INDUSTRIAL RESEARCH & DEVELOPMENT
COOPERATION WITH SPAIN

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Index

1. Spain - STI Overview and Indicators
2. Introduction to CDTI – Spain’s National Innovation Agency and RTDI Funding
3. CDTI and RTDI Internationalization
4. Potential Areas for Industrial R&D Cooperation – Spain’s Technological Strengths
1. Spain - STI Overview and Indicators

- **R&D INTENSITY:** Spain’s R&D intensity has grown from 0.9% GDP in 2000 to 1.36% in 2014.

- **SCIENTIFIC PUBLICATIONS AND IMPACT:** 10th Scientific Power in the world by number of publications and 14th scientific power in terms of citations.

<table>
<thead>
<tr>
<th>Country</th>
<th>Documents</th>
<th>Citable documents</th>
<th>Citations</th>
<th>Self-Citations</th>
<th>Citations per Document</th>
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<td>5 Japan</td>
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<td>2,008,410</td>
<td>27,040,067</td>
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<td>944,632</td>
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</table>

- **R&D PERSONNEL:** 208,831 (12.1 per thousand labour force; 60.7% researchers 126,788).
1. Spain - STI Overview and Indicators

- **PATENT APPLICATIONS** (2013): 269,654 patent applications

  Spain = \textbf{0.3\%} of worldwide number of approved triadic patents.

- **HIGH TECH EXPORTS** (2012): 11.39 million euros (\textbf{9\%} annual growth)

- **SPAIN ranks 27TH** out of 143 countries on the Global Innovation Index 2014 INSEAD.

- **INNOVATIVE BUSINESS SECTOR**
  - 21,000 (2013) firms actively involved in innovation in their business models.
  - Spain \textbf{ranks 13} among the world's top 2,000 R&D investing firms. Companies mainly active in the ICT services sector, the pharma and biotech sectors, energy and industrial engineering sectors.
1. Spain - STI Overview and Indicators

*PROVISIONAL RESULTS (end of 2016) – HORIZON 2020

COMPARATIVE ANALYSIS PERFORMANCE EU COUNTRIES BY RETURN

Horizon 2020: Accumulated Return

Return 1.563,7 M€

10%

SPANISH COMPANIES LEAD BY RETURN, FOLLOWED BY UNIVERSITIES

Source: CDTI
Index

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2. Introduction to CDTI

**Centre for the Development of Industrial Technology**

- Created in 1977
- Public Entity (Secretariat of State for RDI, Ministry of Economy, Industry and Competitiveness, Spain).
- Business innovation financing agency
- Focal point for the promotion of technological innovation
- High national and international prestige

*Enhance Spanish companies’ competitiveness and internationalization through innovation*
2. Introduction to CDTI

Fosters **the technological development and innovation** of Spanish companies.

Channels the funding for national and international R&D&i.

Provides **financial and economic-technical assessment**.

Fosters the Spanish participation in **international technological cooperation programmes**.

Supports the **setting up and consolidating technological companies**.
2. Introduction to CDTI

Over 40 years supporting business RTDI

12,500 beneficiary companies

Business RTDI
Technological modernization
Internationalization
Participation in International Programs

EUR 21,890 million:
direct funding 14,000 million +
return of International Programs 7,890 million
2. CDTI - RTDI Funding

- R+D+I company process
  - Precompetitive Research
  - Technological Development
  - Industrial Innovation
  - Technology Internationalization

- Technical risk
  - Funding intensity

- CDTI project type
  - Industrial Research
  - Development
    - New products/processes development
  - Innovation
    - Technology update
  - Technology Internationalization
  - International Technological Promotion
    - Technology transfer and promotion
Index

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2. Introduction to CDTI – Spain’s National Innovation Agency and RTDI Funding
3. CDTI and RTDI Internationalization
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3. CDTI & RTDI Internationalization

- South Africa
- Egypt
- Algeria
- Canada
- Argentina
- Colombia
- Cuba
- Peru
- Indonesia
- Thailand
- Taiwan
- Australia
- Singapore
- Turkey
- Israel
- Russia
- Malaysia
- Singapore
- Indonesia
- Thailand
- Taiwan

CDTI International Network

(22/03/2017)
3. CDTI & RTDI Internationalization

MULTILATERAL & BILATERAL PROGRAMS

Active policy: encouraging the participation in international programs

✓ Objective: to achieve an effective technological cooperation, at least, between two enterprises from two different countries
✓ International Certification
✓ Market focused with no R&D lines predefined
✓ Balanced consortia, symmetrical-based collaboration
✓ Bottom-up
✓ Open call, excluding grants (Eurostars 2 per year)
✓ Domestic funding: each country funds their entities

Bilateral

- Agreement between CDTI and local entity for managing the applications & evaluating the proposals
- Work plan to establish the objectives in terms of No. of projects, areas...
- Flexibility in the rest of the terms of the agreement
3. CDTI & RTDI Internationalization

KOREA –
Korea Spain Innovating (KSI)

Korea institute for Advancement of Technology (KIAT)

INDIA –
India Spain Innovating Program

- Technology Development Board (TDB)
- Department of Biotechnology (DBT)
- Ministry of New and Renewable Energies (MNRE)

JAPAN – Japan Spain Innovation program (JSIP)

New Energy Industrial Technology Development Organisation (NEDO)

CHINA –
China Spain Innovating (KSI)

High Technology Industry development Center (Torch)

SOUTH AFRICA –
South Africa Spain Innovating (SASI)

Technology Innovation Agency (TIA)

CANADA –
Canadeka

National Research Council (NRC)

BILATERAL PROGRAMS

Different cultures = different solutions
Tailor-made agreements

New Collaboration Agreements with Malaysia and Thailand (June, 2016)
Bilateral Programs Asia Region

CDTI

Finantial support with its own funding sources with improved conditions

Spanish Companies

Cooperation Agreement to jointly develop the project and exploit the results

MARKET

Foreign Agency

Finantial support with its own funding sources under its own regulations

Entities other Country

CDTI

(22/03/2017)
CDTI’s Objectives in Indonesia

Reactivation Agreement of scientific and technical cooperation between Spain and Indonesia (1982)

- Financial support with its own funding sources with improved conditions

Spanish Companies

Cooperation Agreement to jointly develop the project and exploit the results

MARKET

Entities other Country

- Company
- Research Center
- University
- Other R&D performing organizations

Joint Funding Initiative

OPEN CALL
3. CDTI & RTDI Internationalization

Funding methods and amounts

- Loans up to 75%*
  - Fixed interest rate Euribor
- Company own resources: 25% total budget
- Long recovery (10 years) with grace period (2-3 years)
- Possible non-repayable parts (TNR – max 30%)
- Min. budget: 175,000 €

**INNOGLOBAL**

**INTERNATIONAL COOPERATION**

- Including ISIP bilateral program or unilateral program for projects with Thailand, Malaysia, Singapore and Indonesia

**TOTAL CDTI FUNDS**

- EUR 10 million / Competitive Call

**FUNDING TYPE**

- DIRECT GRANT
  - Large Company=30%/Medium=40%/Small=50%

(*) 85% in regions co-funded with Technological Fund (TF)
3. CDTI & RTDI Internationalization

**Acronym**: Guided Parafoil System. gPARAFOIL

**Objective**: Develop an accurate guidance technology with a low cost parafoil type platform for the use in emergency situations.

**Budget**: 1.083.722 euros

**Consortium**: Expace on Board Systems, S.A (Spain), Expalindo Sukses Pratama (Indonesia)

Project pending approval (Evaluation part) in the renewable energy sector
3. CDTI & RTDI Internationalization

**Acronym:** APTAFOOD

**Objective:** Aptamer Based Biosensing to Detect Toxins in Food

**Budget:** 460,820 euros

**Consortium:** Laboratorios CIFGA, S.A. (Spain) and Central Food Technology Research Institute (India)

**Acronym:** WIND POWER FORECAST

**Objective:** Wind Power Scheduling and Forecasting in the state of Tamil Nadu, India.

**Budget:** 332,000 euros

**Consortium:** Vortex Factoría de Calculs, S.L. (Spain) and Centre for Wind Energy Technology – CWET (India)
3. CDTI & RTDI Internationalization

Acronym: NANO SILVER COATING

Objective: To increase the effectiveness of a Concentrated Solar Thermal Plant by increasing the reflectivity of the mirror, the initial investment and the operation cost is reduced, by reducing the mirror surface, or the power generation is increased, by using the same mirror surface.

Budget: 3.8 M€
Consortium: 2 SMEs. Rioglass (Spain) and Nano CSM (Korea)

Manufacture of mirror for automotive sector, solar power plants, etc..

Nano materials for security inks, coating process, etc...

Success Stories
Index

1. Spain - STI Overview and Indicators
2. Introduction to CDTI – Spain’s National Innovation Agency and RTDI Funding
3. CDTI and RTDI Internationalization
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4. Potential Areas for Industrial R&D Cooperation

**SPANISH TECHNOLOGICAL STRENGTHS**

### Aerospace and Security

**Highly competitive sector**
- 5th in Europe by turnover and people employed
- 7th global operator of satellite telecommunications
- Industry capable of conceive, design and produce an entire aircraft (only ten countries)
- Member of the European Space Agency

**Main technologies (Spanish firms world leaders in)**
- Manufacture of composites (especially carbon fibre)
- UAVs (unmanned aircraft vehicles)
- Gas turbine engines
- Air traffic management
- Integrated Systems for border surveillance.

### Automotive

**Highly competitive and international sector**
- 2nd vehicle producer in Europe (9th in the world)
- Exports 86% of production (2009 data)

**One of the most important automotive components industry in the world**

**Main technologies**
- Automotive safety technologies
- Electrical and electronic components
- Pioneering in the introduction of electromobility and Electric Vehicles
4. Potential Areas for Industrial R&D Cooperation

**SPANISH TECHNOLOGICAL STRENGTHS**

**Green economy**
(renewable energies, energy efficiency, water supply, environment sector)

**Construction and civil infrastructures**

**International leader in wind and solar power**
- Photovoltaic solar power capacity: 1st ranked world
- Wind power: 3rd ranked world

**Top level infrastructures and scientific capacity**
- The largest European R&D center for concentrating solar technologies: Plataforma Solar de Almería

**Main technologies**
- Very large offshore wind turbines
- 2nd manufacturer of solar cells in Europe
- Water purification/ Sustainable water management within its integral cycle

**World leader in transports connectivity (Ferrovial – Cintra)**
- Five companies in the world top ten

**International leader in construction**
- Leader at European level.
- 37% incoming from international markets

**Main technologies**
- Top world facilities in high-speed train (Anillo ferroviario Antequera)
- New materials…
4. Potential Areas for Industrial R&D Cooperation

SPANISH TECHNOLOGICAL STRENGTHS

Highly competitive industry at the global markets
- Biotech turnover: 31,100 million of euros
- Global leader in plasma derived products and therapies (Grifols)

4th Nano biotechnology Scientific production in the world
- Barcelona the 2nd Nano biotech city (1st Boston)

Big network of science parks (bioclusters)

Main technologies
- Oncology, Cardiovascular, Neurological and Reproductive technologies
- Rare Diseases
- Biotech diagnosis, biomarkers, nanomedicine
- Regenerative medicine, Cell and Gene therapy
- Biofuels

Market value in 2009: 105,000 million Euros
- Annual increase above 4% over the last 7 years

International leader in telecom (Telefónica)
- 1st European telecom
- Among the 3 world telecom companies (ATT and China Telecom)

International leader in high technology products
- 3D radars
- Flight simulators
- Air traffic and telecom satellites control systems
- Pioneering in industrial production of graphene
- Digital Video Broadcasting, Terrestrial and by Satellite
- Videogames

Health and Nano biotechnology

ICT
THANKS!

TERIMA KASIH!

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