;D centre that develops generic technologies for Wireless Autonomous Sensor Technologies and flexible electronics. A key feature of Holst Centre is its partnership model with industry and academia based around shared roadmaps and programs. It is this kind of cross-fertilization that enables Holst Centre to tune its scientific strategy to industrial needs</p>



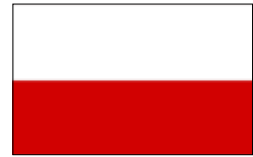
# PART 21

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## POLAND

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# POLAND



## Country Outline

- GDP: 427,737 mil. euros (Eurostat 2015)
- GDP per Capita: 11,100 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Energy, Maths, Physics, IT, Astronomy, Quantum Electronics, Life Sciences

## Contact Information

- Name / Position: Mr. Andrzej Wajs / Senior Expert, Communications Section, National Centre for Research and Development (NCBR)
- Phone no. / e-mail: (+48) 22 390 74 99 / andrzej.wajs@ncbr.gov.pl

Poland has a large population of young skilled researchers and one of the highest scholarisation indexes in Europe (51%). Poland has consistently devoted more resources to science and supporting R&D. Since 2008, Poland's R&D expenses have more than doubled. The Innovation Union Scoreboard 2015 classified Poland as a moderate innovator – 24th place out of 28. Poland ranks one place higher than in 2014. In 2010, the total budget for research accounted for 0.74% GDP. The aim is to reach 2% GDP in 2020. One of the most important instruments that address innovation in Poland is the Operational Programme Smart Growth, with a budget of almost USD 7 bn available in 2014-2020.

According to the most recent (December 2015) data provided by Poland's Central Statistical Office, the country's GERD in 2014 amounted to USD 4,25 bn, which means a 12% increase compared to 2013. This means that 0.94% GDP was devoted to R&D funding (0.87% GDP in 2013). These figures confirm the trend observed in the world standings. As the results of the Global Innovation Index 2015 show, in the period 2008-2013, and therefore during the economic crisis, Poland occupied the first place in terms of growth of private sector R&D expenses (BERD). In the same period, Poland was second only to China in terms of GERD growth.

The year 2014 saw a record increase in the private sector's R&D spending. Businesses allocated almost USD 2 bn on R&D, an 19.7% increase compared to 2013. The private sector's expenses now account for 46.6% of Poland's total R&D expenditure, compared with 43.6% in 2013 and 37.2% in 2012.

Poland is heavily supported by structural and cohesion funding, whose majority was first spent on infrastructure and increasing people's qualifications. The current drive is to make use of that infrastructure and qualified personnel to conduct world-class R&D. There are opportunities for the RoK to become a supplier of services, provider of training and manager of large R&D projects.

Looking at research collaboration, Poland offers excellence in the areas of energy, maths, physics, IT, astronomy, life sciences and quantum electronics. This is perhaps where strategic bilateral collaboration could be fostered under the Horizon2020 funding programme (more information on this and other programmes on offer can be found on the following pages).

## 1. Policies and Strategies in Science, Technology and Innovation

In February 2016, Poland's new government accepted a resolution concerning a long-term economic development plan for the country. The programme is based on five pillars: reindustrialisation, the development of innovative companies, foreign expansion, sustainable social and regional development as well as increased savings.

The author of the concept, Deputy Prime Minister/Development Minister Mateusz Morawiecki (hence "the Morawiecki Plan") identified five challenges that Poland faces. These are they: the middle-income trap, lack of balance between Polish and foreign capital, the lack of innovative products, the demographic trap, and the weak institutions trap.

In order to overcome them, the government singled out strategic economy sectors which will be supported by the state. R&D spending is set to reach 2% GDP, compared to 0.8% at present. Under the plan, USD 250 billion will be spent on investments in the coming years. The sum is to come from EU funds, Polish companies' savings and state-owned companies. Up to USD 20 billion will be delivered in development programmes carried out in co-operation with international institutions, such as the European Bank for Development and Reconstruction, and the World Bank.

One of the key ideas of the plan is the establishment of the Polish Development Fund as a result of a merger of existing institutions, including the Export Credit Insurance Corporation (KUKI), development bank BGK, the Polish Agency for Enterprise Development (PARP), the Polish Information and Foreign Investment Agency (PAIIZ), Industrial Development Agency (ARP) and Polish Investments for Development (PIR).

Welcomed by the European Commission, the plan sets ambitious aims. It envisages that by 2020, Poland's GDP will stand at 79% of the EU average, the level of investment will reach 25% GDP, the number of SMEs will grow to 22,000 while Poland's outward FDIs will increase by 70%.

### Hot STI issues

- Bridging the gap between Poland and more developed countries
- Innovating to contribute to structural adjustment and a new approach to growth
- Improving the design and implementation of the STI policy
- Reforming and improving public research (including tertiary education research)
- Strengthening public R&D capacity and infrastructure
- Business innovation, entrepreneurship and SMEs

### Key figures

- [http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-technology/oecd-science-technology-and-industry-outlook-2014\\_sti\\_outlook-2014-en#page401](http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-technology/oecd-science-technology-and-industry-outlook-2014_sti_outlook-2014-en#page401)
- <http://stat.gov.pl/en/topics/science-and-technology/science-and-technology/science-and-technology-in-poland-in-2014,1,10.html>
- Bloomberg's Global Innovation Index: Poland – 25th place

Source: Warsaw Business Journal

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
Smart Growth (EU international programme)	<ul style="list-style-type: none"><li>▪ Cooperation Type: Joint Research Consortium with a Polish company – SME or micro-sized enterprise</li><li>▪ Funding Organisation: EU</li><li>▪ Call Opening/Closing Date: 2014-2020</li><li>▪ Participation Qualification: depends on the competition under the Programme</li><li>▪ Project Duration: depends on the competition under the Programme</li><li>▪ Funding Scale and Funding Scheme: approx. USD 6.8 billion</li><li>▪ Research Fields: R&amp;D on technologies and products to develop the companies' activities and to strengthen their competitive edge</li><li>▪ Matching fund from Korean government: No</li></ul>

# POLAND

POWER (EU international programme)	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Jointly with a Polish university</li> <li>▪ Funding Organisation: EU</li> <li>▪ Call Opening/Closing Date: 2014-2020</li> <li>▪ Participation Qualification: depends on the competition under the Programme - <a href="http://www.ncbr.gov.pl/en/news/art,4036,more-than-pln-890-million-for-universities.html">http://www.ncbr.gov.pl/en/news/art,4036,more-than-pln-890-million-for-universities.html</a></li> <li>▪ Project Duration: 5 years</li> <li>▪ Funding Scale and Funding Scheme: USD 232 million for 7 competitions in 2016</li> <li>▪ Research Fields: boosting students' entrepreneurship as well as interpersonal and analytical competencies</li> <li>▪ Matching fund from Korean government: No</li> </ul>
GoGlobal.PL	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Mentoring/co-funding partner to a Polish company willing to enter foreign market(s)</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: April/May 2016</li> <li>▪ Participation Qualification: please contact <a href="mailto:go_global.pl@ncbr.gov.pl">go_global.pl@ncbr.gov.pl</a></li> <li>▪ Project Duration: programme to be carried out until 2020</li> <li>▪ Funding Scale and Funding Scheme: own financial input required</li> <li>▪ Research Fields: high technology/knowledge-based services</li> <li>▪ Matching fund from Korean government: No</li> </ul>
Biostrateg	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company/university/research unit</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: March/June 2016</li> <li>▪ Participation Qualification: please contact <a href="mailto:biostrateg@ncbr.gov.pl">biostrateg@ncbr.gov.pl</a></li> <li>▪ Project Duration: max. 3 years; programme to be carried out until 2019</li> <li>▪ Funding Scale and Funding Scheme: minimum USD 2.7 million</li> <li>▪ Research Fields: climate change mitigation/water management/rational management of natural resources/ forestry</li> <li>▪ Matching fund from Korean government: No</li> </ul>
Techmatstrateg	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company/university/research unit</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: May/June 2016</li> <li>▪ Research Fields: R&amp;D in the field of modern materials technology</li> <li>▪ Matching fund from Korean government: No</li> </ul>

CuBR	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company/ university/research unit</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: January/March 2016</li> <li>▪ Participation Qualification: please contact <a href="mailto:cubr@ncbr.gov.pl">cubr@ncbr.gov.pl</a></li> <li>▪ Funding Scale and Funding Scheme: partly by the National Centre for Research and Development, partly by KGHM</li> <li>▪ Research Fields: non-ferrous metals' R&amp;D – exploitation, processing, recycling, environment protection</li> <li>▪ Matching fund from Korean government: No</li> </ul>
Innotextile	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company/ university/research unit</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: April/June 2016</li> <li>▪ Participation Qualification: please contact <a href="mailto:innotextile@ncbr.gov.pl">innotextile@ncbr.gov.pl</a></li> <li>▪ Funding Scale and Funding Scheme: USD 15.6 million</li> <li>▪ Research Fields: new technologies in clothing design and production</li> <li>▪ Matching fund from Korean government: No</li> </ul>
Innochem	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company/ university/research unit</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: February/March 2016</li> <li>▪ Participation Qualification: please contact <a href="mailto:innochem@ncbr.gov.pl">innochem@ncbr.gov.pl</a></li> <li>▪ Funding Scale and Funding Scheme: USD 31 million</li> <li>▪ Research Fields: acquisition of raw materials, production of basic and specialty products, new technologies and so-called horizontal areas i.e. the optimisation of processes conducted and low-carbon production technologies.</li> <li>▪ Matching fund from Korean government: No</li> </ul>
Demonstrator	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company/ university/research unit</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: July/August 2016</li> <li>▪ Participation Qualification: please contact <a href="mailto:instalacje@ncbr.gov.pl">instalacje@ncbr.gov.pl</a></li> <li>▪ Project Duration: until 2017</li> <li>▪ Funding Scale and Funding Scheme: TBC / own financial input required</li> <li>▪ Research Fields: industrial technological installations</li> <li>▪ Matching fund from Korean government: No</li> </ul>

E-Pioneer	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Interdisciplinary teams that include programmers</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Participation Qualification: please contact cezary.borowski@ncbr.gov.pl</li> <li>▪ Project Duration: 5 years</li> <li>▪ Funding Scale and Funding Scheme: USD 27 million</li> <li>▪ Research Fields: ICT</li> <li>▪ Matching fund from Korean government: No</li> </ul>
Fast track for micro and large enterprises as well as SMEs	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research Consortium with a Polish company– business participation is required</li> <li>▪ Funding Organisation: National Centre for Research and Development</li> <li>▪ Call Opening/Closing Date: June/July2016 - large enterprises, April/July and July/December 2016 – micro- and SMEs</li> <li>▪ Participation Qualification: please contact konkurs1.1.1@ncbr.gov.pl</li> <li>▪ Project Duration: until 2018</li> <li>▪ Funding Scale and Funding Scheme: approx. USD 650 million in total for micro and large enterprises as well as SMEs</li> <li>▪ Research Fields: random</li> <li>▪ Matching fund from Korean government: No</li> </ul>

### 3. Joint Activities with Korea in 2016

#### List of Programmes of Activities with RoK in 2016

Please fill out the table below.

Programme Title	Contents
Activity A	<ul style="list-style-type: none"> <li>▪ NB. A new form of co-operation between the Visegrad Group countries (V4-Poland, Czech Republic, Hungary and Slovakia) and RoK is currently being defined. It envisages joint V4-RoK research programmes, with the first one to be dedicated to advanced materials technologies and materials engineering. Details and timing TBC.</li> </ul>
Activity B	<ul style="list-style-type: none"> <li>▪ KONNECT (Strengthening STI Cooperation between the EU and Korea, Promoting Innovation and the Enhancement of Communication for Technology-related Policy Dialogue). The NCBR joined KONNECT in late 2015 in a joint Call on Resources and Sustainability.</li> <li>▪ Other institutions participating in the call are Czech Academy of Sciences, National Research Foundation (RoK), German Federal Ministry of Education and Research, Belgian National Fund for Scientific Research, Korea Institute for Advancement of Technology, Slovak Academy of Sciences and the Scientific and Technological Research Council of Turkey.</li> <li>▪ Polish participants of international projects under KONNECT will be asked to submit their applications in April 2016 (TBC).</li> </ul>

## 4. Others

### Key Research Organisations and Companies

Please fill out the table below.

Organisation Name	Detailed information
National Defence University (AON)	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area : Security &amp; Defence</li> <li>Major Activities with Korea: bilateral agreement on co-operation with Korea National Defense University</li> <li>Contact Information: Mr Jerzy Pietras Tel. (+48) 22 681 36 51 / <a href="mailto:j.pietras@aon.edu.pl">j.pietras@aon.edu.pl</a></li> </ul>
Samsung R&D Institute, Poland	<ul style="list-style-type: none"> <li>Organisation type: Research Unit</li> <li>Major Research Areas: digital television, platform convergence, mobile systems, smart solutions and enterprise solutions</li> <li>Major Activities with Korea: self-evident</li> <li>Contact Information: Tel. (+48) 22 377 80 01 / <a href="mailto:office.rd@samsung.com">office.rd@samsung.com</a></li> </ul>
Wroclaw University of Technology	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area: Technology</li> <li>Major Activities with Korea: bilateral agreement on student and academics exchanges as well as joint research endeavours with the University of Incheon and Kyungpook National University</li> <li>Contact Information: Ms Ewa Mroczek, Deputy Head, International Office, Wroclaw University of Technology, Tel. (+48) 71 320 43 46</li> </ul>
Jagiellonian University, Cracow	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area: various</li> <li>Major Activities with Korea: bilateral agreement on student exchanges with Hankuk University of Foreign Studies (HUFFS) in terms of Korean language and culture</li> <li>Contact Information: Ms Anna Wyżykowska, <a href="mailto:anna.wyzykowska@uj.edu.pl">anna.wyzykowska@uj.edu.pl</a> / Tel. (+48) 12 663 30 15</li> </ul>
Poznań University of Economics and Business	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area: business and economics</li> <li>Major Activities with Korea: student exchange with Chonnam National University</li> <li>Contact Information: Ms Cha Eunhui, <a href="mailto:Chacha1052@jnu.ac.kr">Chacha1052@jnu.ac.kr</a>, Coordinator for European/African Region Exchange Program, Office of International Affairs, Chonnam National University</li> </ul>
Duo Korea Fellowship Programme	<ul style="list-style-type: none"> <li>Major activities with Korea: 1:1 student exchange programme</li> <li>NB. Active in the academic year 2015/16, more information at <a href="http://www.asemduo.org/">http://www.asemduo.org/</a></li> </ul>

\*The organisations/companies should be present in RoK or having active cooperation programmes with RoK.



# PART 22

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## PORTUGAL

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# PORTUGAL



## Country Outline

- GDP: 179,376 mil. euros (Eurostat 2015)
- GDP per Capita: 17,300 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Marine and Freshwater Biology, Materials Science-Composites, Ocean Engineering, Agricultural Engineering, Applied Chemistry, Oceanography, Ceramic Materials, Biomaterials, Thermodynamics, Civil Engineering, Chemical Engineering, Textile Materials Science and Construction and Building Technologies

## Contact Information

- Organisation: Embassy of Portugal
- Name / Position: Mr. Carlos Antunes / Counsellor
- Phone no. / e-mail: (+82) 2-3675-2251 / carlos.antunes@mne.pt

Over the last decade The National Research and Innovation System has been catching up reducing its gap to EU average. R&D expenditure (GERD) as percentage of GDP has recorded the fastest average annual growth rate in the past decade. Portugal has exhibited significant progress in the number of new doctoral graduates per thousand population aged 25-34 years and the share of researchers in the labour force. Portugal is an innovation growth leader among the group of moderate innovators countries.

## 1. Policies and Strategies in Science, Technology and Innovation

ENEI: National Research and Innovation Strategy for Smart Specialisation will underpin research and innovation policy and funding instruments for 2014-2020 period.

2020 Vision: Portugal should have its leadership in the green economy, the digital economy and the blue economy throughout its revealed advantages in ICT, new materials and sustainable use of its endogenous resources namely of the sea and of the forest and minerals. The societal challenges, such as climate change and reduction of its derived risks, lack of biodiversity and water resources and ageing, will be object of special emphasis/focus.

The four pillars of the ENEI Vision for 2020 are:

**Digital Economy:**

- Portugal as an European Player in ICT

**Portugal a country of science and creativity:**

- To exploit the existing capacity in Energy, Biotechnology and Health
- To stimulate culture and creative industries
- To value the national identity and tourism

**Intensify the technological capacity of manufacturing:**

- To reinforce the technological intensity of manufacturing integration in the international value chains
- To exploit the existing capacity in new materials
- To develop the existing capacities in the automobile, aeronautics and space and in transports and logistics

**To value the differentiated endogenous resources:**

- To develop high value added innovative products and eco sustainable products
- Sea Economy (Blue economy), Forest, Mineral Resources and Agri – Food

Five structural objectives answer the identified challenges in the “Analysis of the Portuguese Research and Innovation System. Challenges, Strengths and Weaknesses towards 2020” and five thematic axes which gather the fifteen smart strategic priorities that have been defined below:

**Axis 1: Crosscutting Technologies and its Applications**

- Energy
- ICT
- Raw Materials and Materials

**Axis 2: Manufacturing and Manufacturing Technologies**

- Manufacturing Technologies and Product Manufacturing
- Manufacturing Technologies and Process Manufacturing

**Axis 3: Mobility, Space and Logistics**

- Automobile, Aeronautics and Space
- Transports, Mobility and Logistics

#### Axis 4: Natural Resources and Environment

- Agri-Food
- Forest
- Blue Economy (Sea Economy)
- Water Resources and Environment

#### Axis 5: Health, Well-being and Territory

- Health
- Tourism
- Culture and Creative Industries
- Habitat

## 2. National Programmes and Initiatives

**FCT:** Foundation for Science and Technology is the Funding Agency for Science and Research in Portugal. FCT supports the scientific community in Portugal through a range of funding schemes, tailored for individual scientists, research teams or R&D centres. Through its funding schemes FCT supports graduate education, research and development, establishment and access to research infrastructures, networking and international collaborations, conferences and meetings, science communication and interactions with industry. Scientists from all nationalities and in any research area may apply to FCT for funding.

### List of National Programmes open to the world

Programme Title	Contents
FCT Investigator Programme <a href="http://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/index.phtml.en">http://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/index.phtml.en</a>	<ul style="list-style-type: none"><li>▪ Programme definition: The FCT Investigator Programme aims to create a talent base of scientific leaders, by providing 5-year funding for the most talented and promising researchers, across all scientific areas and nationalities.</li><li>▪ Cooperation Type: Individual Funding</li><li>▪ Funding Organisation: FCT</li><li>▪ Call Opening/Closing Date: annual call</li><li>▪ Participation Qualification: post-doctoral researchers</li><li>▪ Project Duration: 5-year funding</li></ul>

<p>FCT Investigator Programme  <a href="http://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/index.phtml.en">http://www.fct.pt/apoios/contratacaodoutorados/investigador-fct/index.phtml.en</a></p>	<ul style="list-style-type: none"> <li>▪ Funding Scale and Funding Scheme: Grants are of three types:             <ol style="list-style-type: none"> <li>1. <b>Starting Grant</b> – for researchers with more than 3 and less than 8 years post-PhD experience at the time of application and an excellent track record. Prior experience of independent research is not required;</li> <li>2. <b>Development Grant</b> – for researchers with an excellent track-record and significant experience of independent research (as group leaders, principal investigators on research projects or senior/corresponding authors on publications);</li> <li>3. <b>Consolidation Grant</b> – for established independent researchers, with an outstanding curriculum and proof of leadership in his/her research area.</li> </ol> </li> <li>▪ Research Fields: all scientific areas</li> <li>▪ Others: This call is aimed at researchers holding a PhD, of Portuguese or foreign nationality.</li> </ul>
<p>PhD Studentships, PhD Studentships in Industry and Post-Doctoral fellowships  <a href="http://www.fct.pt/apoios/bolsas/concursos/individuais2015.phtml.en">http://www.fct.pt/apoios/bolsas/concursos/individuais2015.phtml.en</a></p>	<ul style="list-style-type: none"> <li>▪ Programme definition: To support the best graduates who wish to pursue research leading to a PhD degree and the most creative post-doctoral researchers pursuing cutting-edge projects, in Portuguese or foreign research centres, in all fields of research.</li> <li>▪ Cooperation Type: Individual Funding</li> <li>▪ Funding Organisation: FCT</li> <li>▪ Call Opening/Closing Date: annual call</li> <li>▪ Participation Qualification: PhD Studentships – Master Degree; Post-Doctoral Fellowships - PhD</li> <li>▪ Project Duration: variable</li> <li>▪ Funding Scale and Funding Scheme:             <ol style="list-style-type: none"> <li>1. <b>Post-doctoral Fellowships</b> are available for PhD holders, preferentially with less than six years post-doctoral experience. Fellowships have a maximum duration of six years, upon mid-term approval and budget availability.</li> <li>2. <b>PhD Studentships</b> support research projects of graduates who comply with the requirements to apply for PhD studies. Studentships have a maximum duration of four years, and must run for a minimum of three consecutive months.</li> <li>3. <b>PhD Studentships in Industry</b> support graduates who wish to carry out research projects in an industry setting, leading to a PhD. Studentships have a maximum duration of four years, and must run for a minimum of three consecutive months.</li> </ol> </li> <li>▪ Research Fields: all scientific areas</li> <li>▪ Others: Portuguese citizens and citizens of EU member states may apply, as well as citizens of other countries, as long as they are resident in Portugal or are citizens of countries with which Portugal has exchange agreements. Foreign researchers who are non-residents in Portugal may apply to post-doctoral fellowships, as long as their application is supported by a Portuguese institution and the research project is to be carried out entirely in Portugal.</li> </ul>

FCT PhD Programmes  
[http://www.fct.pt/apoios/  
programasdoutoramento/  
index.phtml.en](http://www.fct.pt/apoios/programasdoutoramento/index.phtml.en)

- Programme definition: FCT PhD Programmes aim to bring together higher education institutions (HEI), research institutions and industry (when relevant), to:
  1. Promote world-class graduate education and research-based training;
  2. Foster collaborations and sharing of resources between Portuguese institutions, to bolster the international quality and status of these institutions;
  3. Equip students with the necessary transferable skills to become excellent scientists as well as active members of the communities they may find themselves in.
- Funding Organisation: FCT
- Project Duration: Selected PhD programmes are funded for four years. Additional funding is under a FCT decision, based on a FCT PhD Programmes Evaluation Committee.
- Funding Scale and Funding Scheme: FCT PhD Programmes may be one of three types:
  1. National - should involve at least one HEI and one research institution (both Portuguese);
  2. With Industry – should involve at least one research institution, one industrial R&D partner, and one Portuguese HEI;
  3. International – should involve at least one HEI and one research institution (both Portuguese) and an overseas HEI or R&D institution.
- Research Fields: all scientific areas
- Others: In each call, a restricted number of PhD Programmes are approved, based on the decision of an international, independent evaluation panel.

### 3. Joint Activities with Korea in 2016

#### List of Programmes of Activities with RoK in 2016

Programme Title	Contents
H2020 - M-ERA-NET 2	<ul style="list-style-type: none"> <li>▪ ERA-NET in the field of materials science and engineering including micro and Nano technologies, production processes and technologies.</li> <li>▪ Participants: FCT – Foundation for Science and Technology - Portugal KIAT – Korea Institute for Advancement Technology – Republic of Korea</li> </ul>
H 2020 – ICT	<ul style="list-style-type: none"> <li>▪ Federated Interoperable Semantic IoT/cloud Testbeds and Applications</li> <li>▪ Participants: Unparallel Innovation Lda - www.unparallel.pt - Enterprise – Portugal Korea Electronics Technology Institute – Research Centre - Republic of Korea</li> </ul>
H2020 – Healthy Aging	<ul style="list-style-type: none"> <li>▪ My Active and Healthy Aging</li> <li>▪ Participants: Associação Fraunhofer Portugal Research – Research Centre - Portugal Seoul National University – Higher Education - Republic of Korea</li> </ul>
H2020 – Widening	<ul style="list-style-type: none"> <li>▪ Enabling precision chemical methodologies applied to natural-based systems for the development of multifunctional biomedical devices.</li> <li>▪ Participants: Universidade do Minho – Higher Education - Portugal Korea Advanced Institute of Science and Technology – Enterprise - Republic of Korea</li> </ul>

## 4. Others

### Key Research Organisations and Companies

Organisation Name	Detailed information
Universidade do Minho	<ul style="list-style-type: none"> <li>▪ Signature of three Memoranda of Understanding (MoU) between Minho's University and Korean Institutions for the reinforcement of the cooperation within the scope of stem cells, tissue engineering and regenerative medicine (July,2014):               <ul style="list-style-type: none"> <li>• Korea Institute of Science and Technology</li> <li>• Chonbuk National University</li> <li>• Global Stem Cell &amp; Regenerative Medicine Acceleration Center/ GSRAC in collaboration with the European Institute of Excellence on Tissue Engineering and Regenerative Medicine</li> </ul> </li> <li>▪ Contact Information: <a href="http://www.uminho.pt/en/home_en">http://www.uminho.pt/en/home_en</a></li> </ul>
Universidade Católica Portuguesa	<ul style="list-style-type: none"> <li>▪ The Portuguese Catholic University signed a Protocol of Cooperation with the University of Seoul (July, 2014).</li> <li>▪ Contact Information: <a href="http://www.ucp.pt/site/custom/template/ucptportalhome.asp?sspageID=1&amp;lang=2">http://www.ucp.pt/site/custom/template/ucptportalhome.asp?sspageID=1&amp;lang=2</a></li> </ul>
Instituto Superior Técnico (Universidade de Lisboa)	<ul style="list-style-type: none"> <li>▪ The Instituto Superior Técnico signed a Protocol of Cooperation with the University of Seoul (July, 2014).</li> <li>▪ Contact Information: <a href="https://tecnico.ulisboa.pt/en/">https://tecnico.ulisboa.pt/en/</a></li> </ul>

In the field of Antarctic logistics the Portuguese Polar Program has been cooperating with the Korean Polar Research Institute (KOPRI) since 2011 and recently signed a Letter of Understanding promoting cooperation on support to scientists and transportation by aircraft between Chile and Antarctica. Korea cooperates with station and aircraft support to Portuguese scientists and Portugal provides aircraft support to Korean personnel.

Furthermore on the scientific component the University of Lisbon through CEG/IGOT and CERENA/IST cooperates with the Korean Polar Research Institute (KOPRI) on the research on climate change and impacts in terrestrial ecosystems since 2011. Such a cooperation includes field work in the Antarctic station King Sejong in King George Island as well as bilateral visits and PhD co-supervision.



# PART 23

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## ROMANIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# ROMANIA



## Country Outline

- GDP: 160,353 mil. euros (Eurostat 2015)
- GDP per Capita: 8,100 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Energy, Environment and Climate Change, Advanced Materials

## Contact Information

- Organisation: Embassy of Romania
- Name / Position: Ms. Nichita Alexandra / Third Secretary
- Phone no. / e-mail: (+82) 7974924 / alexandranichita@romania.ollehoffice.com

The quality of the research infrastructures is high in Romania. Romania has now top-level research infrastructures and is considered as more than competitive by the highest Western standards. This could support the implementation of successful and complex H2020 projects. There is an excellent infrastructure available, not only in universities, but also at the national level. Romania is hosting one European research infrastructure with global impact – the Eli Extreme Light Infrastructure, with an estimated starting date in 2016 and other 10 research infrastructures of pan European interest in engineering, energy, socio-economic sciences, physics, environmental, marine and Earth sciences, material sciences, chemistry and nanotechnologies, and life sciences.

## 1. Policies and Strategies in Science, Technology and Innovation

Romania has recently adopted the National Strategy for Research, Development and Innovation which sets the framework for the period 2014-2020. Following a policy dialogue phase between the coordinating consortia and MECS, the final set of four priorities was decided: (i) Bioeconomy; (ii) ICT, Space and Security; (iii) Energy, Environment and Climate Change; (iv) Eco-nano Technologies and Advanced Materials. In addition, the national priorities include: Basic Research, Health, Heritage and Cultural Identity and New and Emerging Technologies – the latter being more of a framework for public procurement of innovation than a pre-determined set of technologies, flexible enough to allow a fast response to the challenges of pre-competitive public procurement of innovation during the National Strategy for Research, Development and Innovation 2020 implementation.

The RDI policies are implemented by the Romanian Government through the MECS, and subsequently through the National Authority for Scientific Research and Innovation.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
<p>Extreme Light Infrastructure – Nuclear Physics (ELI-NP) <a href="http://www.eli-np.ro/">http://www.eli-np.ro/</a></p>	<ul style="list-style-type: none"> <li>▪ ELI-NP will create a new European laboratory to consistently investigate a very broad range of science domains, from new fields of fundamental physics, new nuclear physics and astrophysics topics, to applications in material science, life sciences and nuclear materials management.</li> <li>▪ The project is co-financed by the European Regional Development Fund. To be built in Bucharest-Magurele, ELI-NP will be one of the three pillars of ELI - THE EXTREME LIGHT INFRASTRUCTURE, along with the facilities dedicated to the study of secondary sources (Dolni Brezany, near Prague) and to second pulses (Szeged).</li> </ul>
<p>DANUBIUS – International Centre for Advanced Studies for River-Delta-Sea Systems <a href="http://www.danube-delta-blacksea.eu/index.html">http://www.danube-delta-blacksea.eu/index.html</a></p>	<ul style="list-style-type: none"> <li>▪ It is coordinated by the National Institute of Research and Development for Biological Sciences (<a href="http://www.dbioro.eu">www.dbioro.eu</a>) and the National Research and Development Institute for Marine Geology and Geoecology (<a href="http://www.geoecomar.ro">www.geoecomar.ro</a>). This is a Romanian initiative for a Pan European R&amp;D infrastructure in the field of integrated management of rivers-deltas-seas focused on Danube-Black Sea macrosystem with a hub in Danube Delta, at Murighiol, Tulcea County, and having nodes as leading facilities and research centres dealing with processes, research methodologies and offering access to other parts to the Danube – Black Sea macrosystem.</li> <li>▪ Danubius' mission is to provide science-based innovative solutions for major actual environmental-related problems and set the framework for sustainable development of Danube – Danube Delta – Black Sea system, as best practice for large river – delta – sea systems worldwide.</li> <li>▪ DANUBIUS was unanimously elected in 2013 as flagship Project within European Union Strategy on the Danube Region Priority Axis 7 (SUERD).</li> </ul>

<p>Engage in the Romanian Research Infrastructure System</p> <p><a href="http://www.erris.gov.ro">www.erris.gov.ro</a></p>	<ul style="list-style-type: none"> <li>▪ ERRIS (Engage in the Romanian Research Infrastructure System) is a platform developed and hosted by the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), within the framework of the "Improving the efficiency of the electronic data monitoring of R&amp;D activities" European funded project.</li> <li>▪ ERRIS is the first Romanian online platform which connects the research infrastructure owners with potential clients (researchers and company representatives).</li> </ul>
<p>Cluj Innovation City</p> <p><a href="http://www.clujinnovationcity.com/">http://www.clujinnovationcity.com/</a></p>	<ul style="list-style-type: none"> <li>▪ Cluj Innovation City is the major project for our community and the region. Cluj Innovation City is bringing together the local authorities, the universities and the business community to foster the development of the city, the region and the country. Cluj Innovation City is planned as a collaboration ecosystem and synchronized urban development project based on education, innovation and entrepreneurship, with the main goal to create a sustainable community in years to come.</li> <li>▪ Cluj-Napoca has built a solid reputation in recent years as the most important development centre in Romania, second only to Bucharest. Cluj is already the national 'number one' in IT services exports. The local municipality offers diverse assets, including the leading university and academic establishment within the country, a leading medical community and the Romania's foremost IT industry. These assets combined make Cluj-Napoca a strong regional economic development pole.</li> <li>▪ Based on the local assets, the close collaboration with the leading universities, and the rich entrepreneurship environment, Cluj Innovation City is aiming at becoming a significant Eastern European Innovation Hub. Start-ups can rely on local highly skilled human capital. Companies can also develop more competitive advantages by collaborating with applied research centres owned by universities. The current academic environment is already becoming more industry-oriented. Current discoveries by local scientists in artificial blood and brain research confirm their international competitiveness and pedigree, and will furthermore contribute to the EU competitiveness with results in medical and agricultural field.</li> </ul>

### 3. Joint Activities with Korea in 2016

Joint activities are currently being undertaken at the university level, researchers are free to engage in research activities in the preferred fields without coordination of the central government or structures subordinated. Such researches take place especially in the fields of bio-technology, waste management, energy, and they involve exchanges of experts between Romania and Korea.

### 4. Others

#### Key Research Organisations in Romania

Organisation Name	Detailed information
National Authority for Scientific Research and Innovation <a href="http://www.research.ro/en">http://www.research.ro/en</a>	<ul style="list-style-type: none"> <li>The RDI policies are implemented by the Romanian Government through the MECS, and subsequently through the National Authority for Scientific Research and Innovation</li> <li>Contact Information: Phone no. +40-21-319.23.26 / e-mail: <a href="mailto:letitia.stanila@ancs.ro">letitia.stanila@ancs.ro</a></li> </ul>
Executive Agency for Higher Education, Research, Development and Innovation Funding – UEFISCDI <a href="http://uefiscdi.gov.ro/">http://uefiscdi.gov.ro/</a>	<ul style="list-style-type: none"> <li>UEFISCDI is the government institution which has coordinated during 2007-2013 the project-based funding schemes of PNCDI2. Aside from the policy support function, UEFISCDI also plays a policy advisory role by its constant involvement in R&amp;I and higher education (HE) policy analysis and policy formulation process</li> <li>An ongoing project implemented by UEFISCDI has recently mapped 177 active TTO (accelerators, centres for information, and technological transfer, clusters, hubs, incubators, industrial parks and science and technological parks); the regional distribution of the TTO is available at: <a href="https://public.tableau.com/profile/marius.mitroi#!/vizhome/Facilitators/Facilitators">https://public.tableau.com/profile/marius.mitroi#!/vizhome/Facilitators/Facilitators</a></li> </ul>



# PART 24

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## SLOVAKIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# SLOVAKIA



## Country Outline

- GDP: 78,071 mil. euros (Eurostat 2015)
- GDP per Capita: 14,400 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Materials and Nanotechnology, Biomedicine and Biotechnology, Environment and Agriculture, Sustainable Energy

## Contact Information

- Organisation: Embassy of Slovakia
- Name / Position: Mr. Ondrej Sykora / Head of Economic and Commercial Affairs
- Phone no. / e-mail: (+82) 2-794-3981 / emb.seoul@mzv.sk

While Slovakia has developed a partnership with the Republic of Korea (RoK) in the past decade it is a country with one of the most intensive foreign investments from the whole Europe as well as top 5 export destination in EU and the cooperation in S&T has only started recently. So far the cooperation between Republic of Korea and Slovakia in the field of S&T has been developing mainly through various mobility programmes, minor individual projects and multilateral research platforms. However the year 2016 promises a new breakthrough on bilateral level. Based on the Agreement on S&T cooperation between the governments of both countries that entered into force in 2014 the first joint committee is scheduled for 2016. This is bound to open new windows of opportunity for Korean and Slovak researchers, students and science related capacities to participate in diverse and appealing S&T projects in years to come. Moreover during the summit of V4+RoK in December 2015 two new MoU were signed to boost S&T cooperation. One is related to platform V4 and RoK and the other MoU was signed between the Slovak Academy of Science and Korean Institute of Materials Science.

As for many developed economies, science and innovation has become one of the focal points of Slovakia for sustainable economic development, employment and future growth. Even though the gap in R&D expenditure compared to the rest of EU has been wide for many years it has been gradually closing. Yet the total expenditure into R&D in Slovakia in 2014 was still around 1% of GDP. Larger portion of the total budget for R&D comes from the public sector and therefore basic science plays more substantial role and gets more support than applied science. One of the challenges remains to get more private companies involved in the research and innovation process. The aim is to increase private funds in R&D and achieve ratio at least 2:1 between private and public funds while the total expenditure in R&D is planned to double in the near future.



## 1. Policies and Strategies in Science, Technology and Innovation

The main science and innovation objectives of the Slovak Republic are defined in “**Research and Innovation Strategy for Smart Specialisation**” (RIS3), which was approved by the Slovak Government on 13 November 2013. It has identified seven thematic areas of scientific research as follows:

In the area of research and development priorities:

1. **Material Sciences and Nanotechnology** (e.g. lightweight structural materials and composites, organic materials, steel and special materials, etc.)
2. **Information and Communication Technologies** (e.g. technological process management systems, processing of large databases, cloud solutions, etc.)
3. **Biomedicine and Biotechnology** (e.g. diagnostics and therapeutic approaches for cancer, heart disease, blood vessels and brain, pharmacological and industrial biotechnologies, etc.)
4. **Industrial Technologies** (e.g. automation control, robotics, technology for cutting and forming, logistic technologies, processing of polymers, wood, etc.)
5. **Sustainable Power Engineering and Energy** (e.g. reduction of energy intensity, emission reduction program ALEGRO, smart grid technology, safety of nuclear plants, etc.)
6. **Agriculture and Environment** (focus on advanced technologies and practices in agriculture and food production, better utilisation of the forests, etc.)
7. **Selected areas of social sciences** (e.g. The ageing population and quality of life, multiethnicity, social inclusion and poverty problems, employment of young people in the changing conditions, etc.)

The key authority for the implementation of RIS3 is the Government Council for Science, Technology and Innovation with two independent agencies appointed for implementation: Research Agency and Technological Agency which are undergoing a transformation process.

The main tools of funding of research and development under current legislation. Slovak Research and Development Agency (SRDA) – the main agency for distribution of public finances for research and development on the competitive basis in Slovakia. SRDA is responsible for research and development promotion in all research fields including international research cooperation. In the 2014-2020 period there are planned expenditures on operations and programmes of SRDA in total sum of EUR 316 million which is supposed to be tripled by 2020 (<http://www.apvv.sk/>).

Incentives for research and development are provided to entrepreneurs. In the 2014-2020 period expenditures on R&D incentives in total amount of EUR 108 million are planned and doubles by 2020. It is an essential tool for promoting business sector.

Grants to legal persons and natural persons and Grants for scientific and technical services are available in the 2014-2020 period with a planned budget of EUR 115 million and of EUR 73 million respectively.

The main executive and self-governing scientific institution in Slovakia is Slovak Academy of Science which comprises of 23 research institutes and 69 organisations ([www.sav.sk](http://www.sav.sk)).

As an example of excellent R&D work can serve one of the latest break-through in R&D projects with worldwide potential called **AeroMobil** (a flying car) <http://www.aeromobil.com/>.

## 2. National Programmes and Initiatives

Most of the scientific programmes and international S&T cooperation projects that Slovakia offers or takes part in are co-financed by EU funds, therefore the details and application can be found on official web pages of European Commission or through the major R&I programme of EU - Horizon2020. Among the programmes that can be chosen are e.g. EURECA, EIT, COST, EUROSTARS, etc.

On the level of national programmes there are regularly mobility initiatives available, such as SASPRO (<http://www.saspro.sav.sk/>). Please check more for current mobility initiatives at [www.sav.sk](http://www.sav.sk).

## 3. Joint Activities with Korea in 2016

The main joint activity between RoK and SR planned in 2016 is setting up a joint committee in the field of S&T cooperation that is expected to take place in May 2016. Apart from joint research projects mentioned below other activities include mainly individual scholarships/mobility initiatives/exchange programmes.

## List of Programmes of Activities with RoK in 2016

Programme Title	Contents
Intergovernmental Joint committee meeting	<ul style="list-style-type: none"> <li>Activity: Initial Joint Committee meeting based on a bilateral Agreement on Scientific and Technological Cooperation between the Government of Republic of Korea and the Slovak Republic ; May 2016</li> <li>Major topic or agenda: Set up and definition of the joint committee</li> <li>Target Participants: Government officials and selected universities and research institutes</li> <li>Relevant Information: Cooperation in the field of S&amp;T , promotion of mobility of experts and scientists; Major Korean partners MSIP, NRF Korea</li> </ul>
JEM-EUSO	<ul style="list-style-type: none"> <li>Activity: Joint research</li> <li>Major topic or agenda: Research of Extreme Universe Space Observatory Onboard Japan Experiment Module</li> <li>Relevant Information: Duration 2010-2017; Participation of Institute of Experimental Physics SAV Bratislava, Ehwa University and others</li> </ul>
K2 Mobility	<ul style="list-style-type: none"> <li>Activity: Joint research</li> <li>Major topic or agenda: Research of Sustainable Vehicle Technology</li> <li>Relevant Information: Duration 2013-2017; Participation of Institute of Materials and Machine Mechanics SAV Bratislava, University of Science and Technology Pohang</li> </ul>

## 4. Others

## Key Research Organisations and Companies

Organisation Name	Detailed information
University of Zilina <a href="http://www.uniza.sk">www.uniza.sk</a>	<ul style="list-style-type: none"> <li>Organisation type: University</li> <li>Major Research Area/Product: Transportation, construction, new materials, mechanical engineering, smart buildings, renewable energy sources</li> <li>Major Activities with Korea: project EU-Korea - Student Mobility in Intercultural, Language Skills and ECVET by the EU - ICI Korea SMILES</li> <li>Contact Information: <a href="http://vyskumnecentrum.sk/kontakty">http://vyskumnecentrum.sk/kontakty</a></li> <li>Others: cooperation with Yeungjin College, Daegu</li> </ul>

<p>Slovak Technical University Bratislava <a href="http://www.stuba.sk">www.stuba.sk</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: architecture, civil engineering, geodesy, cartography, chemical technologies, food processing, machinery, electrical engineering, electronics, informatics, ICT, applied physics, mathematics, economics and social science</li> <li>▪ Major Activities with Korea: project Eurre-KPS: Estimation of Uncertainty in Rainfall Runoff modelling, Korea, Poland and Slovakia</li> <li>▪ Contact Information: <a href="mailto:science@stuba.sk">science@stuba.sk</a></li> <li>▪ Others: cooperation with Chungbuk National University</li> </ul>
<p>Technical University of Kosice <a href="http://www.tuke.sk">www.tuke.sk</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: University</li> <li>▪ Major Research Area/Product: mining, ecology, metallurgy, geotechnology, mechanical, electrical and civil engineering, economics, ICT, aeronautics</li> <li>▪ Major Activities with Korea: cooperation with Yeungjin College, Daegu</li> <li>▪ Contact Information: <a href="http://www.tuke.sk/tuke/contact-info">http://www.tuke.sk/tuke/contact-info</a></li> <li>▪ Others: preparation of exchange of students in the field of electrical and mechanical engineering</li> </ul>
<p>SAV Slovak Academy of Science <a href="http://www.sav.sk">www.sav.sk</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: National Science Institute</li> <li>▪ Major Research Area/Product: 23 research institutes</li> <li>▪ <a href="http://www.sav.sk/?lang=en&amp;doc=activity-offers-results-products">http://www.sav.sk/?lang=en&amp;doc=activity-offers-results-products</a></li> <li>▪ Major Activities with Korea: various partnership programmes, such as <ul style="list-style-type: none"> <li>– ALICE experiment at the CERN LHC: a study of strong interacting matter properties at high energy densities.</li> <li>– K2 Mobility - Sustainable Vehicle Technology</li> <li>– Cooperation in FP EU in project KONNECT</li> <li>– JRP Program V4 (SAS) - Korea</li> <li>– The Korea Institute of Materials Science (KIMS) and Slovak Academy of Science (SAS) MoU</li> </ul> </li> <li>▪ Contact Information: <a href="mailto:barancik@up.upsav.sk">barancik@up.upsav.sk</a>; <a href="mailto:galik@up.upsav.sk">galik@up.upsav.sk</a></li> <li>▪ Others: MoU with Korean Institute of Material Science (KIMS), preparation of MoU with National Research Foundation of Korea (NRF)</li> </ul>
<p>Ministry of Education, Science, Research and Sport of the Slovak Republic <a href="http://www.minedu.sk">www.minedu.sk</a></p>	<ul style="list-style-type: none"> <li>▪ Organisation type: Ministry</li> <li>▪ Major Research Area/Product: The main ministry overlooking implementation of major policies and programmes in S&amp;T</li> <li>▪ Major Activities with Korea: Initial phase of implementation of the Agreement on S&amp;T cooperation with MSIP</li> <li>▪ Contact Information: <a href="mailto:kami@minedu.sk">kami@minedu.sk</a>, <a href="mailto:marek.hajduk@minedu.sk">marek.hajduk@minedu.sk</a></li> <li>▪ Others: preparation of Joint committee meeting in 2016</li> </ul>

# PART 25

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## SLOVENIA

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# SLOVENIA



## Country Outline

- GDP: 38,543 mil. euros (Eurostat 2015)
- GDP per Capita: 18,700 euros (Eurostat 2015)

## 1. Policies and Strategies in Science, Technology and Innovation

Research and Innovation Strategy of Slovenia 2011-2020 (RISS) is a programme document for achieving social objectives, such as improved living standards for all and improved quality of life. These objectives will be achieved through the establishment of modern research and innovation system, which will contribute to increased knowledge and understanding of society, respond to its challenges, increase the value added per employee and provide quality workplaces and living environment. It is based on Development Strategy of Slovenia and in accordance with Europe 2020 and its flagship initiatives.

In the preparation is Smart Specialisation Strategy of the Republic of Slovenia. The Smart Specialisation Strategy constitutes a different approach to determining policy of the Member States in research, development and innovation to promote efficient and effective investments of funds in areas that have the greatest value added and contribute most to the objectives of sustainable inclusive growth and development. Smart specialisation is a strategy for strengthening the competitiveness of economy, innovation capacity and the diversification of the existing industry as well as the growth of new and booming industries and companies respectively.

## 2. National Programmes and Initiatives

At the moment there is no national programme but RISS envisaged a preparation of an Action plan for International cooperation which is currently under preparation.

## 3. Joint Activities with Korea in 2016

Joint activities with Korea are undertaken on the basis of the Agreement on scientific and technological cooperation between the Government of the Republic of Slovenia and the Government of the Republic of Korea, signed in Seoul on May 30,

1994. On the basis of this protocol Ministry of Education, Science and Research cooperate with National Research Foundation (NRF). Last decision document was approved in July 2013 were both sides agreed to jointly fund the five research projects. Slovenia is interested to launch a common call for the period 2016-2017. The subjects of the call are all scientific fields.

#### 4. Others

Not Applicable





# PART 26

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## SPAIN

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# SPAIN



## Country Outline

- GDP: 1,081,190 mil. euros (Eurostat 2015)
- GDP per Capita: 23,300 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Food, Agriculture and Fisheries, Transport Technologies, Construction Technologies, Environment and Biotechnologies

## Contact Information

- Name / Position: Mr. Jordi Espluga Bach / Delegate CDTI to the Republic of Korea at the Embassy of Spain
- Phone no. / e-mail: (+82) 10-9020-1471 / jordi.espluga@cdties

## 1. Policies and Strategies in Science, Technology and Innovation

Spain's investment in research and development (R&D) undergone a drastic reduction on public R&D expenditure in 2011 and following years in response to the financial crisis. Nonetheless the government of Spain has successfully managed to allocate budgets in 2015 and 2016 with the aim to increase R&D investment and bring back research intensity on track.

Despite the fact that excellence in science and technology is behind the EU average it has seen a slight but steady improvement over the last five year period as reflected in knowledge-intensive activities over the percentage in total employment, an indicator of the intensity of knowledge in the economy. As an example it can be seen in higher contribution of high and medium-high-tech goods to the trade balance helping to raise the Spanish economic competitiveness not only on cost factors but also technology wise.

### Key indicators of research and innovation performance

<b>R&amp;D intensity</b> 2012: 1.30 % (EU: 2.07 %; US: 2.79 %) 2007-2012: +0.5 % (EU: 2.4 %; US: 1.2 %)	<b>Excellence in S&amp;T</b> 2012: 33.2 (EU: 47.8; US: 58.1) 2007-2012: +0.4 % (EU: +2.9 %; US: -0.2%)
<b>Innovation Output Indicator</b> 2012: 80.8 (EU: 101.6)	<b>Knowledge-intensity of the economy</b> 2012: 38.0 (EU: 51.2; US: 59.9) 2007-2012: +2.1 % (EU: +1.0 %; US: +0.5 %)

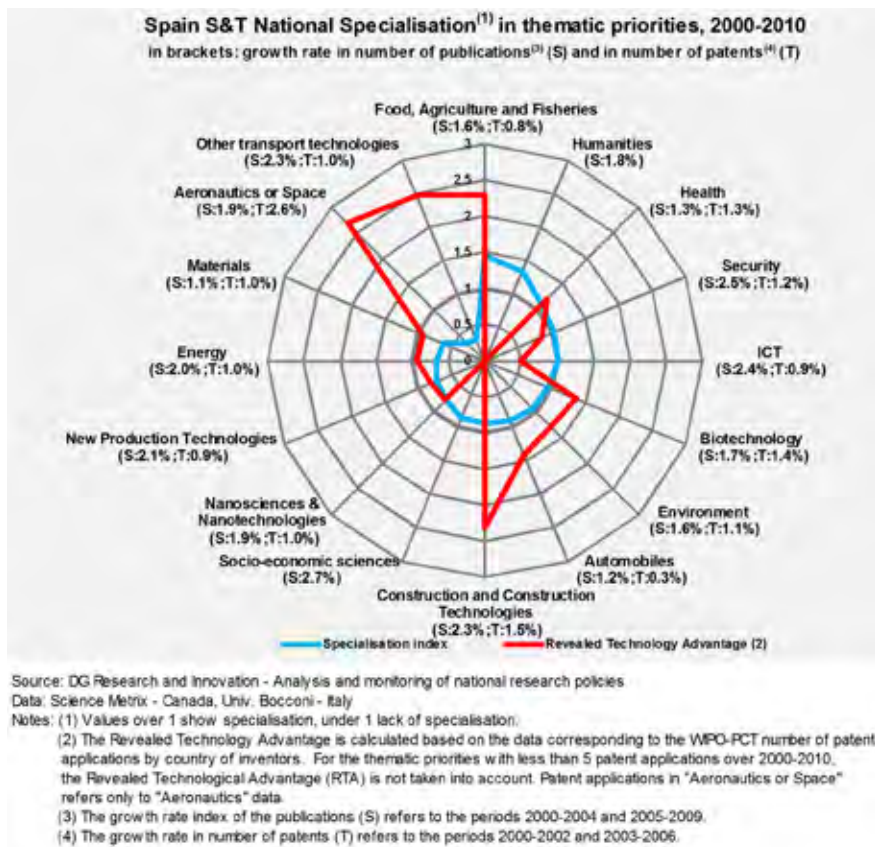
<b>Areas of marked S&amp;T specialisations:</b> Food, agriculture and fisheries, transport technologies, construction technologies, environment and biotechnologies	<b>HT + MT contribution to the trade balance</b> 2012: 3.3 % (EU: 4.23 %; US: 1.02 %) 2007-2012: +15.9 % (EU: +4.8 %; US: -32.3 %)
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*Source: Commission Staff Working Document "Research and Innovation performance in the EU. Innovation Union progress at country level 2014"*

The total expenditure in R&D amounted to 1.24% of the GDP with a total of \$17,960 million in 2013 showing a rebound from the previous year, yet somehow constrained by the fiscal reforms that the country of Spain had been forced to which inevitably forced a downsize in the public investment. A note of consideration while measuring the R&D investment intensity is that in the business-sector over the period prior to the financial crisis the total BERD was growing at the staggering pace of 13.7% and since then a correction took place of an average of -3.2% over the last five years. Nonetheless the trend has shifted and currently is picking back up again showing robust symptoms of growth by both the private and public investment -in a ratio of 78% investment made by company's own resources.

Internationally, noteworthy the outstanding performance of Spain in the 7th Framework Program (FP7) was well above the European Union average and with a sustained positive growth. Also Spain increased over time the number of international scientific co-publications bringing the country in par with the outcomes of similar European economies a process that it was helped at large by the gradual connection of Spain with major European research hubs. In regard with the Horizon2020 (H2020) as per the publication of the Commission on the 1st Results for the 100 published calls to date the country of Spain was 4th close to 12.000 eligible proposals with a success rate slightly over 14%. The number of signed grant agreements, an indicator that shows the return to Spain in monetary terms, was around 11% ranking third among all participant countries to the H2020.

Based on the FP7 thematic priorities the graph below illustrates the areas where Spain shows scientific and technological specialisation to remark notably based on the number of patents the following: aeronautics and space, transport, food & agriculture & fisheries, construction; to a less degree: automobiles, energy, environment, materials, bio and health.



A study of the specialization index by the most-cited publications shows that the largest number of scientific articles is produced by order of importance in the fields of health, information and communications technologies and food, agriculture and fisheries.

In 2013 the Spanish Strategy for Science, Technology and Innovation and the State Plan for Scientific and Technical Research and Innovation were adopted with objectives well aligned with those of Europe 2020, the Innovation and H2020. The main issues addressed are governance system, knowledge transfer between actors, human resources and funding allocation. In this later aspect, the overall strategy is to simplify the allocation of funding for R&D via two main agencies: the new national research agency (AEI, recently established at the end of 2015 and on the process of initiating its activities) and the agency for innovation (CDTI).

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
<p>Programme Individual &amp; Cooperation R&amp;D Projects  <a href="http://www.cdti.es/index.asp?MP=7&amp;MS=20&amp;MN=3">http://www.cdti.es/index.asp?MP=7&amp;MS=20&amp;MN=3</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research</li> <li>▪ Funding Organisation: CDTI</li> <li>▪ Call Opening/Closing Date: Open</li> <li>▪ Participation Qualification: Registered and R&amp;D activities carried in Spain</li> <li>▪ Project Duration: from 12 to 36 months</li> <li>▪ Funding Scale and Funding Scheme: minimum budget for a) Individual R&amp;D project minimum 175.000 EUR, and b) group of affiliated or associated companies 500.000 EUR. Maximum budget covers up to 75% of the total approved budget, in a combined modality of loan (Euribor one-year interest rate) and grant (ranging between 5 to 30% of financed amount depending upon the characteristics of the project and the beneficiary)</li> </ul>
<p>Programme Individual &amp; Cooperation R&amp;D Projects  <a href="http://www.cdti.es/index.asp?MP=7&amp;MS=20&amp;MN=3">http://www.cdti.es/index.asp?MP=7&amp;MS=20&amp;MN=3</a></p>	<ul style="list-style-type: none"> <li>▪ Research Fields: horizontal</li> <li>▪ Matching fund from Korean government: no</li> <li>▪ Others: beneficiaries have to do their research activities in the territory of Spain</li> </ul>
<p>Programme CIEN  <a href="http://www.cdti.es/index.asp?MP=7&amp;MS=17&amp;MN=2&amp;TR=C&amp;IDR=2358">http://www.cdti.es/index.asp?MP=7&amp;MS=17&amp;MN=2&amp;TR=C&amp;IDR=2358</a></p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Joint Research</li> <li>▪ Funding Organisation: CDTI</li> <li>▪ Call Closing Date: 5th May 2015 (yet not announced for 2016)</li> <li>▪ Participation Qualification: Registered and R&amp;D activities carried in Spain</li> <li>▪ Project Duration: from 36 to 48 months</li> <li>▪ Funding Scale and Funding Scheme: Financing up to 75% of the activities with a combination of loan (Euribor one-year interest rate) and grant (30%). Financing from a minimum of 7.000.000 to a maximum of 20.000.000 EUR</li> <li>▪ Research Fields: Strategic for Spain</li> <li>▪ Matching fund from Korean government: no</li> <li>▪ Others: beneficiaries have to do their research activities in the territory of Spain</li> </ul>

<p>Horizon2020  <a href="http://www.cdti.es/index.asp?MP=7&amp;MS=39&amp;MN=3">http://www.cdti.es/index.asp?MP=7&amp;MS=39&amp;MN=3</a></p>	<ul style="list-style-type: none"> <li>■ Cooperation Type: Joint Research</li> <li>■ Funding Organisation: H2020</li> <li>■ Call Opening/Closing Date: Thematic Call for Proposals (1 or 2 / year)</li> <li>■ Participation Qualification: Registered R&amp;D activities carried in Spain, and within an international consortium</li> <li>■ Project Duration: Not fixed</li> <li>■ Funding Scale and Funding Scheme: between 50% to 75% of eligible costs in the form of subsidy</li> <li>■ Research Fields: Thematic</li> <li>■ Matching fund from Korean government: no (though highly recommended)</li> </ul>
<p>EUREKA NETWORK &amp; CLUSTER  <a href="http://www.cdti.es/index.asp?MP=7&amp;MS=563&amp;MN=3&amp;TR=C&amp;IDR=77">http://www.cdti.es/index.asp?MP=7&amp;MS=563&amp;MN=3&amp;TR=C&amp;IDR=77</a>;          EUROSTARS (<a href="http://www.cdti.es/index.asp?MP=7&amp;MS=554&amp;MN=3">http://www.cdti.es/index.asp?MP=7&amp;MS=554&amp;MN=3</a>)</p>	<ul style="list-style-type: none"> <li>■ Cooperation Type: Joint Research</li> <li>■ Funding Organisation: CDTI</li> <li>■ Call Opening/Closing Date: Contingent to the subprogram and type of agreements with partner agencies</li> <li>■ Participation Qualification: Registered R&amp;D activities carried in Spain, and within an international consortium, including enterprises as lead investigators, as well as research institutes and universities</li> <li>■ Project Duration: from 12 to 36 months</li> <li>■ Funding Scale and Funding Scheme: up to 75% of eligible costs in the form of loan at 0% with a relative grant of up to 30%. In the case of Eurostars, in the form of grant ranging between 40% to 60% of eligible costs</li> <li>■ Research Fields: Thematic</li> <li>■ Matching fund from Korean government: yes (highly recommended)</li> </ul>
<p>Programme Retos-Colaboracion  <a href="http://bit.ly/1y8cO4B">http://bit.ly/1y8cO4B</a></p>	<ul style="list-style-type: none"> <li>■ Cooperation Type: Joint Research between companies and research institutes under societal challenges</li> <li>■ Funding Organisation: Secretariat for Research, Development and Innovation at the Ministry of Economy &amp; Competitiveness</li> <li>■ Call Opening/Closing Date: 24/01/2015-24/02/2015 (Annual Call, yet not announced for 2016)</li> <li>■ Participation Qualification: Registered and R&amp;D activities carried in Spain in collaboration between enterprises, research institutes and universities</li> <li>■ Project Duration: Not fixed</li> <li>■ Funding Scale and Funding Scheme: Variable funding in the form of grant and loan</li> <li>■ Research Fields: Horizontal</li> <li>■ Matching fund from Korean government: no</li> <li>■ Others: beneficiaries have to do their research activities in the territory of Spain.</li> </ul>

### 3. Joint Activities with Korea in 2016

Spain and the Republic of Korea have recently signed Memorandum of Understanding with MSIP for basic research collaboration and with MOTIE for applied research collaboration covering various forms of joint collaboration.

The following table shows only the programs for joint applied research collaboration.

#### List of Programmes of Activities with RoK in 2015

Programme Title	Contents
<p>Korea -Spain Bilateral Call for Proposals in EUREKA  <a href="http://www.eurekanetwork.org/">http://www.eurekanetwork.org/</a></p>	<ul style="list-style-type: none"> <li>■ Activity (Programme) Outline: EUREKA bilateral call for proposals, as follows : Call 1 with closing date of 31 March 2016; and, call 2 closing date 31 August 2016</li> <li>■ Major topic or agenda: Bilateral Call for Proposals between Spain and South Korea under the EUREKA programme. Managed by KIAT in Korea and CDTI in Spain.</li> <li>■ Target Participants: companies with joint R&amp;D proposals. Additionally, research institutes and universities are encourage to participate.</li> <li>■ Relevant Information: The objective is to promote, assist and fund the development of joint technology cooperation between South Korea and Spain in areas of mutual interest for the purpose of generating economic benefit for both countries. Relevant information can be found in the web page of EUREKA (search "spain and korea call for proposals").</li> </ul>

### 4. Others

Since the incorporation of South Korea in the Eureka initiative Spain has been Korea's best partner with 38 projects certified (to this date of January 2016, and including all modalities: Individual, Umbrella, Cluster and Eurostars) a signal of the strong synergies that can be developed under this initiative for technology collaboration between entities of Spain and Korea.

In short, Spain and Korea are capitalizing on the EUREKA/EUROSTARS platform for the collaboration, with the commitment of dedicated funds and appropriate human resources for the promotion and evaluation.





# PART 27

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## SWEDEN

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# SWEDEN



## Country Outline

- GDP: 444,617 mil. euros (Eurostat 2015)
- GDP per Capita: 45,400 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Life Sciences, Mining, Minerals and Steel, Forest Products and Biomass, Sustainable Urban Management, Aerospace, Energy, ICT

## Contact Information

- Organisation: Swedish Agency for Growth Policy Analysis, Embassy of Sweden
- Name / Position: Dr. Niklas Z Kviselius / Science & Innovation Counsellor
- Phone no. / e-mail: (+81) 80-4189-1276 / Niklas.Kviselius@growthanalysis.se

Sweden is a creative country characterized by pioneering ideas and new ways of thinking and doing in order to shape our future in a global community. People in all parts of Sweden are willing to contribute to create value for people, the economy and the environment by implementing new or improved solutions. Sweden's innovation system in 2015 is once more in the first position in the EU (The Innovation Union Scoreboard 2015) with the overall ranking remaining relatively stable.

## 1. Policies and Strategies in Science, Technology and Innovation

### Innovation Policy

Sweden is an Innovation leader. Sweden performs above the average of the EU countries for most indicators, especially for International scientific co-publications, R&D expenditures in the business sector, Public-private scientific co-publications and PCT patent applications in societal challenges. Relative weaknesses are in Sales share of new innovations and Knowledge-intensive services exports. The public commitment to a strong innovation climate in governmental, regional or municipal level translates into practical politics within three areas:

#### (1) Well-functioning framework conditions:

Sweden's innovation climate is based on well-functioning and stable framework conditions along with various incentives and means of control. Examples of such framework conditions are stable state finances, free and open markets with effective competition, functioning trade, regulations and structures for taxation, labour market, financial markets, education and research systems, and a suitable intellectual property protection system. Not only public rules and regulations but also private actors' norms and entrepreneurship make a significant contribution to Sweden's innovation framework conditions.

**(2) Innovation in public services, generating demand for innovation:**

The public service's capability to be innovative and the public sector's contribution to the demand for innovation in society are key criteria. This includes setting proper political goals, influencing the formulation of standards and designing efficient procurement processes.

**(3) Direct measures targeting innovation processes:**

Direct measures targeting innovation processes can take the form of financing of innovation activities and entrepreneurship, and advocacy – e.g. providing advice or support to collaborative projects for research and innovation. They may also be a matter of financing knowledge and innovation infrastructures such as incubators, the formation of clusters or networks and test and demonstration facilities.

**R&D policy and funding**

Sweden's R&D expenditure is 3.42% of its GDP. The government's appropriation for R&D was 3.9 billion USD in 2015 and 50% of the total R&D fund was allocated to the higher education sector. The Swedish Research Council, the largest civil recipient of the R&D fund, received 2.68 billion USD in 2015. 72 percent of the R&D fund in the government budget was for general advancement of knowledge. The objective for general advancement of knowledge is divided into 6 fields, including medicine and health science (34%) and natural science (28%).

The central government is the largest financier of research at higher education institutions. For research and post-graduate education to higher education institutions the most important central government financiers outside the direct state contributions are the research councils (Swedish Agency for Innovation Systems and other research-funding agencies). Research funding also comes from research foundations such as the EU, municipalities and county councils. In order to enhance the quality of Swedish research the Government is investing in international recruitment of top researchers. This initiative is being managed by the Swedish Research Council. Young researchers' careers are often impeded by short-term and insufficient funding of research projects making it difficult for them to build independent research. Thus the Swedish Research Council is funding research positions and projects primarily for younger researchers.

There are four major research-funding agencies. The largest is the Swedish Research Council which in 2014 shared out about 668 million USD to basic research in natural sciences, technology, medicine, humanities and social sciences. The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas) supports basic and needs-driven research in the fields of environment, land-based industries and spatial planning. In 2014, Formas distributed about 136 million USD. The Swedish Research Council for Health, Working Life and Welfare (Forte) supports and initiates basic and needs-driven research in the fields of the labor market, work organization, work and health, public health, welfare, the social services and social relations. The organization distributed 62 million USD in 2014. The Swedish Governmental Agency for Innovation Systems (VINNOVA) distributed about 292 million USD in 2014 primarily to needs-driven research in the fields of technology, transport, communications and working life. Several other agencies finance research funding in various areas as well. A number of research funding foundations were established in the mid-1990s using capital from the former wage earner investment funds. These foundations include the Swedish Foundation for Strategic Research (SSF), the Foundation for Strategic Environmental Research (MISTRA), the Knowledge Foundation (KK), the Foundation for Baltic and East European Studies, the Swedish Foundation for Health Care Sciences and Allergy Research (Vårdal) and the Swedish Foundation for International Cooperation in Research and Higher Education (STINT). Also support from public research foundations is an important addition to the central government investments in research. For example the Bank of Sweden Tercentenary Foundation (RJ) is a foundation created with public funding that supports research in Humanities and Social Sciences.

Many private financiers also provide a significant contribution to research. For example the three largest Wallenberg Foundations distributed grants totaling 240 million USD in 2014. Grants are primarily intended to fund research in the fields of medicine, technology and natural sciences. In addition, the Swedish Cancer Society distributed 48 million USD in 2013 for research in its field.

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
<p>Korea-Sweden Research Cooperation Program (STINT)</p>	<ul style="list-style-type: none"> <li>▪ STINT, The Swedish Foundation for International Cooperation in Research and Higher Education, supports research projects between Korean and Swedish universities in cooperation with National Research Foundation of Korea (NRF) for up to 3 years.</li> <li>▪ STINT invests about 70,500 USD per a three-year project in the Joint Korea-Sweden Research Collaboration programme for the time period of 2016-2019. NRF will provide funding for the Korean side.</li> <li>▪ The cooperation type is mobility and calls open to various research fields. Calls usually open approximately in August/September and close September/October for the next year program. Applications submitted for the 2016 program are in the process of evaluation. Calls for the 2017 program would open in August 2016.</li> <li>▪ Project duration is up to three years.</li> <li>▪ <a href="http://www.stint.se/en/scholarships_and_grants/korea-sweden">www.stint.se/en/scholarships_and_grants/korea-sweden</a></li> <li>▪ Contact person: <a href="mailto:mattias.lowhagen@stint.se">mattias.lowhagen@stint.se</a></li> </ul>
<p>Program for Korea Collaboration (SSF)</p>	<ul style="list-style-type: none"> <li>▪ The Swedish Foundation for Strategic Research (SSF) and the National Research Foundation of the Republic of Korea (NRF) launched a joint programme with a purpose of stimulating collaborative, focused research projects involving highly qualified groups in Korea and Sweden.</li> <li>▪ NRF and SSF have set aside the equivalent 3.65 million USD each to cover these Korean-Swedish collaborative projects of the highest international scientific standard.</li> <li>▪ SSF and NRF have selected about 9 projects that have been supported by research grants for joint seminars, conferences, workshops and exchanges of individuals between the applying groups over a period of six years. The research fields include material science, biomedical engineering, and ICST. In 2016, both organizations will support these 9 projects as continuing projects.</li> <li>▪ Contact person: <a href="mailto:Joakim.Amorim@stratresearch.se">Joakim.Amorim@stratresearch.se</a></li> </ul>

<p>Sweden-Korea Collaboration Program (SRC)</p>	<ul style="list-style-type: none"> <li>▪ The Swedish Research Council (SRC) has an ongoing bilateral collaboration with the National Research Foundation of Korea, NRF. A typical project lasts two years with 50,000 USD per year provided by each side.</li> <li>▪ Call for the 2016 program opens in April/May and closes in September/October. The research field for the call is 'Drug discovery research through cell differentiation control (stem cell, cancer cell, immune cell, neuron cell, etc.)'</li> <li>▪ SRC is using a Lead Agency Procedure with NRF. For the 2016 program NRF will take a role of a lead agency.</li> <li>▪ More info (in preparation) : <a href="http://www.vr.se/inenglish/">http://www.vr.se/inenglish/</a></li> <li>▪ Contact person: <a href="mailto:annette.MothWiklund@vr.se">annette.MothWiklund@vr.se</a></li> </ul>
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### 3. Joint Activities with Korea in 2016

Not Applicable

### 4. Others

#### Key Research Organisations and Companies

Organisation Name	Detailed information
<p>Chalmers  <a href="http://www.chalmers.se/en/Pages/default.aspx">http://www.chalmers.se/en/Pages/default.aspx</a></p>	<p>Chalmers is a highly progressive technical university situated in Gothenburg, Sweden. Recently, nine researchers from Sweden and nine from South Korea received a total of 7.3 million USD for research collaboration of the highest international standards. The initiative is funded by the Swedish Foundation for Strategic Research (SSF) in conjunction with the National Research Foundation of the Republic of Korea(NRF). Two of the researchers are from Chalmers (physical chemistry and quantum device physics).</p>
<p>Royal Institute of Technology  <a href="http://www.kth.se/en">http://www.kth.se/en</a></p>	<p>KTH Royal Institute of Technology in Stockholm is the largest and the oldest technical university in Sweden. No less than one-third of Sweden's technical research and engineering education capacity at university level is provided by KTH. For a number of years KTH and KAIST have had collaborative agreements such as reciprocal two-year postdoc positions and six-month guest research positions in the field of medical engineering.</p>

# SWEDEN

<p>Linköping University  <a href="http://www.liu.se/?l=en">http://www.liu.se/?l=en</a></p>	<p>Linköping University is a research-based university with excellence in education. The university is a multi-faculty university in which research and education are equally important. Linköping University has been an innovator since the establishment in the late 1960s creating new study programmes and new ways to tackle research problems. Linköping University's current research collaboration with Korea includes material science and biotechnology.</p>
<p>Lund University  <a href="http://www.lunduniversity.lu.se/">http://www.lunduniversity.lu.se/</a></p>	<p>Lund University (LU) is ranked as one of the top 100 in the world. LU tackles complex problems and global challenges. The university tries to ensure that knowledge and innovations benefit society. LU provides education and research in engineering, science, law, social sciences, economics and management, medicine, humanities, theology, fine art, music and drama. LU has collaboration with Korean counterparts (e.g. Chemical Physics).</p>
<p>Karolinska Institutet  <a href="http://ki.se/en/ki/startpage-kise">http://ki.se/en/ki/startpage-kise</a></p>	<p>Karolinska Institutet (KI) is one of the world's leading medical universities. KI accounts for over 40 % of the medical academic research conducted in Sweden and offers the country's broadest range of education in medicine and health sciences. KI has a wide range of research collaboration with Korean counterparts, including cancer therapy.</p>
<p>Uppsala University  <a href="http://www.uu.se/en/">http://www.uu.se/en/</a></p>	<p>Established in 1477, Uppsala University is Sweden's oldest university. Uppsala University has been placed as one of the 100 best universities in the world during the last number of years with only a few exceptions. Concrete research collaboration with Korea includes cardiovascular diseases, stroke and neurodegenerative diseases like Alzheimer's.</p>





# PART 28

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## UNITED KINGDOM

1. Policies and Strategies in Science, Technology and Innovation
2. National Programmes and Initiatives
3. Joint Activities with Korea in 2016
4. Others

# UNITED KINGDOM



## Country Outline

- GDP: 2,568,941 mil. euros (Eurostat 2015)
- GDP per Capita: 39,500 euros (Eurostat 2015)
- Areas of Marked S&T Specialisations: Biotechnology, Maths, Advanced Materials, Control Systems, Electronics, Engine Technology & Management, Green Manufacturing Energy, Aeronautical Engineering, Formulation Science, Specialty Chemicals, Novel Pharmaceuticals, and Automobiles

## Contact Information

- Name / Position: Mr. Gareth Davies / Head of Science and Innovation, British Embassy Seoul
- Phone no. / e-mail: (+82) 2 3210 5628 / gareth.Davies2@fco.gov.uk

The United Kingdom enjoys a long history of excellence in both basic and applied sciences. With only 4.1% of the world's researchers globally and 3.2% of global R&D expenditure the UK generates 11.6% of all citations and 15.9% of the world's most cited papers. The UK was ranked second overall in the 2015 Global Innovation Index. The World Economic Forum Global Competitiveness Report 2015-16 ranked the UK second in the world for quality of research institutions and fourth for university to industry collaborations. Four of the world top ten universities are in the UK (QS World University Rankings 2015/2016).

## 1. Policies and Strategies in Science, Technology and Innovation

The UK published its most recent national strategy for STI development in December 2014, under the title Our plan for growth: science and innovation. Recognizing that science and innovation must remain at the centre of UK long term economic growth, the strategy has highlighted six elements in order to be the best place in the world for science and business.

These key elements are:

- Deciding priorities – using the focus areas of the UK's Industrial Strategies and 8 Great Technology to support our growth ambitions (details for how to access these documents below).
- Nurturing scientific talent – increasing the number and quality of STI teachers at UK school and supporting the opportunity and financial support to pursue vocational and postgraduate study.
- Investing in our scientific infrastructure – the UK Government has committed GBP 5.9bn to science capital investments from 2016 to 2021, including

investments in new national centres for advanced materials and big data, and new investment in space, energy and aging society related research.

- Supporting research – working in partnership with the UK's universities and the Research Councils, the UK will identify existing best practice and seek to evolve its research funding systems to generate the best possible research output.
- Catalysing innovation – by expanding the UK's network of Catapult Centres supporting strategic partnerships between academia and industry, and by providing new financial support models for small innovative businesses.
- Participating in global science and innovation – supporting the development of new cross-border research projects, and promoting partnership within new international research initiatives and funding programmes, including the European Research Area, Horizon2020 and the Eureka Network.

The UK has prioritized its STI development in areas of existing strength and emerging technology opportunities. Starting with life sciences in 2011 ten national support strategies have been published to promote the growth of UK industry through investment in technology, support for new sector partnerships and access to finances. Alongside the industrial strategies the Eight Great Technologies report published in 2013 highlighted the emerging fields of technologies where existing expertise can be leveraged for new economic growth.

UK Industrial Strategies	Eight Great Technologies
Aerospace	Advanced Materials
Agricultural Technologies	Agri-Science
Automotive Engineering	Big Data
Construction	Energy Storage
Education	Quantum Computing (added in 2014)
Information Economy	Regenerative Medicine
Nuclear Energy	Robotics & Autonomous Systems
Oil & Gas	Satellites
Professional Business Services	Synthetic Biology
Renewable Energy	

A further significant development within the UK's STI environment has been the creation of the UK's innovation support agency, Innovate UK, formerly known as the Technology Strategy Board. Now nearly a decade old, Innovate UK has a budget of over GBP 400 million in 2014 to provide a range of services and programmes to support the commercialization of the best of UK research.

In 2010, and under the management of Innovate UK, the UK announced the creation of the Catapult Centres – organisations created in targeted innovation fields to provide a translational infrastructure to support and close the gap between universities and industry. To date seven Catapults have been launched in the fields of cell therapy, connected digital economy, future cities, high value manufacturing, offshore renewable energy, satellite application and transport systems. Two further Catapults in energy systems and diagnostics for stratified medicine will soon be opened.

While the above details the current drivers for science, research and innovation in the UK in January 2016 it was announced that a new UK Innovation Plan is to be developed. Information on the Plan is expected for publication via the UK Government's [www.gov.uk](http://www.gov.uk) website later in 2016.

Further information on the above can be found online:

Our plan for growth: science and innovation

[www.gov.uk/government/publications/our-plan-for-growth-science-and-innovation](http://www.gov.uk/government/publications/our-plan-for-growth-science-and-innovation)

Industrial Strategy: government and industry in partnership

[www.gov.uk/government/collections/industrial-strategy-government-and-industry-in-partnership](http://www.gov.uk/government/collections/industrial-strategy-government-and-industry-in-partnership)

Eight Great Technologies

[www.policyexchange.org.uk/images/publications/eight%20great%20technologies.pdf](http://www.policyexchange.org.uk/images/publications/eight%20great%20technologies.pdf)

Innovate UK

[www.gov.uk/government/organisations/innovate-uk](http://www.gov.uk/government/organisations/innovate-uk)

Catapult Centres

[www.catapult.org.uk](http://www.catapult.org.uk)

## 2. National Programmes and Initiatives

### List of National Programmes open to the world

Programme Title	Contents
<p>UK-Korea Focal Point Programme</p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Networking and Knowledge Exchange</li> <li>▪ Funding Organisation: UK Department for Business, Innovation and Skills</li> <li>▪ Call Opening/Closing Date: Typically opening in November and closing in February</li> <li>▪ Participation Qualification: UK and Korean researchers interested in exploring collaboration within a topic area of strategic interest to both countries to identify future bilateral cooperation research opportunities</li> <li>▪ Project Duration: Up to two years</li> <li>▪ Funding Scale and Funding Scheme: Up to GBP 15,000 for UK participants. Typically five networking activities are selected each year.</li> <li>▪ Research Fields: All fields within the basic sciences in line with bilateral strategic interests</li> <li>▪ Matching fund from Korean government: Korean funding supported by the Ministry of Science, ICT and Future Planning</li> </ul>
<p>Medical Research Council – Korea Health Industry Development Institute Partnering Awards</p>	<ul style="list-style-type: none"> <li>▪ Cooperation Type: Networking and Knowledge Exchange</li> <li>▪ Funding Organisation: Medical Research Council (MRC)</li> <li>▪ Call Opening/Closing Date: Opening November and closing in January</li> <li>▪ Participation Qualification: UK and Korean researchers interested in exploring new and developing existing healthcare research collaborations, with the aim to identify projects and programmes for longer term, larger scale national funding</li> <li>▪ Project Duration: One year</li> <li>▪ Funding Scale and Funding Scheme: Up to GBP 10,000 for UK participants, with an equal amount of matched funding provided to Korean participants. Up to 10 proposals will be funded each year. Funding can be used to support travel, visits and access to facilities, workshops and networking, researcher exchange, and other similar collaborative activities.</li> <li>▪ Research Fields: All fields within the basic sciences in line with bilateral strategic interests</li> <li>▪ Matching fund from Korean government: Korean funding supported by the Ministry of Health and Welfare</li> <li>▪ Further information can be found via the MRC website:</li> <li>▪ <a href="http://www.mrc.ac.uk/funding/browse/2015-mrc-khidi-uk-korea-partnering-awards/">www.mrc.ac.uk/funding/browse/2015-mrc-khidi-uk-korea-partnering-awards/</a></li> </ul>

### 3. Joint Activities with Korea in 2016

For information on upcoming events and activities please visit the British Embassy Seoul website at [www.gov.uk/government/world/south-korea](http://www.gov.uk/government/world/south-korea).

### 4. Others

The Research Councils UK are the UK's primary scientific and engineering research funding organisations. While funding is typically not awarded to overseas researchers all of the Research Councils welcome grant submissions that made in partnership with overseas researchers. Recently several of the Research Councils have initiated 'International Co-Investigator' programmes that provide funding to overseas researchers. For further information please visit the website of the Research Council relevant to your area of research. Website details are provided below.

#### Key Research Organisations and Companies

Organisation Name	Detailed information
Research Councils UK (RCUK)	<ul style="list-style-type: none"><li>Contact Information: <a href="http://www.rcuk.ac.uk">www.rcuk.ac.uk</a></li></ul>
Arts and Humanities Research Council (AHRC)	<ul style="list-style-type: none"><li>Organisation Type: Research Funding Agency</li><li>Contact Information: <a href="http://www.ahrc.ac.uk">www.ahrc.ac.uk</a></li></ul>
Biotechnology and Biological Sciences Research Council (BBSRC)	<ul style="list-style-type: none"><li>Organisation Type: Research Funding Agency</li><li>Contact Information: <a href="http://www.bbsrc.ac.uk">www.bbsrc.ac.uk</a></li></ul>
Economic and Social Sciences Research Council (ESRC)	<ul style="list-style-type: none"><li>Organisation Type: Research Funding Agency</li><li>Contact Information: <a href="http://www.esrc.ac.uk">www.esrc.ac.uk</a></li></ul>
Engineering and Physical Sciences Research Council (EPSRC)	<ul style="list-style-type: none"><li>Organisation Type: Research Funding Agency</li><li>Contact Information: <a href="http://www.epsrc.ac.uk">www.epsrc.ac.uk</a></li></ul>
Medical Research Council (MRC)	<ul style="list-style-type: none"><li>Organisation Type: Research Funding Agency</li><li>Contact Information: <a href="http://www.mrc.ac.uk">www.mrc.ac.uk</a></li></ul>
Natural Environment Research Council (NERC)	<ul style="list-style-type: none"><li>Organisation Type: Research Funding Agency</li><li>Contact Information: <a href="http://www.nerc.ac.uk">www.nerc.ac.uk</a></li></ul>
Science and Technology Facilities Council (STFC)	<ul style="list-style-type: none"><li>Organisation type: Research Funding and Infrastructure Support Agency</li><li>Contact Information: <a href="http://www.stfc.ac.uk">www.stfc.ac.uk</a></li></ul>

# 2016 Science, Technology and Innovation in Europe



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