JOINING FORCES THROUGH SMART SPECIALISATION SYNERGIES BETWEEN ESIF AND H2020 FOR KETS

Joining forces between regions and private stakeholders for the reindustrialization. The case of Basque Country

Brussels, 26th March 2014
Background
The Basque Country applies strategies for regional development since the 80s and with the new millennium introduces the concept of strategies for knowledge-based industrial diversification.

### TABLE 5 Distinctive features of the Basque Country diversification strategies based on the KET

<table>
<thead>
<tr>
<th></th>
<th>Biobasque and Nanobasque</th>
<th>Advanced manufacturing and ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of diversification</td>
<td>Radical, scientific basis</td>
<td>Incremental, technological base</td>
</tr>
<tr>
<td>Way of diversification</td>
<td>Modernization, radical foundation</td>
<td>Modernization and combination</td>
</tr>
<tr>
<td>Preexisting skills</td>
<td>Small</td>
<td>Big</td>
</tr>
<tr>
<td>Government intervention</td>
<td>Large</td>
<td>Small</td>
</tr>
<tr>
<td>Agents</td>
<td>New type (CRC)</td>
<td>Preexisting</td>
</tr>
<tr>
<td>Current impact</td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Formal strategy</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Key intermediate agents</td>
<td>Agencies: SPRI, Biobasque, Nanobasque</td>
<td>Cluster association, CRC</td>
</tr>
</tbody>
</table>

Instruments (non sectorial) have been focused on the support of knowledge generation within the Basque Science and Technology Network and support of R&D activity within firms.

**Tools**
- EMAITEK
- ETORTEK
- GAITEK
- SAIOTEK
- ETORGAI (2008)
- NETs

**Agents**
- Universities and Excellence Research Centres
- Cooperative Research Centres

**Technological Centres**
- FIRMS
- TKIBS

**Other instruments (industrial promotion)**

**TRL Levels**
- **TRL 1:** Basic principles observed and reported
- **TRL 2:** Technology concept and/or application formulated
- **TRL 3:** Analytical and experimental critical function and/or characteristic proof of concept
- **TRL 4:** Component and/or breadboard validation in a laboratory environment
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**Death Valley**
Outward approach. VII FP

BASQUE PARTICIPATION IN EUROPEAN R&D&I ACTIVITY
2011 STRATEGIC BOOK

6.5.27 Annual breakdown of returns in the FP7 and CIP (2007-2010) and Objectives in the FP7 and CIP (2011-2013)

I.5.7 Breakdown of Objectives in the FP7 and CIP (2011-2013) by Programme and Agent

<table>
<thead>
<tr>
<th>Objectives FP7 and CIP (2011-2013)</th>
<th>Cooperation</th>
<th>Capacities</th>
<th>Ideas</th>
<th>People</th>
<th>CIP</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST Agents</td>
<td>82.60</td>
<td>13.08</td>
<td>6.39</td>
<td>4.20</td>
<td>3.73</td>
<td>110</td>
</tr>
<tr>
<td>University System</td>
<td>17.43</td>
<td>2.82</td>
<td>10.20</td>
<td>6.28</td>
<td>1.27</td>
<td>38</td>
</tr>
<tr>
<td>Enterprises</td>
<td>57.45</td>
<td>6.62</td>
<td>0.41</td>
<td>1.52</td>
<td>0</td>
<td>66</td>
</tr>
<tr>
<td>Other Institutions</td>
<td>5.52</td>
<td>0.48</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Total Programmes</td>
<td>163</td>
<td>23</td>
<td>17</td>
<td>12</td>
<td>5</td>
<td>220</td>
</tr>
</tbody>
</table>

VII PM
450,37 M€
1,233 participations
271 entities
904 projects
0,89%
Outcome
The Basque Country is in a better relative position in result indicators and determinants of competitiveness than in indicators of intermediate performance.


Note: The scale measures the normalised ranking position.
Specialisation in KETs

The Basque Country has doubled the number of PCT patent from the period 2001-2005 to the period 2006-2010, while the growth in the EU is much more modest (less than 20%)

If in the period 2001-2005 the Basque Country appeared sub-specialised in most KETs (the exception being advanced materials), in 2006-2010 the Basque Country showed a specialization index above 100 in Nanotechnology, Biotechnology and Advanced Manufacturing.

<table>
<thead>
<tr>
<th></th>
<th>Período 2001-2005</th>
<th></th>
<th></th>
<th></th>
<th>Período 2006-2010</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total patentes</td>
<td>% sobre total</td>
<td>Indice de especialización de la CAPV</td>
<td>Total patentes</td>
<td>% sobre total</td>
<td>Indice de especialización de la CAPV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAPV</td>
<td>UE-27</td>
<td>CAPV</td>
<td>UE-27</td>
<td>CAPV</td>
<td>UE-27</td>
<td>CAPV</td>
<td>UE-27</td>
</tr>
<tr>
<td>Total patentes</td>
<td>291,4</td>
<td>204,942</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
<td>567,8</td>
<td>241,099</td>
<td>100,0</td>
</tr>
<tr>
<td>Manufactura avanzada</td>
<td>3,0</td>
<td>3,522</td>
<td>1,0</td>
<td>1,7</td>
<td>59,8</td>
<td>10,6</td>
<td>3,965</td>
<td>1,9</td>
</tr>
<tr>
<td>Biotecnología industrial</td>
<td>5,7</td>
<td>4,260</td>
<td>1,9</td>
<td>2,1</td>
<td>93,5</td>
<td>21,2</td>
<td>4,290</td>
<td>3,7</td>
</tr>
<tr>
<td>Fotónica</td>
<td>0,1</td>
<td>2,549</td>
<td>0,0</td>
<td>1,2</td>
<td>3,9</td>
<td>0,3</td>
<td>3,308</td>
<td>0,1</td>
</tr>
<tr>
<td>Micro y nanoelectónica</td>
<td>0,9</td>
<td>2,548</td>
<td>0,3</td>
<td>1,2</td>
<td>25,6</td>
<td>2,6</td>
<td>2,947</td>
<td>0,5</td>
</tr>
<tr>
<td>Materiales avanzados</td>
<td>13,3</td>
<td>5,056</td>
<td>4,6</td>
<td>2,5</td>
<td>185,5</td>
<td>12,3</td>
<td>5,979</td>
<td>2,2</td>
</tr>
<tr>
<td>Nanotecnologías</td>
<td>0,0</td>
<td>101</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>2,6</td>
<td>233</td>
<td>0,5</td>
</tr>
<tr>
<td>TIC</td>
<td>12,1</td>
<td>21,820</td>
<td>4,1</td>
<td>10,6</td>
<td>38,9</td>
<td>30,0</td>
<td>21,026</td>
<td>5,3</td>
</tr>
</tbody>
</table>

Impact of technological intensity

VAB manufacturero por intensidad tecnológica (M€, %, 2005-2012)*

<table>
<thead>
<tr>
<th>Intensidad Tecnológica</th>
<th>2005</th>
<th>2012</th>
<th>% Crecimiento 2005-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alta</td>
<td>3.524</td>
<td>3.764</td>
<td>+7%</td>
</tr>
<tr>
<td>Media Alta</td>
<td>287</td>
<td>324</td>
<td>+13%</td>
</tr>
<tr>
<td>Media Baja</td>
<td>2.485</td>
<td>2.283</td>
<td>-8%</td>
</tr>
<tr>
<td>Baja</td>
<td>6.675</td>
<td>5.280</td>
<td>-21%</td>
</tr>
</tbody>
</table>

(*) VAB manufacturero a precios básicos y euros corrientes (base 2010)
(**) Incluye ramas de otras intensidades: Aeroespacial (alta) y naval (media-baja)
Fuente: Elaboración IBC a partir de datos de Eustat
New R&D&i strategic framework
More specifically, each of the axes are evaluated on a basis of a number of criteria:

1. How to evaluate/prioritise business sectors?
   - Weight in the economy and relative specialisation (added value/GDP, employment)
   - Exports (global share)
   - Technological intensity: high / medium / low
   - Sector structure (competitive intensity, tractor / SMEs, customer chain - supplier, etc.)
   - Growth

2. How to value Basque scientific-technological capacities in enabling technologies?
   - Dimension in scientific-technological agents and companies (number of researchers, R&D € invested)
   - Quality (publications, returns in competitive programs, etc.)
   - Applicability and likelihood of results exploitation (patents, number of projects with companies)
   - Ability to raise the technological level of Basque businesses (own or synergistic sectors)

3. How to evaluate/prioritise the areas of opportunity?
   - Potential impact on society
   - Potential of high value-added solutions
   - Expected growth in the Basque Country’s priority markets
As a result of the initial process of discussion, and in accordance with the selection criteria mentioned earlier, three Main Priorities have been chosen: Advanced Manufacturing, Energy and Biosciences.

- Main priorities meet different profile fields that together constitute a solid proposition, diversified and complementary.
- Priorities are not isolated elections, but a balanced strategy that combines a cross-cutting priority to various sectors in which the Basque Country has strong expertise and capacities (Advanced Manufacturing), and key sectorial area in the Basque Country (Energy) combined with commitment in a diversification field in search of a high-tech businesses with high growth potential.

LINK BETWEEN PRIORITIES
The cross combination of skills and resources strengthens the individual choice of each priority ...

… not as isolated elections, priorities are interrelated through the fundamental axis of “Advanced Manufacturing” that should provide solutions and exploit opportunities in the areas of “energy” and “micro-nano-bio convergence”, always aiming progress in added-value in business activities.
In summary, history, previous strategic commitments, capabilities, development potential and additionality justify the choice of smart specialisation main priorities. Each election has strengths in some elements.

<table>
<thead>
<tr>
<th>Advanced Manufacturing</th>
<th>Energy</th>
<th>Biosciences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>History</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Basque country’s economy is traditionally based on industry. Therefore, successive plans and strategies for competitiveness are set up.</td>
<td>A traditional sector which encompasses some of the main Basque companies, including Iberdrola as the main tractor.</td>
<td>The decision to diversify into new high-tech sectors, has enabled capabilities in microtechnology, nanosciences, biosciences.</td>
</tr>
<tr>
<td><strong>Existence of combined strategies (business + technology)</strong></td>
<td><strong>Advanced Manufacturing strategy, CIC marGUNE, strategies of industrial clusters (automotive, aerospace, machine tools, environment, etc..)</strong></td>
<td>E3 2020, Energibasque, CIC EnergiGUNE, EVE strategy, energy cluster strategy.</td>
</tr>
<tr>
<td><strong>Business skills</strong></td>
<td><strong>Cross sectorial activity to several highly representative economic sectors of the Basque Country</strong></td>
<td>Emerging sector in the Basque Country with some examples of successful new high tech companies and diversification opportunities for traditional sectors.</td>
</tr>
<tr>
<td><strong>Scientific and technological capabilities in enabling technologies</strong></td>
<td><strong>Enabling Technologies, in which there are significant regional capabilities, have a critical influence on the development of this priority.</strong></td>
<td>Scientific-technological field in which some of the Enabling Technologies are the strongest vector for development of products and services.</td>
</tr>
<tr>
<td><strong>Areas of opportunity</strong></td>
<td><strong>Directly affected by the challenge of sustainability, and indirectly to other challenges developing skills critical for other sectors (eg, strengthening the transportation sector to meet the challenge of mobility)</strong></td>
<td><strong>Election closely related to the needs of solutions to global challenges as energy, sustainability, urbanisation and mobility.</strong></td>
</tr>
<tr>
<td><strong>Additionality and consistency</strong></td>
<td>Cross sectorial foundation</td>
<td>Single-sector Strategic commitment</td>
</tr>
</tbody>
</table>

La Metaprioridad está respaldada por el criterio (low).
New instruments
The strategy identifies the challenges of manufacturing in the Basque Country...

Final challenges (Basic strategy)
- To shorten the deadlines from knowledge generation to the market
- To industrialize in large scale products and processes based on emerging technologies

Action challenges (Action lines)
- To train, educate and attract the needed professional profiles
- To generate infrastructures for the development of pilot experiences
- To develop the means to produce and industrialize products and services based on emerging technologies

Support challenges (Governance)
- To improve the effectiveness and efficiency of policies to boost R&D in manufacturing
- To use the challenges posed by global megatrends (aging, climate change, resource scarcity) to design and develop competitive technologies, products and processes.
- To coordinate business sector, scientific and technological agendas
- To advance in agent cooperation within and across sectors as well as locally and internationally
- To deepen the value of intangibles associated with the design and generation of brands

Source. Working Groups of the Advanced Manufacturing 2020 Strategy
... and to cover in a better way all stages till industrialization

**TOOLS**

- **ETORTEK**
- **ETORGAI (2008)**
- **GAITEK**
- **NETs**

**“DEATH VALLEY”**

- **Advanced Manufacturing Centres**
- **Test Infrastructures**

**OTHER INSTRUMENTS**

- **Other instruments (industrial promotion)**

**TOOLS**

- **TRL 1:** Basic principles observed and reported
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Innovation, Financing, Industrial transformation...
We have laid the foundation for improving the industrialization of R&D results with new tools…

Testing facility: Biscay Marine Energy Platform

• An open sea test infrastructure for research and demonstration of offshore Wave Energy Converters
• For testing full-scale prototype devices
• Effectiveness and performance of WEC devices can be tested in a realistic offshore environment,
• Experimental data can be obtained and such in-field testing will be vital for validating designs and concepts and computer-based numerical models

Program aid for demonstration and validation of emerging offshore energy technologies

• To support actions for demonstration and validation of technological developments in the field of marine renewable energies (Commission Regulation 800/2008), such as
  • real or near real catchment scale wave energy;
  • floating wind turbine foundation;
  • real or close to real scale offshore wind turbines;
  • auxiliary or complementary equipment of any of the prototypes above.

www.bimep.com
Wind Industry Subsystem Validation and Integration Centre

ADVANCED MANUFACTURING CENTRE MODEL
public – private collaboration

- Basque Government supports initial investment
- Cluster manages the infrastructure
- Research Center operates the facility
- Industry Consortium supports operation
- Open access to any user

Concluding the design phase
Strategic Industrial Research
MARINEL Project:
New self-installing offshore substation of large dimensions

Off-Shore Wind NER 300
BALEA Project:
Innovative RES Demonstration Project in the subcategory “Wind. Floating off-shore wind systems with nominal capacity 25 MWe”.

Strategic Applied Research
MECOFF Project:
Mechatronic Technologies for Off-shore Wind Energy

Demonstration Facility
WISVIC Wind Industry Subsystem Validation and Integration Centre
Outward dimension

Two complementary modes of implementation

Intensity of investment

Validation

TRI

1

2

3

4

5

6

7

8

9

Basic

Principles

OBSERVED

Technology

Concept

Formulated

Experimental

Proof of Concept

Technology

Validation

In Lab

Technology

Validation

In Relevant Environment

Demonstration

To Relevant Environment

Demonstration

To Operational Environment

System

Components

Assembled

Successful

Mission

Operations

Technological Research

Pillar 1

KET Pilot Line

And Demonstrator Projects

Pillar 2

Manufacturing &

KET Deployment Project

Pillar 3

RIS3

(1) Analysis

(2) Process

(3) Vision

(4) Priorities

(5) Policy mix

(6) Monitoring

RIS 3 Strategy

VANGUARD INITIATIVE

NEW GROWTH

THROUGH SMART

SPECIALISATION

Engagement for a European Industrial Renaissance

National / Regional R&D funding programmes
CRISTINA OYON
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