

A stylized world map in white and light blue on a dark blue background. The map is overlaid with a network of white and blue lines connecting various points, representing a global network. Two prominent white nodes are located over South America and Europe, with lines radiating from them to other nodes across the globe.

EULANEST

**European-Latin American Network
for Science and Technology**



SIXTH FRAMEWORK PROGRAMME



GENERAL INFORMATION ON EULANEST - THE EUROPEAN - LATIN AMERICAN NETWORK FOR SCIENCE AND TECHNOLOGY

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Coordinating organisation: Ministry of Science and Innovation MICINN (Spain)

Project partners:

- Ministry of Foreign and European Affairs (MAEE), France
- Ministry of Higher Education and Research (MESR), France
- Research Institute for Development (IRD), France
- Federal Ministry of Education and Research (BMBF), Germany
- International Bureau of the BMBF (IB-BMBF) at DLR, Germany
- Research Council of Norway (RCN)
- Foundation for Science and Technology (FCT), Portugal
- Ministry of Science and Innovation (MICINN), Spain

Joint call partners:

European EULANEST partners + two Latin American institutions

- Ministry of Science, Technology and Productive Innovation (MINCYT), Argentina
- National Council for Scientific and Technological Development (CNPq), Brazil

Project Summary:

The EULANEST project intended to promote and coordinate research cooperation among EU Member States (MS) and Latin American countries (LAC), thus contributing to strengthen the impact of their national programmes on international cooperation in science and technology (S&T) with Latin America (LA). EULANEST networked European policymaker and programme managers involved in promoting research cooperation with LA in all fields of science.

This ERA-NET aimed to prepare its partners towards the development, design and implementation of joint transnational research activities. In this scope EULANEST first mapped and benchmarked the cooperation activities in S&T among MS and LAC, identifying best practices and preparing the ground for a Joint Action Programme, with the final goal of launching and coordinating a joint call.

The activities of EULANEST contributed to the building of the European Research Area (ERA) and, particularly, to strengthening its international dimension.

In addition, EULANEST aimed to help the development of a more coherent approach of the EU towards scientific cooperation with emerging Latin American countries, like Argentina, Brazil, Chile and Mexico.

Workpackages:

<p>WP1 Mapping & benchmarking of EU member states' S&T programmes with Latin America</p> <p>1.1 Mapping bilateral S&T programmes with Latin America</p> <p>1.2 Programme Benchmarking</p> <p>1.3 Systematic Information Exchange and Needs Analysis</p> <p>1.4 Interactive directory of existing EU-Latin American bilateral research programmes</p>	<p>WP4 transnational research activities</p> <p>4.1. Preparation for transnational Activities</p> <p>4.2 Joint Pilot Programme</p> <p>4.3 Launch a joint call</p>
<p>WP2 Strategic activities. Ground for transnational activities.</p> <p>2.1. Strategic Studies</p> <p>2.2 Identification of barriers and options</p> <p>2.3 Recommendations for future activities</p>	<p>WP5 Management & dissemination of the ERA-NET</p> <p>5.1 Network management</p> <p>5.2 ERA-NET Website</p> <p>5.3 Dissemination</p> <p>5.4 Annual Reports</p>
<p>WP3 Building transnational joint activities</p> <p>3.1 Develop a programme design management and evaluation protocol</p> <p>3.2 Joint Database of Experts and Facilities</p> <p>3.3 Joint Action Plan</p>	





„EULANEST is an ERA-NET from the Sixth Framework Programme (6FP) that started on July 2006 and successfully finished in June 2010.

The main objective of FP6 (2002-2006) was to contribute to the creation of the European Research Area (ERA) by improving the integration and cooperation of research in Europe, which was considered so far largely fragmented. EULANEST was approved sooner before the start of the 7th Framework Programme that was opened, for the first time, to the general participation of third countries in all areas. That openness was accompanied by a change in overall philosophy from the former S&T international cooperation policy. Under these new circumstances, EULANEST was a pioneer in contributing to the achievement of an EU-LAC Knowledge Area through enabling coordination of the S&T national policies of both regions.

EULANEST achievements range from production of novel mapping and benchmarking studies to preparation, design and final launching of a joint call that gathered financial agencies and institutions from 5 European countries and 2 LA countries. It should be pointed out that more than 60 proposals were submitted to the call, confirming the high demand for this type of initiatives that support S&T multilateral cooperation activities.

Today, cooperation with Latin America and the Caribbean is receiving a special attention in a unique context of bilateral, sub-regional and bi-regional S&T Cooperation dialogue. In addition, the recently approved “EU-LAC Joint Initiative for Research and Innovation” provides the political framework to make the EU-LAC Knowledge Area a reality.

We are confident that EULANEST has made a fruitful contribution to the good momentum of the EU-LAC cooperation and could serve as an example of best practices for future initiatives.

Finally, I would like to thank and highlight the work done by all the members of the EULANEST consortium and the high commitment of the institutions involved, and, very specially, recognising the highly professional people behind them“.

Ángeles Rodríguez Pena

Project Coordinator, Deputy Director General for European Programmes Ministerio de Ciencia e Innovación (MICINN)

Content

1. MAPPING AND BENCHMARKING OF THE EUROPEAN COOPERATION IN S&T WITH LATIN AMERICA	6
1.1. PROFILE OF THE BILATERAL COOPERATION OF EACH EUROPEAN COUNTRY WITH LA	6
1.2. COMPARING THE SCHEMES AND IDENTIFYING MAJOR TRENDS AND BEST PRACTICES	8
1.2.1. Typology of the schemes	9
1.2.2. Major trends of the European S&T cooperation with LA	12
1.3. BEST PRACTICES OF THE EXISTING S&T COOPERATION SCHEMES	14
2. ANALYSING THE RESEARCH SYSTEMS OF TWO LATIN AMERICAN COUNTRIES	16
2.1. THE CASE BRAZIL	17
2.1.1. Structure of Brazilian ST&I system	17
2.1.2. Brazil's research priorities	18
2.1.3. Approach for EU-Brazil cooperation	19
2.2. THE CASE MEXICO	20
2.2.1. Structure of Mexican ST&I System	20
2.2.2. Priorities in Mexican S&T	21
2.2.3. Approach for EU-Mexico cooperation	22
3. EVOLUTION AND KEY TRENDS IN THE S&T COOPERATION BETWEEN COUNTRIES OF THE TWO REGIONS AS ANALYSED IN KEY STUDIES	23
3.1. KEY FACTS OF THE S&T COOPERATION	23
3.1.1. Heterogeneity across countries	23
3.1.2. The scientific performance of LA	23
3.1.3. S&T in the context of other modes of cooperation	24
3.2. THE STRATEGIES OF COOPERATION	24
3.2.1. Strategies at country level	24
3.2.2. Strategies at region level	25
3.3. MAIN BARRIERS TO COOPERATION BETWEEN THE TWO REGIONS	25
3.3.1. At European level	25
3.3.2. At LA level	25
3.4. MAIN DRIVERS TO COOPERATION	26
3.4.1. At European level	26
3.4.2. At LA level	26
3.5. Main focus and key issues of the studies under analysis	27
4. THE JOINT CALL INVOLVING COUNTRIES OF THE TWO REGIONS	30
4.1. TERMS OF THE PILOT JOINT CALL	30
4.2. RESULTS AND PROSPECTS FOR FUTURE COOPERATION	31
5. CHALLENGES FOR BUILDING UP ON THE EXISTING AND NEW TOOLS OF COOPERATION BETWEEN THE TWO REGIONS	36
LIST OF ACRONYMS AND ABBREVIATIONS	38

1. MAPPING AND BENCHMARKING OF THE EUROPEAN COOPERATION IN S&T WITH LATIN AMERICA

In order to get an overview of the large number of bilateral S&T cooperation programmes and schemes with LA which are running in each of the EU countries participating in EULANEST (France, Germany, Norway, Portugal, and Spain) the project included one workpackage dealing with the elaboration of a mapping and benchmarking report on EU-LA S&T cooperation.

The focus was on public programmes/schemes using calls to S&T communities. Thus the direct institutional cooperation between research organisations was out of the scope of the analysis. Nevertheless, some schemes in the fringes of the concept have taken on board for analysis, given their potential to contribute to a more coordinated approach of bilateral cooperation across the regions under consideration (EU and LA).

A detailed questionnaire was elaborated and face to face interviews with key players took place, involving namely managers of the schemes at stake. The interviews were conducted by national EULANEST partners. A methodological note was also designed and used to support the work of information gathering, covering key features of the bilateral cooperation, such as:

- Participation degree of LA countries as a counterpart in the bilateral schemes with European partners
- Type of research
- Priority areas
- Type of actions being covered
- Order of magnitude of the budgetary allocations and the average level of funding per action
- Type of eligible costs
- Mode of selection of the projects

In particular it was possible to devise the LA countries involved in the cooperation schemes and the modes of cooperation.

1.1. PROFILE OF THE BILATERAL COOPERATION OF EACH EUROPEAN COUNTRY WITH LA

The national organisational structure with respect to running international cooperation in each European country involved in EULANEST was firstly identified in order to understand the structural background conditions for the implementation of the bilateral schemes under consideration.

From the information gathered on the type of organisational structure of each of the partner countries the conclusion arisen is that quite different approaches are being used.

In **France**, a very diversified spectrum of institutions and types of programmes exist, which address to very specific aspects of bilateral S&T cooperation with LA.

The French specificity concerning the area of research cooperation was identified. Let us underline the following features:

- The involvement of two ministries (Higher Education and Research-MESR and Foreign and European Affairs-MAEE)
- A strong presence of research bodies in LA
- The specific roles of CIRAD and IRD

The following Entities/Schemes involving France have been analysed:

- CAPES-COFECUB
- CIRAD
- Ecos-Nord
- Ecos-Sud
- IRD-ESSOR
- STIC-AmSud
- AMSU-Pasteur
- PCP France-Mexique
- CNRS-LIA

In **Germany** there is a significant variety of institutions being engaged in S&T cooperation with LA as well. The national strategy for the internationalisation of S&T driven by BMBF aims at playing a catalyst role. DFG, AvH and DAAD also currently run cooperation schemes involving LA countries.

The following Entities/Schemes involving Germany have been analysed:

- BMBF-Cooperation with LA
- DAAD-PPP
- DFG
- DFG-BMZ
- AvH

For **Norway** and **Portugal** a concentration of the management of bilateral schemes in a given institution was observed (RCN and FCT, respectively) although the Ministry of Foreign Affairs do plays the role of either the key player (in the case of Norway) or as the partner for cultural agreements also used for scientific cooperation (for Portugal).

The following Entities/Schemes involving Norway have been analysed:

- RCN-BILAT
- RCN-Poverty and Peace

The following Entities/Schemes involving Portugal have been analysed:

- FCT-CAPEs
- FCT-CNPq
- FCT-FAPESP
- FCT and Instituto Camões (Cultural Agreement with Mexico)

In **Spain** an intermediate approach (in between large institutional variety and institutional concentration) was found. MICINN is the main player. Anyhow, the Ministry of Foreign Affairs has also been providing relevant contributions to cooperation through AECID.

The following Entities/Schemes involving Spain have been analysed:

- MICINN-ACI
- AECID
- CSIC
- CYTED (multilateral programme).

The European countries integrating EULANEST concentrate their bilateral cooperation mainly on Argentina, Brazil and Chile and at a lower degree on Mexico. This conclusion is drawn from the number of mere bilateral schemes between European and LA countries that have been analysed. Overall, three schemes are targeting on LA countries.

“Reading” the cooperation from the LA side, lets us underline that Argentina, Brazil and Chile show similar “profiles” while linking with France and Germany (when referring to the number of active bilateral schemes).

France, Germany, Spain and Portugal (in decreasing order) are target countries of Argentina, Brazil, Chile and Mexico in cooperating bilaterally with European countries.

CYTED (S&T for Development) as a multilateral programme that involves 19 LA countries and Iberian countries shows synergies with existing bilateral schemes between the two regions.

Most of the programmes cover various types of research in parallel. Those that do not show such an approach are closer to a science for development orientation.

A balanced distribution of the different fields of science was found for the programmes which specify their thematic orientation. Therefore, one may clearly analyse that the largest number of schemes do not show any thematic priority at all.

Mobility and scientific meetings are the dominant actions covered in the schemes under analysis. Research networks appear as another fully covered type of action.

It is worth noting that there is a large variety across the schemes in relation to the range of activities being supported.

The fact that capacity building is considered just in one scheme is worth to be underlined. This may be connected to the fact that the main target countries in the programmes under analysis are among the most developed ones in LA.

It is interesting to note that the allocation of funds for running the projects is mostly not oriented on an institutional level. On the contrary, it is project-based and this somehow reflects the small dimension and the type of many actions being covered.

With respect to types of expenses being supported, travel expenses and daily allowances, and expenses associated to workshop logistics are by far the type of eligible costs that can be found in a larger number of programmes. Let us underline the low number of schemes explicitly allowing costs for (small) equipment or support to publications.

It is interesting to note that for about one third of the programmes there is no relevant participation of LA countries in the current activities of running or evaluating the programmes.

The launching of calls and the process of evaluation and selection of projects are the domains where a large number of LA countries are jointly involved in running the schemes.

About 40% of the programmes do not show an active role of LA countries in the co-funding of the schemes.

1.2. COMPARING THE SCHEMES AND IDENTIFYING MAJOR TRENDS AND BEST PRACTICES

In the EULANEST project, each partner country differs significantly in the structure of its research system and the institutional framework for S&T cooperation. The guidance note included in the EULANEST questionnaire was intended to standardise as much as possible the collected information between and within each country. As stated in the previous section, the disparities among the schemes are due to the great diversity of European S&T cooperation with LA.

The main challenge of the benchmarking task is to compare the different forms of cooperation illustrated in this report with the different schemes. To do this, one needs to ensure that like-to-like comparisons could be made, especially when dealing with cross-country information.

Schemes were thus classified in different groups, so as to reduce the disparities and to be able to compare categories instead of specific programmes.

The present typology has been set up on the basis of a single criterion, i.e. the schemes' strategic orientation. The strategic orientation is defined by the main purpose of the cooperation. This aspect is not directly addressed in any section of the questionnaire. However, when analysing in-depth the questionnaires, one can distinguish some dominant motivations shared by a number of schemes. These are:

- **Pure bilateral cooperation:** supports bilateral S&T collaboration between one EU country and its counterpart to work in the frame of joint research projects.
- **Preparation of joint research projects:** prepares the ground for future S&T collaboration projects between European and foreign scientists.
- **Innovation:** focuses on the development of innovation projects between European and LA countries.
- **Training:** promotes international cooperation on S&T through the support of training activities
- **Development:** uses S&T research as an instrument for strengthening the capacities of developing countries.
- **Regional integration:** supports networking and scientific collaborations between European and LA countries with a goal to promote the integration process in the region.

Further considerations need to be mentioned to clarify as much as possible the approach used for the establishment of the present typology:

- The proposed typology is not exclusive but is rather one possible typology based on a selected criterion.
- Only strategic orientations concerning more than one scheme have been established as a particular category.
- Schemes with a two-fold orientation could have been classified under several categories. It is indeed common for the same scheme to have more than one goal, or to address several strategic purposes. The following classification emphasises the goal that appears to be the most important or exclusive within a given scheme.

- To illustrate the similar characteristics within each category, some aspects describing the schemes were systematically explored.

They are the following:

- Target countries
- Thematic priorities
- Type of actions funded
- Institutional counterpart
- Funding modality

In some cases, comments related to the institutional counterpart and the funding modality were closely linked and are therefore in some cases presented together.

1.2.1. TYPOLOGY OF THE SCHEMES

Schemes oriented towards pure bilateral cooperation

Country	Institution	Scheme
FRANCE	MAEE-MESR	CAPES-COFECUB
	MAEE-MESR	ECOS
	CNRS	LIA
GERMANY	BMBF	Cooperation in S&T with LA
	DFG	Cooperation visits programme
	DAAD	Project-based exchange of Academics Programmes (PPP). Includes PROALAR (Argentina), PROBAL (Brazil), ALECHILE (Chile) and PROAL-MEX (Mexico)
	FCT	S&T Cooperation Agreements with Argentina and Brazil
PORTUGAL	FCT	S&T Cooperation Agreements with Argentina and Brazil
SPAIN	CSIC	Bilateral and intergovernmental agreements with LA

These schemes have been created to raise and increase collaboration between scientific communities of the European countries and their partner countries.

- **Target countries.** Some of these schemes are specifically addressed to one particular country in the LA region (Capes-Cofecub), or to several clearly defined LA countries (Ecos Nord and Sud, DAAD-PPP, BMBF), while the others have no specific target countries and can be implemented worldwide (CNRS-LIA, DFG, CSIC).

• **Thematic priorities.** Usually, there are no thematic priorities. In the rare instances when there are, they often stem from the national interests of the partner countries. Scientific excellence, as well as the will to finance outstanding research achievements are the basic principles within this category.

• **Type of actions funded.** Basically, these projects aim at promoting the mobility of researchers so as to allow them to participate in bilateral research projects. Scientific meetings and training are frequently financed, although they are not the core objective but rather part of the larger research cooperation. Infrastructure costs are usually excluded from the funding because the main purpose is to finance the additional costs (i.e. trips, per diem, meetings) incurred through international cooperation between two laboratories that already have their own resources.

• **Institutional counterpart.** These schemes always work on the basis of bilateral cooperation agreements with one or several partner institutions. The partner institutions generally stand for the main public organisation that provides funding for S&T research at the national level. Official cooperation among research institutions is thereby established, implying that the application process is restricted to partner institutions and individuals linked or supported by these institutions.

• **Funding modality.** In most cases, both the European and LA institutions share the financial contribution per action through simultaneous national funding. Even though funding can sometimes be relatively low, i.e. some thousands of euros each year, it can produce large side-effects. Indeed, small-scale actions – as those funded by the German BMBF – are intended to trigger bigger research projects.

Schemes oriented towards the preparation of joint research projects

Country	Institution	Scheme
NORWAY	RCN	Bilateral cooperation (BILAT)
SPAIN	MEC	International complementary Actions (ACI)

These schemes implement funding mechanisms – usually small grants – which aim at initiating bilateral cooperation projects. The main purpose is to allow researchers to establish and consoli-

date international contacts with the perspective to prepare new cooperation research projects.

- **Target countries.** No target countries are pre-defined. Consequently, these schemes can envisage collaborations with any country in the world, even though some of them (e.g. Bilat) tend to prioritise some particular geographical areas.
- **Thematic priorities.** Emphasis is given to foster international scientific relationships, so as to strengthen the national knowledge in all fields of science. As a result, no thematic priorities are pre-defined within this category.
- **Type of actions funded.** Like the previous category, the main funded action is the mobility of researchers, i.e. travels, allowances and meetings with researchers in other countries.
- **Institutional counterpart.** To a certain extent, these schemes are unilaterally implemented by the European country. They do not rely on bilateral agreements, unlike the schemes in the previous category. The counterpart is not involved in the selection process and only individuals or research teams from the funding European countries are eligible to apply.
- **Funding modality.** Unilateral funding is the funding modality of these schemes. Like bilateral research projects, the initial impact and visibility can be weak as well as the funds provided, but the leverage effect tends to be important as the mobility is intended to prepare larger cooperation such as joint research projects.

Schemes focusing on the development of innovation projects between European and LA countries

Country	Institution	Scheme
FRANCE	MAEE & MESR	PCP-Mexique
PORTUGAL & SPAIN	General Secretariat of CYTED	Iberoeka

These schemes have been created for the specific purpose of further developing the relationships between science and industry in an international cooperation context. As well as universities, laboratories and research centres, they involve private companies and R&D institutions in the projects.

- **Target countries.** They specifically target countries in the LA region. While PCP tackles the coopera-

tion with Mexico, Iberoeka involves 19 LA countries, which are the same as for CYTED (see above).

- **Thematic priorities are not restricted.** Projects can concern any discipline, as long as they include innovation and technology transfer aspects.
- **Type of actions funded.** PCP finances the implementation of bilateral research projects between a French and a Mexican laboratory, including mobility and training at the PhD level, and associating at least one company, whether Mexican and/or French. For Iberoeka, the type of actions funded is defined by each participating country.
- **Institutional counterpart and funding modality.** PCP scheme is based on a bilateral agreement with clearly identified counterparts allocating simultaneous national funding for the selected projects. Iberoeka works under a decentralised funding mechanism in which each country is responsible for the funding of its own national participants.

Schemes promoting international cooperation on S&T through the support of training activities

Country	Institution	Scheme
FRANCE	Pasteur Institute	AmSud Pasteur
GERMANY	AvH Foundation	Fellowship scheme of the AvH Foundation

These schemes focus on improving the potential of scientific human resources. They provide high-level scientists with learning opportunities such as access to infrastructures, technology, and knowledge, which can only be available through international cooperation. These schemes also aim at establishing international networks of researchers.

- **Target countries.** AmSud Pasteur specifically targets LA countries, in particular those included in the MERCOSUR agreement and its associated states. AvH has no specific budget for the cooperation with the LA countries. Its funding is open to all countries in the world. However, AvH has recently launched a new scheme in collaboration with the Thyssen Foundation – named “Thyssen-Humboldt Short-term fellowships” – which particularly targets post-doctoral researchers from the LA countries, to enable them to pursue academic projects in Germany.
- **Thematic priorities.** According to its core competences, the Pasteur Institute of Paris focuses

on the topic of medical sciences and related thematic disciplines such as biology, biomedicine and biotechnology. The funding of the AvH Foundation is not thematically focused but the recently launched Thyssen programme supports scientists in the area of humanities.

- **Type of actions funded.** These schemes finance training activities, i.e. fellowships, scholarships and courses. The funding of AmSud Pasteur also supports the organisation of scientific meetings and the establishment of research networks on selected topics. In the case of AvH, the funding allows foreign researchers to carry out academic projects in Germany.
- **Institutional counterpart and funding modality.** AvH's funding modality is unilateral, while most activities funded by the AmSud Pasteur scheme receive funds from local, regional or international agencies, as well as the French Embassy in Uruguay and the French Regional Cooperation for the South Cone.

Schemes using S&T research as an instrument for strengthening the capacities of developing countries

Country	Institution	Scheme
FRANCE	IRD	ESSOR
NORWAY	RCN	Poverty & Peace
SPAIN	AECID	Araucaria XXI

This category of schemes intends to reinforce the knowledge base and capacities in key areas related to international development.

- **Target countries.** Apart from Araucaria XXI, which exclusively targets the Latin American and Caribbean countries, these schemes target all developing countries, and not solely the LA region. In tune with their main purpose, the focus is put on countries or regions particularly affected by poverty, exclusion or vulnerability.
- **Thematic priorities.** Not all these schemes preset thematic priorities. For instance, ESSOR can consider any subject dealing with research for development. However, when there are thematic priorities, they are strongly linked to the Millennium Development Goals or other issues included in the global development agenda. For instance, Araucaria XXI focuses on environmental sustainability while P&P supports research initiatives in

key areas of poverty reduction, conflict prevention and peace building. In general terms, cross and interdisciplinary research is emphasised.

- **Type of actions funded.** There is usually a wide range of actions that can be funded under these schemes: bilateral research projects, research networks, training, mobility, capacity building, dissemination, communication and so on. All of them are seen as a means to contribute to the goal of reinforcing the knowledge base and capacities in key areas related to international development.
- **Institutional counterpart and funding modality.** There is no institutional counterpart for these schemes, which are funded only by European countries.

Schemes supporting networking and scientific collaborations between European and LA countries with a goal to promote the integration process in the region

Country	Institution	Scheme
FRANCE	MAEE	Stic AmSud
	CIRAD	ProsPer
SPAIN/PORTUGAL	General Secretariat of CYTED	CYTED

This is the only category highlighting the regional cooperation through collaboration among several research teams in the LA region.

Stic AmSud and CYTED share the practice of financing actions in which the participation of several LA research teams from different countries is compulsory, i.e. at least two for Stic AmSud and six for CYTED. Prosper intends to organise bi-regional cooperation between the EU and the Mercosur on R&D projects related to agro-food issues.

By doing so, these schemes tackle regional projects and show their intention to contribute to the Latin American integration process. This is why they have been classified under this category, even though the goal of regional integration is not always explicitly presented as a core component of the schemes.

- **Target countries.** They are all exclusively addressed to the LA region. Stic AmSud targets five countries in South America, ProsPer focuses in the Mercosur area, while CYTED's scope is much wider and includes all the Portuguese and Spanish speaking countries in the region (i.e. nineteen LA countries, Spain and Portugal).

- **Thematic priorities.** All of them have defined specific thematic areas for collaboration. Stic AmSud clearly concentrates on the topic of ICT, ProsPer deals with agro-food issues and CYTED has defined seven thematic priorities, which are periodically reviewed, according to common interests.
- **Type of actions funded.** Networking is a core component of these schemes. The funding mainly covers networking activities aiming at the creation of research networks. They can also finance other activities such as mobility, training and the organisation of scientific meetings, but these are above all means to promote networking among research partners.
- **Institutional counterpart and funding modality.** CYTED works on the basis of funding scheme linked to the GDP. Stic AmSud works on the basis of simultaneous national funding. ProsPer is an EC-funded project. All of them have different Latin American counterparts.

1.2.2. MAJOR TRENDS OF THE EUROPEAN S&T COOPERATION WITH LA

Based on the previous typology the benchmarking focused on the similarities and complementarities of the European S&T cooperation instruments with LA and helped to identify the best options for joint collaboration within the EULANEST project and the future.

Indeed, the previous classification facilitated the identification of some common characteristics (i.e. similarities) between the European S&T cooperation schemes. Moreover, the differences between the categories have been highlighted, allowing to better acknowledge their complementarities. The apparent disparity could have been reduced, some major trends have been discerned.

This section attempts to describe the European S&T cooperation with LA by exploring the major characteristics of its schemes. These refer to the aspects that have been systematically addressed in the previous section: target countries, thematic priorities, type of actions funded, institutional counterpart and funding modality.

TARGET COUNTRIES

Exception being made of schemes oriented to the LA regional integration, one could assume that there is hardly any particularity in the European S&T cooperation with

the Latin American region compared to the cooperation made with other parts of the world.

The intensity of the cooperation with LA differs according to the European country. For countries such as Norway, the cooperation with the region is quite recent (LA has been a low priority until 2007). As a matter of fact, none of the Norwegian schemes is specifically addressed to the LA region. For other countries, even though the intensity of the cooperation could be measured by specific S&T indicators – such as international co-publications – the will to create and maintain scientific collaborations with the region could also be illustrated by the number of schemes specifically addressed to LA.

Following this principle, one could assume that countries such as France, Germany, Portugal and Spain have a substantial number of schemes specifically addressed to the Latin American region. However, in many cases, the S&T cooperation of these countries is so far included in larger cooperation schemes, which also target the cooperation with other parts of the world. Only twelve out of the twenty schemes considered for this report have been specifically created to address the cooperation with LA.

Obviously, the category regrouping schemes oriented to the LA regional integration only targets LA countries. Most of the other schemes specifically targeting LA countries are included in the first category, i.e. the category oriented to pure bilateral cooperation. These schemes put into practice the S&T cooperation agreements between European and LA funding institutions. However, S&T cooperation agreements between research funding institutions are similarly made with other parts of the world, with no major changes in their implementation.

THEMATIC PRIORITIES

Most of the European S&T cooperation is not thematically focused and there are only a few cases where schemes are intended to foster international cooperation in specific fields of science.

A second major finding in the S&T cooperation with LA is that thematic priorities are not systematically predefined. Schemes tend to be rather open and can consider any topic, provided that it contributes to their aspirations. For instance, most of the schemes oriented towards pure bilateral cooperation prefer to provide sup-

port to excellent research projects rather than to focus in any particular field of science. Likewise, the second category gives emphasis to the achievement of future scientific collaborations and can finance any field of research. Innovation schemes tend to be hard to implement. To facilitate the cooperation, the thematic areas are thus not limited at all.

There are only seven out of twenty schemes where thematic priorities are clearly defined. They describe three different types of situations. In the first one, thematic priorities are intended to deal with the specific needs of the target countries. For instance, in the cooperation of the German BMBF with LA, thematic priorities are bilaterally defined and differ depending on the LA country. In the second situation, the selected thematic priorities are the core competency of the European institution that is running the scheme. This is the case for ProsPer (CIRAD–agronomy), AmSud Pasteur (Pasteur Institute–medical sciences) and ESSOR (IRD- any topic related to international development). In these schemes, the thematic priorities are defined along with the main areas of expertise of the involved research institutions. Finally, thematic priorities are defined in order to foster the cooperation with LA in specific areas. Surprisingly, this is the case for only a few number of schemes, i.e. three French schemes (Stic AmSud: ICT; AmSud Pasteur: medical sciences; ProsPer: agro-food issues) and a Spanish scheme (Araucaria XXI: environment).

TYPE OF ACTIONS FUNDED

The European S&T cooperation tends to concentrate on the implementation of a reduced number of activities. These mainly concern researchers' mobility and training. Infrastructure costs, publication and dissemination activities are very often excluded from the cooperation schemes.

Despite the various orientations observed, the European-LA S&T cooperation tends to focus on the implementation of similar types of actions. There are some differences, depending on the strategic choices of the schemes, but not as many as one might have expected.

The mobility of researchers is the most frequently funded type of action. Indeed, almost all the schemes include mobility as an eligible cost. Given their orientation to promote joint research projects and to foster exchanges between scientists, the first and second categories place mobility as a core action. Some of these schemes also finance other actions, such as the organisation of scientific meetings or training.

Training (including fellowships and PhD training) is also an essential activity in the cooperation schemes of the EULANEST partners. Not only is it highlighted in the category oriented to training, but also in those schemes oriented to innovation and development. For the development-oriented schemes, training is intended to build the research capacity of developing countries.

Bilateral research projects are financed by a significant number of schemes, mainly those included in the first category, which are oriented to pure bilateral cooperation. Also, most of the schemes oriented to innovation and development finance the implementation of bilateral research projects, even if this is not their core action.

Mainly financed by the schemes oriented to regional integration, the creation of research networks is also highlighted by some schemes oriented to training or development. In the first case, networks are established at the regional level and intended to federate LA research teams. For the schemes oriented to training and development, those networks are mainly composed of scholars willing to take advantage of academic contacts worldwide.

On the contrary, there are very few schemes that finance equipment or infrastructure. None of the identified categories pays special attention to this type of action. Only six schemes accept the purchase of infrastructure as an eligible cost (Cooperation visits programme, LIA, AmSud Pasteur, CYTED, Iberoeka and Araucaria XXI). However, they finance infrastructure only as a complement to the main actions of the scheme. In general terms, S&T cooperation is based on the existing infrastructures that are already in place in the laboratories, universities or other institutions involved in the schemes.

Likewise, publication and dissemination of the activities are rarely included in the schemes. Only CYTED and Araucaria XXI accept to fund this type of action, but no scheme is expressly intended to promote them.

FUNDING MODALITY AND INSTITUTIONAL COUNTERPARTS

The European S&T cooperation with LA tends to be balanced. When based on bilateral cooperation agreements, LA counterparts run the scheme jointly with European ones and are equally involved in the funding of the actions.

Numerous schemes are implemented on the basis of bilateral agreements with partner institutions. This can be linked to a growing tendency towards a balanced partnership in the European cooperation with LA. LA counterparts are indeed more and more involved in the management of the schemes. They participate in the evaluation of the proposals, the choice of the thematic priorities (when applicable), the funding of the actions and the strategic decisions of the schemes. The assistantship approach seems to be outdated in the current European scientific collaborations with LA.

The most representative schemes of this balanced cooperation are included in the first category. All of them are based on bilateral agreements and bilateral funding of the actions. It is, however, important to point out that, for the most part, these cooperation agreements only concern the most developed countries in the region, i.e. Argentina, Brazil, Chile and Mexico. It is indeed not surprising that cooperation with these countries follows a balanced partnership.

Each of the schemes oriented to regional integration has a particular relationship with the LA counterparts. CYTED is the only scheme managed by its own General Secretariat, where the LA counterparts are involved at the same level as the European ones. Stic AmSud works on the basis of specific agreements with each LA country involved in the scheme. ProsPer sets up ad hoc agreements between CIRAD and its key partners in the LA region, including embassies.

The majority of the schemes classified under the other categories are implemented with no counterpart in the concerned countries. To a certain extent, this is closely linked to the nature of the schemes. For instance, the schemes oriented towards the preparation of joint research projects are precisely intended to prepare the ground for bilateral agreements. Therefore, the involvement of the counterpart shall be achieved during further stages of the cooperation. Similarly, the schemes oriented towards development use unilateral funding to enhance the capacities of developing countries, which are not officially involved as counterparts of the schemes. As a matter of fact, the more geographically opened a scheme is, the less it is based on an official agreement with any counterpart. This is why in general the schemes that can be implemented worldwide do not have any institutional counterpart in third countries.

The present analysis of the current cooperation shows a significant common ground in the European bilateral cooperation with LA. Despite the great variety of instruments, part of the European S&T schemes have the same priorities, focus on the same types of actions and are implemented following the same basic principles.

This becomes obvious in the case of schemes oriented towards both pure bilateral cooperation and the preparation of joint research projects (i.e. first and second category).

These similarities showed that existing bilateral schemes provided a solid common ground on which the joint initiative of the EULANEST project was built.

1.3. BEST PRACTICES OF THE EXISTING S&T COOPERATION SCHEMES

The previous sections showed that most of the existing cooperation schemes specifically targeting LA are implemented on a competitive basis. As a matter of fact, scientific excellence is one of the core principles running the considered cooperation between Europe and the LA region. Moreover, excluding the purchase of equipment and infrastructure – expenses typically related to development projects – from the funded actions of the schemes confirms the purpose of avoiding the assistantship approach.

The competitive aspect of the cooperation prevails in the case of scientific collaborations with the countries targeted by the EULANEST project, i.e. Argentina, Brazil, Chile and Mexico. The performance of S&T research in those countries certainly calls for a balanced cooperation with Europe. When considering official cooperation established on the basis of bilateral agreements, LA funding agencies have proven to be outstanding partners in the joint management and funding of the cooperation schemes. They advocate for real partnership with European countries and are willing to be fully involved in the decisions concerning the strategic choices and practical implementation of the cooperation. Therefore, the joint initiative of the EULANEST partners was based on a reciprocity principle.

This first recommendation entailed several important implications concerning the set of the joint initiative. Full participation of LA counterparts from the very beginning

had to be ensured in order to set up a balanced cooperation. This meant full involvement from the conception of the joint initiative to the joint selection of the proposals and joint management of the scheme. Furthermore, LA partners had to have room to express their own interests and find some of their national priorities addressed in the joint call. Finally, LA and European co-funding of the actions were detected as the best option to guarantee real balance of the cooperation.

The recent shift from development cooperation to new forms of cooperation further based on reciprocity and cofunding of the actions imposes a better coordination of bilateral interests in the LA region. In this new context, competition between European cooperations slightly makes sense compared to the benefits that could be drawn from an adequate articulation of the bilateral programmes, i.e. highlighting the complementarities and concentrating on the areas each country can bring more added value to.

This calls for the combination of bilateral programmes with innovative ways of cooperation, such as joint actions, especially at the European level, which are likely to benefit all the participating countries.

The benchmarking of the European national schemes showed that many of them have the same priorities, finance similar types of actions and are implemented following the same basic principles. This brought up the idea of using the bilateral schemes for the launch of the joint call by merging some of them (or parts of them) in a single one instead of creating a joint initiative which duplicates the existing cooperation.

This saved the efforts of creating a whole new scheme. In addition, parts of the financial resources bilaterally devoted to these schemes could be used to launch a European initiative. The merge only made sense where existing bilateral programmes had significant common grounds in terms of the target countries, thematic priorities, actions funded, counterparts and funding mo-

dalities. This was particularly the case for the schemes included in the first and second category of the described typology, including schemes oriented towards pure bilateral cooperation or those whose main goal is to prepare the ground for joint research projects. The first category was more appropriate to perform the pilot experience, as most EULANEST partners implement programmes oriented towards pure bilateral cooperation, whereas, in the other categories not all of them are represented.

The benchmarking exercise showed that most of the schemes spent their funding on mobility and training actions. These types of actions should therefore be discarded, unless they were addressed in such a way that they brought added value compared to the existing bilateral cooperation. There is indeed no particular gain in focusing on mobility schemes to create links between European Member States, as such initiatives already exist at the European level, e.g. Marie Curie scheme. However, implementing scientific cooperation programmes on the basis of joint research projects could certainly be much more interesting.

Furthermore, within the discussion of thematic priorities for the joint call it was questioned whether it was essential to preset some topics for the call. On one hand, announcing thematic priorities seemed to be the only way to identify concrete partners and to choose countries to collaborate with. On the other hand, the priorities had to be broad enough to leave appropriate room for negotiation with the LA counterparts. For the final establishment of thematic priorities LA interests were fully taken into consideration.

The best practices included in this report have been identified by European managers of S&T cooperation schemes with LA. Even if they refer to basic management principles that may seem obvious and shared by everyone, they provide a clear layout of the key aspects that have been taken into account for the successful management of the joint initiative.

2. ANALYSING THE RESEARCH SYSTEMS OF TWO LATIN AMERICAN COUNTRIES

Continuing the benchmarking report, country specific studies on the Science, Technology and Innovation structure regarding the focal LA countries were elaborated. Due to time restrictions, specific country reports were finalised only for Brazil and Mexico. Main objective of the analysis was to detect lines to approach cooperation in the science and technology sector, amongst others in view of the EULANEST joint call.

Both country reports were elaborated following the same structure, in order to make the obtained information comparable.

Organised in three parts, the reports compile and interpret the existing information concerning the research system of the respective country. The first part looks closely at the research systems, reviewing its organisation, main actors and the resulting ways in which it operates. The second part is devoted to a detailed examination and analysis of current scientific priorities in each country, as conveyed in the case of Mexico by the Special Programme for Science, Technology and Innovation (PECyTI) 2008-2012 and in the case of Brazil by the National Action Plan for 2007-2010.

These first two parts thus provide the reader with a state of the art overview of the countries' research and innovation potential and a guide to the structure of the corresponding institutions. They give a glimpse on the trends that are arising under the impact of the government's options for gearing science, technology and innovation to the needs of national development.

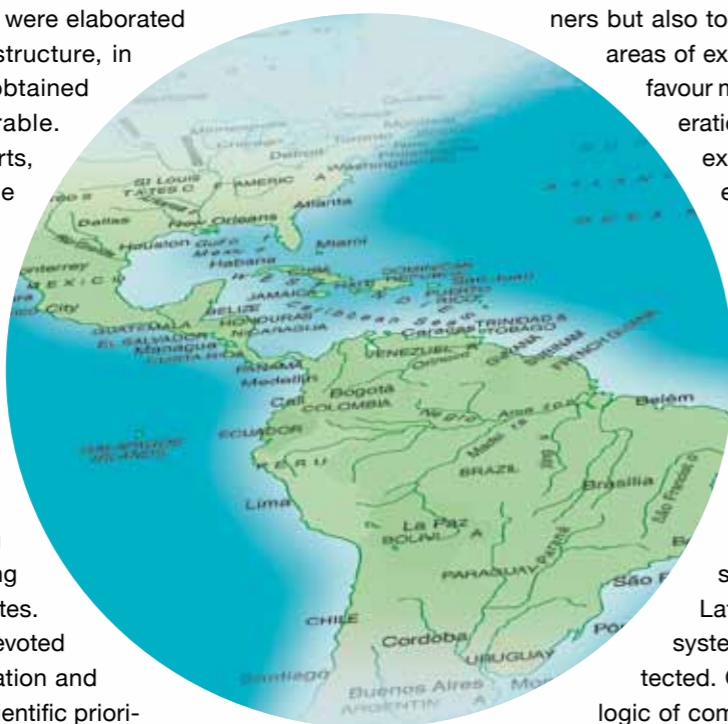
The third and final part offers an interpretation of the information collected, that aimed to give pointers to the

lines of approach for the joint call and future cooperation. The study of the different instruments deployed for bilateral S&T cooperation is thus helpful both for detecting common elements in each member state's policies for cooperation with the Latin American partner and for identifying good practice in this field. Additionally, the knowledge about the research and innovation system of the Latin American countries opens the way not only to

reasoned choices concerning institutional partners but also to ways of targeting the areas of excellence in science, to favour more competitive cooperation. In addition, detailed examination of the scientific priorities brings into relief the sectors for which the federal political authorities explicitly wish to call for international S&T cooperation.

Talking more generally about the European motivation for research cooperation with Latin America, two basic systems of criteria were detected. One line is built by the logic of competitiveness, which is the most common motivation for financing international, bilateral research projects. All five

European countries concerned have this instrument at their disposal. It aims to create and consolidate the links for joint scientific collaboration between national research teams and their Latin American counterparts, in a healthy spirit of worldwide scientific cooperation. For the European research teams involved, the essential purpose of these projects is to ally with Latin American research teams working on the same subject with the intention of sharing the mutual scientific advances and willing to fortify each other. The second motivation has a more philanthropic background of cooperation being initiated as aid for development. Under this category all the programmes could be classified that aim to give Latin American PhD students training in research by



research. This includes programmes that support the emergence of research teams associated with a European team, but also all those which take on the objective of furthering regional integration by setting up networks of research teams of different Latin American countries.

Concerning the European instruments of cooperation, two distinct approaches coexist. The bottom-up method, in means of some research operators that have sufficient resources of their own (like the large research institutions), and in contrast the top-down logic of agencies which operate with a competition-oriented approach using calls for projects.

2.1. THE CASE BRAZIL

2.1.1. STRUCTURE OF BRAZILIAN ST&I SYSTEM

The following abstract will present the backgrounds of the Brazilian ST&I system presenting key actors such as policy-making institutions, research operators and the intermediary structure. The base of information was built by the "fiche Curie+Brasil" that was elaborated by the scientific officials of the French embassy in Brasilia in 2007.

Generally, the observation of the Brazilian system and structure in the science, technology and innovation sector always implies a differentiation of the two levels of operation and decision-making: the federal and the federate.

On federal level the Ministry for Science and Technology (MCT) is a main player for the definition and implementation of the national science, technology and innovation policy (PNCTI). Main driver of the implementation of the PNCTI is the MCT, supported by the

- **Ministry of Education (MEC) by means of Federal Agency for Support and Evaluation of Higher Education CAPES**
- **several sectoral ministries (development, industry and international trade; health; agriculture, fisheries and supply; mines and energy; defence; national integration; planning; finance)**
- **and the president of the Casa Civil (civil house)**

On federate level each state has a State Secretariat for Science and Technology. They are brought together in the National Council of State Secretaries for Scientific and Technological Affairs and Innovation (CONSECTI).

Principal objective of the council is to unify the states ST&I activities while ensuring the decentralisation.

Nevertheless, joint work of the federal (mainly MCT) and federate (CONSECTI) institutions is important for the implementation of the national ST&I policy, which was confirmed by the signing of the cooperation protocol in 2005.

Research operators

Activities in research and development are mainly realised by the public sector in means of research laboratories established in public bodies and universities. The greatest number of research institutions is accordingly attached to ministries, e.g. the MCT manages 20 research units in Brazil's highest priority fields in ST&I. Moreover, the universities are counted as the main contributors to Brazil's research, whereas federal ones take up leading positions in the national ranking realised by the CAPES according to an assessment system to classify the best Brazilian universities.

Intermediate structure

As for the implementation of ST&I strategies, two distinct political levels of operation have to be considered looking at the intermediate structure. Included are theme-based coordination agencies (for programming and/or financing), structures geared to valorisation (innovation agencies) and the assessment bodies.

On the federal level, the main national funding instrument for R&D managed by MCT is the National Fund for Scientific and Technological Development mainly supporting projects in the countries' priority areas. MCT has several agencies to pursue its objectives, of which two are geared to the financing of research: the National Council of Scientific and Technological Development (CNPq) and the Studies and Projects Financing Agency (FINEP).

CNPq is Brazil's oldest funding agency having at its disposal two types of instruments for funding: training grants and financing for scientific research. These instruments are applied using three mechanisms set up in the context of pre-defined programmes:

- **annual calendar for permanent activities (grants, organisation of scientific events)**
- **calls for proposals for specific activities (occasional grants or financial packages)**
- **agreements and partnerships in support of specific actions carried out by the CNPq itself or by third parties**

FINEP promotes and finances scientific and technological research in public and private companies and institutions. It has three financing instruments at its disposal following calls for proposals for subsidies attributed to actions conducted in fields predetermined by the sector funding coordination and management committees, on the resources for sector funds repayable advances intended for companies investments made with own resources or coming from sector funds for specific actions and as backing for innovatory companies.

Parts of the federate fiscal are taken for the financing of research and development. Funding is managed by research support foundations (FAPs) that are generally linked to the State Secretariats for Science and Technology and brought together in the National Council of State Research Support Foundations (CONFAP). Funding schemes are the allocation of grants, research support arrangements, support of scientific exchange and the dissemination of science and technology.

Contributing to the optimisation of Brazilian research, the set up of innovation agencies in universities and research laboratories was made compulsory by the Law on Innovation passed in 2004.

The assessment function on federal level is taken by CNPq and CAPES. The latter is in charge of the assessment of university courses and programmes whereas CNPq for the assessment of research staff. They have moreover set up an online interface system where researchers can publish their curriculum: the *Lattes platform*. The actuality of this platform is guaranteed, as only registered researchers can apply for calls published by CNPq.

At the federate level the FAPs take up the roll of assessment bodies.

2.1.2. BRAZIL'S RESEARCH PRIORITIES

The definition of Brazil's priority research fields for the development of the national science and technology sector was realised by the layout of the Action Plan 2007-2010 with the subtitle "Investment for growth". The examination of this document served to give an insight in Brazil's priorities defined in the ST&I sector.

Main objectives were the broadening of the national scientific base, consolidation of excellence in the various fields of knowledge as well as the enhancement of the technological potential of industry by creation

and acquisition of knowledge and its transformation in innovations.

Four major strategic priorities are formulated in the Action Plan 2007-2010: These are transformed in certain lines of action and implemented by several specific programmes.

The first priority is to extend, integrate, modernise and consolidate the national system of science, technology and innovation, in particular by means of a link-up with federate State governments, such as to strengthen and enlarge the national science and technology base. The three main lines of action in this field are: (I) institutional consolidation of the national ST&I system; (II) training and qualification of ST&I human resources; (III) infrastructure and financing of scientific and technological research.

The second strategic field is dedicated to accelerate the implementation of an environment favourable for innovation in industrial companies, particularly by reinforcing the federal government's industry, technology and foreign trade policy. The strengthening of research in the private sector is also formulated in three lines of action: (I) support for technological innovation in industrial companies (support of research, technology and innovation activities of companies to make them more competitive; cooperation projects between industry and R&D institutions); (II) technology for innovation in industrial companies (network of centres of technological research as support for development of industrial companies); (III) support for creation and consolidation of innovatory companies.

Prioritise research and innovation activities in fields that are strategic for the country's sovereignty form the third strategy of the Action Plan. Over one third of the resources are nominated for this sector. Activities concern the support of high technology sectors with most potential for growth and sectors that are mostly important for Brazil's sovereignty and security. Moreover, the objective is to reduce social and regional inequalities by the reinforcement of regional innovation structures and support of the specific economic potential. The defined strategic fields are the following:

- **key fields for the future, biotechnology and nanotechnology**
- **information and communication technology ICT**
- **health care products and services**
- **biofuels**

- **electrical energy, hydrogen and renewable energies**
- **oil, gas and coal**
- **agriculture and food industries and their derivatives**
- **biodiversity and natural resources**
- **Amazon Basin and Semi-arid environments**
- **meteorology and climate change**
- **the space programme**
- **the nuclear programme**
- **national defence and public security**

Finally, the fourth strategic priority is to promote the popularisation of science subjects and teaching in schools as well as the propagation and dissemination of technologies, in order to make the benefits brought by scientific progress accessible for all and to improve the Brazilian people's living standards. The two lines of action defined are: (I) popularisation of ST&I and (II) improvement of science education and technologies for societal development.

2.1.3. APPROACH FOR EU-BRAZIL COOPERATION

The Brazilian Action Plan 2007-2010 defines certain priority areas for research and development, as cited above. The country report served for a closer analysis of the specific fields with special focus on hints concerning international cooperation. In some of the priority areas international cooperation is explicitly welcome to consolidate national efforts. From the European perspective this offers an excellent approach for cooperation activities with Brazil. The following listing will give an idea of the needs expressed for international cooperation in specific programmes of the Action Plan:

- **Science, technology and innovation for nanotechnology: training of human resources to increase knowledge and skills in this field in the country**
- **Support for the technological development of the electronics and semiconductor industries: cooperation with institutes of excellence**
- **Pharmaceutical industry: production of medicines and biomaterials**
- **Cooperation with the countries dominant in biofuels production in order to maintain the Brazilian world leading position**

- **Food and agriculture sector: EMBRAPA (Brazilian agriculture research cooperation) steering international cooperation in this area**
- **Science, technology and innovation for conservation and sustainable development of the Amazon region: cooperation with countries concerned with the region to fight social and environmental problems**
- **Space: commercial exploitation of the Alcântara space centre**
- **Nuclear field: training of research human resources to be able to participate in the latest developments for nuclear fission reactors**

Apart from the programmes that explicitly demand international cooperation, approaches can be identified in some other programmes of the Action Plan as well. For example, the exchange of PhD students plays an important role in the programme line for training, qualification and fixation of human resources for ST&I. In this context, the multi-lateral Marie Curie Action can be interesting. Moreover, Brazil's priority programme for the promotion of technological innovation in industrial companies offers opportunities for international cooperation whereat starting point could be a European participation in setting up business incubators. Two more sectors of interest in international ST&I cooperation are the ICT sector and alternative energy sources. In the ICT area for example partnerships in higher education are demanded and in the energy sector technology-based international cooperation for a sustainable development.



Generally, in the context of research cooperation with Brazilian counterparts the European researchers must pay attention to the national requirements their partners have to meet, whether to satisfy their assessment criteria and enable them to obtain or keep hold of their CNPq grants, or to comply with the compulsory registration procedures of the *Lattes platform* and other research support tools in operation in Brazil.

2.2. THE CASE MEXICO

2.2.1. STRUCTURE OF MEXICAN ST&I SYSTEM

The following résumé will describe Mexico's science, technology and innovation landscape as well as the main research operators and stakeholders in the country's ST&I system. Information is based on the "Mexico country profile" that was published in 2008 in the context of work at the Observatoire des Sciences et des Techniques (OST Paris), on behalf of the French Ministry of Foreign and European Affairs and the French Embassy in Mexico.

The Mexican ST&I structure began to take shape in the 1960s with the foundation of the Mexican National Council for Science and Technology (CONACYT). CONACYT is since then the main institution for the generation of Mexico's science, technology and innovation and plays the key role in ST&I policy-making and funding. Several programmes, instruments and schemes are set up in contribution to the country's development in science, technology and innovation.

The national R&D policy is defined every six years by national ST&I programmes presented by CONACYT. The programmes set out the planned objectives, strategies and concrete actions. Major changes in R&D policy came about in the early 2000s, when the PRI, the centre-right party which had governed the country for more than 70 years, gave way to the PAN, a more conservative party. Other than the operational reforms of CONACYT itself, approval of the law on science and technology (LCyT) gave rise to new regulatory and governing mechanisms for activities in science and innovation, devised

for all the players involved. The Special Programme for Science and Technology 2001-2006 (PECYT) put into perspective different objectives of the policy implemented by CONACYT, like decentralisation of ST&I activities, definition of priority sectors, greater participation of the private sector in R&D, or diversification of the means of financing fundamental and applied research. These aims were basically taken up in the current Special Programme for Science and Technology and Innovation for National Development 2008 – 2012 (PECyTI).

Research operators

The actual activity of research in Mexico involves a wide range of institutions. Over half of the activities in research and education are realised by the universities. Further key players are innovative enterprises and research institutes. The latter are mainly represented by the 27 public research centres within the CONACYT system and sectoral centres belonging to ministries or public institutions.

Concerning the universities a very heterogeneous structure is found in Mexico including public and private universities, technological institutes, technological universities, polytechnic universities, public research centres, education training colleges and specialist centres for advanced technical training. The National Association of Universities and Institutions of Higher Education (ANUIS) takes in 152 universities and its objective is the strengthening of the Mexican educational and research activities. The association organised forums to promote the improvement of teaching programmes, conducts studies and diagnoses and proposes strategies for encouraging the development of the academic system as a whole.

The public research sector is represented by 27 research centres that operate under the umbrella of CONACYT, and others that work under the supervision of technically oriented ministries. They include the Mexican Institute of Petroleum (IMP), Institute of Research in Electricity (IIE), the Institute for Water Research (IMTA), National Institute for Forestry, Agriculture and Fisheries Research (INIFAP) and the Institute of Nuclear Research (ININ). Even though the research centres depend on the ministries they are relatively autonomous in their budget and research policy.

Since the 1990s CONACYT set up new schemes for the development of technology and innovation infrastructure, thus strengthening research activities of the private sector. Place was given to set up several programmes

to promote research and innovation capacities of enterprises favouring the modernisation of production processes and technology transfer.

Intermediary structures

The intermediary structures include theme-based coordination agencies (for programming and/or financing), structures geared to valorisation (innovation agencies) and the advisory or assessment bodies.

CONACYT is Mexico's most important theme-based agency and primary funding agency for the scientific and technological development of the country.

ADIAT, the Mexican Association of Directors of Applied Research and Technological Development is an association of industrial companies and research centres building the strongest force for innovation in Mexico. Tools for ADIAT's work are publications, training programmes and the annual prize for innovation.

Mexico's advisory and assessment bodies for S&T are FCCYT (the Scientific and Consultative Forum), AMC (Mexican Academy of Science) and REDNACECYT (National Network of State Scientific and Technological Councils and Organisations).

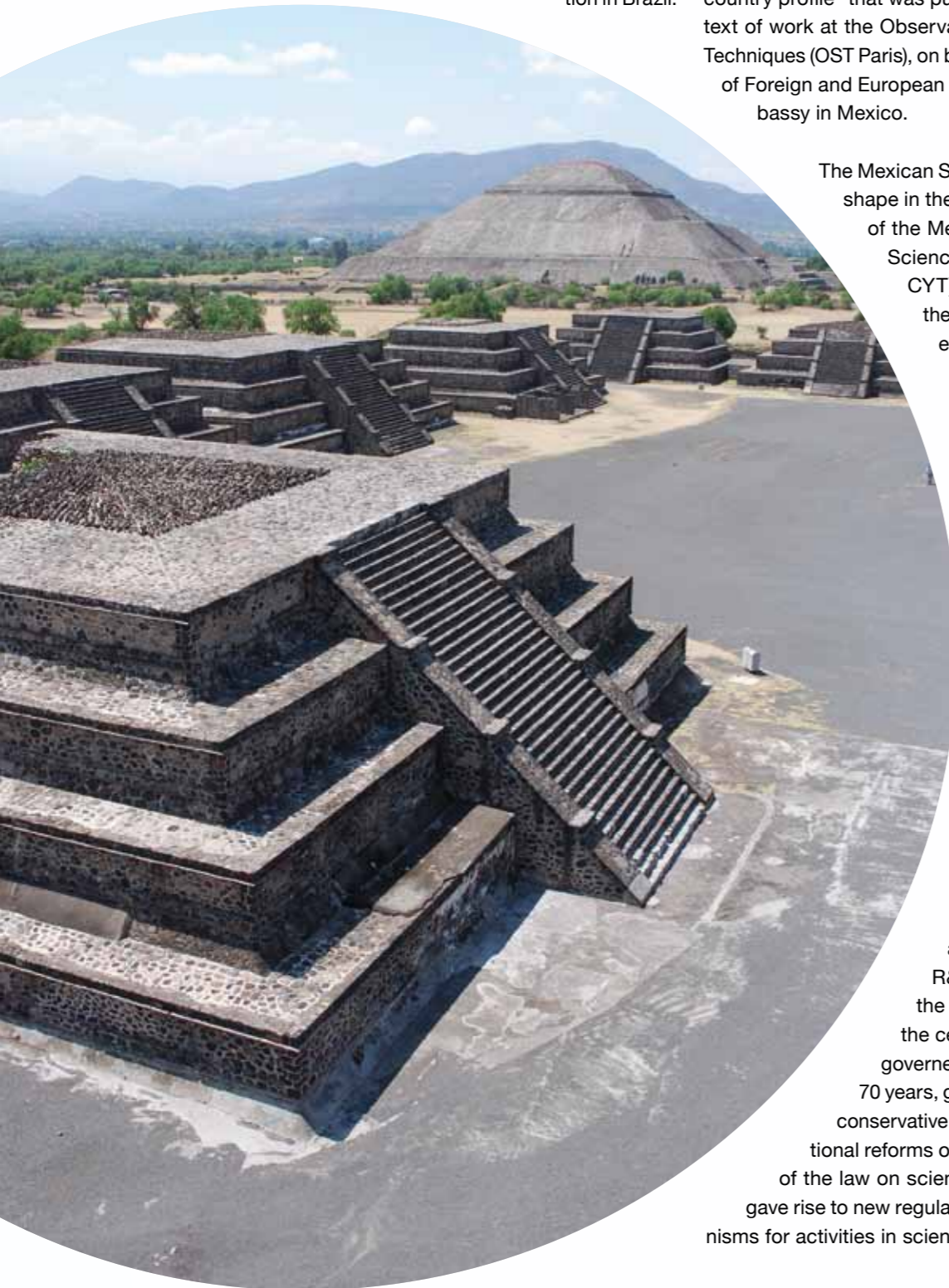
FCCYT was funded by law on science and technology LCyT in 2002 and has an advisory function bringing the scientific and technological community's opinion on CONACYT's schemes and programmes and on the strategies of the S&T policy.

AMC is an institution which comprises the country's most prestigious researchers. It can exercise at the same time the role of a pressure group to influence the definition of CONACYT's policies and of a partner in negotiations for the federal research funding budget.

REDNACECYT is an association bringing together the different councils and organisation's responsible for the S&T policy of each State. This network promotes the decentralisation of S&T activities by taking part in the coordination of a range of actions run by CONACYT, FCCYT and other intermediary institutions.

2.2.2. PRIORITIES IN MEXICAN S&T

The analysis of the Special Programme for Science, Technology and Innovation for National Development (PECyTI) 2008-2012 gives ideas of the Mexican priorities for ST&I.



Taking up basic lines of the previous programme for science and technology PECYT 2001-2006, the new national programme PECyTI 2008-2012 formulates aims and structures of the Mexican research activities, presented in five main objectives:

- **Establish a state policy, for the short, medium and long term, that will reinforce the education-fundamental and applied science-technology and innovation chain**
- **Proceed with the decentralisation of scientific, technological and innovation activities, taking into account the local needs, so as to contribute to the regional development and the use of more suitable technology**
- **Increase and diversify the financing of fundamental and applied research for technology and innovation, from outside public, federal government and state government funding sources**
- **Increase investment in infrastructure for science, technology and innovation, while diversifying the corresponding sources of finance**
- **Assess the way public resources can be invested in human resources training, research and innovation, with a view towards national social and economic development**

With the publishing of the Law on Science and Technology in 2001 which took reference of the PECYT, the importance of science and technology as a driving force for the country's economic and social development was emphasised. The PECYT 2001-2006 also mentioned the importance of international cooperation in research and development. As a confirmation to this the S&T agreement with the European Union was signed in 2004.

The schemes of CONACYT since 2001 mainly focus on the training of human resources in research and development as well as on the promotion of scientific research (academics), innovation and technological development. These lines are implemented in different funding schemes and programmes for research. For the support of sectoral research activities calls are launched

by CONACYT and thematic institutions. Furthermore funds are available for network-building and building of joint laboratories. To ensure the decentralisation of the Mexican R&D activities some programmes are funded by CONACYT in cooperation with the regional governments. Regarding the promotion of research in the public sector CONACYT cofinances programmes to support innovation in companies, to set up R&D infrastructure, human resources for development, innovation projects in leading-edge sectors, patents etc. For strengthening the international dimension of research development Mexico has agreements with several American, Asian and European countries. Furthermore, the participation of Mexican researchers in multilateral cooperation (FP of EU, OAS, CYTED) is nationally supported.

2.2.3. APPROACH FOR EU-MEXICO COOPERATION

As emphasised in the country report, Mexico's scientific community has strongly been developed in the last decades, as have their counterparts in other large countries of Latin America. This trend has been fostered particularly by the mobility of PhD students, but national investments in science and technology have also been a vital factor (for infrastructure, finance programmes and so on).

The report also examined priorities in the field of research in Mexico that are presented in the PECyTI 2008-2012. According to this, national emphasis is put on biotechnology, medicine, energy, environment, technology for industrial production, materials, nanotechnology, ICT, applied mathematics and modelling. Knowledge about the scientific priorities serves as an approach for cooperation with Mexico, even though it was mentioned that a more detailed definition of the thematic focuses would be even more valuable for the operation of the cooperation.

Another approach for cooperation in ST&I with Mexico should be the strengthening of PhD exchange programmes to involve young scientists in international cooperation activities and contribute to the factor of sustainability of the cooperation.

3. EVOLUTION AND KEY TRENDS IN THE S&T COOPERATION BETWEEN COUNTRIES OF THE TWO REGIONS AS ANALISED IN KEY STUDIES

The key ideas expressed in relevant studies addressing the S&T cooperation between Europe and LA have been identified.

In the approach used, we avoid to enter in a too detailed description of the key studies that have been identified covering the topic mentioned above. Our main objective is just to capture in a synthetic way, the main features, trends, barriers and drivers of the cooperation at stake. This objective faced the difficulty of the scarcity of studies tackling in a systematically way the different aspects of the cooperation between the two regions.

Most of the studies are focused on the situation of a specific country and, in a significant number of cases, the topics are approached in different or even very diverse perspectives.

On the other hand, in many studies the theme of international cooperations is addressed as a part (sometimes small) of a study aiming at covering issues with a larger spectrum.

Thus, in general terms we have been dealing with non systematic and fragmented information.

Our analysis tried to pay a particular attention to studies centered on the cooperation at stake as perceived by LA experts because these studies tend to take the contextual conditions in each country or region more into account. Anyway, studies made by Europeans were considered as well.

3.1. KEY FACTS OF THE S&T COOPERATION

3.1.1. HETEROGENEITY ACROSS COUNTRIES

A main feature of the LA cooperation in S&T is a large heterogeneity in the level of development of the national systems. Thus, the type of cooperation at stake and the expectations of the LA countries are quite different across countries. This heterogeneity also applies

to the European countries. Thus, the complexity of the cooperation is a main constraint.

With respect to heterogeneity in LA, we underline the following dimensions:

- **Dimension of the population and scientific community**
- **Intensity of the research effort (in terms of expenditures vis-à-vis GDP)**
- **Traditions and propensity to cooperate internationally**
- **Intensity of the effort of advanced training, namely in the preparation of new PhDs**
- **Offer of S&T infrastructures**
- **Propensity to publish in co-authorship internationally**

3.1.2. THE SCIENTIFIC PERFORMANCE OF LA

The weight of LA countries on the world publication has been evolving positively (for example from 1.6 % to 3.3 % in the period 1993-2002).

This is a positive evolution but still reflects an important gap vis-à-vis Europe.

As it is mentioned in several studies under analysis, the performance is rather or even radically different across countries. The publications are clearly concentrated in several countries where Brazil accounts for almost 50 % of the publications.

With respect to the low number of patents all countries show the same pattern although with small differences.

Let us underline that, as it is stated in one of the studies, even the disclosure of this type of indicators, monitoring the evolution of the S&T landscape in LA benefits to a large extent from international cooperation instruments.

3.1.3 S&T IN THE CONTEXT OF OTHER MODES OF COOPERATION

A main concern of several studies under analysis tends to value very positively the impact of other modes of cooperation beyond the one to research cooperation. Such modes of cooperation are more associated with capacity building and with the creation of critical masses in several LA countries. This has been of crucial relevance in the process of scientific development of LA.

It emerges clearly from the studies that this dimension of capacity building has been absolutely critical for creating basic conditions to cooperate internationally in an effective and “symmetric” way.

Several studies particularly stress the importance of capacity building and further its relevance for paving the way to new and even more effective cooperation. In LA, there has been an association between instruments more oriented to aid the development and others more oriented to the performance of cooperative research.

The first instruments mentioned above are by nature asymmetric and have played an important role namely in the reinforcement of the scientific infrastructure in LA countries. Nevertheless, the second instruments are as well relevant with respect to the impact on the development of LA landscape in S&T.

3.2. THE STRATEGIES OF COOPERATION

3.2.1. STRATEGIES AT COUNTRY LEVEL

The issue of strategies of the European and LA countries is hard to find dealt with a systematic way in studies that address the type of cooperation under analysis.

From the European side one can mention a study made in the nineties (1996) which addressed systematically the strategies of the European countries with respect to international cooperation with a target region. This study was commissioned by the European Commission (DG Research) and was designed to cover key issues of the international cooperation, such as:

- The priority target countries for cooperation
- Intensity of the RTD cooperation with LA
- Identification of cooperation programmes with the target countries

- Estimated expenditures in the RTD cooperation programmes
- The model of RTD cooperation with LA
- Fields of S&T identified in the different schemes either by European or by the target region (in this case LA)
- Modes of cooperation (mobility, joint projects, capacity building, workshops, ...)
- Future trends on the cooperation with LA

The objectives of this study were quite ambitious and pertinent. Its quality is highly dependent on the reliability of the answers provided by the respondents that have been selected. Thus, although providing clues for the main features of the cooperation along the lines presented above, the results of the study are stimulating but should be taken with care. On the other hand, the results may be now outdated for sure although some aspects and trends that have been identified (namely from the European side) stay more the same. For example, the European countries more active in the cooperation with LA countries tend to be the same, but a reinforcement of the interest of some new players in the cooperation with LA has emerged.

In particular what seems to have clearly increased is the intensity of a more symmetric cooperation given the larger performance that some LA countries gained since then.

LA was one of the target regions that was covered in a special volume dedicated to it. Since this study is outdated, we do not deliver in this context a more in depth analysis of the results obtained.

More recently (2006-2008) a working group of the European Union Committee for Scientific and Technical Research (CREST) made an interesting exercise about international cooperation by taking into account the information about the practices and priorities of some MS on international cooperation. The corresponding report provided very useful information about the strategies of several MS vis-à-vis international cooperation but it does not particularly address LA countries. Therefore, it is worth to underline that a particular attention was paid to the case of Brazil for which a specific report was prepared.

Bilateral agreements are a highly disseminated instrument that many countries use in their scientific cooperation.

It is clear that there are a few agreements that remain at a political level and do not show real dynamics of implementation.

In parallel, there are many agreements between European and LA countries that are active and mobilise the interest of national scientific communities.

The question arises whether such agreements are based upon a strategy or such schemes might be just an ad-hoc approach allowing informal exchanges and personal contacts.

3.2.2 STRATEGIES AT REGION LEVEL

The origins of the LA-EU S&T cooperation are well known and documented by policy or evaluation reports. Therefore, specific independent studies focusing just on strategic policy issues of the EU or LA as regions that cooperate in the S&T area are not addressed in this text.

Anyway, one can find pertinent statements related to this issue, for example, in relation to EU specific programmes targeting LA countries or giving room for them in the FP. In the studies under analysis, such statements do address more the results of the programmes rather than its concept and design.

With respect to the strategies of LA, the sub-regional initiative MERCOSUR has been showing a high potential for the field of S&T. Again, specific studies in this area will be welcome.

3.3. MAIN BARRIERS TO COOPERATION BETWEEN THE TWO REGIONS

3.3.1. AT EUROPEAN LEVEL

The important issue of the main barriers for cooperation of European with LA countries has not been addressed explicitly in recent studies that we have identified. This does not deny the relevance of the issue.

For sure, this type of question has been dealt with several coordination actions supported by FP7. Therefore, the deliverables of such projects that might address this issue are not included in the universe of documents that we have analysed.

3.3.2. AT LA LEVEL

It is interesting to note that several studies addressing the issue of barriers to cooperation from LA have been analysed.

Let us note that at LA level, several experiences between countries have been gained. An example is the Programa Regional del Desarrollo Científico y Tecnológico de la Organización de los Estados Americanos. This programme was very important as a driver for developing a culture of S&T cooperation at LA level, as Sebastián, J. (2007) underlines. The fact that it was not possible to keep the programme running reflects the difficulties in implementing regional cooperation.

Other factors that contribute to hampering the cooperation of LA with European countries have been identified as low or insufficient:

- Number of researchers
- Number of new PhDs
- Number of research infrastructures
- Investment in S&T
- Internationalisation of researchers and organisations
- Number of patents
- Uptake of R&D results by companies
- Involvement of business sector in S&T activities
- Number of researchers in the business sector in many LA
- Propensity of LA companies to cooperate internationally on S&T activities

Another factor acting as a barrier is associated with the multiplicity of very small programmes.

The innovation systems in LA countries are generally weak and often fragmented.

Anyway, let us underline that a few LA countries have been taking measures to boost the national S&T and innovation system.

3.4. MAIN DRIVERS TO COOPERATION

The drivers of the S&T cooperation are obviously different in the regions.

3.4.1. AT EUROPEAN LEVEL

Most of the European countries do not have explicit strategies for international cooperation on S&T expressed in a dedicated document. One of the exceptions is Germany, but even in the case of Germany there is no specific policy with regard to LA. This does not mean that the countries might not have strategies of cooperation on the field (as France and others) but they are not necessarily reflected in written documents. Concomitantly, studies focusing on the strategies of European countries vis-à-vis LA countries are hard to find.

One of the modes by which the cooperation is operationalised is through bilateral agreements between countries of the two regions. A large set of consolidated schemes have been working for years between several pairs of countries of the two regions. This type of cooperation has been to some extent updated in depth in the mapping and benchmarking exercises presented in the scope of EULANEST. No fresh studies about this theme have been identified to report.

The FPs have provided opportunities for LA to get involved in multilateral cooperation with European partners. Although the participation of LA partners stays at a level rather lower than the one that the existing potential could justify, the FP offers indeed an important tool for cooperation. The evaluation of the INCO programme provides keys for interpreting the current situation of the cooperation under that scheme but such type of studies were not considered in our analysis.

The bilateral programmes between EU (via European Commission) with different LA countries may work as well as a driver for the cooperation in S&T.

The regional strategies of EU for different regions across LA do show a high potential for contributing to capacity building in LA and to improve the conditions for cooperation. These strategies aim at different regions in LA such as Central America, Andin Community and MERCOSUR. It was hard to find studies addressing these specific problems.

3.4.2. AT LA LEVEL

International cooperation has played an important role in an initial phase of scientific development of a few LA countries. This was achieved mainly by promoting or increasing:

- Training of researchers
- Number of infrastructures
- Capacity building
- Internationalisation of R&D institutes
- Universities of high potential
- Funding of joint research activities
- Number of scientific publications

Most of the cooperation was developed through bilateral schemes between LA and European countries (while in parallel, bilateral cooperation was running as well with USA and Canada).

In recent years the CYTED programme has been playing a relevant role in stimulating the involvement of the LA countries involved in subregional association with European countries. Once again, specific studies on this theme have not been identified.

The Organización de Estados Iberoamericanos (OEI), the UNESCO, the Fundación Carolina and other organisations have already contributed to push the intraregional cooperation. This has been a driver namely through the contribution to capacity building of several LA countries.

On the other hand, several studies stress the following programmes/schemes as important drivers for the cooperation between the regions:

- ALFA programme
- Programme ALBAN
- FP (INCO sub-programme)
- Marie Curie Fellowships
- Increasing influence of the Anglo-American model of doctoral programmes

3.5. MAIN FOCUS AND KEY ISSUES OF THE STUDIES UNDER ANALYSIS

In the following table we indicated the selected studies published in recent years which address or are relevant to the international S&T cooperation between EU and LA.

For each study, we indicate the focus/key issues that they address.

Reference	Focus and key issues
Vessuri, H. (2007) <i>La formación de investigadores en América latina</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 1-36, Fundación Carolina, Madrid.	Focus – Training of researchers Key issues: <ul style="list-style-type: none"> • Evolution of the policies aiming at supporting training • Situation in different LAC • Internationalisation of the training • Brain drain • Different cultural and institutional conditions across LAC • The advanced training (PhD) in several LA countries
Luchilo, L. (2007) <i>Migraciones de científicos e ingenieros latinoamericano: fuga de cerebros, exilio y globalización</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 37-80, Fundación Carolina, Madrid.	Focus – Scientific migrations Key issues: <ul style="list-style-type: none"> • Historical evolution of high qualified personnel in LA • Main destination of migrations of qualified personnel • Brain drain • Differences across countries • Impacts
Sutz, J. (2007) <i>Relaciones Universidad-empresa en América latina</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 113-147, Fundación Carolina, Madrid.	Focus – The interface between universities and companies Key issues: <ul style="list-style-type: none"> • The role of universities as source of knowledge in different countries • The contribution of universities for the innovation system in different LA • The situation relative to the cooperation between universities and companies in S&T activities
Licha, I. (2007) <i>Investigación científica y desarrollo social en América Latina</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 149-183, Fundación Carolina, Madrid.	Focus – The social and economical context of the evolution of S&T in LAC Key issues: <ul style="list-style-type: none"> • High concentration of the LA capacity on S&T on a few countries • Historical evolution of the role S&T in LA • Social sciences in LA
Albornoz, M. (2007), <i>Argentina: modernidad y rupturas</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 185-223, Fundación Carolina, Madrid.	Focus – Evolution and state of the art of S&T in Argentina Key issues: <ul style="list-style-type: none"> • Historical evolution and institutional organisation • The role of the universities • Specificities of the country in S&T system
Dagnino, R., Dias, R. and Novaes, H. T. (2007) <i>Evolução do desenvolvimento científico e tecnológico da América Latina: o caso brasileiro</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 225-260, Fundación Carolina, Madrid.	Focus – Conceptual analysis of scientific and technological development in Brazil Key issues: <ul style="list-style-type: none"> • Evaluation of policies • Decision making process
Ramírez, G. (2007) <i>Estado del desarrollo científico e tecnológico de Chile</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 261-299, Fundación Carolina, Madrid.	Focus – Scientific development in Chile Key issues: <ul style="list-style-type: none"> • Evolution of S&T policy • Constraints hindering the implementation of the policies • Characterisation of the state of S&T • Critical factors for the future of S&T in the country
Jaramillo, H. (2007) <i>Colombia: Evolución, contexto y resultados de las políticas de ciencia, tecnología e innovación</i> , in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 301-329, Fundación Carolina, Madrid.	Focus – Evolution of S&T policy in Colombia Key issues: <ul style="list-style-type: none"> • Development of S&T in the country • Investment in S&T and innovation • Publications • Institutional building • Social impact of research and technological development
Salazar, H. (2008) <i>Estudio sobre resultados e impactos de los programas de apoyo a la formación de posgrado en Colombia: hacia una agenda de evaluación de calidad in Observatorio Iberoamericano de la Ciencia, la Tecnología y la Sociedad (OEI-CAEU).</i>	Focus – Results and impacts of post graduation training in Colombia Key issues: <ul style="list-style-type: none"> • Evolution of the training programmes • Constraints • Institutional support

<p>Sibaja, E. and Láscaris, T. (2007) <i>Historia, valoración y perspectiva del desarrollo de la ciencia, tecnología e innovación en Costa Rica</i>, in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 331-360, Fundación Carolina, Madrid.</p>	<p>Focus – Evolution of S&T and Innovation in Costa Rica and the state of the art Key issues:</p> <ul style="list-style-type: none"> • Institutional development • Human Resources • Publications • Investment in R&D • Relations with social and economic development 	<p>Séchet, P., Laville, F. and Waniez, P. (2003) <i>Le Brésil in Les systèmes nationaux de recherche et d'innovation du monde et leurs relations avec la France : éléments de rétrospective, situation, OST actuelle et futurs possibles.</i></p>	<p>Focus – Defining the profile of Brazil on S&T in relation to main characteristics Key issues:</p> <ul style="list-style-type: none"> • Evolution of the S&T system • Publications • Patents • Insertion of research on the international community • Comparative analysis of the cooperation with USA and European countries
<p>Solleiro, J. L., Castañón, R., Montiel, M. and Luna, K. (2007) <i>Evolución del desarrollo científico y tecnológico de América Latina: México.</i>, in <i>Claves del desarrollo científico y tecnológico de América Latina</i> (Sebastián, J. ed.), pp 361-404, Fundación Carolina, Madrid.</p>	<p>Focus – Evolution and characterisation of S&T in Mexico Key issues:</p> <ul style="list-style-type: none"> • Evolution of the system • Constraints to the implementation of policies • Investment in S&T • Human resources • Patents • Publications • S&T development and economic development in the country • Critical factors for the S&T development of the country 	<p>González, L. E., Espinoza, O. (2008) <i>Estudio sobre resultados e impactos de los programas de apoyo a la formación de posgrado en Chile</i> in <i>Estudio de resultados e impactos de los programas de apoyo a la formación de posgrado en ciencias e ingeniería, Observatorio Iberoamericano de la Ciencia, la Tecnología y la Sociedad. Santiago do Chile.</i></p>	<p>Focus – Results and impacts of postgraduation programmes in Chile Key issues:</p> <ul style="list-style-type: none"> • Recent trends in the policies towards training • Trends in the training • Evolution of the demand • Evolution of the offer • Internationalisation of higher education and post-graduation programmes • Institutional organisation
<p>Cetto, A. M. and Vessuri, H. (2006) <i>L'Amérique latine et les Caraïbes hispanophones</i>, in <i>Rapport de l'UNESCO sur la science</i>, pp 47-80, UNESCO, Paris.</p>	<p>Focus – Overall view of S&T in LA Key issues:</p> <ul style="list-style-type: none"> • Cooperation for development • Asymmetry in the cooperation • Conditions for symmetry • Indicators of S&T in LA • Characteristics of the scientific cooperation • Bilateral cooperation • Multilateral cooperation • Different modes of institutional cooperation • Scientific migrations • Cooperation with Europe versus USA • LA scientific infrastructures • Role of international organisations • Role of international funding institutions 	<p>Luchilo, L. (2008) <i>Resultados e impactos de los programas de apoyo a la formación de posgrado en México</i> in <i>Estudio de resultados e impactos de los programas de apoyo a la formación de posgrado en ciencias e ingeniería, Observatorio Iberoamericano de la Ciencia, la Tecnología y la Sociedad. Centro Redes.</i></p>	<p>Focus – Support to postgraduation training in Mexico Key issues:</p> <ul style="list-style-type: none"> • Training programmes • Trends in the training • Indicators • Institutional organisation • Characterisation of the training programmes • Evaluation of the training programmes
<p>Plonski, G. A. (2000) <i>S&T Innovation and Cooperation in Latin America, Cooperation South 1</i>, 99-107.</p>	<p>Focus – Ideas for reshaping S&T and Innovation cooperation Key issues:</p> <ul style="list-style-type: none"> • Examples of programmes • The case of MERCOSUR • New agenda for S&T cooperation in LA 	<p>Lvovich, D. (2008) <i>Resultados e impactos de los programas de apoyo a la formación de posgrado en Argentina</i> in <i>Estudio de resultados e impactos de los programas de apoyo a la formación de posgrado en ciencias e ingeniería, Observatorio Iberoamericano de la Ciencia, la Tecnología y la Sociedad.</i></p>	<p>Focus – Results and impacts of postgraduation in Argentina Key issues:</p> <ul style="list-style-type: none"> • Training programmes • Institutional support • Indicators relative to training
<p>Sebastián, J. (2008) <i>La cooperación académica y científica en el espacio eurolatinoamericano</i>, <i>Revista española de desarrollo y cooperación</i> 142, 163-178.</p>	<p>Focus – Main characteristics and constraints of the scientific cooperation between LA and Europe and the role of EC in this cooperation Key issues:</p> <ul style="list-style-type: none"> • The bases of the cooperation • The bilateral level • The participation on the FP • Copublications • Multiplicity of schemes for supporting scientific cooperation • Multiplicity and heterogeneity of players • Low number of PhD programmes • Strategies and instruments of EU for the scientific cooperation with LA (including regional programming for LA) • Cooperation strategies of EU with several LA countries 	<p>(2009) <i>Grandes instalaciones científicas en Iberoamérica</i>, <i>Revista Iberoamericana de Ciencia, Tecnología y Sociedad.</i></p>	<p>Focus – Identification of large scientific infrastructures in Latin America Key issues:</p> <ul style="list-style-type: none"> • Description of the main characteristics of the infrastructures • The potential role in international cooperation
<p>Baud, M. (2002) <i>Latin American and Caribbean studies in the Netherlands</i>, <i>Revista europea de estudios latinoamericanos y del caribe</i> 72, 139-160.</p>	<p>Focus – Identification of studies on LA in Netherlands and trends Key issues:</p> <ul style="list-style-type: none"> • Institutions involved • Types of studies 	<p>(2008) <i>Lessons learnt from the S&T cooperation of Member Status/Associated States with present and future international competitors: Brazil</i> (prepared for CREST Working Group on International Cooperation).</p>	<p>Focus – Analysis of S&T and innovation in Brazil Key issues:</p> <ul style="list-style-type: none"> • The S&T system • S&T cooperation with Europe • International mobility of Brazilian researchers • Brazil's S&T cooperation with USA, Canada and Japan
<p>Villavicencio, D. H. and Inizan, S. (2008) <i>Profil Mexique</i>, in <i>Profil Pays</i>, pp 1-59, OST.</p>	<p>Focus – Defining the profile of Mexico on S&T in relation to main characteristics Key issues:</p> <ul style="list-style-type: none"> • Evolution of the S&T system • S&T production • National programmes • The players • International cooperation • Cooperation with Europe and North America • Opportunities for cooperation 	<p>El Estado de la Ciencia 2009, RYCIT (2009).</p>	<p>Focus – S&T indicators in LA countries Key issues:</p> <ul style="list-style-type: none"> • Evolution of the main indicators • Comparisons in the international context
		<p>Barrere, R. (2009) <i>La biotecnología en Iberoamerica. Situación actual y tendencias</i>, <i>Observatorio Iberoamericano de Ciencia, Tecnología, y Sociedad del Centro de Altos Estudios Universitarios de la OEI.</i></p>	<p>Focus – Analysis of international cooperation of LA countries on the field Key issues:</p> <ul style="list-style-type: none"> • Publications • Comparison across countries • In depth analysis of the Ibero American cooperation • Trends in the cooperation

4. THE JOINT CALL INVOLVING COUNTRIES OF THE TWO REGIONS

EULANEST was aiming to overcome the fragmented scientific cooperation with Latin American countries by the establishment of a consortium that brought together European programme managers. Until then, cooperation was primarily based on bilateral cooperation between European and Latin American countries.

In pursuing this goal and in contribution to the international dimension of the European Research Area (ERA), EULANEST aimed to initiate multilateral research cooperation. Within this framework, one of the main goals was the launch of a joint call, which contributed to the building of joint research collaboration in the field of Sustainable Renewable Energy in the frame of climate change, and Nanoscience with focus on human health. Considering that the opportunities for research funding for multinational projects between Europe and Latin America have been limited, the intention of launching this joint call was to encourage joint research activities in the respective fields of science and to promote networking activities between the partners of the mixed LA-EU consortia.

4.1. TERMS OF THE PILOT JOINT CALL

Launching the joint call was an initiative jointly realised by the European EULANEST consortium and partners from Brazil and Argentina in the frame of the ERA-Net Action. Initially, Chile and Mexico were also invited to participate but due to the worldwide crises and the financial engagement in other projects, their participation finally could not be realised.

Hence the joint call was realised and financed by the following European institutions

- **Ministry of Foreign and European Affairs (MAEE), France**
- **Ministry of Higher Education and Research (MESR), France**
- **Research Institute for Development (IRD), France**
- **Federal Ministry of Education and Research (BMBF), Germany**

- **International Bureau of BMBF (IB-BMBF) at DLR, Germany**
- **Research Council of Norway (RCN)**
- **Foundation for Science and Technology (FCT), Portugal**
- **Ministry of Science and Innovation (MICINN), Spain**

in cooperation with two Latin American institutions

- **Ministry of Science, Technology and Productive Innovation (MINCYT), Argentina**
- **National Council for Scientific and Technological Development (CNPq), Brazil**

In order to elaborate the framework and content of the joint call, a “joint call preparation workshop” was realised. All joint call partners were participating to define aims, thematic focus, conditions and process of the joint call.

It was agreed to realise a joint programme for funding scientific collaboration projects in areas of interest of the two regions. Discussing the thematic focus, it was decided to open the call for submission of proposals in two fields of science

- **Sustainable Renewable Energy in the frame of climate change and**
- **Nanoscience with focus on human health**

French and Norwegian partners only participated in funding projects in the area of Energy due to national research emphasis.

The liaison of European and Latin American scientists was meant to build effective collaborations on common research questions, based on complementarities, sharing of expertise and methodology to create new knowledge through a mixed consortium. The intention was bringing together Latin American and European scientists to work on a joint topic of mutual interest and thereby build up research networks. Thus, the call aimed to promote research activities but also networking activities in the defined thematic fields.

The joint call was directed at European and Latin American scientists who were already involved in joint research collaboration as well as those aiming at starting a new collaboration.

Financing of the joint call was realised through the model of a virtual common pot, which implied a two step application system (international and national) and funding of each project partner by the respective national agency.

For the coordination of the joint call a joint call Secretariat was established and run by the German project partner IB-BMBF. The submission of proposals was moreover supported by an online tool. The secretariat was in charge of coordinating the application, evaluation and funding decision process.

Proposals generally had to be submitted by the project coordinator, representing a consortium that involved an appropriate number of participants, at least two European organisations and one Latin American. Preferably, consortia should have been formed of an equal number of European and Latin American institutions, which was the case in about one third of the submitted projects. Generally about half of the consortia were dominated by European participants. Coordination of the proposals was held in two thirds of the cases by a European and one third by a Latin American institution.

The joint call was opened for submission a little less than three months, from September to December 2009. During that period, a total of 65 proposals were presented, including 39 proposals in the area of Sustainable Renewable Energies and 26 proposals in Nanoscience. The experts (evaluators) commended high scientific quality for the majority of the presented projects.

The EULANEST joint call funding partners selected seven of the submitted proposals to be funded, four in the area of Sustainable Renewable Energies and three in the area of Nanoscience. The funding decision was taken by the experts ranking and regarding priorities of the consortia towards policies to LA, thematic and funding aspects. The funded projects included in a well balanced way scientists from all participating countries. Brief descriptions of the projects will be presented in the following passage.

The evaluation process of the joint call was threefold. First of all, each proposal was evaluated by three independent evaluators following eight criteria:

1. **Relevance to the aim(s) of the call**
2. **Scientific quality and originality of the project and of the research plan (innovative potential, adequate methodology)**
3. **Scientific excellence of the applicants (e.g. previous scientific track record, publications in scientific journals, standing of the institute the applicants belong to).**
4. **Scientific relevance of the expected results**
5. **Feasibility of the project (project governance, adequate budget, resources, time schedule; cost effectiveness, risk and assumption)**
6. **Level of collaborative interaction between the teams and added value of the consortium**
7. **Scientific relevance of the expected results**
8. **Contribution to the scientific community, expected exploitation of the results**

Some experts were then invited to the scientific board meeting with the final goal to obtain a ranking listing the ten best proposals in Sustainable Renewable Energies and the five best proposals in Nanoscience. Finally, one of the three evaluators of each proposal was nominated as rapporteur to elaborate a consensus report, summing up the individual evaluations.

The pool of evaluators included experts in both fields of science and from all European and Latin American countries which were participating in the joint call.

4.2. RESULTS AND PROSPECTS FOR FUTURE COOPERATION

In the frame of the EULANEST joint call seven projects were selected to be funded as briefly mentioned above. Four of the projects are dedicated to research questions in the field of Sustainable Renewable Energy and three to the area of Nanoscience. Three of the Energy projects are coordinated by Latin American project partners and one by the European partner. The latter was also the case for all Nanoscience projects. The participating institutions are mainly universities and research institutions and only one project team has one partner from the SME sector.

The following brief descriptions of the projects will give an insight on the thematic focus the funded research teams work on:



SOCs – Energy conversion from renewable sources in solid oxide cells

In a carbon constraint economy, limited by dwindling fossil fuel reserves and climate change, renewable energy derived from biomass, solar, hydraulic, geothermal and wind power will become increasingly important in the production of hydrogen for fuel cell utilisation. The potential for renewable energy sources is particularly huge in Latin America and European Union countries have been playing a very important role in developing and using technologies for hydrogen production and fuel cell applications.

Combining European and Latin American backgrounds, the overall objective of this joint project is to develop high efficiency technologies of energy conversion based on solid oxide cells operating at high temperatures from renewable sources. Particularly, the following issues are concerned within the subject of the proposed research:

- Application of new materials for components of solid oxide cells (SOCs)
- Production of hydrogen from steam using solid oxide electrolyser cells (SOECs)
- Use of sustainable renewable energy sources as fuels in solid oxide fuel cells (SOFCs)

Project partners:

- Federal University of Santa Catarina (Brazil) – **Coordination**
- National University of Rosario (Argentina)
- Hamburg University of Technology (Germany)
- Institute of Ceramics and Glass ICV-CSIC, Madrid (Spain)
- University of Paul Sabatier, Toulouse (France)
- Norwegian University of Science and Technology, Trondheim (Norway)
- University of Aveiro (Portugal)



CERENH2 – Cerium-based catalysts for the purification of hydrogen from renewable source: a theoretical and experimental approach of the structure-reactivity relationships

The concerns about global warming have increased the interest in energy sources that can reduce the net carbon dioxide emissions, such as the use of hydrogen (H₂) as energy vector in fuel cell operated devices. The main objective of the project is to contribute to a deep understanding of non-conventional and more efficient catalytic materials in the purification of molecular hydrogen, produced by renewable organic sources, by combining experimental results with theoretical calculations. The achievement of the project relies on the unique and complementary multidisciplinary expertise of the European and Latin American teams involved. All the groups possess world-known expertise on oxide based catalysts for multiple applications, and some of them have already successfully worked together in similar systems (previous collaborations: Argentina-France, France-Spain, Argentina-Spain).

Project partners:

- Institute of Technological Development for the Chemical Industry Santa Fe (Argentina) – **Coordination**
- University of Cádiz (Spain)
- Spanish National Research Council, Madrid (Spain)
- University Pierre et Marie Curie, Paris (France)



e-SOFC – Direct Ethanol Solid Oxide Fuel Cell

Solid Oxide Fuel Cells (SOFC) are one of the most efficient and promising electricity producing technologies at present. SOFCs are able to directly use a variety of hydrogen rich fuels, such as methane, natural gas, biogas produced from wastes, and other hydrocarbons. Up to now, alcohols have not been considered widely as a fuel for SOFC.

The project addresses the conversion of bio-ethanol to electricity at high efficiencies, building on a complementary association between the four partners of the project. The Brazilian partners have developed an innovative anode material that is able to convert ethanol to electric current directly in the fuel cell with minimal fuel pre-processing. SINTEF has extensive expertise in calculating the reaction kinetics and equilibria in order to prevent the formation of coke in the fuel cell, whereas Juelich has exceptional expertise on engineering materials into real SOFC components. In a joint effort it will be possible to evaluate the Brazilian materials development in SOFC cells and test these for the feasibility of direct utilisation of ethanol for electricity production.

Project partners:

- Research Centre Juelich LIC (Germany) – **Coordination**
- SINTEF, Trondheim (Norway)
- Federal University of Rio de Janeiro (Brazil)
- EnergiaH, Rio de Janeiro (Brazil)



GlyMat – From glycerol towards new materials

The design of polymers from renewable sources is currently receiving increasing attention, and interest has focussed on the use of cheap, biodegradable, and annually renewable starting materials to reduce petroleum dependence and the negative impact on the environment. Vegetable oils and glycerol, as by-product of biodiesel production, are one of the cheapest and most abundant biological sources available in large quantities.

The aim of this project is the preparation of new ecological friendly materials from glycerol-modified vegetable oils (polyols) by bio-catalytic processes in miniemulsion. The project will improve the collaboration between Brazilian and European partners in the field of polymers and materials from renewable sources. Only the combination of the expertise of each partner can ensure the development of an efficient, environmentally friendly process for the preparation and application of water based polymer dispersions and other materials as emulsifiers from biodiesel “waste” products.

Project partners:

- Institute of Chemistry, Federal University of Rio Grande do Sul, Porto Alegre (Brazil) – **Coordination**
- Max-Planck-Institute for Polymer Research, Mainz (Germany)
- Institute for Biotechnology and Bioengineering, Instituto Superior Técnico, Technical University of Lisbon (Portugal)





NEURONANO – Magnetotransduction: development of magnetic nanoparticle-viral vector complexes for therapeutic gene delivery in the senile brain

A number of age-related neurological pathologies are of significant medical and economic impact for both Latin American and European regions due to the increase of the elderly population in urban areas. Therefore, the development of novel therapies for neurodegenerative diseases constitutes an issue of growing importance.

Neuronano is a multidisciplinary project aimed to develop new gene therapy-related therapeutic strategies for the treatment of neurodegenerative diseases. Using tools from nanotechnology, nanomagnetism and gene therapy we propose to construct novel, high performance magnetic adenoviral vectors for magnetotransduction, to enhance the levels of neurotrophic factors that prevent the degeneration and enhance recovery of remaining neuron neuroprotective molecules. Starting by animal models of senile neurodegeneration, this therapy could be ultimately used in Alzheimer and Parkinsonian patients.

- Project partners:**
- Institute of Nanoscience of Aragón, University of Zaragoza (Spain) – **Coordination**
 - Technical University of Munich (Germany)
 - Department of Chemistry, University of Aveiro (Portugal)
 - Institute for Biochemical Research, National University of La Plata (Argentina)



FIBROGEL – Bioinspired Nanofibrous Gel for Tissue Engineering of Cartilage and Bone

High incidence of degenerative skeletal tissue disorders such as osteoarthritis and osteoporosis in a progressively aging human population make tissue engineering of cartilage and bone a focus of extensive research. Bone and joint disorders are the most common disease in both European and Latin American countries.

The project's objective is to combine the use of high performance materials and advanced nanotechnology to design an implant with unique properties which can influence the local tissue regeneration. The multidisciplinary project aims to gain radical innovation in the strategy of treating injured bone and cartilage. A strong long-term impact on a variety of fields such as nanobiotechnology and regenerative medicine will be achieved.

- Project partners:**
- Institute for Bioengineering of Catalonia, Barcelona (Spain) – **Coordination**
 - Institute of Pharmacy, Martin Luther University Halle-Wittenberg (Germany)
 - Federal University of Rio de Janeiro (Brazil)
 - National University of La Plata (Argentina)
 - Technical University of Valencia (Spain)



NanoSkin – Nanoparticles for the Improved Therapy of Severe Skin Diseases – Leishmaniasis and Squamous Cell Carcinoma as Examples

Nanoparticle drug carriers gain increasing interest in the pharmaceutical market. Recently, however, toxicity of nanoparticles became a matter of concern, too. Today only very few drugs loaded to liposomes have been introduced into the pharmaceutical market worldwide. Facing these limitations, experts in the broad field of nanoparticle research from Argentina, Germany and Portugal have decided to build-up a joint platform for fundamental and transnational research in the field of nanomedicine.

The project aims for an improvement of drug therapy combining classical approaches and targeting host-parasite interactions and host-cancer cell interactions, respectively. Innovative pharmaceutical actives (e.g. antimicrobial peptides) will be compared to current gold-standards – both non-loaded and loaded to nanocarriers which are proven to enhance skin penetration and which are locally well tolerated.

The consortium involving experts from Latin America and Europe covers the spectrum of methods, knowledge and technology needed to build-up and characterise the particles.

- Project partners:**
- Institute of Pharmacy, Freie Universitaet Berlin (Germany) – **Coordination**
 - Faculty of Health Sciences, University Fernando Pessoa and Institute of Biotechnology and Bioengineering, Centre of Genetics and Biotechnology, University of Trás-os-Montes and Alto Douro, Porto (Portugal)
 - National University of Quilmes, Bernal (Argentina)

5. CHALLENGES FOR BUILDING UP ON THE EXISTING AND NEW TOOLS OF COOPERATION BETWEEN THE TWO REGIONS

The main cooperation activities between the European countries integrating EULANEST (France, Germany, Norway, Portugal, and Spain) and the LA countries, mainly with Argentina, Brazil, Chile and Mexico, have been based on very active bilateral cooperation programmes as confirmed by the work of mapping and benchmarking of the EU-LA cooperation in S&T done by EULANEST. Since this cooperation concerns dominantly the most developed LA countries, it has been meeting the principles of reciprocity and symmetry. Besides this type of bilateral cooperation between countries of the two regions, the European Union itself has been establishing some bilateral agreements with some LA countries. The challenge could be to extend such principles of reciprocity and symmetry to the cooperation between other countries from both regions.

The existing similarities in S&T cooperation schemes between countries of the two regions and the consolidated experience of Cyted as a multilateral programme (that involves two European (Iberian) and many

LA), provided a solid common ground on which the joint initiative of the EULANEST project was built. Moreover, the LA funding agencies have proven to be outstanding partners in the joint management and funding of the cooperation schemes. Therefore, innovating cooperation of the existing bilateral schemes towards a multilateral initiative for the launch of a joint call could avoid the need to raise more funds and more important would imply a further step towards the construction of the EU-LA Research Area.

For LA partners, such multilateral initiatives could broaden the chances to multilaterally collaborate with European countries in a simpler frame. They could be highly interested in taking part in European multilateral initiatives other than those proposed by FP projects. Even though they are becoming gradually familiarised with the EC funding procedures

and their participation in FP7 projects is being increasing and promoted by EULARINET, for instance, they can sometimes be discouraged to apply because of the complexity of this kind of projects.

In future initiatives, it is important to enable access to cooperation opportunities to LA countries with low or no participation in EU-LA S&T cooperation activities. FP7 is already contributing to increase the LA countries S&T human capacity building using available mechanisms (like Marie Curie Actions) but the bulk of capacity building has to be ensured through national policies. The last aim of this action is to encourage the return of researchers to their countries of origin.

The experience of EULANEST in promoting and coordinating EU-LA countries research cooperation could be useful for future initiatives taking into account the reports on the first mapping and benchmarking of the EU-LA cooperation activities in S&T, on the identification of best practices and launching of the first EU-LA joint call where seven projects could be funded in two different priority fields of science. Moreover, this EULANEST joint call supported joint research activities as well promoted networking activities between 30 partners of the seven countries and constitutes an important contribution to the intensification of the EU-LA cooperation in the field of S&T.

Actually, the ERA-NET scheme is one of the existing instruments that will contribute to the development and implementation of the new initiative entitled EU-LAC Joint Initiative for Research and Innovation agreed within the Madrid Declaration and included in its Action Plan 2010-2012. This initiative is based on a synergistic and complementary combination of existing and new types of instruments at national, regional, bi-regional and levels for S&T cooperation in close coordination with higher education and innovation policies.

For promoting innovation in S&T field and uptaking research results in society within the EU-LA context, it is highly recommended to stimulate the participation of the private sector since the majority of the previous experiences were focused on public entities and programmes. An example could be the instrument already successfully im-



plemented in the EU like the Joint Technology Initiative (public-private partnership that funds the strategy defined by Industry) where the experience of partners that participated in EULANEST could be valuable.

It is important to identify and address structural obstacles to uptake and use new knowledge by SMEs and other institutions even though they are already supported by structures for economic cooperation (like AL-Invest IV directed to SMEs of both regions).

In parallel, the recent creation of the Latin American Investment Facility (LAIF) to support investment in LA priority areas is contributing to R&T infrastructure and helping micro-enterprises and SMEs to absorb and use existing and new knowledge for social and technological innovation.

Finally, the know-how of this ERA-NET could contribute to the design of the framework of joint programming initiative extended to EU-LAC cooperation.

The whole set of accumulated know-how on S&T cooperation between the two regions justifies and provides the ground for the launching of new joint initiatives with a multilateral dimension. For that purpose, the successful experience in the pilot joint call launched in the scope of EULANEST can be a good basis to inspire new initiatives of the same type desirably showing more scale, either in terms of the number of countries or the budget to be mobilised from countries of both regions.



LIST OF ACRONYMS AND ABBREVIATIONS

ADIAT –	Asociación Mexicana de Directivos de la Investigación Aplicada y el Desarrollo Tecnológico	GDP –	Gross domestic product
AECID –	Agencia Española de Cooperación Internacional para el Desarrollo	GRICES –	Gabinete de Relações Internacionais da Ciência e do Ensino Superior (it was extinguished and a part of its functions was taken up by FCT)
AMC –	Academia Mexicana de Ciencias	IB-BMBF –	International Bureau of BMBF
AMSUD-Pasteur –	Amérique du Sud - Institut Pasteur	ICT -	Information and communication technology
ANUIES –	Asociación Nacional de Universidades e Instituciones de Educación Superior	IIE -	Institute of Research in Electricity
AvH –	Alexander von Humboldt Foundation	IMP –	Mexican Institute of Petroleum
BMBF –	Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research)	IMTA –	Institute for Water Research
BMZ –	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung	INCO -	Specific RTD programme in the field of international cooperation
CAPES –	Coordenação de Aperfeiçoamento de Pessoal de Nível Superior	INIFAP –	National Institute for Forestry, Agriculture and Fisheries Research
CIRAD –	Centre de Coopération Internationale en Recherche Agronomique pour le Développement	ININ –	Institute of Nuclear Research
CNPq –	Conselho Nacional de Desenvolvimento Científico e Tecnológico	INP –	Institut National Polytechnique de Toulouse
CNRS –	French National Center for Scientific Research	IRD -	Institut de Recherche pour le Développement
CONSECTI –	Conselho Nacional de Secretários Estaduais para Assuntos de Ciência, Tecnologia e Inovação	LA –	Latin America
COFECUB –	Comité Français d'Évaluation de la Coopération Universitaire avec le Brésil	LAC –	Latin America Countries
CONACYT –	Consejo Nacional de Ciencia y Tecnología	LCyT -	Ley de Ciencia y Tecnología
CONCYTEC –	Conselho Nacional de Ciência e Tecnologia	LIA -	Laboratoire international associé
CONFAP –	Conselho Nacional das Fundações Estaduais de Amparo à Pesquisa	MAEE -	Ministère des Affaires Étrangères et Européennes
CONYCIT –	Comisión Nacional de Investigación Científica y Tecnológica	MCT –	Ministerio del Poder Popular para Ciencia y Tecnología
CSIC –	Consejo Superior de Investigaciones Científicas	MEC-	DGCOOP – Ministerio de Educación y de la Cultura – Dirección General de Relaciones y Cooperación
CREST -	Comité de la recherche scientifique et technique	MERCOSUR -	Mercado Común del Sur
CYTED –	Ciencia y Tecnología para el Desarrollo	MESR –	Ministère de l'Éducation Supérieure et de la Recherche
DAAD –	German Academic Exchange Service	MEC –	Ministerio de Educación y Ciencia
DAAD-PPP –	Programm des projektbezogenen Personenaustauschs (Programme of project related person exchange)	MICINN –	Ministerio de Ciencia e Innovación
DFG –	Deutsche Forschungsgemeinschaft – German Research Foundation	MICIT –	Ministerio de Ciencia y Tecnología
EC –	European Commission	MINCYT -	Ministerio de Ciencia, Tecnología e Innovación Productiva
Ecos-Nord -	Université Paris XIII	MS –	EU Member State
Ecos-Sud -	Université Paris XIII	PAN -	Partido Acción Nacional
Embrapa -	Empresa Brasileira de Pesquisa Agropecuária	PCP -	Programme de Coopération Post-graduée
ERA –	European Research Area	PECYT -	Programa Especial de Ciencia y Tecnología (Mexico)
ESSOR -	Emergence, Suivi, Soutien, Orientation	PECyTI -	Programa Especial de Ciencia, Tecnología e Innovación (Mexico)
ESSOR -	Emergence, Suivi, Soutien, Orientation	PNCTI -	National Science, Technology and Innovation Policy (Brazil)
EU -	European Union	P&P -	Poverty & Peace scheme from Norway
FAPESP –	Fundação de Amparo à Pesquisa do Estado de S. Paulo	PRI -	Partido Revolucionario Institucional
FCCYT -	Foro Consultivo y Tecnológico	RCN –	Research Council Norway
FCT –	Fundação para a Ciência e a Tecnologia	REDNACECYT –	National Network of State Scientific and Technological Councils and Organisations (Mexico)
FIIAPP –	Fundación Internacional y para Iberoamérica de Administración y Políticas Públicas	RT&I –	Research, Technology and Innovation
FINEP –	Financiadora de estudos e projetos	SECYT –	Secretaría de Ciência, Tecnología e Innovación Productiva
FP –	Framework Programme	S&T –	Science and Technology
FNDCT -	Fundo Nacional de Desenvolvimento Científico e Tecnológico (Brazil)	ST&I –	Science, Technology and Innovation
		STIC-AmSud –	Comité Stic AmSud – Ministère des Affaires Étrangères



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