



Research and innovation underpinning France's attractiveness to investment

At a time when research is becoming an increasingly global activity, France offers a wide range of decisive advantages: a pool of highly-qualified researchers; world-class research centers that are strengthening their links with businesses; and government incentives designed to stimulate public-private partnerships.

IN EUROPE AND THE WORLD, FRANCE ENJOYS A HIGH STANDING IN THE INTERNATIONAL RANKINGS:

🏆 **2nd** in the world for Fields medals (mathematics), after the United States and **3rd** in Europe for the number of Nobel prizes obtained in scientific disciplines since 1950.

🏆 **3rd** in Europe and **6th** in the world for scientific publications in 2008.

(2010 report by the Observatoire des Sciences et des Techniques)

🏆 **2nd** in Europe and **6th** in the world for the number of international patents filed in 2010. *(WIPO 2011)⁽¹⁾*

🏆 **3rd** in Europe for the number of researchers (274,000), after Germany and the United Kingdom *(Eurostat, 2011)*

but with 8.4 researchers for every 1,000 employees, France is ahead of Germany (7.2), the United Kingdom (5.6) and the Netherlands (5.1). *(OCDE, 2010)*

▶▶ **France is a place that takes research seriously. First of all, the education system there is excellent: you only have to look at the number of scientists it produces. Secondly, it's a place where the government actively encourages R&D. When you have all that, anything's possible."**

Robert Lu,
President, China National BlueStar

1. An environment of excellence

France's universities and research institutes have become more powerful and are more open than ever to forming partnerships with French and foreign firms, positioning themselves to play a full part in global research and innovation networks.

UNIVERSITIES

The recently established independence of French universities means they now have the power to organize their training courses to meet the needs of their students and the job market, to promote new niches of scientific excellence, to recruit highly-qualified researchers and to develop cooperative partnerships with companies.

Meanwhile, the creation of university foundations (32 since 2007) allows them to tap into private funding for collaborative projects. Universities can also create subsidiaries or acquire holdings in the capital of innovative companies to accelerate technology transfers.

POWERFUL PUBLIC-SECTOR RESEARCH BODIES

→ THE CNRS (National Center for Scientific Research)

The National Center for Scientific Research is France's principal multidisciplinary research body, which conducts research in all scientific, technological and sociological fields.

With 16 Nobel Prize winners and 11 Fields medal winners, the CNRS has a long tradition of excellence.

→ **THE CEA (French Atomic Energy and Alternative Energies Commission)**

Set up following the Second World War to conduct research into the uses of atomic energy, the CEA was renamed the French Atomic Energy and Alternative Energies Commission in 2009.

It is now a major player in the field of low-carbon energies, as well as in information technologies, health, defense and global security. It has 10 research centers and employs almost 16,000 people.

→ **INRA (French National Institute for Agricultural Research)**

INRA is the leading crop science research body in Europe, studying agriculture, food and the environment.

It has 8,500 employees and almost 150 research and experimentation sites.

→ **INRIA (French National Institute for Research in Computer Science & Control)**

INRIA has 3,400 employees and eight research centers.

INNOVATION CLUSTERS

France's 71 innovation clusters (cf. Appendix II) unite researchers and manufacturers from the same industry in a region and showcase the diversity of France's key sectors. Over 6,500 companies belong to these clusters, including 670 foreign companies.

A quarter of foreign-owned establishments in the clusters belong to American groups. Among European countries, Germany has the most cluster members, followed by the Netherlands.

In these open 'ecosystems', companies can develop partnerships and synergies with universities and research laboratories on collaborative R&D projects with an international profile. As part of a responsive network of companies, researchers and clients, cluster members gain access to the expertise and talent they need. They also benefit from innovation platforms and tailored services, while receiving direct subsidies, tax exemptions and tax credits.

Between 2006 and 2010, 4,600 collaborative projects received more than €3.6 billion in state funding.

2. A wide range of support for research in France

As well as funding for public-sector research, programs to stimulate corporate R&D and public-private partnerships, France also has research schemes that can benefit companies.

FRANCE'S RESEARCH TAX CREDIT: REDUCING THE COST OF CORPORATE R&D OPERATIONS

→ 40% of R&D costs are deductible in the first year, 35% in the second year and 30% in subsequent years, up to €100 million; beyond this threshold, 5% of costs are deductible (no ceiling).

→ The research tax credit rate is doubled for R&D outsourced to public-sector laboratories⁽²⁾.

→ The salaries of junior final-year doctoral and post-doctoral research personnel signing their first permanent contract with a company in France are counted in the research tax credit base at four times their nominal amount⁽³⁾.

Over 15,000 companies claimed the research tax credit in 2009, of which almost 2,130 were foreign-owned. The total sum of research tax credits granted was €4.7 billion.

For further information, visit the French Ministry for Higher Education and Research website:
<http://www.enseignementsup-recherche.gouv.fr/pid24835/le-creditimpot-recherche.html>

►► **Personally, I think that thanks to the research tax credit reform in 2008, France is one of the countries that offers the most generous tax treatment of research and development.** ”

Lars Rebien Sorensen,
CEO, Novo Nordisk A/S

►► **France's research tax credit played a decisive role in our decision to expand our center in Buc, near Versailles, and to add to its activities for certain global markets, such as aerospace. As such, its availability has allowed us to make investments to develop a new business line in the field of smoke detection and fire extinction on rail rolling stock (locomotives, trains and coaches), creating a market which was hitherto practically non-existent.”**

François Gérin,
Assistant General Manager – Siemens France

NATIONAL RESEARCH AGENCY CALLS FOR PROJECTS

France's National Research Agency promotes research in France, notably by funding research projects selected through calls for projects after competitive tendering. Companies can also submit tenders and take part in projects in partnership with public-sector research bodies. The Agency's budget in 2011 is €750 million.

To find out more and view NRA invitations to tender, visit: <http://www.agence-nationale-recherche.fr>

To identify a potential public- or private-sector partner for your research, visit: <http://www.lemoteurdelarecherche.fr>

CONVENTION INDUSTRIELLE DE FORMATION PAR LA RECHERCHE (CIFRE): RECRUITING YOUNG RESEARCHERS.

CIFRE industrial research training contracts offer postgraduate students the opportunity to complete their doctorate in a company over a three-year period, in collaboration with a research team outside the company responsible for supervising their thesis. The company receives an annual fixed grant of €14,000 and pays the doctoral student a minimum gross annual salary of €23,500.

For further information: visit the National Association for Technical Research (ANRT) website: <http://www.anrt.asso.fr>

CARNOT INSTITUTES: CREATING PARTNERSHIPS WITH PUBLIC-SECTOR RESEARCH TEAMS TO SUPPORT YOUR PROJECT.

The purpose of France's 34 Carnot institutes is to tap into public-sector research resources to meet business innovation needs. **Every year, more than 5,000 R&D contracts are signed between businesses and the Carnot institutes.** They are organized into seven major fields of excellence (ICT; micro- and nano-technologies; materials; energy and environment; earth sciences; life sciences and healthcare; construction and, as of this year, social sciences). Carnot institutes employ approximately 25,000 researchers, accounting for a research budget of €1.9 billion. They generate almost €350 million in partnership revenues.

For further information:

<http://www.enseignementsup-recherche.gouv.fr/cid22127/recherchecontractuelle-les-instituts-carnots.html>

Example of a Carnot institute: QUALIMENT (Nutritional and sensory quality of foods)

This Carnot institute was accredited in 2011, has 516 researchers and a research budget of €43 million. It brings together a group of complementary teams capable of meeting industrial demands in relation to the sensory and nutritional quality targets of foods.

It comprises 11 entities organized around four research areas: taste/texture and food behavior, nutrition, structure of the food matrix and processes.

RESEARCH IN EUROPE: FRANCE, A MAJOR PLAYER IN FP7

The Seventh European Framework Program for Research and Technological Development (FP7) is the EU's main instrument for funding research in Europe, covering the period of 2007-2013. It has a budget of €50.5 billion, not including the Euratom budget for the next five years, which is €2.7 billion. FP7 supports research in selected priority areas, the aim being to claim or consolidate the EU's position as a global leader in these sectors.

For further information: www.ec.europa.eu/research

3. Innovation funding

OSEO: A KEY PLAYER IN FUNDING INNOVATIVE SMES

OSEO, the main provider of state aid to innovative SMEs and mid-size companies (*entreprises de taille intermédiaire* – ETI) in France, awarded **€650 million of funding for innovation in 2010**, corresponding to almost €2 billion of investment made by the companies being supported. OSEO offers a range of direct funding such as interest-free loans, repayable advances and grants for innovative projects, and is the body responsible for implementing the innovation cluster structural program (PSPC).

For further information: <http://www.oseo.fr>

► **France has become particularly dynamic in terms of innovation.**
Marco Battisti,
President (Western Europe and Israel),
Intel Capital

AID FOR SETTING UP R&D CENTERS

The “research, development and innovation” national development grant (PAT RDI)

Awarded throughout France, the primary objective of the “research, development and innovation” national development grant (*Prime à l'aménagement du territoire* – PAT) is to help mature companies boost their R&D work. It is mainly used to set up research centers in large companies and is awarded to corporate R&D programs or procedural and organizational innovations in services that generate:

- at least 20 new net permanent jobs;
- or research investment of at least €7.5 million.

For further information: <http://territoires.gouv.fr/la-pat-recherche-developpement-innovation>

LOCAL AUTHORITY AID FOR RESEARCH AND INNOVATION

Local authorities, mainly regions with statutory coordinating powers in local economic development, have created their own measures to support innovation. Aid from these sources usually complements assistance provided by the State or national bodies. Some regions have also set up venture capital investment funds, capable of supplementing the long-term financing of innovative businesses.

For further information, visit the website of each French region.

For further information on the different types of support available for innovation, visit the French Ministry for Higher Education and Research website at:
<http://www.enseignementsup-recherche.gouv.fr/pid24627/innovation.html>

4. Knowledge underpinning the “National Investment Program”

With its exclusive focus on projects generating growth and jobs in five strategic areas, the aim of the “National Investment Program” and its €35 billion state-funded budget is to underpin the competitiveness of the French economy. In total, €19 billion will be allocated to projects in higher education and research.

€10 BILLION FOR HIGHER EDUCATION

- **Initiatives of excellence (IDEX): €7.7 billion** to promote the development of five to 10 world-class higher education and research multidisciplinary centers of excellence.
- **‘Operation Campus’:** €1.3 billion to modernize French campuses.
- **The Saclay plateau:** €1 billion to build the largest scientific campus in Europe by 2020.

€9 BILLION FOR RESEARCH AND ITS COMMERCIALIZATION

- **Laboratories of excellence (LABEX) and equipment of excellence (EQUIPEX): €2 billion** to provide the best French research laboratories with improved resources and to invest in the latest equipment to enable them to compete internationally.
- **Technology research institutes (IRT): €2 billion** to create between 6 and 9 preferred partnership sites between the corporate and research worlds. Their dynamic and focused ‘ecosystems’ will facilitate the commercialization of research work.
- **Health, biotechnologies and university hospital institutes: €2.4 billion.**
- **Technology transfer acceleration companies (SATT).** These will act as “one-stop shops” to improve the research commercialization service provided to researchers and businesses. They will have a budget of €900 million.
- **“France Brevets”:** A new state investment fund responsible for establishing a wide portfolio of intellectual property rights and commercializing them on behalf of patent holders. The fund has a budget of €100 million, €50 million of which comes from the “commercialization” funds of France’s “National Investment Program” and €50 million from the French Government Investment Bank (CDC). “France Brevets” will underpin the work of SATTs.

€16 BILLION TO DEVELOP INDUSTRIAL SECTORS, SMES AND SUSTAINABLE DEVELOPMENT

Companies can respond to calls for projects or calls for expressions of specialist interest aimed at financing innovative and economically viable projects in future technology sectors.

The total amount of private and state investment expected thanks to the leverage effect of the “National Investment Program” is €60 billion.

For further information on the “National Investment Program” and calls for projects, visit:

<http://investissement-avenir.gouvernement.fr>

See also the “National Investment Program Glossary” on the French government innovation clusters website:

<http://competitivite.gouv.fr>

Examples of recent or ongoing calls for projects or expressions of interest:

- **Intelligent electrical systems** (June 2011)
- **Collection, sorting, recycling and recovery of waste** (June 2011)
- **Development of the digital economy** (June 2011)
- **Capture, geological storage, transport and recovery of CO₂** (May 2011)
- **Deployment of recharging infrastructure for electric and hybrid vehicles** (April 2011)
- **Hydrogen and fuel cells** (May 2011)
- **Energy storage** (May 2011)
- **Plant chemistry** (May 2011)

5. Opening up research to foreign investment

France has the third largest number of foreign students in the world, with almost 280,000 enrolments each year (up 73% between 1999 and 2009). Joint degrees between universities are increasing, at a time when mutual recognition of qualifications within Europe has tripled in four years.

The remit of the Campus-France Agency is to promote French higher education courses around the world and offer foreign students access to higher education in France. Its website has a catalogue of 36,000 higher education courses, 600 of which are taught in English.

<http://www.campusfrance.org/fr>

Foreign company R&D operations in France amount to over €5.7 billion, i.e. 22% of all entrepreneurial R&D costs in France or 14% of gross expenditure on research and development (GERD; 2008 figures).

In 2010, France was the second largest recipient in Europe by project numbers of foreign R&D investment (Ernst & Young's "European Attractiveness Survey" 2011). According to the latest assessment of job-creating foreign investment in France drawn up by the IFA, France attracted 51 R&D investment projects in 2010, 42 in 2009 and 21 in 2008, amounting to a total of 114 in the last three years.

►► **The reason for selecting France for R&D is the friendliness of the government agencies and the community in welcoming us, and obviously the tax credits for an R&D investment. The Saclay area is attractive because the investment in France in a major R&D center allows us to work closely with the university and allows us to work closely with external companies and technologies that we may not have internally."**

Chuck Davis,
R&D Vice-President - Kraft Foods Europe

^[1] For further information about filing patents: visit the National Institute for Industrial Property website: <http://www.inpi.fr/fr>

^[2] Research costs for R&D work outsourced to public-sector laboratories are double-counted in the research tax credit base. The reimbursement rate for these projects is therefore up to 60%.

^[3] Remuneration multiplied by two and overhead expenses double-counted.

EXAMPLES OF FOREIGN COMPANIES CONDUCTING THEIR RESEARCH AND DEVELOPMENT IN FRANCE

- Expansion of the British company **Cambridge Silicon Radio** which recruited for new engineering positions at its R&D center in Sophia-Antipolis (Provence-Alpes-Côte d'Azur region; 12 jobs).
- **The Entyrecycle Co. Ltd.**, another British company, decided to set up a recycling and reclamation center for used materials (tires), together with an R&D center in the Nord-Pas-de-Calais region. The investment is expected to create more than 240 jobs.
- The American group, **GE Transportations Systems**, chose to set up an R&D center in Ile-de-France (Paris region) that will specialize in the development of signaling technology for land-based public transport (50 jobs created).
- **Google Inc.** announced that it would be creating an R&D center in Ile-de-France (Paris region) to adapt and improve search engine performances. This project will create 200 jobs.
- The Irish company **Icon plc**, a global provider of outsourced development services for the health sector, is expanding its R&D center, Icon Clinical Research Sarl, in Ile-de-France (Paris region; 90 additional jobs).
- **LG Chem**, a South Korean firm, decided to set up an R&D center specializing in lithium battery design for the electric car industry in Ile-de-France (Paris region). This is expected to create around 10 jobs.
- A European biotechnology R&D center, specializing in technology used to measure low-abundance biomarkers, is being set up by the subsidiary of the American company **Singulex**, in the "Lyonbiopole" innovation cluster. The project is expected to create 15 jobs.
- **Transics**, a Belgian firm specializing in developing embedded IT and electronic solutions, is consolidating its French subsidiary DIS Transics in Alès (Languedoc-Roussillon region). Its restructured R&D operations will create 10 additional jobs.
- **Weicha Power**, a Chinese manufacturer of truck diesel engines and transmissions took over the Cassis-based equipment maker Famer Paca in the Provence-Alpes-Côte d'Azur region. The company also decided to create an R&D center on the same site. The project is expected to safeguard 40 jobs and create 50 new ones.
- The Canadian company **Westport Innovation**, a global leader in low-emission alternative fuel technologies confirmed it would be setting up its European headquarters in Lyon (Rhône-Alpes region). The company hopes to progressively expand all of its operations, such as the promotion of natural gas and biogas transport fuel. The presence of the LUTB (Lyon Urban Truck and Bus) innovation cluster was a key draw in attracting Westport Innovation to the area.

FRANCE'S INNOVATION CLUSTERS

