

Brazil Market Analysis

Brazil Market Analysis for the Education Sector

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Introduction and Background

Scottish Enterprise (via Scottish Development International (SDI)) and British Council Scotland commissioned Galloway & Associates to carry out research into the Brazil market as part of their support to Universities Scotland to identify and prioritise opportunities in overseas markets which will be of strategic interest to the Scottish Higher Education sector over the next three years. Brazil had been identified as one of the priority markets with the greatest potential based on the collective strengths of the sector in Scotland.

The primary purpose of this research is, *'to report on the existing Scottish and UK education links with Brazil and to provide an evidence base from which the sector and supporting stakeholders can make future market entry decisions.'* The findings and recommendations of this work will be used to inform British Council Scotland and SDI how they might best support Scottish universities and develop market activities which allow Scotland's higher education institutions to engage successfully with the Brazil market.

Approach and Methodology

The research work was carried out over a period of six weeks during September and October 2014, and included a combination of extensive desk and internet research in the UK and Brazil, as well as primary research involving over 50 in depth interviews in Scotland, the rest of the UK and Brazil with stakeholders, practitioners and professionals involved in or with experience of higher education and international collaboration in the Brazil market. The following groups of stakeholders were engaged in these:

- The partners of Connected Scotland.
- Support agencies such as SDI and British Council, both in the UK and in Brazil.
- Universities Scotland International Committee members.
- Government agencies such as UKTI and SIN in the UK and Brazil.
- Representatives from Scotland's Research Pools.
- Academics and researchers in Scottish universities with experience operating and working with Brazil across a range of sectors and disciplines.
- Academics working in Brazilian universities.
- A range of other professionals and experts working both in the academic and corporate sectors in Brazil.

A list of the key individuals who contributed to this research is included in Appendix 1.

It should be noted that although our intention was to speak with executives in a number of the funding agencies and the Ministries of Education and of Science and Technology, this work coincided with the run up to and the event of the Brazilian general election. This made such meetings impossible to arrange. Indeed, many of the government-related websites closed down for periods of time during the election campaign.

Interviews were designed to identify the following kinds of information:

- As many of the current links and activities with Brazil as possible within the Scottish HEIs, across all areas from student recruitment, student and staff mobility, transnational education models, teaching and training and research collaboration.
- Lessons for the sector from the challenges and successes experienced in the market from a range of different perspectives.
- The key subjects and disciplines of strength in Scotland which match the needs and funding opportunities of Brazil.
- The key opportunity areas in the market, across universities, funding agencies and industry collaboration.
- Short case studies and examples of good practice or successful models of engagement which could inform ways in which the sector itself might consider engaging with the market.
- Where participants thought the support agencies such as SDI, British Council Scotland and Universities Scotland could best support the sector collectively to engage more effectively with the market.

A sample questionnaire used as the basis for interviews with the Scottish HEIs is included in Appendix 2.

We have created this report in two sections.

Part 1, a combination of desk research and interviews for verification purposes, provides a comprehensive overview of the Brazilian education market and includes a summary of its key features, structures, organisations and funding mechanisms. It also contains, through the appendices and the included web links, signposting of additional information in these areas for those who wish to research them more deeply.

Part 2 provides feedback from the qualitative interviews regarding the opportunities for the Scottish Higher Education sector in Brazil, the challenges and issues institutions and supporting agencies face there, and suggestions and options, informed by those with experience working in and with the Brazil market, of how these support organisations could best assist the sector collectively to develop this market.

Summary Findings and Recommendations

The current position

Most of Scotland's universities consider Brazil an attractive market with economic, academic and industry drivers and a strong funding context and with needs that match Scotland's strengths well. Although many already have some level of engagement and experience in Brazil (largely as a result of the Science without Borders programme (SwB)), there is a wide mix of experience, numbers of contacts and agreements, and levels of ongoing collaboration among the Scottish institutions in Brazil. Some are just beginning their activities in the market while others have more experience and have university and funding body agreements in place.

Brazil is now a priority market for most (although not all) Scottish HEIs but is increasingly this is at a more strategic level, with the longer term focus now more on relationships, collaboration, and research than undergraduate recruitment. This matches the clear message from Brazilian Universities that they want to build collaborative agreements and partnerships, to develop research links, mobility and joint degrees and move to the next stage beyond student recruitment. It is clear that Brazil is not a Transnational Education (TNE) opportunity in terms of branch campuses, articulations or distance learning etc in the same way that China, Malaysia or the Middle East are. The Scottish institutions are agreed that there is a lot to do in this complex market and that a collective approach would be of benefit, even to those most currently active in the market.

Market challenges

Brazil is a market which presents many challenges to universities and other organisations wishing to do business there. Its size, complexity and high levels of bureaucracy mean it takes a long time to get things done. The English language barrier is not a trivial issue (at the academic and professor level, as well as for students) and from the other side, almost all information sources in Brazil are available only in Portuguese which makes operating difficult and limits insight into the market and possibilities for two-way international exchanges. The well-documented 'saturation' of Sao Paulo and Rio de Janeiro, both at institutions and funding agencies, mean that it is increasingly hard to stand out from the competition.

Despite the wide range of programmes and funds 'available' for international projects and collaboration, there are a number of significant challenges around research-related funding in Brazil. There is for example a lot of mobility activity but by comparison few *large* projects. Accessing the 1% Special Participation Fund levy and engaging investment from industry and corporations through this is proving challenging for overseas universities and companies, not least because the most significant funding must usually stay in Brazil. Because of its size there is often also a lack of visibility outside the market of where the wider range of funding opportunities in Brazil lie. Scottish universities can also be affected by the profile of the UK which, in a market where non-private education is free, is negatively impacted by its policy of tuition fees, and there can be issues too around recognition of foreign degrees. For all of the above reasons universities say that Brazil is a hard market in which to be strategic.

Key principles and rationale for recommendations

This report's recommendations are for a *collective* approach, and it is not intended to provide individual strategies for every university, most of whom will have their own strategic priorities and activities planned in the market. Those Scottish institutions with significant experience and exiting networks in Brazil will have different needs to those with fewer. Because Brazil is such a large and complex market, all the Scottish universities with an interest in developing their business in Brazil have indicated to us that they are supportive in principle of the benefits of greater collaboration and sector-wide support (even those who have their own resource or experience in the market). The basis for this should take into account the following principles for engagement.

- Brazil is a highly competitive and in some geographies a saturated market. It is therefore important to differentiate the offer we present, and to really focus on Scotland's greatest strengths.

- It is clear that to be successful in Brazil you have to be there, to be able to speak to people face to face to develop and build relationships and trust. This should be reflected in the type of support being considered.
- Brazil is a market where you have to think long term. It is not a market for quick results. Again, agency support for market activities must reflect this with a professional approach, follow-up and long term agenda.
- The greatest needs of Brazil (e.g. disciplines, sectors, industries, partnership models and focus for funding) should be the driver for the initial focus. These should be matched to Scotland's academic strengths and from there to the institutions and academics, wherever they are, with the matching capabilities.

Recommendations for how SDI, British Council Scotland and Universities Scotland can support the higher education sector collectively in Brazil

In all our interviews we asked participants for their thoughts and suggestions, given their experiences in Brazil and the opportunities and challenges identified, for how Scottish Development International, British Council Scotland and Universities Scotland might best support the sector collectively in its engagement in Brazil. Taking these and the learnings from the education market research in Part 1 into account, we have made the following recommendations for how these agencies might consider taking forward their support for the sector collectively in Brazil.

1. Based on responding to the needs of Brazil, a collective approach should focus on research collaboration and postgraduate mobility opportunities, not on recruitment

Most Scottish universities already have some activity in Brazil. Although Brazil is currently a key undergraduate recruitment market for Scottish and UK institutions, most agree that for the longer term the strategic and sustainable links lie in research collaboration. Successful development of research collaboration is almost always bottom-up, not top down, using researcher-to-researcher relationships to build a broader and more strategic relationship. Sector support should therefore focus on facilitating the conditions for this through a 'managed collaboration' approach.

2. Leverage the benefits of a collective Scotland approach

There is a strong rationale for a collective approach in Brazil now: many Scottish universities are engaged in the market, it is a large, complex market with many common issues across institutions, it is highly competitive so a collective approach provides a unique differentiator, and it seems that now is a critical time to establish strategic links and activities there for the future. There is an opportunity to build Scotland's profile and brand with the federal and state funding agencies such as CAPES, CNPq, CONFAP, the top universities and other bodies. There is however a need to balance this top down high level engagement with supporting tangible, bottom up collaboration.

3. Use the Research Pools as a spearhead for this engagement and to bring the focus onto funding for valuable research

The Research Pools offer a strong differentiator in demonstrating Scotland's unique ability to work together in partnership. They concentrate Scotland's collective strengths in key areas of need in Brazil and they offer more than any single institution can, with the benefit of making Scotland more internationally competitive. Based on their international priorities and the needs of the market, the suggested focus should be on the SULSA, SAGES and MASTS Research Pools (and ETP as appropriate), across the areas of geoscience, environment, life sciences, and marine science and technology. They have effective models for working internationally, none is doing anything collectively in Brazil but it is a priority market for them all. In addition the Research Pools can facilitate Scottish and international corporate and industry engagement and partnership, for example via the Innovation Centres.

4. Help organise, fund and facilitate thematic workshops as the basis of this engagement

Top researchers in Scotland say it is not hard to find out who the key researchers are in a specific scientific field in Brazil. What is hard is to get people together. Despite many MoUs now existing between Brazilian universities and those overseas, there is a clear message that in many cases these are not developing into projects of substance. Workshops which bring

specific individuals and senior academics together to start forming relations are seen by both sides as a good next step. It is recommended therefore that the support agencies ensure that any 'top down' Connected Scotland initiative in Brazil (as above) has as a core function to facilitate these technical peer-to-peer contacts. Responsibility for decisions on what subjects or focus areas for the workshops, and proposals for how these might be developed should rest with the experts in the Research Pools themselves. It is suggested to aim to arrange 2 - 3 workshops in two or three key areas in 2015 with the outputs being proposals and grant applications. Importantly, in addition to the seed funding required to enable this, there must be a mechanism in place for longer term funding for the substantial research collaboration projects intended as the eventual output of these workshops. The Hong Kong and SE Asia models applied by SULAS and MASTS respectively may provide a template for this.

5. Help generate more effective engagement with companies and industry, in Brazil and Scotland

A number of Scottish universities have been trying to develop three-way research collaboration with industry and a Brazilian university partner, but outside a few notable examples in oil & gas and energy, little of substance has come of these. There are many MoUs but few large projects. There is an opportunity to work with and represent universities to help them develop a collective strategy for how to access the 1% Special Participation Fund levy in particular. Companies need to be actively engaged with and married to Scotland's areas of expertise in the research opportunities areas of interest to them. In the oil and gas sector for example, this should include engaging more closely with SDI's Oil and Gas team, the Oil and Gas Forum, ETP and oil and gas companies in Scotland to understand their experiences in Brazil, and develop with them ideas for how industry and universities can work together to exploit opportunities there.

6. Option: Provide a shared in-market dedicated resource for assisting collectively the Scottish universities interested in growing their presence in Brazil

Brazil is a large and unwieldy market even for those more actively involved in the market. All the universities interviewed suggested ways in which someone on the ground would positively impact on the sector's work and its understanding of how it should focus its engagement with Brazil at this sectoral level. Such a resource would help to avoid duplication of effort and cost currently being experienced by universities working independently with Brazil, and it would leverage existing experience in the market and identify synergies for initiatives across the sector. With a focus on research and collaboration, not on recruitment, it would also help emphasise Scotland's brand.

Its activities could span a number of possible areas of need expressed by the universities, many of which require Portuguese and an on-the-ground presence to do so effectively. This might include to; gather intelligence on the market, help navigate the bureaucracy, provide information on funding mechanisms, monitor calls for projects, identify and get access to technical contacts, departments and universities in the market and contacts within the administrative agencies, clarify the priorities, focus, activities of the FAPs and other funding agencies, and advise on how to realise opportunities through the Newton Fund, clarify regulatory issues in the market and provide administrative support to assist Scottish institutions to gain and keep momentum, implement agreements, and monitor events, conferences, gatherings and opportunities for face to face contact.

SDI's office in Brazil is currently focused exclusively on the oil and gas sector, with little capacity for supporting Scotland's HEIs in the market. With additional resource is there potential to leverage this office, presence and its operating infrastructure which is already in place? A discussion among the support partners is obviously required concerning the rationale and basis of funding this kind of resource.

7. Features of a Delegation or Mission

Missions to international markets can sometimes be quite general and with a range of objectives. With Brazil there is a strong feeling that Scotland is at this point beyond a generic mission approach, and that the need now is for much more focused discussions. This was brought into focus by the recent BC-FAUBAI mission to the UK and Scotland. There is a feeling that the onus is now on Scotland to grasp this opportunity and develop a proposal, for

example for workshops as above, which will allow the academics to find new ideas and new research opportunities, that can be brought to Brazil in the spring next year. There is seen to be value in a high level delegation with the aim of raising the awareness of the HE sector in Scotland in general, but also with the specific goal of setting up a small number of focused, practical workshops. While institutions and agencies in Brazil may know of Scotland's UG engagement in SwB, they know less about the quality, strengths, research capabilities, and key departments across the Scotland's universities, nor do they know about the Connected Scotland, Research Pool and Innovation Centre concepts.

The proposed timescale is of a mission or visits in the spring. Now that the election is over, policies and people's positions will be clearer, and this time frame ties in with the FAUBAI conference in April 2015, followed by the Going Global conference in London in June 2015, two key events where senior policy makers and educators will be in attendance. The approach should consider maximising these opportunities for a combination of high level engagement and the development of more focused academic collaboration activities around this.

Additional considerations for the support agencies

Finally, we make some suggestions for the support agencies regarding some areas requiring greater clarification and consideration in order to take forward the above recommendations:

- **The agencies should consider the level of priority of Brazil for the above activities relative to its other priority markets such as China.**

The above proposal for addressing opportunities in Brazil should be considered relative to other important markets where collectively and individually there are similar information gaps, complexities, needs and widespread sectoral engagement. China would be an obvious example. Is there a model for agency support of the HE sector, including the possibility of an in-market dedicated resource, that could work not only for each market in its own right, but as a network to encourage multilateral partnerships and opportunities across markets?

- **Promote and explain the available funding programmes, mechanisms and options**

In our research some universities who nevertheless said that a research-led approach was their focus still seemed unclear about how to leverage Newton Fund opportunities. Both at an individual institution level and in order to underpin the collective sectoral approach described above, there should be clarity on how to access and use the available funds and mechanisms such as Newton, Horizon 2020 and others, and to therefore identify any gaps where additional funding might be required to deliver the support this approach demands.

- **Ensure the Brazil Working Group engages with all the points of expertise and experience in Brazil.**

There are many academics and executives in Scottish universities with extensive and valuable experience working and collaborating in the Brazil market. We have tried to involve as many of these as possible in this research exercise, and several have expressed a shared interest in the sector's engagement in the market and said they are keen to be involved in taking this thinking forward. We recommend these individuals should be invited to contribute to the activities of the Brazil Working Group.

Part 1: Overview of the Brazilian Education Market

Background and Drivers

Despite the influx of public and private investment that the country has received in the past few years, Brazil needs to improve its 'educational ecosystem' to meet the skill, knowledge, and innovation requirements of a country striving to improve the quality of life for all of its citizens and to climb higher on the world stage. Since the 1990s Brazil's economy has modernised and grown, and its higher education institutions also expanded in size and quality. Yet access to and expansion of education is still a key challenge for the country. At the primary and secondary school levels, educational quality remains low by global standards (Brazil ranked second from the bottom in the Global Index of Cognitive Skills and Educational Attainment, in a 2012 global study of 39 countries). And although a number of Brazil's public universities are competitive globally, with some of the best institutions located in the industrialized state of São Paulo, including the University of Campinas and the University of São Paulo (two of only four South American universities to make the 2014-15 Times Higher Education World University Ranking list of the top 400 universities), a 2012 Economist article noted that only 11% of the Brazilian population has a post-secondary qualification, compared to approximately 40% of Americans.

Brazilian higher education is changing fast. From 2002 to 2012, the number of students attending college in Brazil doubled to seven million. But with only 17 percent of Brazilians aged 18 to 24 in college, the government has pledged to raise that percentage to 33 percent by 2020. A large population of young adults, deficient schools and the growth of industries such as oil which demand skilled workers all mean that the demand for higher education will continue to rise. To serve this very lucrative and growing market (and since the public sector lacks the cash to expand provision) this demand is being met from private institutions. American and Brazilian private equity funds, corporations and investment banks are now buying and merging educational institutions in Brazil at a rapid pace.

Private sector investment in vocational, technical, primary and high school education in Brazil is also growing. Publishing giant Pearson recently bought Grupo Multi, a very large chain of foreign-language schools, in a deal worth more than \$880 million. Avenues, a New York private school has announced plans to open campuses in São Paulo and Rio de Janeiro. And over the last five years, mergers and acquisitions have made some of the biggest chains in the country bigger, which has concentrated the power in very large, for-profit groups. The 10 largest chains of colleges in Brazil now educate nearly 35 percent of the country's students. Brazil's two largest chains of higher education institutions, Kroton Educacional and Anhanguera Educacional, were recently in the process of merging to create the world's largest publicly traded for-profit higher education company, worth more than \$8 billion. The universities of the merged company will have more than a million students. Laureate Education, the privately held American education company, has made 12 acquisitions since it entered Brazil in 2005 and now has more than 200,000 students in the country. About 5.3 million of Brazil's 7 million college students were in private institutions in 2013, and this is growing. For the development of the education system to continue Brazil needs to pursue academic research and technology transfer links, and international student and faculty mobility and exchange will play a very important role in this.

A number of government led initiatives have been significant drivers in increasing this activity in recent years. The recently extended Science Without Borders (SwB) programme (with its pledge to fund 100,000 places on overseas programmes in the fields of science, technology, mathematics and engineering) includes three strands; Undergraduate Visiting Student (one year), PhD and Split PhD, initiatives led by state research foundations or public organisations, such as the São Paulo Research Foundation, CNPq, FAPESP and those in industry and the private sector (such as Santander Bank's mobility programme and Fundação Estudar's studying-abroad programme) are examples. Closer to home the UK's £375m Newton Fund, programme (announced this year and aiming to improve the science and research capabilities of emerging nations such as Brazil and strengthen their ties with the UK) and the European

Union's €80bn Horizon 2020 research and innovation programme both encourage greater collaboration, joint research and exchange.

Yet, as a recent article¹ observed, Brazil's higher education sector continues to face challenges. Despite the Science without Borders scheme, "there is no Brazilian university in the top 200 world universities... Research spending has doubled in the last five years, but the number of international patents remains stuck at 13,800.... Brazil boasts one of the world's most rapidly developing economies, but many of its population are out of work, or prone to debilitating sicknesses like diabetes.... Brazil has more than 2,400 universities, and five to six new institutions open every month but despite the country's soaring youth population, there isn't a big pool of potential student talent for universities to draw from... Over 50% of Brazilian high school students do not complete their studies."

The British Council's 2013 Country Brief on Brazil states that,

"Despite performing well below the international indicators in science and innovation, Brazil recognizes that these are essential growth areas, with international journal articles published doubling to over 12,300 between 2000 and 2009.... The majority of R&D takes place in the country's top seven universities, as opposed to in the private or business sectors. Stronger business R&D links are necessary to increase visibility and bridge the gap between study and industry."

And that, "As Brazilian institutions remain fairly weak overall in terms of research, partnerships with researchers in the international community are well established." The Brief also notes of Brazil that,

"English language proficiency and academic preparedness are likely to remain barriers for international study until the quality of basic education improves overall and young Brazilians engage more fully with the English language. While Brazil remains limited as a study destination, it is a rich source of international students with significant growth potential."

What is certain is that Brazil is now looking for ways in which its universities can work with business to meet the critical needs of people in the country, ways to open access without sacrificing quality, and of ensuring international education can have *real* impact on research. Universities in Brazil are keen to build collaborative agreements which will allow them to develop research and joint degrees, and to identify sources of joint funding via their state funding agencies and European schemes. They not only want to encourage student mobility to Brazil and are keen to establish links whereby they would host overseas students, but they also see the links to international universities made possible through programmes such as Science Without Borders as mechanisms to internationalise their own campuses and help improve their global rankings.

These are the drivers which create both student mobility and research collaboration opportunities for countries such as Scotland whose collective higher education sector has both existing ties and the relevant skills and capabilities, especially in key STEM fields such as Engineering, Physical Sciences, Health Sciences, Computing Science, Aerospace, Energy, Mining, Agriculture, and Biotechnology.

This section of the report provides an overview of the higher education system and its links to the principle agencies and funding mechanisms that are already in place and delivering results across the country. Brazil is a large and complex market and we have aimed to provide definitions and information within a manageable scope. For example, we have not focused on the TNE arena, which is not a top priority for Brazil outside of the Portuguese speaking world or Latin America.

Brazil's higher education model is a mix of federal, state and municipal institutions, both public and private. Traditionally, the 'brain power' has been sitting in public federal and state institutions (with free admissions) while the private segment was focused on catering to the massive undergraduate population. Here again, the gap is narrowing as private institutions specialise and develop strong working ties to the local industries.

¹ British Council: <http://blog.britishcouncil.org/2013/10/31/brazils-higher-education-challenges/>

This report signposts the areas and tools available to help make sense of the thousands of institutions that may hold potential for Scottish Universities. We hope that it will facilitate and speed up becoming familiar with the Brazilian higher education landscape and its drivers. We have also included information about access points for researchers whose work is at the cutting edge of their field (e.g. through the CAPES, LATTES databases).

Funding of academic research and collaboration projects in Brazil is a complex area which involves top-down initiatives from the federal government. Many are implemented across various Ministries and their respective funding agencies (CAPES, FINEP, CNPq). We have identified the largest and most active agencies as the ones Scottish Universities should become familiar with, including the state agencies that enact federal and state policies (FAPs).

Part 1 of this report is a road map. It evidences through selected examples how the most successful approaches to the Brazilian education and research market span grassroots initiatives (researcher to researcher) and large national mandates (whole university systems or research consortia). Brazil is focused on solidifying agreements that will help it train a more qualified and internationalised workforce. It is also focused on knowledge transfer and ensuring a strong nexus between education and industry. Understanding and capitalizing on the activities of existing networks (FAPs, FAUBAI, ANPEI, EMBRAPA, etc.) should provide a basis for successful and sustained partnerships between Scottish Universities and Brazil.

Regional Priorities in Brazil

For administrative and economic reasons, Brazil's 26 states and Federal District are commonly grouped in 5 regions. The Southeast and South form the epicentre of the country in terms of their economies, population and talent pools, job markets and industrial production. The Northeast is very populous but more rural, and still lagging behind in education achievement, although great strides have been made in the past decade.

Region	Pop. (est. in M)	# Municipalities
Centre West	13.3	466
North	15	451
Northeast	52.1	1793
South	27.2	1188
Southeast	79.7	1668



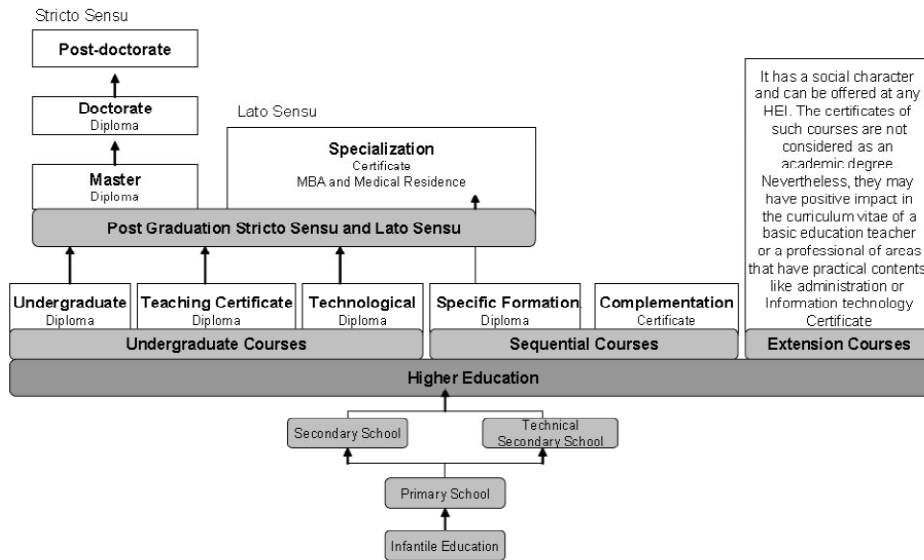
Source: http://www.brazil-help.com/brazilian_states.htm

See Appendix 3 for details of the basic demographic and HDI indicators in each region and state.

Brazil's Education System at a Glance

In Brazil, undergraduate university education may range from four to six years, depending on the course of study. Professional programs are generally taught at the undergraduate level, and some programs (i.e. architecture, engineering, medicine, law, psychology, etc.) may require five to six years of study before completion.

Detailed structure of higher education in Brazil



Source: Sector study for Education in Brazil, Paulo Renato Souza Consultores, 2005.

Higher Education Institutions in Brazil

Within Brazil's higher education system, we have focused on three types of institutions known for their academic excellence and which demonstrate a good level of international readiness in academic research:

- Universities
- National Institutes of Science and Technology (INCTs)
- Professional education, Science and Technology Institutions (Rede federal)

See Appendix 4 for details of the number, types and locations of HEIs in Brazil, sourced from the 2011 national education census.

Universities

Brazil adopts a mixed system of public and private funded universities. Usually public-funded universities offer a broad spectrum of university courses and they are 100% financed by the government. As with everything official in Brazil, universities tend to be known by their acronym. Names starting in **UF** denote a **federal** institution, while **UE** denotes a **State** university. The notable exception is **PUC**, the Catholic private university (*Pontifícia Universidade Católica*) and its affiliated campuses. The States' two-letter code is often included in the universities' full acronym, e.g. UFRN, *Federal University of Rio Grande Norte*. Public universities can be funded by the Federal Government or by State Governments (such as USP in the State of São Paulo). All 27 Brazilian states have federal and state universities. Public universities are responsible for a significant part of the research that takes place in Brazil. The country now graduates over 25,000 PhDs (2012), 70% in sciences and engineering. (Source: <http://geocapes.capes.gov.br/geocapesds/#>). According to official data, 65% of these PhDs' work in public research centres and 30.9 % in industry

For this report, as a reference we have prepared a list of the Top-100 Brazilian universities:

- Ranked
- Listed by region
- Listed by state

See Appendix 5 for these lists. Universities are hyperlinked on the worksheets.

This shows that the regional distribution of the top universities is heavily skewed in favour of the South and Southeast, with just 3 states (São Paulo, Rio Grande do Sul and Minas Gerais) home to 45% of the top institutions. This will be an important consideration for any SDI trade mission involving on-campus activities.

Region	Top-100 HEIs
Centre West	6
North	4
Northeast	20
South	27
Southeast	43
TOTAL	100

State	State abbreviation	Top 100 HEIs
São Paulo	SP	21
Rio Grande S	RS	13
Minas Gerais	MG	12
Paraná	PR	9
Rio de Janeiro	RJ	9
Bahia	BA	5
Santa Catarina	SC	5
Ceará	CE	4
Pernambuco	PE	3
Amazonas	AM	2
Fed. District	DF	2
Goiás	GO	2
Paraíba	PB	2
Sergipe	SE	2
Alagoas	AL	1
Espírito Santo	ES	1
Maranhão	MA	1
Matto Grosso S	MS	1
Matto Grosso	MT	1
Pará	PA	1
Piauí	PI	1
Rio Grande N	RN	1
Tocantins	TO	1

Brazilian Universities in the World Rankings

Only a small number of Brazilian universities feature in world university rankings. The Shanghai Academic Ranking of World Universities 2014 features 6 institutions as follows:

Country Rank	Institution	World Rank
1	University of Sao Paulo	101-150
2-5	Federal University of Minas Gerais	301-400
2-5	Federal University of Rio de Janeiro	301-400
2-5	UNESP	301-400
2-5	University of Campinas	301-400
6	Federal University of Rio Grande do Sul	401-500

Source: <http://www.shanghairanking.com/World-University-Rankings-2014/Brazil.html>

In the Times 2014/15 Higher Education World University Rankings only two universities from Brazil feature in the top 400 (University of Sao Paulo (at 201-225) and University of Campinas (301-350)).

The QS World University Rankings 2014/15 place only three Brazilian universities in the top 300:

2014 ranking	University
132	USP - University of Sao Paulo
206	UNICAMP - University of Campinas
271	UFRJ - Federal University of Rio de Janeiro

However, within Latin America 10 Brazilian universities feature in the top 20, and 19 Brazilian Universities are in the top 100 BRICs universities.

Top Brazilian universities: comparative rankings (2013)

Owing to the sheer number of HEIs, and this relative international reputation of the sector overall, it is useful to approach the market from the standpoint of quality. Two rating systems can be cross-referenced to determine which Brazilian universities offer the best quality programmes from undergraduate to graduate studies:

1. CAPES uses a weighted formula combining academic research output, quality of teaching, labour market assessment, plus internationalisation and innovation indices to review upwards of 3,300 programs at most universities around the country (5,000+ post-graduate courses). Ratings are on a scale of 1 to 7, with 3 being average, 5 showing internationally acceptable performance, and 7 as the best.

For this report, we isolated the top 12% (rated 6 and 7) to show:

- The top-ranked by subject area
- One worked-out ranking example (Engineering I-IV)

This offers a detailed guide across all subject and discipline areas to the university programmes which are the most likely to offer partnership opportunities for a collective Scotland approach (See Appendix 6: CAPES Rankings.xls – an accompanying Excel document to this report). The database is available in Portuguese at: <http://www.avaliacaotrienal2013.capes.gov.br>

2. RUF is a ranking system developed by the national newspaper Folha de São Paulo. Its ranking formula takes into account the Ministry of Education (MEC) course ratings as well as international research output, calculated as the number of times a university's researchers is quoted by international research groups and the percentage of research papers published in collaboration with researchers from outside Brazil. RUF rankings account for the 40 curricular areas with the most enrolments at 192 universities nationwide. It is worth noting that USP, Sao Paulo's municipal university, ranks first in 20 of these course areas.

For this report, we prepared a spreadsheet of the top 100 universities (RUF ranked), organized as follows:

- Overall score
- Research capabilities
- International readiness
- Course categories, with one worked out example ranking (Chemical Engineering)

(See Appendix 7: RUF University Rankings.xls, also an accompanying Excel document to this report). The database is available at:

<http://ruf.folha.uol.com.br/2014/rankingdeuniversidades/> (searchable by state)

<http://ruf.folha.uol.com.br/2014/rankingdecursos/administracaodeempresas/> (searchable by curricular area).

The following table provides the summary of the broad curricular areas evaluated by RUF:

1	Business administration	21	Philosophy
2	Agronomy	22	Physics
3	Architecture and urbanism	23	Physiotherapy
4	Biological sciences	24	Geography
5	Biomedicine	25	History
6	Computer science / Information systems	26	Journalism
7	Accounting	27	Language arts (Lit. & Linguistics)
8	Design	28	Mathematics
9	Law	29	Medicine
10	Economy	30	Veterinary medicine
11	Physical Education	31	Nutrition
12	Nursing	32	Dentistry
13	Environmental Science	33	Education (teaching ed.)
14	Civil engineering	34	Marketing and publicity
15	Systems engineering	35	Psychology
16	Industrial engineering	36	Chemistry
17	Electrical engineering	37	International relations
18	Mechanical engineering	38	Social (public) service
19	Chemical engineering	39	Sociology
20	Pharmaceutical science	40	Tourism and hospitality

Source: <http://ruf.folha.uol.com.br/2014/>

Consistency across ranking systems

The two university rating systems are sensibly the same in terms of the HEIs that occupy the top-20, and point to the predominance of Federal and State universities, as this table of 2013/14 results shows:

CAPES ranking		RUF rankings	
Rank	University	Rank	University
1	USP	1	USP
2	UFRJ	2	UFMG
3	UNICAMP	3	UFRJ
4	UFMG	4	UFRGS
5	UFRGS	5	UNICAMP
6	UNESP	6	UNESP
7	UFSC	7	UFSC
8	UNIFESP	8	UNB
9	UNB	9	UFPR
10	UFV	10	UFSCAR
11	PUC-RS	11	UFPE
12	PUC-RJ	12	UNIFESP
13	UFPE	13	UFC
14	UFPR	14	UFBA
15	UERJ	15	UFMS
16	UFSCAR	16	UFF
17	UFBA	17	UERJ
18	UFF	18	PUC-RS
19	UFC	19	UFV
20	UFLA	20	PUC-RJ

Source: CAPES/FAUBAI: Denise de Menezes Neddermeyer, 14 April 2014

In addition to Brazil's universities, sector-based initiatives might do well to consider also institutions outside of top-ranked universities, such as the INCTs and Rede federal.

INCTs (Institutos Nacionais de Ciência e Tecnologia)

National Institutes of Science and Technology

<http://estatico.cnpq.br/programas/inct/apresentacao/apresentacao.html>

The National Institutes of Science and Technology (INCTs) sit under the Ministry of Science and Technology (MCT) and were formed in 2008 in order to:

- Promote excellence in STI with activities of international scope
- Integrate STI with private enterprise
- Achieve a greater geographical balance for scientific education and research around Brazil.

INCTs are funded primarily from federal resources from CNPq, FINEP, CAPES, Petrobras, BNDES, the Ministry of Health, and match funding is provided by three FAPS (FAPEMIG, FAPERJ, FAPESP). These are running new calls now and are divided in areas of knowledge, approved research themes that are those that link directly to Brazil's STI Strategic Plan of Action, namely:

- Biotechnology
- Nanotechnology
- Information Technology And Communication
- Health
- Biofuels
- Electricity, Hydrogen And Renewable Sources Of Energy
- Oil, Gas And Coal
- Agribusiness
- Biodiversity And Natural Resources
- Amazon (development of Brazil's interior region)
- Semi-Arid (development of Brazil's Northeast - regions with a hot and dry climate)
- Climate Change

- Space Program
- Nuclear Program
- National Defence
- Public Safety
- Education
- Sea And Antarctic
- Social Inclusion

A widget (in Portuguese) on the website shows the geographical distribution of INCTs and their area of research expertise:

<http://estatico.cnpq.br/programas/inct/apresentacao/institutos.html>



This website shows individuals and institutions who have expertise in these theme areas. Under each subject theme there are lists of the participating states, universities and the key researchers in this area.

Looking at possible sources of expertise in Brazil, the INCTs should be considered in addition to the top universities. Competition for INCT funding is very competitive, so this is seen as a reliable indication of the quality of research capability. Importantly, it is also at the level of *department* within universities, so is a good indicator of where more specific levels of departmental expertise exist (beyond the general university subject strengths such as indicated in the above university rankings). One can use this to cross-check the recommendations for example from a FAP regarding where good researchers are in their state, against CAPES rankings and against citation rates.

See Appendix 8 for a list of all the INCTs, their contact details and their areas of research concentration and expertise.

Rede Federal de Educação Profissional, Científica e Tecnológica

Federal Network of Professional education, Science and Technology Institutions

The Federal Network of Professional Education, Science and Technology covers all Brazilian states, offering technical courses, higher education technological (undergraduate, masters and doctorate) courses and diplomas. Member institutions rank near the top in national assessments. A searchable directory and contact details are available in Portuguese on the home page: <http://redefederal.mec.gov.br/>.

The Ministry of Education (MEC) is investing more than R \$ 1.1 billion to expand the vocational education sector. Currently, there are 354 units and more than 400,000 student places nationwide. With a further 208 new schools scheduled to be delivered by the end of 2014, there will be 562 units in operation, capable of generating 600,000 student places. It is a key priority of the Dilma Rousseff administration that was just re-elected in October 2014 to guarantee access to education and make education facilities available in every state.

CONIF

Conselho Nacional das Instituições da Rede Federal de Educação Profissional, Científica e Tecnológica

National Council of the Federal Network of Professional Education, Science and Technology Institutions

<http://www.conif.org.br>

CONIF, the *National Council of the Federal Network of Professional Education, Science and Technology Institutions* is a forum whose aims are to promote, strengthen and consolidate professional, scientific and technological education, research and innovation in Brazil. CONIF numbers 405 units across Brazil: 38 federal institutes, two federal centres of vocational and technological education, a federal technological university and the College Pedro II.

CONIF fosters interdisciplinary and inter-institutional projects, through conferences, seminars and colloquia. It encourages the exchange of information and experiences between the institutions that make up the Council along with national and international educational, research and extension education providers, cultural organizations, and science and technology.

Recent international cooperation projects:

- Brazil/Canada teacher exchange program with Canada Colleges and Institutes. Initiated in 2013 and planned in 2 phases. Phase 1 sent 43 Brazilian teachers as part of a pilot program intended to give Brazilian professionals opportunities to learn about the Canadian education system, its delivery and its stakeholders. Placed in 19 colleges according to their areas of interest, Brazilian professionals were to observe the range of teaching technologies used in Canadian colleges and learn how applied research and innovation occurs. Phase 2 will involve up to 1,000 Brazilian teachers, administrators and heads of academic departments. Funding on the Brazilian side was provided by SETEC, CONIF, SWB, and CAPES. See more at: <http://www.collegesinstitutes.ca/what-we-do/international-partnerships/swbprogram/#sthash.di9YJSDh.dpuf>
- Brazil/Finland announced a teacher exchange program of up to 12 months starting in 2014 under the auspices of the VET teachers for the future project (Finland). The projects will be developed at the Universities of Applied Sciences HAMK, Haaga-Helia and Tamk and must be related to one of the strategic areas of the federal government in science, technology and innovation - agriculture, food, automotive, automation, biomedical, biotechnology, construction and building, creative economy, renewable energy, electronics, energy, mechanics, nanotechnology, oil and gas, environmental resources, assistive technology, environmental technologies (forests), information and communication technologies, educational technologies, including internet-based and distance education for sustainability, transport and tourism. Funding on the Brazilian side will be provided by SETEC and CNPq: See more at <https://sites.google.com/site/orientationvetteachersbrazil/>

Professional development for academics in UG/PG is a critical concern for Brazil. It is listed as the core mission, and the first funding criterion, of most funding bodies (FAP, CAPES, CNPq). The above case studies show that opportunities for mobility can be quickly realized, provided they lead to clear outcomes with short horizons (12 to 24 months). Participants in these initiatives received partial funding, in the form of modest travel grants and stipends (\$3,000 to \$9,000 per person is the norm).

For more information on the Network of Professional education, Science and Technology Institutions, see Appendix 9, CONIF and Rede Federal.

Partnering with Researchers

International collaborations and larger institutional agreements in Brazil often originate from grassroots activities between researchers. In addition to the INCT database mentioned above, two other instruments in Brazil assist researchers to do this:

Lattes Database

Sponsored by CNPq, LATTES compiles information about the scientific and technological output from education and innovation institutions as well as individual researchers in Brazil. Its first function, mirroring, is geared to state foundations supporting research and involves completing the institutions' latest data and curricula updates, for public access. Its second function is datamining into groups of research interests, teachers, and students registered with the Lattes Platform. As such it enables searches for individuals, research groups and Research & Development institutions through a single Information System.

<http://estatico.cnpq.br/portal/programas/inct/apresentacao/> (in Portuguese)

http://buscatextual.cnpq.br/buscatextual/busca.do;jsessionid=B54E6D8386CC1BDA464418C0DFF1D351.jb_buscacv_245-1 (in English)

Research groups formed by personnel from different institutions who form lasting networks can also be accessed in the Directory of Research Groups.

<http://dgp.cnpq.br/buscaoperacional/> (in Portuguese)

It is also possible to search for Brazilian institutions actively involved in the country's Science & Technology system at the Directory of Institutions.

<http://di.cnpq.br/di/cadi/consultainst.do> (in Portuguese).

FAUBAI

FAUBAI (<http://faubai.org.br>) the Association of Brazilian Higher Education Institutions is the leading institution for international education in Brazil. It promotes the development of exchange programs and international cooperation as a means to improve the teaching, research, extension and administration of affiliated institutions. With around 250 members, FAUBAI seeks to stimulate the continuous improvement of the management of international exchange and cooperation and to promote the potential of the Brazilian higher education system abroad. FAUBAI also communicates the diversity and potential of Brazilian HEI's together with funding agencies, diplomatic missions, and international programmes and organizations.

Key activities

- Exchange of information and experiences
- Promotion: congresses, conferences, seminars, courses and meetings
- Advisory services to universities, public agencies and other entities
- Active participation with public institutions and agencies to promote international cooperation
- Exchanges with universities, organizations, agencies and other entities abroad
- Management of databases on International Cooperation

FAUBAI is a one of the key organizations in Brazil focused on developing the internationalisation of Brazilian institutions at all levels, from TNE through research initiatives. The recent British Council/FAUBAI mission of Brazilian universities to the UK, including Scotland, in September 2014 is a good example of this. They are a good point of contact to assist SDI and the support agencies to develop an appropriate market approach and their events can serve as a platform for engagement with the sector.

See Appendix 10 for information on international associations linked with FAUBAI.

Main Sources of Funding of R&D and Innovation in Brazil

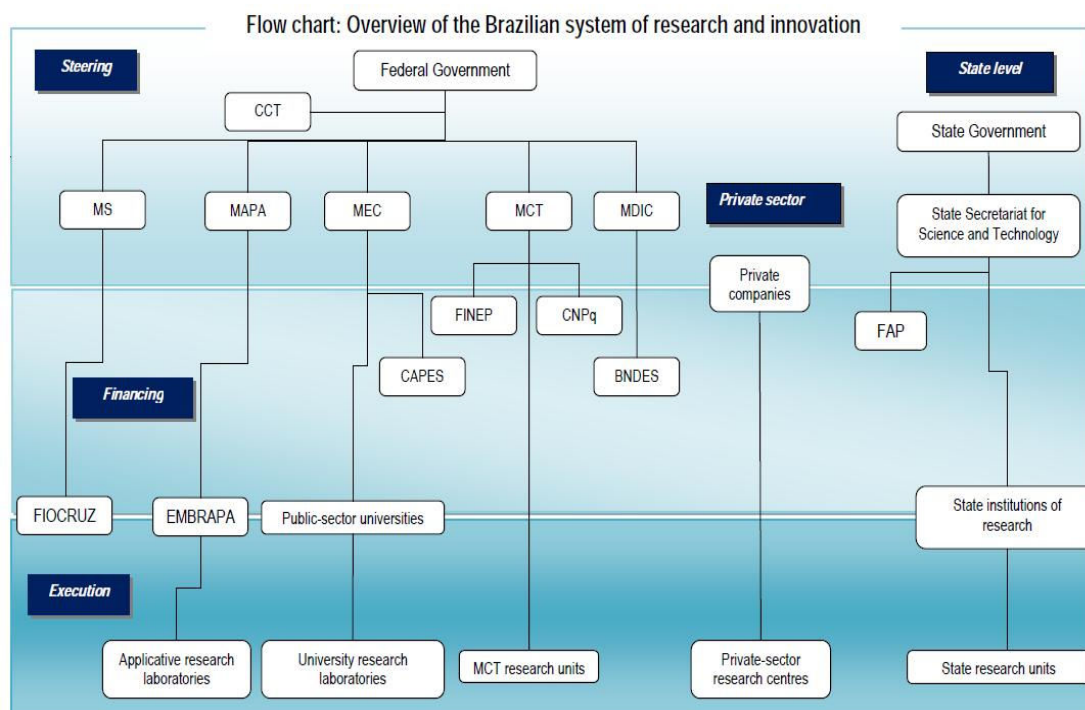
The framework for Brazilian research policy is outlined in the National Strategy for Science, Technology and Innovation 2012 – 2015. The objectives contained in this cover the development of the national R&D system and the funding of innovation in enterprise. The following strategic areas are the cornerstones of Brazilian research policy:

- Nanotechnology and biotechnology
- Information and communication technology
- Health research
- Energy (biofuels, electrical energy, crude oil etc.)
- Agriculture.

The Brazilian government is investing around £16 billion as part of the four-year National Strategy, with an additional £8 billion to be financed by state companies and the federal states.

As with many developing countries, research in Brazil is still predominantly a public-sector activity (55%). Approximately three-quarters of scientists work in the academic sector. Research is conducted in establishments of higher education and research (the universities) or laboratories located in specifically geared establishments (public research bodies). In addition to these there are some private universities which contribute to the national research results. The business sector is increasingly dynamic and in recent years has developed some world-class industries but it is only in the past ten years that effective policies have been put in place to foster industrial and service-sector R&D.

Brazilian Research Funding comes from several different kinds of funding sources, from those directly or indirectly related to the Brazilian ministries to others that relate to private funding (companies and industry sectors). The following chart provides a helpful summary of these funding streams.



Source: <http://www.access4.eu/brazil/330.php>

Institutional funding

Funding for research in universities and HEIs is, in the main, administered by agencies linked to the Ministry of Science and Technology (MCT) and the Ministry of Education (MEC). It is

common for significant research projects to secure multi-agency funding, for example from the academic research agency CAPES, the innovation agency FINEP, and the research agency CNPq. Other Ministries with responsibility for promoting research & innovation include the Ministry of Health which has the Oswaldo Cruz Foundation (FIOCRUZ) whose purpose is to promote health and social development, and the Ministry of Agriculture with the supervisory body for the Brazilian Agricultural Research Corporation (EMBRAPA). Appendix 11 lists the principle federal research bodies in Brazil.

FINEP, the Brazilian Studies and Projects Finance Organization, provides grants to non-profit institutions like universities and research centres, and lends money to companies. FINEP's mission is to encourage and finance innovation, and scientific and technological research in business, universities, research centres, and other public or private institutions in Brazil. Over the last four decades, FINEP has helped improve science and technological infrastructure which created an increased supply and demand for technology in Brazil and its neighbouring countries. In the period 2010-2014, FINEP has granted funds to roughly 500 projects per annum.

A database at the FINEP website (in Portuguese) shows projects funded by FINEP (http://www.finep.gov.br/transparencia/projetos_aprovados_ano.asp?ano=2013) Searchable criteria are: name of HEI or corporate institution, year of project activity (2007-2014), State by State. Source: http://www.finep.gov.br/pagina.asp?pag=fundos_o_que_sao

CNPq (<http://www.cnpq.br/>), the Council for Scientific and Technological Development is a public foundation. Its mission is to promote and stimulate *the* scientific and technological development of Brazil and to contribute to the formulation of national S&T policy through funding capacity building in S&T (at master, doctoral and specialisation level) and financing research projects in key areas. Through its programmes, CNPq supports the development of research, strengthens research groups and institutions, and encourages international cooperation of Brazilian researchers. Active international cooperation programmes include: bilateral agreements, CIAM (interamerican), CERN (Europe), CPLP (Portuguese speaking nations) European Union, PROSUL (SouthAm), CYTED (Spain and LatAm), TWAAS, PEC-PG (PG exchange program), IBAS (India, Africa).

CAPES (<http://www.capes.gov.br/>), the Federal Agency for Support and Evaluation of Higher Education, CAPES, supports MEC in formulating policies in the context of higher education and coordinates the Brazilian system of post graduate education. It is primarily concerned with the evaluation of programmes at Brazilian institutions of higher learning, and with the awarding of grants and scholarships related to education. CAPES fosters Brazil's human capacity in S&T through training activities. It also plays a role in funding international research cooperation - many international cooperation agreements between Brazil and other countries are operated through CAPES. CAPES grades research institutions throughout Brazil on a scale ranging from 1-7, focusing on education quality and research outputs.

Indirect funding

Indirect funding is available through the budgets of public and private universities, institutes and centres. Some public and private universities such as UNICAMP, have their own internal agencies, foundations and funds (e.g. Fundação de Desenvolvimento da UNICAMP, FUNCAMP) set apart and managed with the purpose of supporting Research, Development and Innovation carried out by their faculties and students. They may not own the budget, but receive their funds from the fostering agencies (CNPq, FINEP, etc.).

Project-based funding

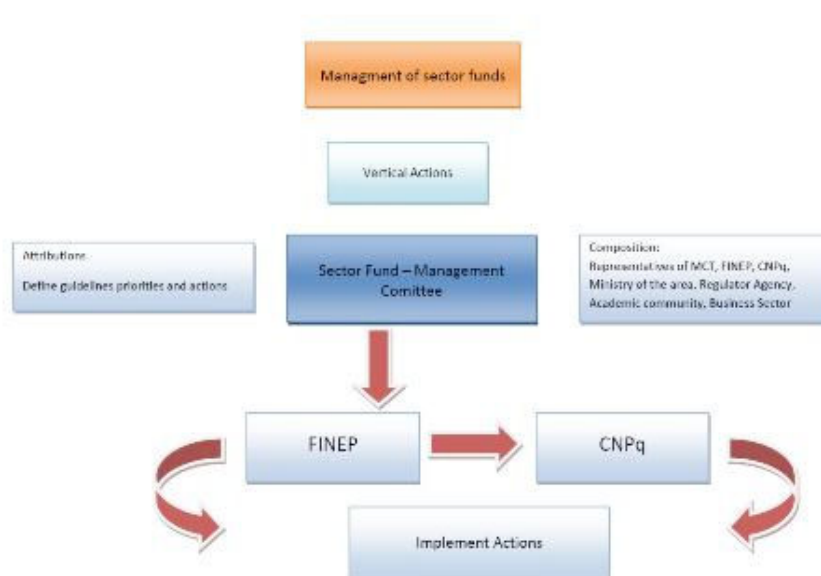
The MCT 's (Ministry of Science and Technology) research funding unit, CNPq, is responsible for project-based funding. This is allocated along two main lines:

- Research Capacity Building Human Resource Programme – a direct funding programme mostly for individual scholarships. In 2013 almost 96,000 scholarships were awarded.
- Knowledge Expansion and Consolidation Programme – this programme concerns funding groups and projects.

Sector funding

The MCT, FINEP and CNPq decide which sectors will be funded. In special cases, funding may take place through requests determined by managing committees. Generally the funding is allocated within the FNDCT and managed by FINEP, its Executive Secretariat. Sector funds were created as an additional source of funding to finance the development of strategic sectors for the country. Funding in 2013 reached R\$ 11.2 billion (plan Inova Empresa).

There are 17 sector funds. 15 relate to specific sectors, 2 are cross-sector. Of these two, one is cross-topic support for innovation and technology transfer, aimed at improving university-industry interactions ('Green/Yellow'). The other is to help improve the infrastructure of ICT (CT-Infra). (See Appendix 12 for details of the Sector Funds). The following diagram illustrates the management of the Sector Funds:



Source: UNESCO *Sistemas nacionales de ciencia, tecnología e innovación en América Latina y el Caribe 2010*

Industrial, commercial and service corporations

These usually fund their own R&D&I centres, or via some type of fiscal benefit (e.g. tax exemption). Among public companies Petrobras (Brazilian Petroleum Corporation) stands out as a key player in the Brazil research landscape. The company is among the leading R&D investors in the world, and while many of the company's R&D efforts are carried out in its own research centre (CENPES), it maintains many partnerships with universities and external research institutes.

National private and non-profit associations and foundations

Funds come from statutory mechanisms or donations from private individuals or companies.

Funding by other nations, international organizations and multilateral institutes

Examples include: The Rockefeller Foundation, Ford Foundation, Inter-American Development Bank, World Bank, UNESCO, UNDP, World Health Organization, World Wildlife Foundation, Kellogg Foundation, Bill & Melinda Gates Foundation, US National Science Foundation and Volkswagen Foundation.

The FAPs: Research coordination

In addition to the above, the state funding agencies (Fundação de Amparo à Pesquisa, or FAPs), play an important role in bridging spontaneous funding requests with fund sourcing. In practice, the FAP often matches the funds of other (federal) agencies with State funding, which is the purse under their control. The constitutions of most of the federate States provide for the redistribution of a percentage of the State's fiscal revenue towards science and technology research. These resources are managed by The FAPs. FAPs support research projects in higher education and research institutions, in all fields of knowledge. They act by allocating grants, research support arrangements, scientific exchanges and the dissemination of science and technology. They provide a bridge between State mandates of research and innovation with business sector activity at the state level. They mirror the economic priorities and sector strengths of every state. In 2013 the annual budget of all the FAPs was £725m (Source: Brazilian National Council Of State Funding Agencies For Research Support Presentation October 2013). The most active and most well-funded FAP is The São Paulo Research Support Foundation, FAPESP, which coordinates research in the state responsible for 50% of the national scientific output.

The FAPs' resources come from a state constitution mandate percentage of gross fiscal revenues (1%). In actuality, only FAPESP, in the state of São Paulo, receives the full allocation year in and year out. FAPERJ and FAPEMIG are also funded to the extent provided in the constitution. In recent years, several FAPs have supported thematic network-based projects and even more recently, innovation projects in cooperation with universities and research organizations or in the form of direct grants to firms. About half have passed their own state innovation law, and some have established innovation funds to provide competitive grant to firms.

BR		FAP State Chapter
Abbr.	State	Acronym
DF	Distrito Federal	FAPDF
GO	Goiás	FAPEG
MT	Mato Grosse	FAPEMIG
MS	Mato Grosso do Sul	FUNDECT
AC	Acre	FAPAC
AP	Amapá	FAPEAP
AM	Amazonas	FAPEAM
PA	Pará	FAPESPA
RO	Rondônia	FAPERÓ
TO	Tocantins	FAPT
AL	Alagoas	FAPEAL
BA	Bahia	FAPESB
CE	Ceará	FUNCAP
MA	Maranhão	FAPEMA
PB	Paraíba	FAPESQ
PE	Pernambuco	FACEPE
PI	Piauí	FAPEPI
RN	Rio Grande do Norte	FAPERN
SE	Sergipe	FAPITEC
PR	Paraná	FA

RS	Rio Grande do Sul	FAPERGS
SC	Santa Catarina	FAPESC
ES	Espírito Santo	FAPES
MG	Minas Gerais	FAPEMIG
RJ	Rio de Janeiro	FAPERJ
SP	São Paulo	FAPESP

Historically research in Brazil has been concentrated in the south-central region, particularly São Paulo, Rio de Janeiro and surrounding areas. There is now a move to encourage greater decentralisation, which may impact positively on the number of opportunities available through FAPs beyond these regions.

See Appendix 13 for a complete directory of FAP contacts. The research and sector focuses of the FAPs will be discussed in Part 2 of this report.

FAPESP is the far-and-away leader in the FAP system. The state of São Paulo accounts for 50% of the scientific output in the country. FAPESP is the oldest and best funded of all FAPs. The initiatives it spearheads are replicated in the other states, with more or less success depending on funding levels. The communication tools on the FAPESP portal are first rate, including an online magazine for the divulgation of research topics to the public and scientific community, and provide an essential overview of the initiatives and networks that are available through FAPs.

Research, Innovation and Dissemination Centres (RIDCs)

FAPESP supports 17 Research, Innovation and Dissemination Centres (RIDCs) funded for a period of up to eleven years. (<http://cepid.fapesp.br/en/home>) RIDCs integrate basic multidisciplinary research, the transfer of technology through collaboration with industry and government, and extension activities in scientific education. Their objectives also include the creation of research partnerships with industry.

Funding for the 17 RIDCs is from FAPESP and the host institutions (funding faculty, technicians, support personnel, and infrastructure). From 2013, it is estimated that for the eleven-year duration of the programme, the total funding for the 17 centres will be more than US\$ 680 million, with US\$ 370 million from FAPESP and US\$ 310 million in salaries from the host institutions. Additional funding will be obtained by each centre from industry and government organizations.

The RIDC research foci selected in 2013 include:

- Biodiversity and drug discovery
- Cellular therapy
- Computational engineering
- Food and nutrition
- Functional materials
- Glasses and glass-ceramics
- Human genome and stem-cells
- Inflammatory diseases
- Mathematical sciences applied to industry
- Metropolitan studies
- Neuromathematics
- Neuroscience and neurotechnology
- Obesity and associated diseases
- Optics, photonics, and atomic and molecular physics
- Redox processes in biomedicine
- Toxins, immune-response and cell signalling

CONFAP, the Brazilian National Council Of State Funding Agencies For Research Support, is the agency responsible for coordinating FAPs across Brazil.
See: <http://confap.org.br/news/> (in Portuguese)

ANPEI, The Association for Research and Business Development

ANPEI is a useful interlocutor for the support agencies in their approach to any industry sector in Brazil. The association (founded in 1984) exists to promote innovation in enterprises and increase the competitiveness and productivity of Brazilian companies. See: <http://www.anpei.org.br/>

Commenting on the outlook for R&D in 2014, Carlos Eduardo Calmanovici, ANPEI President, Said,

“Brazil is very diverse when it comes to innovation ecosystems. Apart from the well consolidated Oil & Gas cluster in Rio de Janeiro (RJ) or the Defence and Aerospace cluster in São José dos Campos (SP), there are several relevant initiatives for Information & Communication Technologies, Biotechnology and Biosciences, Agribusiness, Creative Industries, New Materials and Nanotechnology emerging in different parts of the country. It is easy to find partners and to structure interaction networks in several different areas and this will continue in 2014, consolidating existing clusters and eventually starting new ones when local environments are favourable.”

Currently, ANPEI has 151 member companies belonging to a diverse range of industries: Technology Services (19%), Chemicals (13%), Electrical and Electronic (7%), Auto-parts (7%), Machinery and equipment (12%), Petrochemical (2%), Energy (7%), Biotechnology (5%), Pulp and Paper (4%), Food (6%), Construction (2%), Steel (2%), Mining (2%) and Others (12%).

The list of member companies show a split between those businesses based and capitalized in Brazil (75%) vs. multinationals (25%). See detail of member organization at: <http://www.anpei.org.br/associados-emp-1>

Science Without Borders

(<http://sciencewithoutborders.international.ac.uk>)

Introduced in 2011 the government pledged that the Science Without Borders student mobility programme would fund 100,000 places on overseas programmes in the fields of science, technology, mathematics and engineering (<http://sciencewithoutborders.international.ac.uk/about/subject-areas.aspx>). According to the re-elected President of Brazil, Dilma Rousseff's announcement in July 2014 a further 100,000 scholarships will be offered in Phase 2 for the period 2015 to 2018, both undergraduate and postgraduate. The current scheme has three strands: Undergraduate Visiting Student (one year), PhD and Split PhD.

This investment is aimed at cutting-edge research and development to bring substantial returns for business and industry through working with the scientists of the future, creating networking and high-level promotional opportunities for business. Brazil's Petrobras is contributing approximately £100 million to this scholarship program and will grant 5,000 scholarships to support undergraduate, postgraduate and doctoral students. A case study of BG Group's participation in SwB in Brazil is available at: <http://sciencewithoutborders.international.ac.uk/about/business-and-industry/case-study-bg-group.aspx>

The vast majority of the students on the programme to date have been at undergraduate level (with approximately 70% of SwB students in the UK here to do Engineering). The PhD routes have been less successful for two reasons. Brazilian universities are reluctant to divert students to overseas as they then lose their most talented people. Secondly, while the universities are keen to send students for split PhDs many do not have enough links with suitable international partners.

The Brazilian universities not only see SwB as an opportunity for their students to go abroad but, as the programme benefits only those students who qualify to participate, they hope to use the scheme to develop links with international universities as a mechanism to internationalise their own campuses and help improve their global rankings. The details of Phase 2 of the SWB programme have not been confirmed but there is broad consensus that the Brazilian universities will have more influence over the destination to which their students choose to go. In Phase 1 the students were able to choose without much input from their home institution and that is likely to change. This suggests a greater need for UK universities to develop their one-to-one institutional links in Brazil.

The Newton Fund

The Newton Fund was introduced this year as part of the UK's official development assistance. Over 5 years it will provide £375 million fund (£75 million a year) with the aim of developing science and innovation partnerships that promote the economic development and welfare of developing countries. Brazil is included in the list of 15 countries in which it will run. It is expected that the UK funding will lead to extra funding from partner countries, private foundations, multi-lateral organisations and corporate partners. A number of universities in Scotland are utilising the Newton Fund to facilitate their collaborative activities in Brazil. It covers three broad categories of activity:

- People: improving science and innovation expertise (known as 'capacity building'), student and researcher fellowships, mobility schemes and joint centres.
- Programmes: research collaborations on development topics.
- Translation: innovation partnerships and challenge funds to develop innovative solutions on development topics.

The Department for Business, Innovation and Skills (BIS) administers the fund. Activities under the fund are managed by a core group of delivery partners, including: the Academies (Royal Society; Royal Academy of Engineering; The Royal Society of Chemistry, British Academy and The Academy of Medical Sciences); British Council (in collaboration with the UK Higher Education International Unit); Research Councils UK (RCUK); Technology Strategy Board (TSB); and Met Office.

This is a significant initiative that offers a range of opportunities for Scottish HEIs to develop opportunities in Brazil. Details of the programmes can be found on the partner websites (e.g. <http://www.britishcouncil.org/education/science/newton>, <http://www.international.ac.uk/programmes/current-opportunities/the-newton-fund/calls-for-brazil.aspx>)

Horizon 2020

Horizon 2020 is a new European Union programme for research and innovation and which will run from 2014 to 2020 with an estimated €80bn budget. It has priorities and programmes under 'Excellent Science', 'Industrial Leadership' and 'Societal Challenges'. International cooperation is crucial to many of its objectives, and it will specifically target Brazil in order to build research links with the European Union. As a designated associated state, Brazilian researchers will be eligible to apply for Horizon 2020 funding in collaboration with partners in EU states. Under the old FP7 framework (which Horizon 2020 replaces) 166 Brazilian participants were granted EU research funding to a total of €24.1 million. Details can be found at <http://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020> . There is now an opportunity to encourage industrial and academic relationships between Scotland and Brazil so that both countries are well positioned to take advantage of this funding.

Sector Participation and Involvement

The federal government initiative, Inova Empresa, is investing \$14bn over 2 years to subsidise innovation projects in priority areas: Oil and Gas, Agribusiness, Energy, Information Communication Technology, Healthcare, Aerospace and Defence, Environmental Sustainability. We comment on and give examples of international projects in three of these sectors below:

Oil and Gas

An increase in demand from the oil and gas industry for innovative technologies, principally because of the pre-salt reserves, is driving scientific innovation in Brazil. Petrobras alone will have invested US\$ 212.3 billion in Brazil by the end of 2014. Much of that investment will be applied to high-complexity equipment. More detail can be found at <http://www.petrobras.com/en/magazine/post/brains-made-in-brazil.htm>. Details of Petrobras's key areas of focus are at

<http://www.movidospelatecnologia.com.br/english.html>, <http://www.petrobras.com.br/en/our-activities/>

Suppliers are installing research centres in Brazil, close to universities and to Petrobras, intensifying the exchange of knowledge and instigating the emergence of, "one of the world's most advanced poles of research in the energy sector." At the centre is the Technological Park of the Federal University of Rio de Janeiro (UFRJ), located at Ilha do Fundão, close to the Petrobras Research Center (Cenpes). Six companies from the oil and gas industry are setting up there. Schlumberger inaugurated the Center for Research in Geo-engineering in 2010 and also in the process of installing themselves at the Park are Halliburton, Baker Hughes, FMC Technologies, Tenaris Confab and Usiminas. Further, the BG Group (see <http://www.bg-group.com/154/where-we-work/brazil/sustainability/> for details) announced that it will also invest close to US\$ 1.5 billion in its Global Technological Center in Rio de Janeiro by 2021, and General Electric (GE) has already installed a centre on land next to the Technological Park.

According to Rio de Janeiro State Government, these companies together have already invested almost US\$ 303 million in the Park alone. Research in the energy sector is also being stimulated in Brazilian universities, including through the model of thematic networks created by Petrobras in 2006. Each network brings together laboratories from diverse universities and research institutions, which act in an integrated form under the coordination of Petrobras on themes defined by the company. Currently, there are 50 networks, in which more than 100 institutions of research and development share knowledge, experiences and infrastructure. Between 2008 and 2010, Petrobras invested US\$ 2.6 billion in research, of which 56% was undertaken in collaboration with universities, foreign and Brazilian companies, and other laboratories.

ANP (Brazilian National Agency of Petroleum, Natural Gas and Biofuels) is the federal government agency linked to the Ministry of Mines and Energy (MME) (<http://www.anp.gov.br/>) and oversees the activities undertaken by the oil, natural gas and biofuel industries in Brazil. It announces calls for tenders and closes deals on behalf of the State with crude oil and natural gas exploration, development and production dealers. ANP also inspects and monitors the sector's regulated industries. ANP monitors the implementation of the 1% Special Participation Fund levy (discussed in more detail in Part 2) to check the amount of resources invested and the adequacy of expenditure in relation to the technological development goals/creating new products and processes for the oil, natural gas and biofuels segment.

BG Group has recently implemented a technology strategy focused on R&D opportunities in Brazil, in the context of the investment obligations arising from pre-salt hydrocarbon production in the Santos Basin. A BG Global Technology Centre has been established in Rio de Janeiro from which a range of projects will be managed, spanning BG's areas of operation and interests globally. And in collaboration with FAPESP BG is establishing a Brazilian Research Centre for Gas Innovation. Details of this can be found at <http://www.fapesp.br/en/8206>.

Energy

Brazil is the world's largest sugarcane producer and second largest ethanol manufacturer. With more than 30 years Brazil has by far the longest experience in developing an infrastructure and capacity to produce bio-based energy based on sugar cane (<http://www.be-basic.org/be-basic-brazil.html>). Brazil also has strong federal and regional investments in fundamental and applied research in the bio-energy field. The Brazilian Sugarcane Industry Association (UNICA) is the largest organization in Brazil representing sugar, ethanol and bioelectricity producers. UNICA members answer for more than 50% of all ethanol produced in Brazil and 60% of overall sugar production.

The BE-Basic Foundation (Biotechnology based Ecologically Balanced Sustainable Industrial Consortium) in the Netherlands (<http://www.be-basic.org/>) is an international public-private partnership that develops industrial bio-based solutions to build a sustainable society and has developed collaborations with Brazil in this area. These collaborations build on an integrated business plan of activities, formalised in a series of joint agreements:

- FAPESP - São Paulo Research Foundation and its BIOEN Research Programme (2010). An eight million dollar joint Dutch-Brazilian research programme with the FAPESP Bio-energy programme (BIOEN). Thematic priorities include synthetic biology for bio-fuels and bio-based chemicals and sustainability. The BIOEN programme of FAPESP aims to integrate comprehensive research on sugarcane and other plants that can be used as bio-fuel sources, thus assuring Brazil's position among the leaders in the area of Bio-energy. Research ranges from biomass production and processing to bio-fuel production and its impacts.
- CTBE - Brazilian Bioethanol Science and Technology Laboratory (2011). The National Laboratory of Science and Technology of Bio-ethanol (CTBE) contributes to Brazil's leadership role in the renewable energy sources and chemical industry raw material production sectors, mainly by improving the sugarcane bio-ethanol production chain through research, development and innovation. In September 2011, BE-Basic and CTBE signed an agreement for a 4-year cooperation in the fields of ethanol industrial technology, bio refinery technologies and alcohol chemistry, and socio-economic impacts including sustainability. The cooperation also includes educational programmes. In the framework of this agreement, two Professional Doctorate in Engineering students from TU Delft have done their engineering project at CTBE.
- Unicamp - University of Campinas (2012). BE-Basic and TU Delft (Delft University of Technology: <http://www.tudelft.nl/>) opened a joint Brazil office to further intensify and facilitate the cooperation with Brazil in the fields of research, education and business development. The office is located in Campinas. Unicamp and the BE-Basic Foundation are also collaborating in the field of bio-based economy. They officially joined forces in 2102 to create new science and breakthrough technologies. This agreement facilitates a four-year cooperation in the field of bio-based economy in a broad range of activities, such as development of education programmes, exchange of staff and students, joint research projects and exchange of academic knowledge.
- FIESP - Federation of Industries of São Paulo State (2012). FIESP and the BE-Basic Foundation have a formal partnership that facilitates collaboration in developing the bio-economy, especially in the fields of industry innovation, entrepreneurship and human capital development.

More information on these collaborations can be found at: <http://www.be-basic.org/news-center/news/be-basic-strengthens-bonds-with-brazilian-industry-and-academia.html> and at <http://www.be-basic.org/be-basic-brazil.html>

Agribusiness

The agribusiness sector is responsible for a significant portion of Brazil's GDP. The focus of CT-AGRO (sector fund) is the scientific and technological capabilities in the areas of agronomy, veterinary, biotechnology, agricultural economics and sociology, among others; technological upgrading of the agricultural industry; stimulating greater investments in tropical agricultural biotechnology and diffusion of new technologies.

The Brazilian Corporation of Agricultural Research (EMBRAPA) is aimed at technological innovation and is linked to the Ministry of Agriculture, Livestock and Food Supply (MAPA). With a budget: R\$ 2.3 billion in 2013, all current projects, portfolios and regions are listed on the EMBRAPA website: <https://www.embrapa.br/en/busca-de-projetos/-/projeto/todos>.

With a focus on innovation, EMBRAPA works with an extensive agenda of strategic issues, anticipating scenarios and solutions for agriculture and stockbreeding. Business and family farming, the frontier of knowledge and the preservation of ancestral practices of traditional Brazilian communities are among these activities. EMBRAPA builds knowledge together with segments of the industry and invests to promote the sustainability of Brazilian agriculture, with respect to environmental diversity, ethnics and culture. It looks for cooperation with major research centres worldwide and relies on scientific cooperation in order to address the future challenges of agriculture. EMBRAPA aims to be a 'global benchmark' in agriculture in tropical climates and supports the Brazilian Government in actions to promote sector development in emerging countries.

EMBRAPA has built a strong network of international cooperation and is currently present in all continents, partnering with some of the major institutions and research networks in the world. Coordinated by the Secretariat of International Affairs (SRI), activities abroad also contribute to the technical cooperation programme of the Brazilian Government, which seeks to transfer and adapt technologies for the national tropical challenges of different countries.

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Part 2: Scottish Higher Education Institutions Links to Brazil, Opportunities in the Market and Recommendations for support from SDI, British Council Scotland and Universities Scotland

Why Brazil?

The HM Government in its International Education: Global Growth and Prosperity Report lists Brazil in its priority list of countries for international education partnerships, chosen, “on the basis that they are important countries for increased engagement by the UK for a whole host of foreign policy reasons and, in addition, their demographics and ambitions mean they are prioritising and investing in education.” Brazil is identified in several other reports, including a number from the British Council as a market with varying levels of opportunities across a range of international higher education areas from student recruitment, TNE and research collaboration. While TNE opportunities are ranked below average by the British Council in its report, “The Shape of Things to Come: The evolution of transnational education: data, definitions, opportunities and impacts analysis”, demographic drivers mean that Brazil is highlighted in the ‘Horizon Scanning’ report’s list of emerging markets with the highest demand for higher education qualifications by 2020, based on population of potential tertiary students.

Other reports point to the opportunities for research collaboration. ‘The Shape of Things to Come’ notes the unexploited research collaboration opportunities with both large and smaller companies in countries such as Brazil which have low tertiary sector innovation rates, in addition to those opportunities with academic institutions where the UK is already the second most frequent collaboration partner for Brazil after the US. Galloway & Associates’ own recent ‘Global Priority Market Analysis’ research on behalf of SDI and British Council Scotland revealed that Brazil was of specific interest to a number of Scotland’s collaborative Research Pools², generally on the basis of its interest as a nation with emerging research strengths, or in terms of it having a strong industrial base for potential knowledge exchange. The report, ‘Strategic Analysis of the Scottish Higher Education Sector, Distinctive Assets’ provides further detail on the strengths upon which such potential research collaboration opportunities may be built.

Scottish Government and agency prioritisation

The Scottish Government is in the process of overhauling its Americas strategy. This will include Brazil plus one or two other South American countries. The draft of this will be produced early in 2015. Brazil will become a priority market, although the specific priority areas of focus across Food and Drink, Textiles, Oil and Gas, Energy, Life Sciences, Tourism, Construction and Education are still being worked out. The Scottish Government is not currently investing in any initiatives in Brazil through the UK Government.

For the British Council, Brazil along with Mexico is a corporate priority in the Americas region. In terms of international higher education, alongside its global corporate priorities for higher education, the British Council’s priorities in Brazil are:

- Increasing the market share for the UK.
- A campaign for mutual accreditation of awards.
- The development of links between higher education, government and industry (including research).
- Support for the internationalisation of Higher Education Institutions.

Of particular importance for Brazil in its corporate priorities is the Newton Fund.

The above priorities play out for British Council Scotland through the Connected Scotland framework making its priorities in higher education those identified by the partnership (such as Brazil, China, and Malaysia).

² Namely: SULSA (Life Sciences), SAGES (Geoscience/ Env/Society), SICSA (Informatics & Computer Science) and MASTS (Sustainable Aquaculture Forum)

Scottish Development International's international priorities vary across its various sector teams. The education team focuses mainly on its core markets of; the Gulf, Africa, South East Asia, China and India, although individual institutions can be supported in markets outwith these. Brazil has not been a priority for the education team except through Connected Scotland and to date any education activity in Brazil has been as additional support to its Oil and Gas team's activity (for example accompanying them on Brazil missions). Its office in Brazil is focused on the oil, gas and energy sector.

Priority for Scottish higher education stakeholders

Most Scottish institutions have some kind of activity in Brazil and the majority see it as a growth area. There is a high volume of activity happening with Brazil at an institutional level, in many cases kick-started by the Science Without Borders programme, and some institutions have been very proactive in establishing university offices or representation in the market.

Those we interviewed suggested many reasons why Brazil is an attractive market and of significant interest to the institutions, and why it should be a priority strategic focus for the Scottish sector as a whole.

- It has economic, academic, technical and industry drivers and a strong funding context.
- The needs of Brazil map well onto Scotland's academic and research strengths and capabilities, and this includes opportunities to partner with industry. Key sectors, industries and disciplines seen to be most relevant, in demand and attractive to Brazil (and therefore likely to attract funding), and where Scotland demonstrates academic excellence include:
 - Energy, (of all kinds), renewables, bioenergy, deep water oil and gas
 - Geosciences
 - Carbon cycle, capture
 - Engineering
 - Environment, environmental change and ecology
 - Sustainability
 - Agriculture and, agribio, soil erosion
 - Biodiversity, life sciences
 - Ocean and maritime science
 - Aquaculture
 - Water systems, quality, supply
 - Plant and animal science
 - Biology and biochemistry
 - Public health
 - Medicine, tropical medicine
 - Urban and social development and planning, future/smart cities
 - (English language training)
- KPMG's recent High Growth Markets Survey Brazil highlights the country's infrastructure and resource challenges that are also drivers for opportunities for external support:
 - "Transportation and infrastructure are major challenges that are likely holding back GDP growth in Brazil. Fundamental gaps in access to and stability of reliable sources of water, power, and electricity can result in unreliable service and skyrocketing prices. Gaps in manufacturing, transportation, retail and wholesale channels, and communications infrastructure make it difficult to produce, transport, distribute, and promote products and services. Brazil is noted for extreme infrastructure challenges, as poor highways and rural roads slow commerce. Poor infrastructure also exposes companies to significant business interruptions such as natural disasters."

It highlights the key industry opportunities in Brazil as being, Petroleum, Electronics, Telecom, Automotive, Mining and Sanitation.
- It has a number of very good institutions with a high academic profile.
- The Newton Fund offers significant opportunities in Brazil across mobility, partnership and research grants.
- Some see Brazil as an attractive focus compared to China: "Being further back on the

development curve it is looking to bring most of its expertise in, rather than trying to create its own world-class institutions.”

- Although most universities in Scotland have some kind of links to Brazil, there is a shared and overwhelming feeling that there is still a lot of work to be done in what is a large and complex market. There is much ‘low-level’ activity but, outside some important examples in oil, gas and energy, this is not being particularly coordinated from a Scotland perspective. There is a general agreement among Scottish institutions that a collective approach would be of benefit, even to those currently most active in the market

The needs and focus of Brazil should drive the engagement

Driven by a strong internationalisation agenda and international rankings, the message that Brazilian universities really want to *partner* with UK universities now is an important one. The clear feedback from Brazilian universities is that they want to build collaborative agreements which will allow them to develop research, joint projects, reciprocal exchange of students and possibly joint degrees. They also hope to identify sources of joint funding via their state funding agencies and European schemes. They also want to encourage student mobility to Brazil and are very keen on establishing links whereby they would host students from Scotland.

Existing Scottish and UK Higher Education Links with Brazil

From our interviews we have summarised for each of the universities on the International Committee information they were happy to share, both data-based and qualitative, regarding their links, activities and focus in Brazil. This also includes from some of them some short case examples illustrating the kinds of research projects and collaborations currently happening in Brazil. These profiles are included in detail in Appendix 14

Within their international strategies, the focus on Brazil in the past two or three years has for many Scottish higher education institutions increased. 8 of the 12 universities on the International Committee said that Brazil is now regarded as one of their priority international markets. For some this was wholly as a result of student recruitment under SwB. For others historical links on the research side are more longstanding and developed. For a small number Brazil is not a key strategic priority. Across the institutions there is a wide variation in the levels of experience, networks, agreements and ongoing collaboration among the Scottish institutions with Brazil, from some who have been working in the market for years or are deeply connected in sectors such as oil and gas, to those who are just starting out.

Research collaboration and student recruitment

Although undergraduate recruitment through the SwB programme continues to be successful for a number of Scottish universities engaging with Brazil many institutions are now approaching Brazil at a much more strategic level with the emphasis on building long term and sustainable relationships, and consequently with a focus more on research collaboration and mobility rather than solely on recruitment. Groups are being put together within some of these universities and dedicated members of staff or representatives in the market are being appointed with the focus on Brazil. Among these, Glasgow and Heriot Watt now have Brazil working or strategy groups, Edinburgh has an office in the market, Aberdeen has a dedicated person to develop the Brazil business and Strathclyde has a newly appointed representative on the ground in the market. However, despite these levels of interest and activity and an increasing number of MoUs being signed between Brazilian and Scottish institutions, outside of oil and gas there are still relatively small numbers of large or industry-linked research projects.

Brazil features as one of the top three markets for the Royal Society of Edinburgh although its relationship with the market is in its early stages. It is in the process of signing a MoU with the Brazilian Academy of Sciences and is keen to leverage this relationship and possible bilateral exchange of researchers and joint research projects as part of the sector's wider engagement with Brazil.

Science without Borders

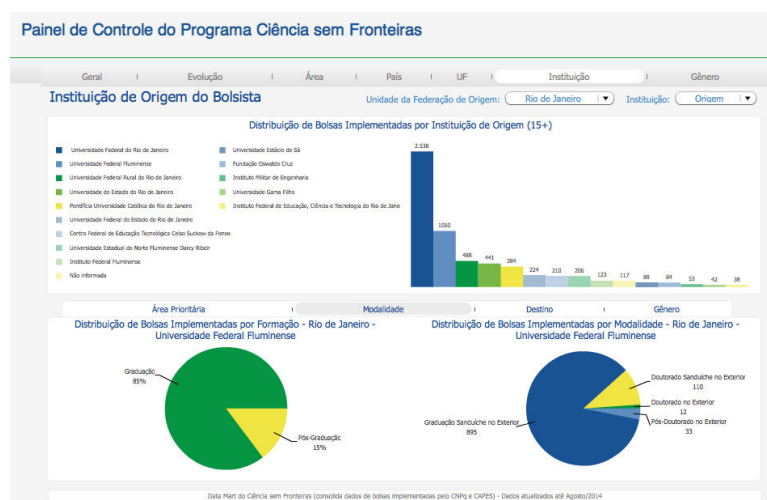
The most significant engagement between Scottish universities and Brazil has been via the Science without Borders programme. Latest data from Universities UK International Unit shows the following numbers of SwB undergraduate students placed at Scottish universities across all 5 cohorts to date:

UK University	Cohort 1 (Sept 2012)	Cohort 2 (Jan 2013)	Cohort 3 (Sept 2013)	Cohort 4 (Jan 2014)	Cohort 5 (Sept 2014)	Total at UK HEI
The University of Strathclyde (S78)	11	47	65	172	151	446
University of Glasgow (G28)	20	13	63	67	64	227
Glasgow Caledonian University (G42)	7	35	16	52	14	124
University of Dundee (D65)	6	13	22	27	46	114
Heriot-Watt University - Edinburgh (H24)	5	0	26	0	50	81
The University of Aberdeen (A20)	13	9	15	14	15	66
Edinburgh Napier University (E59)	1	0	5	14	33	53
The University of Stirling (S75)	1	0	5	15	3	24
University of St Andrews (S36)	2	1	4	5	3	15

Numbers for PhD students on the programme are for students currently in the UK or about to arrive. Universities UK International Unit does not have the statistics per institution of past intakes.

SwB PhD numbers		
Scottish HEIs	Sandwich PhDs (6-12 months)	Full PhDs (3-4 years)
Stirling	1	1
Strathclyde	10	3
Glasgow	11	3
Heriot-Watt	2	3
Edinburgh	8	6
St. Andrews	7	4
Dundee	2	8
Aberdeen	10	8
SRUC	5	0

Detailed statistics from Brazil regarding the most recent position of the SwB programme under a range of criteria such as; destination countries and recruiting institutions, the most popular subjects, sending universities and states etc of is available on the Science Without Borders control panel (in Portuguese). <https://www.cienciasemfronteiras.gov.br/web/csf/painel-de-controle>



Transnational Education (TNE)

There is little visible appetite among Brazilian universities for development of TNE arrangements of the kind commonly found in other markets such as China, the Middle East or Malaysia such as branch campuses, distance learning, online delivery, 2+2 arrangements etc). It is therefore unlikely to be a priority for them going forward and consequently (in addition to limitations due to the language barrier), universities in Scotland do not see much scope for these opportunities in Brazil. Instead, Brazilian universities are looking to be an equal partner, and for student mobility, staff mobility and joint research.

For institutions that do wish to enter the market in this way there are two possible strategies:

- Partner with local universities. Some foreign universities are partnering in Brazil with Brazilian universities to deliver joint and double degrees.
- Purchase a local education institution. As we described above, DeVry Education

Group and Laureate Group have done this.

Manchester Business School is an example of a university which has set up in partnership with a local entity, FGV (the most well known business administration school in Brazil). The MBS/FGV Centre opened in March 2010 as one of its 7 international centres (UK, Brazil, Shanghai, Dubai, Singapore, Hong Kong and Miami which together now support 3500+ students worldwide). The Brazil centre is the hub for MBA candidates who live and work in South America. Graduates from the programme in Brazil earn two degrees: the University of Manchester, Masters in Business Administration (identical to that of the Full Time on campus programme) and an MBA Specialization certificate from FGV.

Missions to and from Brazil

There have been over the last few years a large number of missions and visits to or from the UK and Scotland to Brazil. The most recent of these, their purpose and their participants from both the UK and Brazil sides are detailed for information purposes in appendix 15. This provides a guide to some of the Brazilian universities and funding agencies which have demonstrated most actively their interest in seeking partnerships and collaborations with the UK and Scotland. With this in mind we have included for reference in Appendix 16 the detailed Brazilian university and participant profiles of the British Council - FAUBAI Mission to the UK in September 2014.

Groups and forums engaged with Brazil

In addition to the Universities Scotland Brazil Working Group which includes representation and input from the universities, British Council in Scotland and Brazil and Universities UK HE International Unit there are a number of other groups and forums which could be included and brought together in discussions of a collective Scotland approach to the market. (We mention some specific to the oil and gas sector in a later section of the report).

The Latin America Regional Group (LARG) is a recent group set up by some of the Scottish universities who are eager to expand their activities in the region. In response at least in part to the challenges and limitations presented by the domination of the SwB programme they are trying to look at working with Brazil in new ways. For example, addressing the challenge of recruiting students outside SwB on scholarships on Humanities and Social Sciences courses for which at present there are few mechanisms or open calls for funding etc. Ideas suggested include expanding into Brazil mechanisms with work well in other markets, such as the Saltire Scholarships which are available from the Scottish government for India and China.

It also wants to work with officials at FAPs in some of the states such as Minas Gerais and Bahia, outside Sao Paulo and Rio which "are really saturated" to develop a process with them that would allow Scotland to have a constant flow of students or PhD mobility. It planned to use the British Council exhibition 8-12 November (in Sao Paulo, Rio de Janeiro and Belo Horizonte) as a base for deciding how they might make contact with Minas Gerais and some of the other states in the north. They are meeting with SDI in Rio de Janeiro at that time to try to develop an approach for contacting officials in these funding agencies to work out how to access some of the available funds, and to develop a good relationship with Scotland. LARG believes that the only way to work in Brazil at this level is to develop the Scottish contingency.

"We can do so much alone, but a Scottish collective approach would be of benefit in this respect."

It is also looking at idea of organising a Scotland-specific event in order to position its own activities more distinctly.

The universities who are members of LARG are listed in Appendix 17: Given the stated aims and activities of LARG it would make sense to integrate its thinking, experience and plans into the Connected Scotland approach to supporting the sector in Brazil.

UK Universities' activities in Brazil

We have also looked at what other universities in the UK, outside of Scotland, are doing in Brazil. There is a range of engagement models being used. Some are setting up branch offices, some have formal exclusive or shared dedicated representatives. Others have less formal or part time reps in the market. There has been a noticeable increase in recent activity in the market and demonstrates an understanding now among UK universities that if they are to engage seriously and sustainably with Brazil they need to have some kind of local presence there.

Russell Group universities have become more aggressive in the market, and are recruiting local representatives in Sao Paulo to work for them. In addition to Edinburgh, Kings College appointed a Brazil country manager three months ago with a research focus. Birmingham is now apparently looking to appoint someone full time. The University of Sheffield Advanced Manufacturing Research Centre (AMRC) has a representative in Sao Paulo, specifically for that centre, not for the main university. De Montford has a new representative in the market, as does Bristol (shared with Strathclyde and focusing both recruitment and research links). Nottingham and Birmingham have been in the market for many years and have an office in Joinville in the state of Santa Catarina for the purpose of networking with organisations such as CAPES, CNPq and FAPESP to extend their research capability (not recruiting) and to have someone on the ground to help with logistics of visits of high level academics. The Manchester Business School is based in Sao Paulo and Rio de Janeiro, working in partnership with FGV to provide the Manchester Global MBA to students across South America. <https://brazil.portals.mbs.ac.uk/Aboutus/PartnershipwithFGV.aspx>

We have picked a number of examples, to look at in more detail, of institutions who are particularly active in Brazil and who were identified by those we spoke to as having been successful in how they have engaged with the market. Detailed summaries of these, in addition to some examples from the US and Europe, are included in Appendix 18.

Summary of the Market Challenges and Issues facing Scottish HE institutions in Brazil

In our interviews with universities and individuals here in Scotland with experience of Brazil, and with organisations on the ground in the market a number of important points were made regarding the significant issues and challenges being faced in working with the market. Consideration by the support agencies should be made of where they might be able to support Scotland's HE institutions in overcoming or mitigating the effects of these.

Bureaucracy and the general challenges of doing business in Brazil

There is a popular saying in Brazil that, "Brazil is not for beginners." The challenges of doing business in Brazil are well known, with red tape, paperwork, bureaucracy, poor infrastructure, the negative effects of protectionism, urgent need for reforms in education and other challenges contributing to the country being placed 116 out of 189 on the World Bank's annual Ease of Doing Business report. Despite being the hemisphere's second-largest economy, and the seventh largest economy in the world, the country is still a challenging place to do business. Out of 15 high growth markets, KPMG rated Brazil as the 5th most challenging market in which to do business, behind Nigeria, India, Argentina, and Indonesia. While the country posted growth rates around 8 percent in the last decade, growth has since grown sluggish.

Scottish universities expressed the following general observations and experiences of working in the market:

- All universities, especially the public ones are under pressure from the government to 'internationalise'. "The people in them want to do this, they are open and enthusiastic about engaging with overseas visitors, and they have access to large budgets. However, most don't know how to make this happen and don't know how to use this money." While the environment in Brazil is positive regarding the availability of resources for research (especially in Sao Paulo and FAPESP), there are institutional bottlenecks and cultural subtleties that are impacting the accessibility of these funds and the development of relationships. These are important factors in establishing new collaborations with UK universities.
- Brazil is a federation where states have some level of independence regarding what concerns the federal government. It means that in many areas there is no single source of information.
- Everything takes an enormous amount of time in Brazil and it is seen by those operating in the market as a difficult place to work. "China and Indonesia are easier to operate in than Brazil."
 - Slow internal decision-making in institutions needs to be approved at many different levels and the result is that although many universities have engaged with Brazil, not many of them have projects that are up and running. "We are in the middle of a project which sees a number of PhD students come to our university on a joint degree basis. This took 3 years to negotiate and get through the system."
 - Anything that is new takes a long time. "Even with MoUs each student involved needs a single contract to move forward. So contracting issues, even if you have identified sponsorship, make it quite a challenge to build research capacity."
- Working with government organisations is hard work. Edinburgh has struggled to set up the office in Sao Paulo for a year and a half, and is still not there.
- Despite SwB, student recruitment is still seen as a challenge in Brazil. For some it is not yielding the results they want and they are already focusing more on other markets in Latin America which offer an easier environment to work in for both short and long term results.
 - "Under SwB there is a limit of 200 full time PhDs for each country so we are all competing for the same 200. This limits the number of PhDs who are able to come. For undergraduate recruitment the issue is funding as the £15k per year for tuition fees and accommodation creates a shortfall."
- There is much variability among the quality of universities in Brazil. Even the best

- ones do not work in the same way as those in the UK.
 - “The pace and timescale is different, there is bureaucracy and everything takes lots of work, lots of paperwork, you never know if something is going forward or not.”
- Setting up meetings is very hard in Brazil. Individuals are not necessarily driven by the national international agenda, rather by the teaching of Brazilian students and improving levels of education in Brazil.
 - “Often projects are run because individual academics there find them interesting to do, but their goal is not to write papers, attend international conferences and be an academic in the international sense. They are permanently dealing with internal student issues.”
- Although Scottish universities might have contacts at Brazilian institutions, getting through to them sometimes is very difficult.
 - “Many of the professional/ administrative roles in Brazilian universities are performed not by professionals as in the UK, but by academic staff who might also be head of internationalisation, so they also have their own research and teaching going on.”
- Dealing with the legislative and regulatory organisations such as ANP is not easy.
 - “There are many people in the regulatory agencies and in the universities who are overtly or covertly hostile to interaction with overseas - they don’t think money or students should be going outside of Brazil. Those who are covert can very easily trip up or delay to the point of people giving up, very promising initiatives. This is a ‘different’ attitude to bureaucracy to what we are used to in the UK/US. There are many stories in Scotland of people who have tried to enter into relationships with Brazil under things like SwB or the Special Participation Fund levy, and have given up because it is too much hassle”

The English language barrier

The English language barrier is not a trivial issue and exists at the academic and professor level, not just with students.

- “Professors who may have 25 years experience and are regarded highly with reputations in Brazil may never have had a single article published in English. They feel threatened and it can be a significant inhibitor for them. As a result often Brazilian universities will have foreigners working there to facilitate communications. Even at the top universities, very few academics are capable of teaching their courses in English. And very few Brazilian students speak English. This is why many students choose Portugal, Spain or even the US.” A solution for some such as Edinburgh is to offer, sensitively, tailor-made English lessons for academics (i.e. not generic lessons), which would cover also academic culture, university life in the UK etc.
- Some universities are starting to address this. UNESP, the State University of Sao Paulo for example is offering 60-70 subjects in English now in order to attract international students.

Over-saturation in key centres

The key institutions and agencies in the centres of Sao Paolo and Rio de Janeiro are now saturated with inbound international visits, delegations, missions and requests for engagement and MoUs on a daily basis.

- Scottish universities say that there is a clear message from their Brazilian colleagues (especially in the above locations) that they are being swamped with overseas visits. “You can even feel it when you are speaking to people in Sao Paulo and Rio. They are just fed up with speaking to millions of international universities.”
- While the Brazilian institutions may be very open to receiving visitors, they are reporting that many of the delegations they host are sporadic with no meaningful follow up. “In future, it is quite possible that they will restrict visits to those institutions with whom they have formal agreements.” Knowing that these same institutions are being courted by the top North American and other international universities it implies an imperative that Scotland’s collective approach is structured, well planned and followed up.

Funding challenges

There are particular difficulties concerning accessibility of funding and applying for grants. These include:

- There is a frustration for UK academics that often Brazil finds it more attractive to fund a large number of projects each with small amounts of money, than large grants for bigger projects. There are also few funding opportunities for longer-term (3-5 year) joint research projects. If there is no prospect of a larger grant at the end it makes certain opportunities much less attractive to UK academics. It was mentioned that there is a role here for the UK agencies at a diplomatic level to try to address this strategic inhibitor of developing significant projects.
- Many funds in Brazil (including the 1% Special Participation Fund levy) require research to be carried out and the money spent *in* Brazil, and are therefore not sufficiently flexible for many research collaboration projects. Other examples were given of where FAPs will not fund projects outside Brazil.
 - “This is a big problem. I am in Brazil to develop a research group that has joint PhDs, but the challenge is that the money largely needs to be spent in Brazil. All the money available in the university sector is in a way largely available for the universities in Brazil, and they are not keen to see too much money go outside Brazil. So academics can come down here on a research type basis, get money for travelling and perhaps can get a paper or two out of it, but this is all fairly small stuff.”
- Applications in many regional funding agencies can be time consuming and unclear. By contrast, the RCUK-FAPESP bilateral agreement for research grants makes the application simpler with one joint application, but is restricted to partnerships within the state of Sao Paulo. <http://www.rcuk.ac.uk/international/funding/collaboration/RCUKFAPESPmou/>
- It is often hard to identify where the available funds will come from. It requires a lot of continuous checking which in turn really requires an on the ground presence in Brazil and an understanding of Portuguese.
- In many cases the calls that come out are very generic and it is not clear what they are expecting. Again, it means it is really essential to have someone on the ground to clarify these. “This is why more institutions are setting up operations in the market. And it has to be someone who understands the political influences and the university context.”
- Project funding from the Brazil side, even if it appears to be ‘100% funding’ may cover the cost of the research itself, but it often does not cover the full economic cost of the project or overheads. This can have the effect of making projects less attractive to the UK side. “I am not aware of any 100% funding schemes – most require matched funding on this side.”
- Sometimes there are differences in the assessment criteria between the UK and Brazil research councils. This requires better interaction of the two. FAPESP for example is trying to work more closely with the UK Research Council.
- Most funding from Brazilian partners supports exchange of people and researcher mobility, but there is less interest in the UK to travel to Brazil for training, compared to the other way round (where time spent in the UK or US is seen as a major part of one’s career development). Interest in going to Brazil is usually based on a much more specific interest in a particular research area.
- Most Scottish universities have little experience engaging directly with any of the FAPs outside of FAPESP and FAPERJ.

Other challenges

- UK tuition fees are seen as a problem in relations between Brazil and the UK, and are an issue when students compare the situation in Brazil, or in France and Germany where tuition is free or less expensive. “The perception of the UK in Brazil is not good. They think we are only there to get money.”
- There is a perceived lack of interest in PhDs in Brazil meaning it is hard to find and recruit Brazilian PhD students (e.g. on SwB) even if one does know the right universities and departments.

- “Research needs participation of PhDs, but this qualification is often seen more as an academic than practical qualification in Brazil. This limits the number of Brazilian students willing to go for a PhD. And there are relatively few people in STEM subjects who do post-docs in Brazil as they can get better-paid jobs in industry, and because academia in Brazil in many areas is still a relatively unattractive career.”
- “Even if PhD students get funded to come for 3 years to the UK, they have to go back to Brazil as a condition of the funding. The students however do not like this condition. For undergraduates and sandwich PhDs it is not so much of a problem.”
- There is a gap in opportunities for overseas Masters degrees as there is no funding for these in Brazil.
 - “Is there an opportunity to tap into SwB to bring students to do shorter programmes like Masters/MPhil degrees if that degree is non-existent in Brazil? Aberdeen University is trying to put together a Masters Degree in Data Management for the Oil Industry for someone from Petrobras who wants to come and do this programme as there is nothing in Brazil that caters for this clientele. Possible areas include Geology for Oil and Gas, offshore Engineering and many more.”

Issues concerning recognition of foreign degrees in Brazil

This was described by Universities UK International Unit as follows:

- “The recognition of UK degrees in Brazil in any discipline is often a challenge unfortunately, due to the fact that the recognition of foreign degrees in Brazil is a de-centralised and therefore quite bureaucratic process. The only way that a degree would be automatically validated is if the UK and the validating Brazilian institution have a bi-lateral agreement in place to that effect. To validate their foreign degree in Brazil, students need to provide transcripts with the number of hours completed for each module as well as the number of credits awarded and grades etc. Then the Brazilian Universities will decide whether or not they agree that the work completed abroad is equivalent to their own degree. If it decides that it cannot validate the degree for whatever reason, the student would then need to approach another Brazilian University and go through the same process in the hope that they would validate it. And so on and so forth. It can therefore be a very lengthy and costly process; costing anywhere between £200 and £400 to get the degree validated. Here is an example of what the process would entail if a student would want USP to validate their degree: <http://www.usp.br/secretaria/?p=36>.”

Issue of joint degrees

A number of Scottish universities are interested in establishing some kind of joint degree-type arrangement. “Some but not all Brazilian universities are happy with this and it is up to the universities involved whether you get a co-tutelle or one joint degree.” This issue (which was raised in the discussion of the 2014 BD-FAUBAI Brazilian delegation to Edinburgh) was summarised by the University of St Andrews as follows:

- “We are keen to find a way to work with Brazilian universities to establish Joint PhD awards, rather than double degrees. So far, we have done so on an individual student basis (co-tutelle) with a few institutions, with varying degrees of success... (We) also understand that they require significant approvals to set up a Joint PhD programme, and so this is quite challenging on their side, in comparison with double degrees or individual co-tutelles. It was helpful to have the discussion, and hopefully there will be more – it was great to hear that the QAA is also involved, as this should help us to move forward on this particular issue, or at least establish the guiding principles from a QAA perspective.”

The challenge of being strategic about Brazil

A number of people commented on the fact that Brazil is not an easy market to work with *strategically*. One reason for this is that the programmes (SwB PhD or similar) are set up so that the *student* has control over where they go, rather than the universities in Brazil or in the UK. Another is because there are few succinct procedures in Brazil.

- “This means that even if one has an agreement with, for example FAPESP, FAPERJ, USP etc it is hard to predict on what basis some students are funded and others are not. In some other Latin American markets, if you have the funding agreement in place, one can easily advise students on the funding and process for coming to Scotland to study. This is not the case in Brazil. There would be potential benefits for a joined up Scotland approach to work with officials at a number of the FAPs to develop a process with them that would allow Scotland to have a more constant flow of students and PhD mobility.”

Considerations for a Collective Approach to the Brazil Market

The brief for this project requested that we consider different ways in which the support agencies might target a collective approach to the market. This included options of focusing on the best institutions, and on the most attractive regions/states and sectors in Brazil. Building on the factual information provided in Part 1 on Brazil's academic institutions and funding organisations, and informed by the stakeholder interviews, we summarise our considerations of these approaches below.

Identifying the best teaching and research capabilities

In a country larger than Europe, identifying where the highest quality teaching and research capabilities in Brazil reside is not a simple task. There is no central mapping of research in Brazil and many university websites are not easy to navigate or kept up to date. In many cases information is hidden and is not easy to find. It represents just one example of the institutions not having the resources to put their internationalisation aims into practice.

- “Generally speaking Brazilian universities are still rather inexperienced in knowing how to connect with academics and departments in countries like the UK and the US, and not clearly identifying their key areas of capability or research in which they are looking for partners is an example of this. It requires you to search for it, or to dedicate a resource to this activity.”

The top university rankings including sortable criteria were presented in Part 1 of this report, and we covered a number of ways in which prioritisation might be achieved. In most cases there are only one or two top universities per state. Sao Paulo is different and is resource intensive.

- “USP should be considered almost as 20 universities, because each unit is in effect a small university working by itself, with separate departments and international collaborations in each. They often don't talk to each other and are located in separate buildings. This is the only state like this, and in the other most important states there might only be another 15-18 universities which one would need to consider if looking for the *top-level* research capabilities.”

The LATTES system also mentioned in Part 1 reportedly works well and is a good system for international universities to identify information on researchers in all universities in all areas. <http://lattes.cnpq.br/>. As with many things in Brazil however, it is mostly in Portuguese only. The state of Sao Paulo also has a separate database maintained by FAPESP containing individuals, their interests and the FAPESP scholarships already approved.

Advice from experts in the market is that as a guide for a collective approach one would do well to focus on the top universities that are the most international (such as those who have been on missions to the UK), those with a history of working with the UK, those currently doing significant research internationally already, and also those with CAPES rankings of 6 or 7. (Of course, academics in individual universities in Scotland, especially within those institutions which may not have the most well known international brand names or reputations, might equally find a more appropriate match themselves by focusing on teaching and research partner universities in Brazil which better correspond to their own levels (which could for example mean considering CAPES 5-ranked institutions, of which there are very many)).

- “At an individual academic to academic level, you may connect with people in different areas, but as an institution (or a group of institutions), you have to engage with the top 20 universities.”

Geographic or state focus

It was suggested that a specific geographic or state focus might be helpful as a way to prioritise the engagement of the sector in Brazil. This in turn relates directly to the features, quality and areas of focus and expertise of both the Brazilian institutions and the FAP regional funding agencies across Brazil. We have summarised the key considerations and opinions on this below.

Brazil's wealthiest state is home to the biggest, most active and most well-funded FAP, the São Paulo Research Support Foundation, FAPESP. São Paulo has some of Brazil's top universities with one third of Brazil's scientific publications coming from institutions in that state. FAPESP is one of the biggest funding partners for UK HEIs. It establishes partnerships with overseas funding agencies, companies, institutions of higher education and research as well as cooperation agreements providing for exchange of researchers and development of joint research programmes. It has 22 agreements with UK universities and with the British Council and RCUK, as well as with many other international institutions. The FAPESP website has comprehensive information in English on its activities, programmes for international collaboration and its international agreements (from seed funding for exchange of researchers and small workshops to full funding for research projects, selected jointly by FAPESP and the partnering agency). <http://www.bv.fapesp.br/en/>, <http://www.fapesp.br/en/6812> and <http://www.fapesp.br/en/5399>.

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Metasearch Search (Google) Advanced search

Research Grants and Scholarships supported by FAPESP

Research Grants
Regular Grants (2-year grants)
Thematic Grants (5-year grants)
Research Grants - Thematic Project
CNPq - Thematic Projects - Pronex
CNPq - National Institutes of Science and Technology (INCTs)
Special Projects
São Paulo Excellence Chair (SPEC)
Young Investigators Grants (JP) (4-year-grants)
Research, Innovation and Dissemination Centers (RIDCs) (11-year grants)
Organization of Scientific Meeting
Topic grants
Visiting Researcher Grant
Participation in Scientific or Technological Meeting
Support for Research Publications (Articles, Books)
Scholarships
Scholarships in Brazil
Scholarships abroad
Theme-oriented Programs
Research Program on eScience
Bioenergy Research (BIOEN)
Global Climate Change
Biodiversity Research (BIOTA)
Information Technology and the Development of Advanced Internet (TIDIA) (Program available from 2001 to 2012)
Integrated System for Hydrometeorology in the State of São Paulo (SIHESP)
Inter-institutional Cooperation to Support Brain Research (CINAPCE)
Structural Biology Network on Advanced Topics in Life Sciences (Smolnet)
Genomics (Program available from 1997 to 2008)
Viral Genetic Diversity Network (VGDN) (Program available from 2000 to 2005)

Application-oriented Research Programs (Business and Government)
University-Industry Cooperative Research (PITE)
Small Business Research
Innovative Research in Small Business (PIPE)
Phase 3 Small Business Research PAPP-PIPE III
Sectorial Consortia for Research and Innovation (CONSITEC)
Public Policy
Improvement in Public Education
Research in Public Policies
Research in Public Policies for the National Health Care System (PP-SUS)
Pro-Science (Program available from 1996 to 2000)
São Paulo Technology Parks Program
Research in Science Centers in the State of São Paulo
Support of Intellectual Property Rights and Licensing (PAPI/NUPLITEC)
Science Awareness Programs
Scientific Journalism
Research Infrastructure Programs
ANSP Network
Scientific Electronic Library Online (SciELO)
Technical Training Program
Support of Research Infrastructure
Research Infrastructure - General Infrastructure
Research Infrastructure - Chemical Residues
Infrastructure for Research Equipment
Multi-user Equipment (EMU)
Institutional Research Infrastructure - Technical Reserve
Support for Research Books Acquisition (FAPLivros)
Museums, Depository Centers of Information and Documents and Biological Collections

Information and Dissemination Channels
Events directory
With FAPESP participation (as a promoter and/or exhibitor)
Publications
Fapesp Publications
Scientific dissemination issues
News Agency of the São Paulo Research Foundation
Pesquisa FAPESP Magazine

FAPESP support in numbers*
82,192 / 32,268 Research grants
106,839 / 34,352 Scholarships in Brazil
6,725 / 3,745 Scholarships abroad
(Total / Available in English)
*Updated in October 04, 2014

FAPESP Classification Schemes
Home Research Institutions
Scientific publications resulting from Research Projects
Cooperation Agreements (most recent)
Concytec
University of East Anglia
University of Birmingham
University of Bath
Keele University
University of Waterloo
Heriot-Watt University
National Research Council of Italy (CNR)
University of Warwick
Queen's University of Belfast
Stichting Dutch Polymer Institute (DPI)
Japan Science and Technology Agency (JST)
Texas Tech University
University of Cape Town
Hiroshima University
University of Haifa
Universidad de Chile
Universidad Complutense de Madrid
UNC Charlotte
Durham University
Groupe des Écoles Centrales (GEC)
University of Sydney
Bangor University
MINCYT and USP
NEPAD Agency
PEW
University of Edinburgh
See more FAPESP Cooperation Partnerships and Agreements

While all universities want and will continue to work with FAPESP and USP in Sao Paulo, and FAPERJ in Rio de Janeiro, there is a feeling that other states are being neglected and may offer additional opportunities. In addition, as we have seen, it is well documented that these two states are now inundated with visiting overseas HEIs.

Outside of Sao Paulo, and Rio de Janeiro, there is a recognised need for greater internationalisation. The federal government are currently looking into programmes which target with funds geographies outside these two centres in order to distribute development more broadly across the country. There is an argument that if you make a proposal targeting funds for example in the Amazon, in the North or in the North East of Brazil, you will have a better chance of success than one targeting Sao Paulo. Examples cited in our interviews included:

- “The president of one of the funding agencies in Brazil said that the State of Amazonas funding agency has the highest investment per PhD in Brazil, and higher than Sao Paulo.”

- “The State of Minas Gerais is the second richest and the most populous state. Comparatively it does not receive as many visitors, but it has a significant focus on aerospace and is looking for and able to fund opportunities to being overseas R&D centres to the state.”
- “In the North East of Brazil, renewable energy is a focus and they are exploring wind power.”
- “The creative economy in the North East is a huge topic. Even if they don’t have very good research labs currently, there may be the opportunity to establish research centres there, and they have the funds.”

The flipside of this however is that one is likely to encounter in these areas more problems than with the FAPs with more experience and established processes. These include the challenges of finding people with a good level of English and dealing with less well-developed processes for submitting projects than in Sao Paulo and Rio de Janeiro.

The focus for the FAPs activities are not only informed by the government priorities such as energy, biofuels, agriculture, aerospace etc (where Brazil has good enough capabilities to work at the same level as international universities) but other areas outside this such as Social Sciences. And now, through the UK-CONFAP agreement all 26 FAPs have access to Newton Fund money, which means that the scope is larger and they have the power within this to diversify into a number of areas, beyond STEM. It is important to understand as much as possible the local priorities and sectors of focus per state. These are not however always clear or well developed, and they can change. On an individual institution basis, to engage with the FAPs Scottish universities will require more detailed research to find out where these specific areas of focus are.

A number of people pointed out some of the benefits of working with the FAPs over federal organisations such as CAPES and CNPq. This includes both the sensitivities for the Brazilian federal bodies of UK tuition fees, but also their requirement to speak to a single representative body from the UK rather than engaging with each institution individually. “On the student recruitment side this is now effectively delivered through Universities UK for the SwB programme, but it has never yet been possible on with research” (previous attempts such a group of 12 universities led by Nottingham a number of years ago failed as each partner on the UK side in the end had different objectives). Although a collective Scotland approach to the support agencies might offer the opportunity for such a representative at the federal level, there is a belief among some that the FAPs are generally happier to work with institutions individually.

For a collective Scotland approach to engaging with the FAPs, and in terms of how SDI and BC might support this through in-market visits or meetings, a level of prioritisation would be required. While individual opportunities exist everywhere, consultation with key experts in the market such as the British Consulate Science and Innovation Network (SIN), the British Council and others, and Universities UK International Unit in the UK, identifies the following FAPs as offering the greatest opportunities for engagement with the UK. They are well-funded, with good research, have all visited the UK, and are considered to have the greatest broad potential. Most are in the South and South East:

1. FAPESP – Sao Paulo
2. FAPEMIG – Minas Gerais
FAPERJ – Rio de Janeiro



3

FAPERGS - Rio Grande do Sul.
FACEPE – Pernambuco (NE)

4.

FAPESC – Santa Catarina
Fundacao Araucaria - Paraná

Those experienced in the market state that as rule everything below Sao Paulo works well, while states above Rio de Janeiro, with the exception of Pernambuco are more problematic. So although there are some good universities there, it means there is currently limited funding available. This situation should be clarified.

Other states offer significant opportunities around more specific projects (such as Amazonas for biodiversity, forestry, Rio Grande do Norte for agribusiness etc), but because of this they might be considered too limited in scope for a broader sectoral approach.

“The scope is wider across more areas of research in (the FAPS prioritised above) and therefore are likely to be more effective for the effort you have to put in. If you have a choice, you would go to the South and South East.”

From the information shared with us we have compiled a rough indication of the areas of strength or focus of some of the key FAPs (although these require verification from more detailed engagement). These are included in Appendix 19.

A presentation, “Brazilian National Council Of State Funding Agencies For Research Support, October, 28 2013” gives more detail on CONFAP and on a number of the FAPs (Parana Fundacao Araucaria, Amazonas – FAPEAM, Goias – FAPEG, Minas Gerais – FAPEMIG, Rio de Janeiro – FAPERJ) and their areas of focus. A copy of this is provided along with this report’s appendices.

It is neither easy to identify what the areas of strength of these FAPs are, nor to determine the levels of funding available. It was noted that although it is possible to see in some cases what their stated areas of focus are, it may not be that the areas they are promoting are the areas it would be best to work with them in. Instead these could be weaknesses in which they are trying to increase the expertise. For example, while Sao Paulo may be focusing on Biofuels in which it is strong, Pernambuco may equally be pushing engineering because it feels this is a weakness it hopes to improve. Both these scenarios offer Scotland opportunities – either to fill these gaps in expertise, or to work with very strong industries and high levels of research expertise. A collective, strategic Scotland approach has not to date been made to any of the FAPs. As such there is a strong rationale now for doing so, both to identify for some of the more outlying states above what their sectoral and funding priorities are and to present Scotland’s, collected research and innovation capabilities.

Industry and Corporate engagement

The most significant opportunities for corporate and industry engagement in Brazil are through the so-called Special Participation Fund levy through which any company exploiting natural resources (e.g. energy and oil and gas companies) has to invest in R&D and education.

“1% of gross production revenue from large Brazilian oil and gas fields shall be invested in R&D in Brazil (the R&D levy). The levy is overseen by Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP), the oil and gas regulator.

ANP has been imposing on concession agreements a clause obliging O&G companies to carry out R&D investments. This measure aims to foster the technological research and development of new technologies, products and processes for the Oil & Gas industry, as well as to encourage the creation of O&G centers of excellence and development of national R&D institutions.

According to the referred clause, the O&G company should invest in Brazil a minimum amount of 1% of the gross revenue derived from the E&P of oil fields which are assessed by the Special Participation mentioned above. Note that up to 50% of the amount invested in R&D may be applied for the own O&G company's projects. The remaining amount should be invested in universities and other R&D related institutions authorized by ANP.³

Companies are having problems spending this levy as the law requires that the money has to be spent in Brazil, not overseas. So although companies such as BG Group have PhD mobility in different countries, it is difficult for them to conduct research within the regulations. As a result it making significant investments on the ground in Brazil by for example building a research centre in Rio and a supercomputer in Bahia. One approach mentioned in the market is universities using their connections and approaching companies with proposals to access CAPES/CNPq SwB funding to get corporate money to, in effect, create a 'corporate SwB scheme' with companies such as Petrobras and BG Group. It is clear however that more work is required to develop models which will allow overseas universities satisfactory accessibility to these funds to do the work they want to do.

Opportunities in the oil and gas sector

SDI's 2014 report 'Doing Business in Brazil – Oil and Gas Opportunities for the Supply Chain' summarises the key features of the sector in Brazil:

- Brazil is the 10th largest producer of energy in the world and the largest producer of liquid fuels in South America
- Brazil has the second largest proven oil reserves in South America after Venezuela
- 90% oil production is offshore in very deep water
- Most of the oil reserves are heavy grade
- New finds, amongst the world's largest are in areas known as 'pre-salt' basins
- The country has strict 'local content rules' as a result of policy changes first introduced in 2005
- The National Oil Company, Petrobras, accounts for over 80% of production

Other operators in addition to Petrobras will deliver significant activity in Brazil in the next 4/5 years:

Operator	2013	2014	2015	2016	2017	2018	Grand Total	Share of total Capex
Petrobras	17,964	22,513	18,354	19,230	24,530	24,388	126,979	91%
OGP	1,527	1,398	563	172	4		3,663	3%
Shell	1,016	620	1,135	212	13		2,996	2%
ExxonMobil		136	136	254	363	996	1,885	1%
Queiroz Galvao	70	143	325	299	249	524	1,610	1%
Anadarko	21	12	65	123	193	275	688	0%
Repsol Sinopec					190	313	503	0%
Statoil		91	252	139	4		485	0%
Total					136	275	411	0%
Other	5	199	256	197	33	291	980	1%
Grand Total	20,602	25,112	21,084	20,627	25,715	27,062	140,202	100%

Each of these operators now has to invest in R&D equivalent to 1% of the gross revenue of the field which presents opportunities for Scottish based companies operating there. According to SDI in Brazil there are 30-40 of these in the oil and gas sector. These include:

Scottish based Company	Brazilian partner / client	Type of activity
Subsea 7	Petrobras	Pipe-Lay Support Vessels (PLSVs)
Hydrasun	Hydrasun Remaq	Hoses and connections, Other specialist services 3 year deal with Petrobras for equipment supply.
Wood Group Kenny	Saipem	Steel lazy-wave riser (SLWR) system
Caley Ocean Systems	LIG Global Services Ltda.	Cable laying, subsea umbilicals, risers and flowlines

³ KPMG A Guide to Brazilian Oil & Gas Taxation

	<i>new company OSS Sistemas Offshore Ltda</i>	<i>(SURF) projects</i>
FMC Technologies	<i>Petrobras</i>	<i>Subsea trees for pre-salt fields</i>
Maersk Supply Service	<i>Petrobras</i>	<i>Anchor handling tug supply vessels</i>
Technip	<i>Petrobras</i>	<i>Manufacture of 24km gas injection flexible lines</i>
Expro	<i>Petrobras</i>	<i>Slickline equipment and personnel</i>
Nautronix Ltd	<i>N/A</i>	<i>Brazilian office open for several years</i>
MDT International	<i>Various operators</i>	<i>Training services</i>

In addition to research and innovation opportunities there will be an increasing need for expertise to train and educate the workforce as it increases in size and deals with new equipment, and to train and educate on new ways of working and new processes, and on new technologies as they enter the market.

There is already a range of support available to the companies and universities working in this sector in the market. The Oil and Gas Forum on Brazil aims to use universities as a portal for engagement for engagement with industry with Brazil, and the Scottish universities working in oil and gas on the ground already work collaboratively and are connected through the Energy Technology Partnership. In addition ITF (Industry Technology Facilitator) a not-for-profit consultancy and research company, facilitates connections between universities in the UK and countries looking for expertise in the energy sector. It puts researchers in the UK in touch with universities and oil and gas companies in Brazil (<http://www.itfenergy.com/>). Companies with research problems in Brazil get in touch with ITF, and they launch a call to researchers in UK. SDI's Global Scots programme is also a potential vehicle for taking advantage of and accessing research and training opportunities in the oil and gas sector in Brazil.

SDI's office in Brazil is focused primarily on the oil and gas sector there, and Nicola Sartini is currently looking closely to understand how Scottish universities and companies can take advantage of the levy.

"We are not sure how money can be accessed if the work is not done in Brazil. This needs some investigation. Nobody really understands and the policy is being reviewed and might change. All the big service companies are building and opening R&D centres in Brazil to get access to this money. We don't expect Scottish universities to be able to come out and set up an R&D facility in Brazil just to get the access money. But doing the work in Scotland is not eligible. So how, through partnerships, can we get some of this money into the universities' pockets?"

Outside of the oil and gas sector there is not much evidence of significant corporate or industry engagement. When considering areas to focus on in Brazil, those where it has public companies such as Petrobras are considered a good way to do so. These are the areas in which the government is investing because it wants strong companies, and in many cases these represent areas where Brazil is innovative. For example:

- Oil and Gas – Petrobras.
- Aviation – Embraer. It has excellent research centres.
- Embrapa – Brazilian Agricultural Research Corporation. A state-owned company affiliated with the Brazilian Ministry of Agriculture, it is devoted to pure and applied research on agriculture. It covers food and biofuels and has responsibility for a large increase in productivity in agriculture. It has offices in the UK.

Another opportunity to engage in the corporate sector in Brazil is for capacity building and training through the large number of Corporate Universities in the country. In many cases, third party organizations are called upon to offer customized and off-the-shelf corporate training programmes. There is little evidence of Scottish institutions offering this kind of support currently in the market. Additional engagement with the corporate sector in Brazil might also be possible by working through the Brazil National Confederation of Industry, CNI and related organisations such as SENAI (www.cni.org.br), or through the well organised sector associations in key areas such as Agribusiness (<http://www.abag.com.br>) Health, Mining, Airplane production etc.

Interviews in the market regarding opportunities for engagement with corporations and industry revealed that this tie up between academia and industry in Brazil in a more applied (rather than theoretical) way is a relatively new area and there are few established routes to these opportunities. With the top universities being publically funded there were historically neither incentives nor mechanisms for bringing private funds into universities. To take this work forward, being present on the ground, and working informal networks with institutions and companies is key. Many UK enquiries in this area are currently being directed through UKTI in Brazil.

A sectoral approach and Scotland's Research Pools

In our original research last year all of Scotland's Research Pools were contacted in order to understand their international market priorities for collaborative research. Three of these (SAGES, SULSA and MASTS) indicated a high level of prioritisation for Brazil. Their comments from last year's survey are noted below:

Research Pool	Interest in Brazil
<p>Scottish Alliance for Geoscience, Environment and Society (SAGES)</p>	<p>Particular opportunity for SAGES in the areas of forest science; biochar and carbon; water security; climate science. Some existing collaborations (decades of history). The opportunity is to develop collaborative research opportunities and funding streams within top Universities and agencies in Brazil, as well as to improve the attractiveness of Scotland to top Brazilian researchers (students and academics)</p> <p>A country with a huge number of institutions – coordinating an approach in specific areas of science with groups of Brazilian universities may be effective</p>
<p>Scottish Universities Life Sciences Alliance (SULSA)</p>	<p>The country is tapping into its immense oil wealth and has invested in research e.g. Science without Borders programme.</p> <p>Distance is perhaps greatest problem but a number of exchange schemes exist including BBSRC with FAPESP.</p>
<p>Marine Alliance for Science and Technology for Scotland (MASTS)</p>	<p>MASTS (Sustainable Aquaculture Forum):</p> <p>Brazil - Strong background in agricultural research but planning to expand aquaculture production and science base.</p> <p>Brazil - Science without borders is in place but difficult to get a high enough profile to attract enough students.</p> <p>MASTS Dynamics and Properties of Marine Systems Theme</p> <p>Argentina, Brazil. Cuba emerging with space programs, and growing research capacity</p> <p>Funding mechanisms, esp. funding for studentships, scholarships and travel for joint field work.</p>

Brazil is too big and the opportunities for individual universities too fragmented to allow a 'match making exercise' of Scotland's HE sector strengths to specific opportunities in the market. Given the challenges noted above for collectively leading with a geographic, state-led or institution-focused approach, in our interviews the Research Pools were frequently mentioned as an important potential vehicle for prioritising Scotland's engagement with Brazil on a collective basis. We interviewed representatives from each of these Pools, in addition to the Energy Technology Partnership (ETP) (because of the importance of the oil, gas and energy sector) to evaluate the potential for this, to understand how they saw the opportunities and possible benefits from engaging with Brazil in this way, and to identify how the agencies such as SDI, British Council Scotland and Universities Scotland might best provide support for this. The details of these inputs are included in Appendix 20, but the key messages were as follows:

The Research Pools by their nature offer a connected approach, and the focus areas of these three Pools, across geoscience, environment, life sciences and marine science and technology, map well onto the sectoral priorities in Brazil. SULSA and MASTS in particular have structures in place and experience building relationships with overseas markets, and have case examples in Hong Kong and SE Asia respectively, which demonstrate good practice and which would provide a possible template for engagement at this level in Brazil. While ETP is not currently active as a Pool in Brazil, its members across oil and gas and energy, are already working with each other collaboratively in the market. Details of the above Hong Kong model (SULSA and ETP) are included in Appendix 21. The SE Asia example

(MASTS) is described in 'United Kingdom – South East Asia Aquaculture Workshops: Fish & Shellfish, Health & Nutrition: A Report Prepared for the UK Science & Innovation Network March 2014' which can be found at:

http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0CEoQFjAF&url=http%3A%2F%2Fwww.masts.ac.uk%2Fmedia%2F113895%2Fuk_sea_aquaculture_workshop_report_-_7-7-14_-_final_with_presentations.pdf&ei=khxJVLiFB-SC7gb-o4D4Ag&usg=AFQjCNEGsxA0kjcaTsQHYBgZbQVwvmbEOw&bvm=bv.77880786,d.ZGU

All are keen to pursue projects in Brazil as none have a coordinated approach to Brazil at present. They have expressed their support of a collective approach, believe that workshops would be a useful mechanism for making this work, and are clear about the type and level of individuals who would need to be involved to make it effective. They also note the opportunities for working both with academic institutions in Brazil and with industry. Links between the Research Pools and the new Innovation Centres were mentioned as an opportunity to facilitate greater Scottish and international corporate involvement.

Recommendations for how SDI, British Council Scotland and Universities Scotland can support the Higher Education Sector collectively in Brazil

In all our interviews we asked participants for their thoughts and suggestions, given their experiences in Brazil and the above opportunities and challenges, for how Scottish Development International, British Council Scotland and Universities Scotland might best support the sector collectively in its engagement in Brazil. Taking these into account, we make the following recommendations for how these agencies might consider taking forward their support for the sector collectively in Brazil.

Key principles and rationale for recommendations

- These are recommendations for a *collective* approach, not for the individual strategies of each university each of which will have its own strategic priorities and activities planned in the market. Those Scottish institutions with significant experience and exiting networks in Brazil will have different needs to those with less.
- Because Brazil is such a large and complex market, all the Scottish universities with an interest in developing their business in Brazil are supportive in principle of the benefits of greater collaboration and sector-wide support (even those who have their own resource or experience in the market).
- Brazil is a highly competitive and in some geographies a saturated market. It is therefore important to differentiate the offer we present, and to really focus on Scotland's greatest strengths.
- It is clear that to be successful in Brazil you have to be there, to be able to speak to people face to face to develop and build relationships and trust. This should be reflected in the type of support being considered.
- Brazil is a market where you have to think long term. It is not a market for quick results. Again, agency support for market activities must reflect this with a professional approach, follow-up and long term agenda.
- The greatest needs of Brazil (such as; disciplines, sectors, industries, partnership models and focus for funding) should be the driver for the initial focus. These should be matched to Scotland's academic strengths and from these to the institutions and academics, wherever they are, with the matching capabilities.
 - This might include both working with people who are peers at the top levels of research to do joint research with the top level universities, but equally it might mean helping other Brazilian institutions raise their capability.

1. Based on responding to the needs of Brazil, a collective approach should focus on research collaboration and postgraduate mobility opportunities, not on recruitment

Most Scottish universities already have some activity in Brazil. Although Brazil is currently a key undergraduate recruitment market for Scottish and UK institutions, most agree that for the longer term the strategic and sustainable links lie in research collaboration.

- When the SwB programme eventually comes to an end, in the absence of a mechanism to support individual students who don't have the money to study abroad in such numbers, undergraduate recruitment will return to a much reduced size.
- The undergraduate recruitment process of SwB is now well established and the universities say they know or can find out enough themselves about this.
- There are plenty undergraduate student recruitment forums and events in Brazil which are already well known, established and used by Scottish universities prioritising Brazil (e.g. British Council and other fairs).
- There is a belief among some institutions (and some experience already to this effect) that a research-led approach to the market will in itself lead to ongoing undergraduate recruitment and exchange and other opportunities in the future.
- Brazilian universities want to take the next stage beyond mobility to research, exchange and partnership.
- Successful development of research collaboration is almost always bottom-up, not top down, using researcher-to-researcher relationships to build a broader and more strategic relationship. Sector support should therefore focus on facilitating the conditions for this through a 'managed collaboration' approach.

- The criteria for prioritising sectoral support should be for those institutions or groups of institutions who are prioritising research with Brazil, and who have the best capabilities in the specialisms most sought after in Brazil. Brazil is looking for research partnerships and will look for the best PIs for their workshops, so Scotland needs to field its best researchers. Scottish researchers say too that Scotland should focus on the best people in Brazil, wherever they are (i.e. rather than basing the focus more generally on particular states or geographies).

2. Leverage the benefits of a collective Scotland approach

- There is a strong rationale for a collective approach in Brazil now.
 - Many Scottish universities are engaged in the market.
 - It is a large, complex market with many common issues across institutions.
 - Now is a critical time to establish strategic links and activities there
 - It is highly competitive so this approach provides a unique differentiator.
- Build Scotland's profile and brand with the federal and state funding agencies such as CAPES, CNPq, CONFAP, the top universities and other bodies to:
 - Promote its reputation for research and innovation excellence (which the universities say is hard for them to do to funding agencies by themselves).
 - Look at the opportunities for working with Scottish industry
 - Position Scotland as a study destination.
 - Share the benefits of the Scottish higher education system (including its 4 year model as a differentiator from the rest of the UK, and competitive with the US).
 - Have in place the funding to back up such an approach.
- This can be particularly helpful for universities with less well known brands, those who are less experienced in Brazil or not involved in oil and gas, and can provide a support mechanism to any individual university interactions with the market.
- A collective approach also allows for the promotion of other areas and disciplines of strengths behind the above focus, such as Humanities, Creative Industries etc.
- Such as approach has never been done before which offers potential impact.
- There will be a need to balance this top down high level engagement with supporting tangible, bottom up collaboration.

3. Use the Research Pools as a spearhead for this engagement and to bring the focus onto funding for valuable research

- The Research Pools offer a strong differentiator in demonstrating Scotland's unique ability to work together in partnership.
- They concentrate Scotland's collective strengths in key areas of need in Brazil, and offer more than any single institution can. This makes Scotland more globally competitive.
- This builds on contacts and experience already in the market and involves the 'competent and committed' people at the right level
- Based on their priorities and the needs of the market, the suggested focus should be on SULSA, SAGES and MASTS, (and ETP as appropriate), across the areas of geoscience, environment, life sciences, and marine science and technology.
 - Effective models for working internationally already exist (SULSA/ETP in Hong Kong, MASTS in SE Asia).
 - None of them is doing anything collectively in Brazil but it is a priority market for them all.
 - Individual universities in these discipline areas have not made significant headway in the market.
 - Pools overlap offering further opportunities for engagement.
 - Environment related areas are priority with the Brazilian government.
- The Research Pools can facilitate Scottish and international corporate and industry engagement and partnership, for example via the Innovation Centres.
- SwB and the Newton Fund are catalysts for engagement to work through both the Research Pools and Innovations Centres in Scotland.

4. Help organise, fund and facilitate thematic workshops as the basis of this engagement

- Top researchers in Scotland say it is not hard to find out who the key researchers are in a specific scientific field in Brazil. What is hard is to get people together.
- Despite many MoUs now existing between Brazilian universities and those overseas, there is a clear message that in many cases these are not developing to projects of substance. Workshops which bring specific individuals and senior academics together to start forming relations are seen by both sides as a good next step.
- Support agencies should ensure that any 'top down' initiative in Brazil has as a core function to facilitate these technical peer-to-peer contacts.
- There are well-established processes for setting up and running such workshops.
- It is important to organise these at the right level of specialism and experience.
- Research pools are seen as a natural driver for this kind of collaboration. Academics in them know what their colleagues in other institutions are doing and how they might work together. The Pools support this as an effective and tangible way to engage and develop collaborations with the market, and they have the structures to set these up.
- Responsibility for decisions on what subjects or focus areas for the workshops, and proposals for how these might be developed should rest with the Pools themselves. Depending on the support agencies' preferred criteria, consideration might be made of prioritising potential projects which emphasise the possibility for involvement of Scottish industry
- In addition, a number of Scottish universities who have already been developing similar workshops in Brazil e.g. through FAPESP and FAPERJ have expressed a willingness to extend these to the whole sector if the funds can be put in place to allow this.
- It is suggested to arrange 2 - 3 workshops in two or three key areas in 2015.
- The outputs should be proposals and grant applications, knowing that there are corresponding opportunities for funding.
- In addition to the seed funding required to this, there must at this end be a route to or mechanism for longer term funding for the substantial research collaboration projects intended as the eventual outputs of these workshops or they will not lead to more than a small exchange of staff.
- Funding options for such an initiative should therefore be clarified. Perhaps the Hong Kong and SE Asia models mentioned above may provide a template for this.

5. Help generate more effective engagement with companies and industry, in Brazil and Scotland

- A number of Scottish universities have been trying to develop three-way research collaboration with industry and a Brazilian university partner, but outside a few notable examples in oil and gas/energy, little of substance has come of these. There are many MoUs but few large projects.
- There is an opportunity to work with and represent universities to help them develop a collective strategy for how to access the 1% Special Participation Fund levy in particular (considering options from partnering to setting up research institutes in the market). Aberdeen for example has been able to link SwB to the SPF through BG Group to get 25 PhD students last year (the equivalent to £5m in terms of income). Companies need to be actively engaged with and married to Scotland's areas of expertise (for example within the Research Pools and Innovation Centres) in the research opportunities areas of interest to them.
- In the oil and gas sector, this should include engaging more closely with SDI's Oil and Gas team, the Oil and Gas Forum, ETP and oil and gas companies in Aberdeen/Scotland to understand their experiences in Brazil, and develop with them ideas for how industry and universities can work together to exploit opportunities there.
- A person on the ground could help with facilitating the route to these kinds of contacts.

6. Option: Provide a shared in-market dedicated resource for assisting collectively the Scottish universities interested in growing their presence in Brazil

Brazil is a large and unwieldy even for those more actively involved in the market. All the universities interviewed suggested ways in which someone on the ground could start to have quite an immediate impact on the sector's work and its understanding of how it should focus its engagement with Brazil at this sectoral level.

- This would help to avoid duplication of effort and cost currently being experienced by universities working with Brazil.
- It would leverage existing experience in the market and identify synergies for initiatives across the sector.
- The focus would be on research and collaboration, not on recruitment.
- It would help emphasise Scotland's brand.
- Activities could span a number of possible areas of need expressed by the universities, many of which require Portuguese and an on-the-ground presence to do effectively, such as:
 - Gather intelligence on the market.
 - Help navigate the bureaucracy.
 - Provide information on funding mechanisms, monitor calls for projects.
 - Identify and get access to technical contacts, departments and universities in the market and contacts within the administrative agencies (who are often hard to get in touch with).
 - Help those who are newer to the market to differentiate between good and bad private and public institutions and identify where the pockets of expertise lie.
 - Clarify the priorities, focus, activities of the FAPs and other funding agencies, and advise on how to realise opportunities through the Newton Fund.
 - Clarify regulatory issues in the market.
 - Provide administrative support to assist Scottish institutions to gain and keep momentum, implement agreements etc.
 - Capture the breadth of research collaborations and connections between Scotland's institutions and Brazil as a basis for identifying sector-wide opportunities.
 - Monitor events, conferences, gatherings and opportunities for face-to-face contact.
- Although there are some areas of competition between universities, there are enough common areas of need in such a large and diverse market.
- SDI's office in Brazil is currently focused exclusively on the oil and gas sector, with little capacity for supporting Scotland's HEIs in the market. With additional resource is there potential to leverage this office, presence and its operating infrastructure which is already in place? (Scottish Food and Drink has this year appointed dedicated local Food and Drink industry specialists in some markets in Asia).
- A dedicated resource would obviously require an agreed and clear role and remit, and a means of funding. Options include a 2-3 year resource to build momentum in the market, perhaps funded in part by the universities. By sitting under the SDI banner the arrangement would benefit from not needing a lead academic partner and, echoing the German House arrangement (described in detail in Appendix 18), an initiative like this could help to create brand awareness around Scottish education.
- As an extension or alternative to in market support it was suggested that a practical Brazil 'toolkit' offering practical advice and for common issues and perhaps including some market research would be welcomed. Building on the Universities UK Intelligence Unit's more generic publication 'International Partnerships – a Legal Guide for UK Universities' but with a focus specifically on Brazil, this might address:
 - Issues with terminology (e.g. joint/double degrees)
 - Advice on dealing with the challenges and intricacies within the Brazilian system at state and national level that make things complex for our institutions
 - Highlighting important areas (such as the implications of charitable status, tax liabilities in Brazil etc) of which universities should be aware, and which often do not emerge until a lot of time and money has already been spent by an individual institution.

This level of advice does not currently exist at the level required for Brazil specifically. As so many institutions consider Brazil as a priority market and are increasing their activities there, it has potential to be helpful if the sector is going to pool its efforts.

7. Features of a Delegation or Mission

- Missions to international markets can be quite general and with a range of objectives. With Brazil there is a strong feeling that Scotland is at this point beyond a generic mission approach, and the need now is for much more focused discussions. Following the recent delegation to Scotland the Scottish universities believe they are now obliged to go back collectively with a proposal, for example for workshops, which will allow the academics to find new ideas and new research opportunities.
- There is seen to be value in a high level delegation (“Brazilians always want to meet the top people, not the second in command”) with the aim of raising the awareness of the HE sector in Scotland in general, but also with the specific goal of setting up a small number of focused, practical workshops. While institutions and agencies in Brazil may know of Scotland’s undergraduate engagement in SwB, they know less about the quality, strengths, research capabilities, and key departments across Scotland’s universities, nor do they know about the Connected Scotland, Research Pool and Innovation Centre concepts.
- For meetings with the likes of CAPES and CNPq, knowing how overwhelmed with visits they are, Scotland should be prepared to offer something different in order to differentiate itself, and make it stand out.
 - Suggestions include, free PhDs, offers for a small number of academics come to Scotland for summer workshops, or for e.g. 5 STEM undergraduates to use our labs, have the Research Pools set up a scholarship to come to Scotland to do research, offer English courses to accompany PhD Scholarships, offer quality assurance or other advice to them etc.
- The proposed timescale is of a mission or visits in the spring
 - Now that the election is over, policies and people’s positions will be clearer.
 - This ties in with the FAUBAI conference in April 2015, followed by the Going Global conference in London in June 2015. These are two key events where senior policy makers and educators will be in attendance. The approach should consider maximising these opportunities for a combination of high level engagement and the development of more focused academic collaboration activities around this.
- There is likely to be the need for some kind of preparatory visit e.g. to introduce the idea of Connected Scotland and the Research Pools at a funding agency level to make sure that those in policy and in charge of funding are connected to the fact that this is our plan, what our commitment is and what the expected output will be.
- Should a prioritisation of states, geographies or institutions be required for the purposes of visiting the market, these should take their lead from where the discipline areas of focus are. Within this, regionally the 5 or 6 states identified above in the S/SE with the broadest interests, best institutions, experience and interest in international collaborations, and the most funding should be the focus.

Additional considerations for the support agencies

Finally, we make some suggestions for the support agencies regarding some areas which require greater clarification and consideration in order to take forward the above recommendations:

The agencies should consider the level of priority of Brazil for the above activities relative to its other priority markets such as China

The above proposal for addressing opportunities in Brazil should be considered relative to other important markets where collectively and individually there are similar information gaps, complexities, needs and widespread sectoral engagement. China would be an obvious example. Is there a model for agency support of the HE sector, including the possibility of an in-market dedicated resource, that could work not only for each market in its own right, but as a network to encourage multilateral partnerships and opportunities across markets?

Promote and explain the available funding programmes, mechanisms and options

In our research some universities who nevertheless said that a research-led approach was their focus still seemed unclear about how to leverage Newton Fund opportunities. Surprisingly one head of research was reported to have said that he did not see the Newton Fund as major focus. Some people said that the information around the Newton Fund could have been better communicated and publicised.

Both at an individual institution level and in order to underpin the collective sectoral approach described above, there should be clarity on how to access and use the available funds and mechanisms such as Newton, Horizon 2020 and others, and to therefore identify any gaps where additional funding might be required to deliver the support this approach demands.

Ensure the Brazil Working Group engages with all the points of expertise and experience in Brazil

There are many academics and executives in Scottish universities with extensive and valuable experience working and collaborating in the Brazil market. We have tried to involve as many of these as possible in this research exercise, and several have expressed a shared interest in the sector's engagement in the market and said they are keen to be involved in taking this thinking forward. We recommend these individuals be invited to contribute to the activities of the Brazil Working Group (along with some of the many others identified in this report):

- Dr Antonio Ioris, University of Edinburgh,
- Brendan McAndrew, University of Stirling
- David Vega-Maza, University of Aberdeen
- Ben Kneller, University of Aberdeen
- Wamberto Vasconcelos, University of Aberdeen
- Jeremy Mottram, University of Glasgow
- Karen Diele, Edinburgh Napier University
- Ted Henry, Heriot-Watt University

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Appendix 1: List of the key individuals engaged and interviewed in the research

Members of the Universities Scotland International Committee or those nominated by them:

- Professor Seth Kunin, Vice-Principal for Internationalisation, University of Aberdeen.
- Maria Law, Internationalisation Manager, Abertay University.
- Catriona McCarthy, Deputy Director, The International Office, University of Edinburgh.
- Rachel Sandison, Director of Recruitment and International, University of Glasgow.
- Janet Roberts, Director of Development & Global Engagement, Glasgow Caledonian University.
- Ruth Moir, Heriot-Watt University, Assistant Principal (International Development)
- Dr Richard Butt, Dean of School of Arts, Social Sciences and Management, Queen Margaret University.
- Martyn Spence, Director of Marketing, Communication and Student Recruitment, Robert Gordon University.
- Gillian Gardner, Senior International Officer, University of St-Andrews.
- Professor Andy Peters, Assistant Principal International, SRUC.
- Stuart Shorthouse, Head of Recruitment and International Office, University of Strathclyde.

Members of the Connected Scotland Brazil Working Group:

- Claudio Anjos, Director Education and Society, British Council Brazil Office.
- Professor William Naphy, Chair in History, University of Aberdeen.
- Professor Patrick Corbett, Professor of Carbonate Petroleum Geoengineering, Heriot-Watt University.
- Michelle Stewart, Deputy Director, International and External Affairs, University of Stirling.
- Professor Albert Rodger, Vice Principal for External Affairs and Chair of Research & Knowledge Exchange Committee of the Scottish Funding Council, University of Aberdeen.
- Lucy Young, Head of Education, British Council Scotland.
- Professor Margaret Smith, Vice Principal International and External Relations, University of Dundee.
- Rajandeep Singh, Officer for Latin America, University of Edinburgh.
- Tania Lima (and Rachel Sarah Kennedy) Assistant Director, Programmes and Operations, UK HE International Unit.

Members of Connected Scotland Partner Group

- Gordon Adam, Director of Development and Communications, Royal Society of Edinburgh.
- Jamie Neal (for Rebecca Robinson), China and the Americas Team, Scottish Government.
- (Note: Paul Hagan from the Scottish Funding Council was contacted but did not respond to our request for an interview).
- Ulrike Peter, Senior Policy Officer (International), Universities Scotland.
- Lee-Ann McLeish, International Education Executive, Scottish Development International.

Other individuals who were interviewed and who contributed to our research:

- Dr Karen Diele, Senior Lecturer, School of Life Sport and Social Sciences Edinburgh Napier University
- Ted Henry, Associate Professor (Reader) Toxicology, School of Life Sciences, Heriot Watt University
- David Vega-Maza, Lecturer in Engineering. CCS, University of Aberdeen
- Daniela Tolezano Madureira, College Development Officer, College of Physical

- Sciences, University of Aberdeen
- Ben Kneller, Chair in Geology & Petroleum Geology, University of Aberdeen
 - Professor Tariq Durrani, University of Strathclyde
 - Wamberto Vasconcelos, Reader, Computing Science, University of Aberdeen
 - Prof Jeremy Mottram, Professor of Molecular and Cellular Parasitology,
 - Dean of Graduate Studies, College of Medical, Veterinary and Life Sciences, University of Glasgow
 - Dr Antonio Ioris, Lecturer in Environment and Society, School of Geosciences, University of Edinburgh
 - Barrie Shepherd, Executive Director, Energy Technology Partnership (ETP)
 - Denise Barrault, Executive Director, Scottish Universities Life Sciences Alliance – SULSA, University of Edinburgh.
 - Trevor Hoey, SAGES Director, College of Science and Engineering International Lead, University of Glasgow.
 - Prof Stuart Anderson, Professor of Dependable Systems, School of Informatics, Edinburgh, Director of SICSA.
 - Prof Brendan McAndrew, Professor of Aquaculture Genetics, Convenor of MASTS Sustainable Aquaculture Forum.
 - Mark James, MASTS Operations Director, Scottish Oceans Institute, University of St Andrews.
 - Carolina Costa, Deputy Director Science & Innovation at British Consulate-General in Sao Paulo, Brazil.
 - Dalinda Perez Alvarez Rodriguez, Director, The Office of the Americas, University of Edinburgh.
 - Rodrigo Gaspar, Director - Brazil Office, University of Bristol and Director - Brazil Office, University of Strathclyde.
 - Nicola Sartini, Regional Director Latin America, Scottish Development International.
 - Gerry Love, Senior International Business Executive, Oil and Gas Sector Team, Scottish Development International
 - Charles Marriott, Senior Policy Officer (Research & Knowledge Exchange and Health), Universities Scotland. (Communication was made through Charles to all members of the Research and Knowledge Exchange Committee, a number of whom contributed information concerning projects and experience in Brazil to this research).
 - Sean O'Connor, Policy Officer, Americas, UK HE International Unit.
 - In addition input was given from representatives of the Brazilian universities which took part in the BC-FAUBAI mission to the UK in September (their names, profiles and institution profiles are included in Appendix 16) and from informal discussions and conversations with other individuals on the ground in Brazil.

Appendix 2: Questions for Scottish Universities and other Stakeholders

- Why do you understand Brazil was chosen as a priority market to research in more detail?
- What are the existing (known) links with Brazil within your own institution, across all areas - student and staff mobility/exchange, transnational education models such as joint degrees (UG, Masters, PhD), teaching and training, research collaboration?
 - Could you please write these down and share with us?
- What have been the main successes for you in Brazil, and what have been the principal challenges?
- What involvement in the Science without Borders (or the Newton Fund) have you had or do you plan to have?
 - What has been your experience of this?
 - What have been the student numbers at both UG and PhD levels? What has worked well? What have been the issues?
 - What is your target/objective re the UG and PhD elements of this over next 3 years?
- What other sources of students from Brazil do you have other than SwB? How do you do this?
- With regard to your institution's experience of research collaboration with Brazil, which are the subject/discipline areas you are focusing on?
 - What kinds of collaborations or research exchanges have you had, and where would you like to develop these?
 - Who are the key academics/staff members and departments with links to and experience in Brazil?
- Going forward, which areas of engagement with Brazil is your institution focusing on and why? Where do you see the opportunities?
- Do you have an international strategy that includes Brazil? If so, what is your goal/approach re the Brazil market? What level of priority among overseas markets does Brazil have for you?
- What is your experience of validation of foreign degrees in Brazil – e.g. joint/double degrees?
- How easy have you found dealing with regulations in general in the market?
- In your experience, who are the key stakeholders in Brazil you need to engage with to operate effectively in the market?
- Are there other universities from the UK or other countries you see doing well in the Brazil market. What can we learn from them and the way they are approaching the market?
- Do you think you understand all you need to about the opportunities open to your institution in Brazil e.g.; the funding and other bodies/agencies in the market and their sector priorities, Brazilian universities with compatible strengths, opportunities with industry and companies in Brazil etc to take forward your growth plans there?
 - Where would you say your knowledge or capability gaps are?
- What in your opinion could SDI, British Council Scotland and Universities Scotland do to support Scottish HEIs collectively to maximise their ability to take advantage of the opportunities in the market?

Appendix 3: Basic demographic and HDI indicators in each region and state

Capital City	Region	Size (in km ²)	Population (2007 estimate)	% Pop. Urban/Rural	Number of Municipal Districts	Per Capita GNP in Reais (R\$)	Life Expectancy (2007 projection)
Brasília	-	8,514,204 (slightly larger than the Continental United States)	192,000,000 (2 008 estimate)	82.5/17.5	5,564	R\$8,300	72.24
Brasília	Center West	5,801	2,393,000	94/6	1	R\$19,071	75.1
Goiânia	Center West	340,086	5,750,000	88.6/11.4	246	R\$7,500	73.1
Cuiabá	Center West	903,357	2,866,000	76.6/23.4	141	R\$10,161	72.9
Campo Grande	Center West	357,124	2,304,000	84.7/15.3	78	R\$8,944	73.5
			13,313,000		466		
Rio Branco	North	152,581	664,000	69.6/30.4	24	R\$5,413	71.1
Macapá	North	142,814	619,000	93.7/6.3	16	R\$6,796	70.1
Manaus	North	1,570,745	3,351,000	77.6/22.4	62	R\$11,434	71.3
Belém	North	1,247,689	7,136,000	75.2/24.8	143	R\$4,991	71.7
Porto Velho	North	237,576	1,567,000	68.2/31.8	52	R\$6,238	70.9
Boa Vista	North	224,298	405,000	81.6/17.7	15	R\$4,881	69.6
Palmas	North	277,620	1,337,000	74.1/25.9	139	R\$3,776	71
			15,079,000		451		
Maceió	Northeast	27,767	3,557,000	67.4/32.6	102	R\$3,876	65.4
Salvador	Northeast	564,692	13,974,000	67.4/32.6	417	R\$6,350	71.7
Fortaleza	Northeast	148,825	8,238,000	76.4/23.6	184	R\$4,169	69.9
São Luís	Northeast	331,983	6,199,000	67/33	217	R\$2,748	67.2
João Pessoa	Northeast	56,440	3,595,886	75.8/24.2	223	R\$3,872	67.9
Recife	Northeast	98,311	8,518,000	76.8/23.2	185	R\$5,730	67.9
Teresina	Northeast	251,529	3,041,000	60.7/39.3	223	R\$2,892	68.8
Natal	Northeast	52,796	3,051,000	72.4/27.6	167	R\$5,369	70.1
Aracajú	Northeast	21,910	2,007,000	82.2/17.8	75	R\$6,782	70.6
			52,180,886		1793		
Curitiba	South	199,315	10,261,856	83.6/16.4	399	R\$9,891	73.2
Porto Alegre	South	281,748	10,984,000	80.5/18.5	496	R\$ 13,320	74.8
Florianópolis	South	95,346	5,974,000	82.5/17.5	293	R\$12,158	75
			27,219,856		1188		
Vitória	Southeast	46,077	3,474,000	82.2/17.8	78	R\$10,288	73.4
Belo Horizonte	Southeast	586,528	19,522,000	84.7/15.3	853	R\$8,770	74.4
Rio de Janeiro	Southeast	43,696	15,593,000	96.9/3.1	92	R\$14,638	72.8
São Paulo	Southeast	248,209	41,164,000	94.5/5.5	645	R\$13,725	73.9
			79,753,000		1668		

Appendix 4: Number of universities, by administrative type and location

Location / Admin. Type		Institutions											Inst. of Techn. & Sci. (CEFET)			
		Grand TOTAL			Universities			University Centres			Faculties			Total	Capital	Interior
		Total	Capital	Interior	Total	Capital	Interior	Total	Capital	Interior	Total	Capital	Interior			
Brasil		2,365	819	1,546	190	86	104	131	51	80	2,004	652	1,352	40	30	10
	Public	284	95	189	102	48	54	7	1	6	135	16	119	40	30	10
		Federal	103	64	39	59	31	28	-	-	4	3	1	40	30	10
		State	110	31	79	37	17	20	1	1	72	13	59	-	-	-
		Municipal	71	-	71	6	-	6	6	-	6	59	-	59	-	-
	Private	2,081	724	1,357	88	38	50	124	50	74	1,869	636	1,233	-	-	-
Norte		152	94	58	16	15	1	8	5	3	121	67	54	7	7	-
	Public	27	20	7	14	13	1	1	-	1	5	-	5	7	7	-
		Federal	16	15	1	9	8	1	-	-	-	-	-	7	7	-
		State	5	5	-	5	5	-	-	-	-	-	-	-	-	-
		Municipal	6	-	6	-	-	1	-	1	5	-	5	-	-	-
	Private	125	74	51	2	2	-	7	5	2	116	67	49	-	-	-
Nordeste		432	220	212	35	21	14	6	6	-	380	183	197	11	10	1
	Public	63	26	37	29	15	14	-	-	-	23	1	22	11	10	1
		Federal	26	19	7	15	9	6	-	-	-	-	-	11	10	1
		State	15	7	8	14	6	8	-	-	1	1	-	-	-	-
		Municipal	22	-	22	-	-	-	-	-	22	-	22	-	-	-
	Private	369	194	175	6	6	-	6	6	-	357	182	175	-	-	-
Southeast		1,157	295	862	79	30	49	87	27	60	980	232	748	11	6	5
	Public	134	28	106	28	9	19	3	1	2	92	12	80	11	6	5
		Federal	34	14	20	19	5	14	-	-	4	3	1	11	6	5
		State	71	14	57	7	4	3	1	1	63	9	54	-	-	-
		Municipal	29	-	29	2	-	2	2	-	25	-	25	-	-	-
	Private	1,023	267	756	51	21	30	84	26	58	888	220	668	-	-	-
South		389	97	292	46	11	35	18	5	13	319	79	240	6	2	4
	Public	42	11	31	22	7	15	3	-	3	11	2	9	6	2	4
		Federal	17	7	10	11	5	6	-	-	-	-	-	6	2	4
		State	15	4	11	8	2	6	-	-	7	2	5	-	-	-
		Municipal	10	-	10	3	-	3	3	-	4	-	4	-	-	-
	Private	347	86	261	24	4	20	15	5	10	308	77	231	-	-	-
Centre West		235	113	122	14	9	5	12	8	4	204	91	113	5	5	-
	Public	18	10	8	9	4	5	-	-	-	4	1	3	5	5	-
		Federal	10	9	1	5	4	1	-	-	-	-	-	5	5	-
		State	4	1	3	3	-	3	-	-	1	1	-	-	-	-
		Municipal	4	-	4	1	-	1	-	-	3	-	3	-	-	-
	Private	217	103	114	5	5	-	12	8	4	200	90	110	-	-	-
Fed. District		59	59	-	2	2	-	5	5	-	51	51	-	1	1	-
	Public	3	3	-	1	1	-	-	-	-	1	1	-	1	1	-
		Federal	2	2	-	1	1	-	-	-	-	-	-	1	1	-
		State	1	1	-	-	-	-	-	-	1	1	-	-	-	-
		Municipal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Private	56	56	-	1	1	-	5	5	-	50	50	-	-	-	-

Source: MEC/INEP/DEED

IF/CEFET - Instituto Federal de Educação, Ciência e Tecnologia e Centro Federal de Educação Tecnológica.

Appendix 5: Top 100 Universities in Brazil

a) Top 100 Universities Ranked

	University name	State	Region
1	Universidade de São Paulo (USP)	SP	Southeast
2	Universidade Federal de Minas Gerais (UFMG)	MG	Southeast
3	Universidade Federal do Rio de Janeiro (UFRJ)	RJ	Southeast
4	Universidade Federal do Rio Grande do Sul (UFRGS)	RS	South
5	Universidade Estadual de Campinas (UNICAMP)	SP	Southeast
6	Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP)	SP	Southeast
7	Universidade Federal de Santa Catarina (UFSC)	SC	South
8	Universidade de Brasília (UNB)	DF	Center West
9	Universidade Federal do Paraná (UFPR)	PR	South
10	Universidade Federal de São Carlos (UFSCAR)	SP	Southeast
11	Universidade Federal de Pernambuco (UFPE)	PE	Northeast
12	Universidade Federal de São Paulo (UNIFESP)	SP	Southeast
13	Universidade Federal do Ceará (UFC)	CE	Northeast
14	Universidade Federal da Bahia (UFBA)	BA	Northeast
15	Universidade Federal de Santa Maria (UFSM)	RS	South
16	Universidade Federal Fluminense (UFF)	RJ	Southeast
17	Universidade do Estado do Rio de Janeiro (UERJ)	RJ	Southeast
18	Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS)	RS	South
19	Universidade Federal de Viçosa (UFV)	MG	Southeast
20	Pontifícia Universidade Católica do Rio de Janeiro (PUC-RIO)	RJ	Southeast
21	Universidade Federal do Rio Grande do Norte (UFRN)	RN	Northeast
22	Universidade Federal de Goiás (UFG)	GO	Center West
23	Universidade Estadual de Maringá (UEM)	PR	South
24	Universidade Estadual de Londrina (UEL)	PR	South
25	Universidade Federal da Paraíba (UFPB)	PB	Northeast
26	Universidade Federal de Uberlândia (UFU)	MG	Southeast
27	Universidade Federal de Lavras (UFLA)	MG	Southeast
28	Universidade Federal de Juiz de Fora (UFJF)	MG	Southeast
29	Universidade Federal do Pará (UFPA)	PA	North
30	Universidade Federal de Pelotas (UFPEL)	RS	South
31	Universidade Federal do Espírito Santo (UFES)	ES	Southeast
32	Pontifícia Universidade Católica do Paraná (PUCPR)	PR	South
33	Universidade Federal de Sergipe (UFS)	SE	Northeast
34	Universidade Federal de Ouro Preto (UFOP)	MG	Southeast
35	Universidade Presbiteriana Mackenzie (MACKENZIE)	SP	Southeast
36	Universidade Federal de Mato Grosso (UFMT)	MT	Center West
37	Universidade Federal de Mato Grosso do Sul (UFMS)	MS	Center West
38	Universidade Federal de Alagoas (UFAL)	AL	Northeast

39	Universidade Estadual do Ceará (UECE)	CE	Northeast
40	Fundação Universidade Federal do Abc (UFABC)	SP	Southeast
41	Universidade Federal do Amazonas (UFAM)	AM	North
42	Pontifícia Universidade Católica de Minas Gerais (PUC MINAS)	MG	Southeast
43	Universidade do Vale do Rio dos Sinos (UNISINOS)	RS	South
44	Universidade de Caxias do Sul (UCS)	RS	South
45	Universidade Federal do Piauí (UFPI)	PI	Northeast
46	Universidade Federal de Campina Grande (UFCG)	PB	Northeast
47	Universidade Federal Rural do Rio de Janeiro (UFRRJ)	RJ	Southeast
48	Universidade Católica de Brasília (UCB)	DF	Center West
49	Universidade Federal de Alfenas (UNIFAL-MG)	MG	Southeast
50	Universidade Estadual do Oeste do Paraná (UNIOESTE)	PR	South
51	Universidade São Francisco (USF)	SP	Southeast
52	Universidade Federal de São João Del Rei (UFSJ)	MG	Southeast
53	Universidade Tecnológica Federal do Paraná (UTFPR)	PR	South
54	Pontifícia Universidade Católica de São Paulo (PUCSP)	SP	Southeast
55	Universidade Federal do Rio Grande (FURG)	RS	South
56	Universidade Federal do Maranhão (UFMA)	MA	Northeast
57	Fundação Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA)	RS	South
58	Universidade Federal Rural de Pernambuco (UFRPE)	PE	Northeast
59	Universidade Federal do Triângulo Mineiro (UFTM)	MG	Southeast
60	Universidade Estadual de Ponta Grossa (UEPG)	PR	South
61	Universidade Estadual de Santa Cruz (UESC)	BA	Northeast
62	Universidade Federal de Itajubá (UNIFEI)	MG	Southeast
63	Universidade Nove de Julho (UNINOVE)	SP	Southeast
64	Universidade de Pernambuco (UPE)	PE	Northeast
65	Universidade do Vale do Itajaí (UNIVALI)	SC	South
66	Universidade Luterana do Brasil (ULBRA)	RS	South
67	Universidade Positivo (UP)	PR	South
68	Fundação Universidade do Estado de Santa Catarina (UDESC)	SC	South
69	Universidade Paulista (UNIP)	SP	Southeast
70	Universidade de Franca (UNIFRAN)	SP	Southeast
71	Universidade de Fortaleza (UNIFOR)	CE	Northeast
72	Fundação Universidade Federal do Pampa (UNIPAMPA)	RS	South
73	Universidade Tiradentes (UNIT)	SE	Northeast
74	Universidade Estadual do Norte Fluminense Darcy Ribeiro (UENF)	RJ	Southeast
75	Universidade Metodista de São Paulo (UMESP)	SP	Southeast
76	Universidade Regional de Blumenau (FURB)	SC	South
77	Universidade do Estado do Amazonas (UEA)	AM	North
78	Universidade de Ribeirão Preto (UNAERP)	SP	Southeast
79	Universidade Estácio de Sá (UNESA)	RJ	Southeast
80	Pontifícia Universidade Católica de Campinas (PUC-CAMPINAS)	SP	Southeast
81	Universidade Cruzeiro do Sul (UNICSUL)	SP	Southeast

82	Universidade Federal do Estado do Rio de Janeiro (UNIRIO)	RJ	Southeast
83	Universidade de Mogi Das Cruzes (UMC)	SP	Southeast
84	Universidade Feevale (FEEVALE)	RS	South
85	Universidade de Taubaté (UNITAU)	SP	Southeast
86	Universidade do Estado da Bahia (UNEB)	BA	Northeast
87	Universidade de Santa Cruz do Sul (UNISC)	RS	South
88	Universidade Estadual de Feira de Santana (UEFS)	BA	Northeast
89	Universidade Estadual do Sudoeste da Bahia (UESB)	BA	Northeast
90	Universidade Guarulhos (UNG)	SP	Southeast
91	Universidade do Grande Rio Professor José de Souza Herdy (UNIGRANRIO)	RJ	Southeast
92	Universidade Estadual do Centro Oeste (UNICENTRO)	PR	South
93	Fundação Universidade Federal do Tocantins (UFT)	TO	north
94	Pontifícia Universidade Católica de Goiás (PUC GOIÁS)	GO	Center West
95	Universidade Estadual de Montes Claros (UNIMONTES)	MG	Southeast
96	Universidade São Judas Tadeu (USJT)	SP	Southeast
97	Universidade Regional Integrada do Alto Uruguai e Das Missões (URI)	RS	South
98	Universidade Metodista de Piracicaba (UNIMEP)	SP	Southeast
99	Universidade do Sul de Santa Catarina (UNISUL)	SE	South
100	Universidade Regional do Cariri (URCA)	CE	Northeast

b) Top 100 Universities by Region

University name	State	Region
Universidade de Brasília (UNB)	DF	Center West
Universidade Federal de Goiás (UFG)	GO	Center West
Universidade Federal de Mato Grosso (UFMT)	MT	Center West
Universidade Federal de Mato Grosso do Sul (UFMS)	MS	Center West
Universidade Católica de Brasília (UCB)	DF	Center West
Pontifícia Universidade Católica de Goiás (PUC GOIÁS)	GO	Center West
Universidade Federal do Pará (UFPA)	PA	North
Universidade Federal do Amazonas (UFAM)	AM	North
Universidade do Estado do Amazonas (UEA)	AM	North
Fundação Universidade Federal do Tocantins (UFT)	TO	North
Universidade Federal de Pernambuco (UFPE)	PE	Northeast
Universidade Federal do Ceará (UFC)	CE	Northeast
Universidade Federal da Bahia (UFBA)	BA	Northeast
Universidade Federal do Rio Grande do Norte (UFRN)	RN	Northeast
Universidade Federal da Paraíba (UFPB)	PB	Northeast
Universidade Federal de Sergipe (UFS)	SE	Northeast
Universidade Federal de Alagoas (UFAL)	AL	Northeast
Universidade Estadual do Ceará (UECE)	CE	Northeast
Universidade Federal do Piauí (UFPI)	PI	Northeast
Universidade Federal de Campina Grande (UFCG)	PB	Northeast
Universidade Federal do Maranhão (UFMA)	MA	Northeast

Universidade Federal Rural de Pernambuco (UFRPE)	PE	Northeast
Universidade Estadual de Santa Cruz (UESC)	BA	Northeast
Universidade de Pernambuco (UPE)	PE	Northeast
Universidade de Fortaleza (UNIFOR)	CE	Northeast
Universidade Tiradentes (UNIT)	SE	Northeast
Universidade do Estado da Bahia (UNEB)	BA	Northeast
Universidade Estadual de Feira de Santana (UEFS)	BA	Northeast
Universidade Estadual do Sudoeste da Bahia (UESB)	BA	Northeast
Universidade Regional do Cariri (URCA)	CE	Northeast
Universidade Federal do Rio Grande do Sul (UFRGS)	RS	South
Universidade Federal de Santa Catarina (UFSC)	SC	South
Universidade Federal do Paraná (UFPR)	PR	South
Universidade Federal de Santa Maria (UFSM)	RS	South
Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS)	RS	South
Universidade Estadual de Maringá (UEM)	PR	South
Universidade Estadual de Londrina (UEL)	PR	South
Universidade Federal de Pelotas (UFPEL)	RS	South
Pontifícia Universidade Católica do Paraná (PUCPR)	PR	South
Universidade do Vale do Rio dos Sinos (UNISINOS)	RS	South
Universidade de Caxias do Sul (UCS)	RS	South
Universidade Estadual do Oeste do Paraná (UNIOESTE)	PR	South
Universidade Tecnológica Federal do Paraná (UTFPR)	PR	South
Universidade Federal do Rio Grande (FURG)	RS	South
Fundação Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA)	RS	South
Universidade Estadual de Ponta Grossa (UEPG)	PR	South
Universidade do Vale do Itajaí (UNIVALI)	SC	South
Universidade Luterana do Brasil (ULBRA)	RS	South
Universidade Positivo (UP)	PR	South
Fundação Universidade do Estado de Santa Catarina (UDESC)	SC	South
Fundação Universidade Federal do Pampa (UNIPAMPA)	RS	South
Universidade Regional de Blumenau (FURB)	SC	South
Universidade Feevale (FEEVALE)	RS	South
Universidade de Santa Cruz do Sul (UNISC)	RS	South
Universidade Estadual do Centro Oeste (UNICENTRO)	PR	South
Universidade Regional Integrada do Alto Uruguai e Das Missões (URI)	RS	South
Universidade do Sul de Santa Catarina (UNISUL)	SE	South
Universidade de São Paulo (USP)	SP	Southeast
Universidade Federal de Minas Gerais (UFMG)	MG	Southeast
Universidade Federal do Rio de Janeiro (UFRJ)	RJ	Southeast
Universidade Estadual de Campinas (UNICAMP)	SP	Southeast
Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP)	SP	Southeast
Universidade Federal de São Carlos (UFSCAR)	SP	Southeast
Universidade Federal de São Paulo (UNIFESP)	SP	Southeast
Universidade Federal Fluminense (UFF)	RJ	Southeast
Universidade do Estado do Rio de Janeiro (UERJ)	RJ	Southeast

Universidade Federal de Viçosa (UFV)	MG	Southeast
Pontifícia Universidade Católica do Rio de Janeiro (PUC-RIO)	RJ	Southeast
Universidade Federal de Uberlândia (UFU)	MG	Southeast
Universidade Federal de Lavras (UFLA)	MG	Southeast
Universidade Federal de Juiz de Fora (UFJF)	MG	Southeast
Universidade Federal do Espírito Santo (UFES)	ES	Southeast
Universidade Federal de Ouro Preto (UFOP)	MG	Southeast
Universidade Presbiteriana Mackenzie (MACKENZIE)	SP	Southeast
Fundação Universidade Federal do Abc (UFABC)	SP	Southeast
Pontifícia Universidade Católica de Minas Gerais (PUC MINAS)	MG	Southeast
Universidade Federal Rural do Rio de Janeiro (UFRRJ)	RJ	Southeast
Universidade Federal de Alfenas (UNIFAL-MG)	MG	Southeast
Universidade São Francisco (USF)	SP	Southeast
Universidade Federal de São João Del Rei (UFSJ)	MG	Southeast
Pontifícia Universidade Católica de São Paulo (PUCSP)	SP	Southeast
Universidade Federal do Triângulo Mineiro (UFTM)	MG	Southeast
Universidade Federal de Itajubá (UNIFEI)	MG	Southeast
Universidade Nove de Julho (UNINOVE)	SP	Southeast
Universidade Paulista (UNIP)	SP	Southeast
Universidade de Franca (UNIFRAN)	SP	Southeast
Universidade Estadual do Norte Fluminense Darcy Ribeiro (UENF)	RJ	Southeast
Universidade Metodista de São Paulo (UMESP)	SP	Southeast
Universidade de Ribeirão Preto (UNAERP)	SP	Southeast
Universidade Estácio de Sá (UNESA)	RJ	Southeast
Pontifícia Universidade Católica de Campinas (PUC-CAMPINAS)	SP	Southeast
Universidade Cruzeiro do Sul (UNICSUL)	SP	Southeast
Universidade Federal do Estado do Rio de Janeiro (UNIRIO)	RJ	Southeast
Universidade de Mogi Das Cruzes (UMC)	SP	Southeast
Universidade de Taubaté (UNITAU)	SP	Southeast
Universidade Guarulhos (UNG)	SP	Southeast
Universidade do Grande Rio Professor José de Souza Herdy (UNIGRANRIO)	RJ	Southeast
Universidade Estadual de Montes Claros (UNIMONTES)	MG	Southeast
Universidade São Judas Tadeu (USJT)	SP	Southeast
Universidade Metodista de Piracicaba (UNIMEP)	SP	Southeast

Top 100 Universities by State

University name	State	Region
Universidade Federal de Alagoas (UFAL)	AL	Northeast
Universidade Federal do Amazonas (UFAM)	AM	North
Universidade do Estado do Amazonas (UEA)	AM	North
Universidade Federal da Bahia (UFBA)	BA	Northeast
Universidade Estadual de Santa Cruz (UESC)	BA	Northeast
Universidade do Estado da Bahia (UNEB)	BA	Northeast
Universidade Estadual de Feira de Santana (UEFS)	BA	Northeast

Universidade Estadual do Sudoeste da Bahia (UESB)	BA	Northeast
Universidade Federal do Ceará (UFC)	CE	Northeast
Universidade Estadual do Ceará (UECE)	CE	Northeast
Universidade de Fortaleza (UNIFOR)	CE	Northeast
Universidade Regional do Cariri (URCA)	CE	Northeast
Universidade de Brasília (UNB)	DF	Center West
Universidade Católica de Brasília (UCB)	DF	Center West
Universidade Federal do Espírito Santo (UFES)	ES	Southeast
Universidade Federal de Goiás (UFG)	GO	Center West
Pontifícia Universidade Católica de Goiás (PUC GOIÁS)	GO	Center West
Universidade Federal do Maranhão (UFMA)	MA	Northeast
Universidade Federal de Minas Gerais (UFMG)	MG	Southeast
Universidade Federal de Viçosa (UFV)	MG	Southeast
Universidade Federal de Uberlândia (UFU)	MG	Southeast
Universidade Federal de Lavras (UFLA)	MG	Southeast
Universidade Federal de Juiz de Fora (UFJF)	MG	Southeast
Universidade Federal de Ouro Preto (UFOP)	MG	Southeast
Pontifícia Universidade Católica de Minas Gerais (PUC MINAS)	MG	Southeast
Universidade Federal de Alfenas (UNIFAL-MG)	MG	Southeast
Universidade Federal de São João Del Rei (UFSJ)	MG	Southeast
Universidade Federal do Triângulo Mineiro (UFTM)	MG	Southeast
Universidade Federal de Itajubá (UNIFEI)	MG	Southeast
Universidade Estadual de Montes Claros (UNIMONTES)	MG	Southeast
Universidade Federal de Mato Grosso do Sul (UFMS)	MS	Center West
Universidade Federal de Mato Grosso (UFMT)	MT	Center West
Universidade Federal do Pará (UFPA)	PA	North
Universidade Federal da Paraíba (UFPB)	PB	Northeast
Universidade Federal de Campina Grande (UFCG)	PB	Northeast
Universidade Federal de Pernambuco (UFPE)	PE	Northeast
Universidade Federal Rural de Pernambuco (UFRPE)	PE	Northeast
Universidade de Pernambuco (UPE)	PE	Northeast
Universidade Federal do Piauí (UFPI)	PI	Northeast
Universidade Federal do Paraná (UFPR)	PR	South
Universidade Estadual de Maringá (UEM)	PR	South
Universidade Estadual de Londrina (UEL)	PR	South
Pontifícia Universidade Católica do Paraná (PUCPR)	PR	South
Universidade Estadual do Oeste do Paraná (UNIOESTE)	PR	South
Universidade Tecnológica Federal do Paraná (UTFPR)	PR	South
Universidade Estadual de Ponta Grossa (UEPG)	PR	South
Universidade Positivo (UP)	PR	South
Universidade Estadual do Centro Oeste (UNICENTRO)	PR	South
Universidade Federal do Rio de Janeiro (UFRJ)	RJ	Southeast
Universidade Federal Fluminense (UFF)	RJ	Southeast
Universidade do Estado do Rio de Janeiro (UERJ)	RJ	Southeast
Pontifícia Universidade Católica do Rio de Janeiro (PUC-RIO)	RJ	Southeast

Universidade Federal Rural do Rio de Janeiro (UFRRJ)	RJ	Southeast
Universidade Estadual do Norte Fluminense Darcy Ribeiro (UENF)	RJ	Southeast
Universidade Estácio de Sá (UNESA)	RJ	Southeast
Universidade Federal do Estado do Rio de Janeiro (UNIRIO)	RJ	Southeast
Universidade do Grande Rio Professor José de Souza Herdy (UNIGRANRIO)	RJ	Southeast
Universidade Federal do Rio Grande do Norte (UFRN)	RN	Northeast
Universidade Federal do Rio Grande do Sul (UFRGS)	RS	South
Universidade Federal de Santa Maria (UFSM)	RS	South
Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS)	RS	South
Universidade Federal de Pelotas (UFPEL)	RS	South
Universidade do Vale do Rio dos Sinos (UNISINOS)	RS	South
Universidade de Caxias do Sul (UCS)	RS	South
Universidade Federal do Rio Grande (FURG)	RS	South
Fundação Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA)	RS	South
Universidade Luterana do Brasil (ULBRA)	RS	South
Fundação Universidade Federal do Pampa (UNIPAMPA)	RS	South
Universidade Feevale (FEEVALE)	RS	South
Universidade de Santa Cruz do Sul (UNISC)	RS	South
Universidade Regional Integrada do Alto Uruguai e Das Missões (URI)	RS	South
Universidade Federal de Santa Catarina (UFSC)	SC	South
Universidade do Vale do Itajaí (UNIVALI)	SC	South
Fundação Universidade do Estado de Santa Catarina (UDESC)	SC	South
Universidade Regional de Blumenau (FURB)	SC	South
Universidade Federal de Sergipe (UFS)	SE	Northeast
Universidade Tiradentes (UNIT)	SE	Northeast
Universidade do Sul de Santa Catarina (UNISUL)	SE	South
Universidade de São Paulo (USP)	SP	Southeast
Universidade Estadual de Campinas (UNICAMP)	SP	Southeast
Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP)	SP	Southeast
Universidade Federal de São Carlos (UFSCAR)	SP	Southeast
Universidade Federal de São Paulo (UNIFESP)	SP	Southeast
Universidade Presbiteriana Mackenzie (MACKENZIE)	SP	Southeast
Fundação Universidade Federal do Abc (UFABC)	SP	Southeast
Universidade São Francisco (USF)	SP	Southeast
Pontifícia Universidade Católica de São Paulo (PUCSP)	SP	Southeast
Universidade Nove de Julho (UNINOVE)	SP	Southeast
Universidade Paulista (UNIP)	SP	Southeast
Universidade de Franca (UNIFRAN)	SP	Southeast
Universidade Metodista de São Paulo (UMESP)	SP	Southeast
Universidade de Ribeirão Preto (UNAERP)	SP	Southeast
Pontifícia Universidade Católica de Campinas (PUC-CAMPINAS)	SP	Southeast
Universidade Cruzeiro do Sul (UNICSUL)	SP	Southeast
Universidade de Mogi Das Cruzes (UMC)	SP	Southeast
Universidade de Taubaté (UNITAU)	SP	Southeast
Universidade Guarulhos (UNG)	SP	Southeast

Universidade São Judas Tadeu (USJT)	SP	Southeast
Universidade Metodista de Piracicaba (UNIMEP)	SP	Southeast
Fundação Universidade Federal do Tocantins (UFT)	TO	North

Appendix 6 – CAPES Rankings.

See accompanying Excel Document: Appendix 6 CAPES Rankings

Appendix 7 – RUF Rankings

See accompanying Excel Document: Appendix 7 RUF Rankings

Appendix 8: INCTs (Institutos Nacionais de Ciência e Tecnologia)

National Institutes of Science and Technology

http://estatico.cnpq.br/programas/inct/_apresentacao/apresentacao.html

INCTs contacts (and research focus)

Instituto Nacional de Ciência e Tecnologia em Astrofísica (INCTA) *Astrophysics*

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Instituto Nacional de Ciência e Tecnologia de Informação Quântica (INCT-IQ) *Quantum information*

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<http://www.quantiki.org>

Instituto Nacional de Ciência e Tecnologia de Fluidos Complexos (INCT-FCx) *Complex fluids*

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Instituto Nacional de Ciência e Tecnologia de Fotônica *Photonics*

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http://www.cnpq.br/programas/inct/_apresentacao/inct_fotonica.html

Instituto Nacional de Ciência e Tecnologia em Refrigeração e Termofísica (INCT-CT) *Cooling and thermophysics*

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Instituto Nacional de Ciência e Tecnologia de Sistemas Complexos (INCT-SC) *Complex systems*

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Instituto Nacional de Ciência e Tecnologia em Fotônica Aplicada à Biologia Celular (INFABiC) [Applied photonics for cellular biology](#)

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Instituto Nacional de Ciência e Tecnologia Antártico de Pesquisas Ambientais (INCT-APA) [Environmental research in the Antarctic](#)

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Instituto Nacional de Ciência e Tecnologia em Áreas Úmidas (INAU) [Wetlands](#)

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Instituto Nacional de Ciência e Tecnologia do Café (INCT Café) [Coffee production](#)

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http://www.cnpq.br/programas/inct/_apresentacao/inct_cafe.html

Instituto Nacional de Ciência e Tecnologia da Criosfera [Cryosphere](#)

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Instituto Nacional de Ciência e Tecnologia da Biodiversidade e Uso da Terra na Amazônia [Biodiversity and land use in Amazonia](#)

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Instituto Nacional de Ciência e Tecnologia de Estudos do Meio Ambiente (INCT-EMA) [Environmental studies](#)

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http://www.cnpq.br/programas/inct/_apresentacao/inct_estudos_meio_ambiente.html

Instituto Nacional de Ciência e Tecnologia – Centro de Estudos Integrados da Biodiversidade Amazônica (INCT-CENBAM) [Centre for integrated studies of Amazonian biodiversity](#)

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http://ppbio.inpa.gov.br/Port/objetosassociados/cenbam/index_html/document_view

Instituto Nacional de Ciência e Tecnologia para Mudanças Climáticas [Climate change](#)

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http://www.cnpq.br/programas/inct/_apresentacao/inct_mudancas_climaticas.html

Instituto Nacional de Ciência e Tecnologia dos Serviços Ambientais da Amazônia (SERVAMB) [Environmental services in the Amazon](#)

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http://www.cnpq.br/programas/inct/_apresentacao/inct_serv_amb_amazonia.html

Instituto Nacional de Ciência e Tecnologia de Transferência de Materiais Continente-Oceano [Materials transfer in the continent-ocean interface](#)

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Instituto Nacional de Ciência e Tecnologia de Arqueologia, Paleontologia e Ambiente do Semiárido do Nordeste do Brasil (INAP) [Archeology, Palaeontology and Environmental studies in the semi-arid Northeast](#)

Anne-Marie Pessis (Coordenadora)

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Instituto Nacional de Ciência e Tecnologia de Bioanálítica (INCTBio) [Bioanalytics](#)

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Instituto Nacional de Ciência e Tecnologia em Biofabricação (Biofabris) [Biomanufacture](#)

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Instituto Nacional de Ciência e Tecnologia de Biologia Estrutural e Bioimagem (INBEB) [Structural biology and bio-imaging](#)

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http://www.cnpq.br/programas/inct/_apresentacao/inct_biologia_estrutural.html

Instituto Nacional de Ciência e Tecnologia de Biomedicina do Semiárido Brasileiro [Biomedicine in the semi-arid region of Brail](#)

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<http://www.ibisab.ufc.br>

Instituto Nacional de Ciência e Tecnologia de Biotecnologia Estrutural e Química Medicinal em Doenças Infecciosas (INBEQMeDI) [Structural biotechnology and chemical medicine in infectious diseases](#)

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Instituto Nacional de Ciência e Tecnologia Brasil Plural (IBP) [Pluralism in Brazil](#)

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Instituto Nacional de Ciência e Tecnologia de Catalise em Sistemas Moleculares e Nanoestruturados
molecular catalysis and nanostructured systems

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Instituto Nacional de Ciência e Tecnologia de Células-Tronco e Terapia Celular
Stem-cell and cellular therapy

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Instituto Nacional de Ciência e Tecnologia de Células-Tronco em Doenças Genéticas Humanas
Stem-cell and genetic disorders in humans

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http://www.cnpq.br/programas/inct/_apresentacao/inct_doencas_geneticas.html

Instituto Nacional de Ciência e Tecnologia de Ciência Animal
Animal science

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Instituto Nacional de Ciência e Tecnologia em Ciência da Web
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http://www.cnpq.br/programas/inct/_apresentacao/inct_ciencia_web.html

Instituto Nacional de Ciência e Tecnologia sobre Comportamento, Cognição e Ensino
Behaviour, cognition and education

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Instituto Nacional de Ciência e Tecnologia de Controle Biorracional de Insetos/Pragas

Insect and pest biocontrol

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Instituto Nacional de Ciência e Tecnologia para o Controle das Intoxicações por Plantas Toxic plant control

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Instituto Nacional de Ciência e Tecnologia para Convergência Digital (INCoD) Digital convergence

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Instituto Nacional de Ciência e Tecnologia para Diagnóstico em Saúde Pública Diagnosis in public health

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Instituto Nacional de Ciência e Tecnologia para Doenças Tropicais (INCT-DT) Tropical diseases

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Instituto Nacional de Ciência e Tecnologia para Educação, Desenvolvimento Econômico e Inserção Social

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Instituto Nacional de Ciência e Tecnologia de Energia e Ambiente [Technology and environment](#)

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Instituto Nacional de Ciência e Tecnologia de Energias Renováveis e Eficiência Energética [Energética da Amazônia \(INCT-EREEA\) Renewable energies and energy efficiency in Amazonia](#)

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Instituto Nacional de Ciência e Tecnologia de Engenharia da Irrigação [Irrigation science](#)

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Instituto Nacional de Ciência e Tecnologia para Engenharia de Software (INES) [Software engineering](#)

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Instituto Nacional de Ciência e Tecnologia Translacional em Medicina (INCT-TM) [Translational medicine](#)

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José Alexandre Crippa (Vice-coordenador)
Contatos
Flavio Kapczinski: kapcz@terra.com.br
José Alexandre Crippa: jcrippa@fmrp.usp.br
Jaime Hallak: jhallak@fmrp.usp.br
http://www.ufrgs.br/inct_tm/

Instituto Nacional de Ciência e Tecnologia em Tuberculose (INCT-TB) [Research on tuberculosis](#)

Diógenes Santiago Santos (Coordenador)
Afrânio Lineu Kritski (Vice-coordenador)
Contatos
E-mail: diogenes.santos@pq.cnpq.br
http://www.cnpq.br/programas/inct/_apresentacao/inct_tuberculose.html

Instituto Nacional de Ciência e Tecnologia de Vacinas (INCTV) [Immunisation science](#)

Ricardo T. Gazzinelli (Coordenador)
Mauricio M. Rodrigues (Vice-coordenador)
Contatos
Endereço: Av. Augusto de Lima nº 1.715, Barro Preto – 30190-002 Belo Horizonte - MG
Telefone: 55 31 3349-7774 ou 3349-7767
E-mail: inctv@cpqrr.fiocruz.br
<http://www.cpqrr.fiocruz.br/inctv>

Instituto Nacional de Ciência e Tecnologia Herbário Virtual da Flora e dos Fungos [Virtual herbarium of flora and fungi](#)

Leonor Costa Maia (Coordenadora)
Maria Regina Barbosa (Vice-coordenadora)
Contatos
Centro de Ciências Biológicas – Universidade Federal de Pernambuco
Av. Prof. Nelson Chaves, s/nCidade Universitária
50670-420 - Recife/PE
Fone/fax: 55-81-21268865
leonorcmiaia@pq.cnpq.br; leonorcmiaia@yahoo.com.br
<http://inct.florabrasil.net>

Instituto Nacional de Ciência e Tecnologia para Web (inWeb) [Web systems](#)

Virgílio Almeida (Coordenador)
Nívio Ziviani (Vice-coordenador)
Contatos
Departamento de Ciência da Computação
Universidade Federal de Minas Gerais
Av. Antônio Carlos, 6627 - Pampulha
Belo Horizonte, MG - Brazil
31270-010
Email: virgilio@dcc.ufmg.br
<http://www.inweb.org.br>

Instituto Nacional de Ciência e Tecnologia de Análise Integrada do Risco Ambiental [Integrated analysis of environmental risk](#)

Paulo Hilário Nascimento Saldiva (Coordenador)
Thais Mauad (Vice-coordenador)
Contatos
Faculdade de Medicina da Universidade de São Paulo
Departamento de Patologia - Laboratório de Poluição
Atmosférica Experimental – LIM05
Av. Dr. Arnaldo, 455 1º Andar – sala 1220
São Paulo – SP – Brasil
01246-903
Tel: 0055 (11) 3061-7214; 0055 (11) 3061-8521
E-mail: info@inaira.org
<http://www.inaira.org/>

Instituto Nacional de Ciência e Tecnologia para Avaliação de Tecnologia em Saúde (IATS) [Technology assessment in health sciences](#)

Flávio Danni Fuchs (Coordenador)
Carisi Anne Polanczyk (Vice-coordenadora)
Contatos
Juliana Juk
Ramiro Barcelos, 2350 – prédio 21
contato@iats.com.br
<http://www.iats.com.br>

Instituto Nacional de Ciência e Tecnologia em Fisiologia Comparada (INCT-FisC) [Comparative physiology](#)

Augusto Shinya Abe (Coordenador)
Contatos
asabe@rc.unesp.br
http://www.cnpq.br/programas/inct/_apresentacao/inct_fisiologia_comparada.html

Instituto Nacional de Ciência e Tecnologia em Nanodispositivos Semicondutores (DISSE) [Semiconductor nanodevices](#)

Patrícia Lustoza de Souza (Coordenadora)

Paulo Sérgio Soares Guimarães (Vice-coordenador)
Contatos
LabSem/CETUC/PUC-Rio
Rua Marquês de São Vicente 225
Rio de Janeiro, 22451-900
Telefone: + 55 21 35271155
E-mail: contato@disse.org.br
<http://www.disse.org.br>
http://www.cnpq.br/programas/inct/_apresentacao/inct_nanodispositivos_semicondutores.html

INCT das Doenças do Papilomavirus HPV diseases

Luisa Lina Villa (Coordenadora)
Contato: contato@incthpv.org.br
http://www.cnpq.br/programas/inct/_apresentacao/inct_hpv.html

INCT de Eletrônica Orgânica Organic electronics

Roberto Mendonça Faria (Coordenador)
Contato:
rfaria@pq.cnpq.br; faria@if.sc.usp.br
<http://www.ineo.ifsc.usp.br/>

INCT de Energia, Ambiente e Biodiversidade Environment and Biodiversity

José Carlos Verle Rodrigues (Coordenador)
<http://www.inct.cienam.ufba.br/>

INCT de Estudos do Espaço Space science

Sergio Frascino Muller de Almeida (Coordenador)
José Renan de Medeiros
Contato: frascino@pq.cnpq.br; frascino@ita.br; renan@dfte.ufrn.br

INCT de Geociências da Amazônia Geosciences of the Amazon region

Roberto Dall'Agnol (Coordenador)
Contato: roberto.dallagnol@pq.cnpq.br; robdal@ufpa.br
http://www.cnpq.br/programas/inct/_apresentacao/inct_geociencia_amazonia.html

INCT Interface Cerebro-Máquina Brain-machine interface

Miguel Angelo Laporta Nicolelis
Contato: [Sidarta Ribeiro – ciencia@natalneuro.org.br](mailto:Sidarta.Ribeiro@ciencia@natalneuro.org.br)
http://www.natalneuro.org.br/sobre_iinn/index.asp

INCT de Madeiras da Amazônia Timbers of the Amazon region

Niro Higuchi (Coordenador)
Contato: (92) 3643-1843; 3643-1900 – niro@pq.cnpq.br; higuchin@uol.com.br
http://www.cnpq.br/programas/inct/_apresentacao/inct_madeiras_amazonia.html

INCT de Obesidade e Diabetes Obesity and diabetes

Mario Jose Abdalla Saad (Coordenador)
Contato: (19) 3521-8950 – msaad@pq.cnpq.br; msaad@fcm.unicamp.br; inct.od@gmail.com
http://www.cnpq.br/programas/inct/_apresentacao/inct_obesidade_diabetes.html

INCT de Reabilitação do Sistema Encosta-Planície Rehabilitation of plain-hill border systems

Willy Alvarenga Lacerda (Coordenador)
Contato: willy@pq.cnpq.br; willyl@globo.com
<http://www.geoheco.igeo.ufrj.br/reageo/index.htm>

Appendix 9: Rede Federal de Educação Profissional, Científica e Tecnológica and CONIF

Rede Federal de Educação Profissional, Científica e Tecnológica

Federal Network of Professional education, Science and Technology Institutions

Searchable directory available on the home page: <http://redefederal.mec.gov.br/>

CONIF

Conselho Nacional das Instituições da Rede Federal de Educação Profissional, Científica e Tecnológica

National Council of the Federal Network of Professional Education, Science and Technology Institutions

<http://www.conif.org.br>

Key institutions by region

Full list available at: <http://painel.mec.gov.br/academico/mapaSupProf/acao/P>

See map following listing of key institutes.

Southeast

INSTITUTO FEDERAL ESPÍRITO SANTO

Endereço:

Av. Rio Branco, 50, Santa Lúcia, Vitória/ES

Telefone: (27)3357-7500

E-mail: gabinete@ifes.edu.br \ **Site:** www.ifes.edu.br

INSTITUTO FEDERAL NORTE DE MINAS GERAIS

Endereço: Rua Gabriel Passos, 259, Centro, Montes Claros/MG

Telefone: (38) 3201-3050

E-mail: gabinete@ifnmg.edu.br

Site: www.ifnmg.edu.br

INSTITUTO FEDERAL SUDESTE DE MINAS

Endereço: Av. Francisco Bernardino, 165, Centro, Juiz de Fora/MG

Telefone: (32)3257-4100

E-mail: gabinete@ifsudeste.edu.br

Site: www.ifsudeste.edu.br

INSTITUTO FEDERAL MINAS GERAIS

Endereço: Av. Professor Mário Werneck, 2590, Bunitis, Belo Horizonte/MG

Telefone: (31)2513-5103

E-mail: gabinete@ifmg.edu.br

Site: www.ifmg.edu.br

INSTITUTO FEDERAL SUL DE MINAS

Endereço: Rua Ciomara Amaral de Paula, 167, Medicina, Pouso Alegre/MG

Telefone: (35)3449-6150

E-mail: reitoria@ifsuldeminas.edu.br

Site: www.ifsuldeminas.edu.br

INSTITUTO FEDERAL TRIÂNGULO MINEIRO

Endereço: Av. Dr. Randolpho Borges Júnior, 2900, Univerdecidade, Uberaba/MG

Telefone: (34)3326-1102

E-mail: gabinete.reitoria@iftm.edu.br

Site: www.iftm.edu.br

CENTRO FEDERAL DE EDUCAÇÃO TECNOLÓGICA DE MINAS GERAIS

Endereço: Avenida Amazonas, 5253, Nova Suíça, Belo Horizonte/MG

Telefone: (61)3319-7006

E-mail: gabinete@adm.cefetmg.br

Site: www.cefetmg.br

RIO DE JANEIRO

INSTITUTO FEDERAL RIO DE JANEIRO

Endereço:

Rua Pereira de Almeida, 88, Praça da Bandeira, Rio de Janeiro/RJ

Telefone: (21) 3293-6060

E-mail: gr@ifrj.edu.br

Site: www.ifrj.edu.br

INSTITUTO FEDERAL FLUMINENSE

Endereço: Rua Dr. Siqueira, 273, Parque Dom Bosco, Campos dos Goytacazes/RJ

Telefone: (22)2737-5619

E-mail: reitoria@iff.edu.br

Site: www.iff.edu.br

CENTRO FEDERAL DE EDUCAÇÃO TECNOLÓGICA CELSO SUCKOW DA FONSECA

Endereço: Av. Maracanã, 229, Maracanã, Rio de Janeiro/RJ

Telefone: (21)2568-8890

E-mail: caique@cefet-rj.br

Site: www.cefet-rj.br

COLÉGIO PEDRO II

Endereço: Campo de São Cristóvão, 177 – 3º andar, São Cristóvão, Rio de Janeiro/RJ

Telefone: (21)3891-1009

E-mail: dggab@cp2.g12.br

Site: www.cp2.g12.br

SÃO PAULO

INSTITUTO FEDERAL SÃO PAULO

Endereço: Rua Dr. Pedro Vicente, 625, Canindé, São Paulo/SP

Telefone: (11)3775-4501

E-mail: gab@ifsp.edu.br

Site: www.ifsp.edu.br

South

INSTITUTO FEDERAL PARANÁ

Endereço:

Rua Victor ferreira do Amaral, 306- Tarumã. Curitiba/PR

Telefone: (41)3535- 1660

E-mail: gabinete@ifpr.edu.br

Site: www.ifpr.edu.br

INSTITUTO FEDERAL SUL-RIO-GRANDENSE

Endereço:

Rua Gonçalves Chaves, 3798 - Pelotas/RS

Telefone: (53) 3309-1750

E-mail: reitoria@ifsul.edu.br

Site: www.ifsul.edu.br

INSTITUTO FEDERAL FARROUPILHA

Endereço: Rua Esmeralda, N° 430 - Faixa Nova - Camobi - Santa Maria/RS

Telefone: (55) 3218-9808

E-mail: gabreitoria@iffarroupilha.edu.br

Site: www.iffarroupilha.edu.br

INSTITUTO FEDERAL RIO GRANDE DO SUL

Endereço:

Rua General Osório, 348, Centro - Bento Gonçalves/RS

Telefone: (54) 3449-3300

E-mail: gabinete@ifrs.edu.br

Site: www.ifrs.edu.br

INSTITUTO FEDERAL CATARINENSE

Endereço: Rua das Missões, Ed. Missões, N° 100 Bairro Ponta Aguda - Blumenau/SC

Telefone: (47)3331-7800

E-mail: ifc@ifc.edu.br

Site: www.ifc.edu.br

INSTITUTO FEDERAL SANTA CATARINA

Endereço: Rua Quatorze de Julho, 150 - Coqueiros - Florianópolis/SC

Telefone: (48)3877-9000

E-mail: reitoria@ifsc.edu.br

Site: www.ifsc.edu.br

Centre West**DISTRITO FEDERAL****INSTITUTO FEDERAL BRASÍLIA**

Endereço: SGAN 610, Bloco A, Brasília/DF

Telefone: (61) 2103-2139

E-mail: reitoria@ifb.edu.br

Site: www.ifb.edu.br

INSTITUTO FEDERAL GOIÁS

Endereço:

Avenida Assis Chateaubriand, nº 1658, Setor Oeste, Goiânia/GO

Telefone: (62) 3612-2200

E-mail: gabinete@ifg.edu.br

Site: www.ifg.edu.br

INSTITUTO FEDERAL GOIANO

Endereço:

Rua 88, N° 280, Caixa Posta N° 50, Setor Sul, Goiânia/GO

Telefone: (62) 3605-3600

E-mail: gabinete@ifgoiano.edu.br

Site: www.ifgoiano.edu.br

INSTITUTO FEDERAL MATO GROSSO DO SUL

Endereço: Rua Ceará, 972, Santa fé, Campo Grande/MS

Telefone: (67)3042-5197

E-mail: reitoria@ifms.edu.br

Site: www.ifms.edu.br

INSTITUTO FEDERAL MATO GROSSO

Endereço: Av. Senador Filinto Muller, 953, Cuiabá/MT

Telefone: (65) 3616-4105

E-mail: gabinete@ifmt.edu.br

Site: www.ifmt.edu.br

5. [Cendotec](#) Centro Franco-Brasileiro de Documentação Técnica e Científica
6. [CIEE](#) Council on International Education Exchange – International Study Programs
7. [CIES](#) Council for International Exchange of Scholars
8. [CNPq](#) Conselho Nacional de Desenvolvimento Científico e Tecnológico
9. [CONAHEC](#) Consortium for North American Higher Education Collaboration
10. [CRUB](#) Conselho de Reitores das Universidades Brasileiras
11. [DAAD](#) Serviço Alemão de Intercâmbio Acadêmico
12. [EAIE](#) European Association for International Education
13. [Edufrance](#) Educação na França
14. [FAPESP](#) Fundação de Amparo à Pesquisa do Estado de São Paulo
15. [FASID](#) Fundação de Desenvolvimento Internacional de Ensino Superior do Japão
16. [IAU](#) International Association of Universities
17. [LASPAU](#) Academic and Professional Programs for the Americas
18. [MRE](#) Ministério de Relações Externas
19. [OEA](#) Organização dos Estados Americanos
20. [OEI](#) Organização dos Estados Iberoamericanos

Appendix 11: Principal federal research bodies in Brazil

Status	Name	Website	N ^o . of Labs	Priorities
Public sector institution under the Ministry of Agriculture	Brazilian Agricultural Research Corporation (Empresa brasileira de pesquisa agropecuária – EMBRAPA)	embrapa.br	41	Sustainable agricultural production, generation and processing of food in tropical climates.
Public sector institution under the Ministry of Health	Oswaldo Cruz Foundation (Fundação Oswaldo Cruz – FIOCRUZ)	fiocruz.br	15	Health, medicine in relation with the environment, ecology, education, epidemiology, microbiology, parasitology, clinical research, virology, anthropology and sociology.
Public sector institutions under the Central Administration of the Ministry of Science and Technology (MCT)	Brazilian Centre for Physics Research (Centro Brasileiro de Pesquisas Físicas – CBPF)	cbpf.br	17	Nanosciences, nanotechnologies, information technology, nuclear energy.
	Renato Archer Research Centre (Centro de Pesquisa Renato Archer – CenPRA)	cenpra.gov.br	12	Information technology and innovation.
	Centre for Mineral Technology (Centro de Tecnologia Mineral – CETEM)	cetem.gov.br	10	Environmental and recycling technology, industrial minerals and rocks, sustainable management of mining resources.
	Brazilian Institute of Science and Technology Information (Instituto Brasileiro de Informação em Ciência e Tecnologia – IBICT)	ibict.br		Relations between information, science, technology, culture and society.
	National Institute for Research on the Amazon Region (Instituto Nacional de Pesquisas da Amazônia – INPA)	inpa.gov.br	6	Technologies for the development of the Amazon.
	National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais – INPE)	inpe.br	5	Space science, atmosphere, meteorology, space technology.
	National Institute for Semi-Arid Environments (Instituto Nacional do Semi-Arido – INSA)	insa.gov.br		New technologies for development of semi- arid environments.
	National Institute of Technology (Instituto Nacional de Tecnologia – INT)	int.gov.br		Work with the private sector to develop research in the fields of chemistry, materials technology, industrial engineering, energy and environment.
	National Observatory (Observatório Nacional – ON)	on.br	10	Astronomy, astrophysics, geophysics.
	Museum of Astronomy and Related Sciences (Museu de Astronomia e Ciências Afins – MAST)	mast.br	2	History of science and scientific education.
	Pará Emilio Goeldi Museum (Museu Paraense Emilio Goeldi – MPEG)	museu-goeldi.br	3	Generation and dissemination of knowledge on the natural and socio-cultural systems of the Amazon Basin.
	National Astrophysics Laboratory (Laboratório Nacional de Astrofísica – LNA)	lna.br	4	Development of competitive and innovatory tools.
	National Laboratory for Scientific Computing (Laboratório Nacional de Computação Científica – LNCC)	lncc.br	8	Biosystems, bioinformatics.
	Brazilian Synchrotron Light Laboratory (Associação brasileira de tecnologia Luz Síncrotron – LNLS)	lnls.br	7	Synchrotron light, micro and nanotechnology, molecular biology.
	Private-sector Social Organizations under supervision of the MCT	Mamirauá Institute for Sustainable Development (Instituto de Desenvolvimento Sustentável Mamirauá – IDSM)	mamiraua.org.br	5
	National Institute of Pure and Applied Mathematics (Instituto de Matemática Pura e Aplicada – IMPA)	impa.br		Algebra, fluid dynamics, mathematical economics, probability.
	National Research and Education Network (Rede Nacional de Ensino e Pesquisa – RNP)	rnp.br		Advanced networks.
	Nuclear Technology Development Centre (Centro de Desenvolvimento da Tecnologia Nuclear – CDTN)	cdtn.br		Scientific and technological research in the nuclear field.
Units of the National Commission for Nuclear Energy (Comissão Nacional de Energia Nuclear – CNEN)	Regional Centre of Nuclear Sciences (Centro Regional de Ciências Nucleares – CRCN)	crn.gov.br		Bring the benefits of nuclear energy to the Nord and Nordeste regions.
	Institute of Nuclear Energy (Instituto de Engenharia Nuclear – IEN)	ien.gov.br		Scientific and technological research and development in the nuclear field.

	Institute for Energy and Nuclear Research (Instituto de Pesquisa Energéticas e Nucleares – IPEN)	ipen.br		Scientific and technological research and development in the nuclear field
	Institute of Radioprotection and Dosimetry (Instituto de Radioproteção e Dosimetria – IRD)	ird.gov.br		Monitoring services for the use of ionising radiations and nuclear technology

Source: <http://rbi.ie/research-in-brazil/public-sector-research-organizations/>

Appendix 12: Sector Funds

The 17 sector funds of FINEP cover:

- **Aeronautics:** Stimulates investments in R&D in aeronautical engineering, electronics and mechanics;
- **Agribusiness:** Stimulates capacity building in the areas of agronomy, veterinary medicine, biotechnology, economics and agricultural sociology;
- **Amazon:** Promotes R&D activities in the Amazon region;
- **Waterways:** Supports technological innovation in the areas of water transportation;
- **Biotechnology:** Strengthens the national infrastructure of biotechnology research; stimulates the creation of companies based on biotechnology;
- **Energy:** Stimulates R&D on new alternative energy;
- **Space:** Stimulates R&D on space technology in the areas of communication, remote sensing, meteorology, agriculture, oceanography and navigation;
- **Hydro:** Improves the utilization of water resources, through actions in the areas of water resources management, water conservation in urban areas, sustainability in Brazilian environments and integrated and efficient use of water;
- **Information technology:** Promotes strategic R&D projects in information technology;
- **Infrastructure:** Cross-sector fund to support infrastructure;
- **Minerals:** Stimulates research on mineral exploration;
- **Oil and Natural Gas:** Stimulates innovation in the supply chain of oil and natural gas;
- **Health:** Supports capacity building in the areas of public health, pharmaceuticals, biotechnology, etc;
- **Transportation:** Funds R&D in transport engineering, materials, logistics, equipment and software;
- **“Yellow Green”:** Cross-topic support of innovation and technology transfer, aimed at improving university-industry interactions;
- **Telecommunications (FUNTEL):** Supports R&D in telecommunications.

Source: UNESCO Sistemas nacionales de ciencia, tecnología e innovación em América Latina y el Caribe 2010

Appendix 13: Directory and contact details for the FAPS

BR		FAP State Chapter				
Common Two Letter	State	Acronym	Address	Phone	email	Website
Abbreviation						
DF	Distrito Federal	FAPDF	SCS Qd. 08, Bloco B50, 6º andar, Ed. Venâncio 2000, Brasília/DF - CEP: 70.333-900	+55 (62) 3201-8081	fap@fap.df.gov.br	www.fap.df.gov.br
GO	Goiás	FAPEG	Rua Dona Maria Joana (travessa da AV. 83) -Qd.12 - n° 150 - Setor Sul - Goiânia - GO -74.083-114	+55 (62) 3201-8081	fapeg@fapeg.go.gov.br	www.fapeg.go.gov.br
MT	MatoGrosso	FAPEMIG	Rua Raul Pompéia, nº 101, Bairro São Pedro - Belo Horizonte - Minas Gerais CEP 30.330-080	(31) 3280-2100	ci@fapemig.br	www.fapemig.br
MS	Mato Grosso do Sul	FUNDECT	R. São Paulo 1436, Vila Célia, Campo Grande – MS - CEP 79.010-050	(67) 3316-6700	secretaria@fundect.ms.gov.br	<NONE>
AC	Acre	FAPAC	Av. Nações Unidas, nº 78 - Bairro Bosque - Rio Branco – AC CEP 69.900-715	(68) 3215-2552	gabinete.fapac@ac.gov.br	www.fapac.ac.gov.br
AP	Amapá	FAPEAP	Av. Pe. Júlio Maria Lombaerd, 1614 - sala A2 - Santa Rita, Macapá - AP CEP 68900-030	(96) 3223-8580	fapeap@fapeap.ap.gov.br	www.fapeap.ap.gov.br
AM	Amazonas	FAPEAM	Travessa do Dera, S/N – Flores - Manaus – Amazonas CEP 69058-793	(92) 3878-4000	decon@fapeam.am.gov.br	www.fapeam.am.gov.br
PA	Pará	FAPESPA	Travessa Nove de Janeiro n°1686. Bairro: São Bráz, Belém/PA - CEP:66.060.575	(91) 3323-255-	fapespa@fapespa.pa.gov.br	www.fapespa.pa.gov.br
RO	Rondônia	FAPERÓ	Av. Pres. Dutra, 3004 -Bairro Caiari - Porto Velho, RO - CEP 76801-156	(69) 3216-5127	fundacaorondonia@gmail.com	www.fapero.ro.gov.br
RR	Roraima	<NONE>				
TO	Tocantins	FAPT	Praça dos Girassóis - CEP: 77001-002	(63) 3218-6340	ci@fapt.to.gov.br	www.fapt.to.gov.br
AL	Alagoas	FAPEAL	Rua Melo Moraes, 354, Centro, Maceió-AL CEP 57020-330	(82) 3315-2200	atendimento@fapeal.br	www.fapeal.br
BA	Bahia	FAPESB	Rua Aristides Novis, n.º 203, Colina de São Lázaro – Federação, Salvador - BA. CEP: 40210-720	(71) 3116-7600	<NONE>	www.fapesb.ba.gov.br
CE	Ceará	FUNCAP	Avenida Oliveira Paiva, número 941 – Bairro Cidade dos Funcionários, Fortaleza CEP: 60.822.130	(85) 3101-2170	imprensa@funcap.ce.gov.br	www.funcap.ce.gov.br
MA	Maranhão	FAPEMA	Rua Perdizes, Quadra 37, N° 05, Jardim Renascença. CEP: 65075-340	(98) 2109-1400	gabinete@fapema.br	www.fapema.br
PB	Paraíba	FAPESQ	Rua Emiliano Rosendo Silva, S/N, Bodocongó, Campina Grande-PB CEP 58.429-690	(83) 3333-2600	fapesq@fapesq.rpp.br	www.fapesq.rpp.br
PE	Pernambuco	FACEPE	Rua Benfica, 150, Bairro da Madalena - Recife - PE CEP 50720-001	(81) 3181-4600	asscom.facepe@facepe.br	www.facepe.br

PI	Piauí	FAPEPI	Av. Odilon Araújo, 372, Piçarra, Teresina-PI CEP: 64017-280	(86) 3216-6090	fapepi@fapepi.pi.gov.br	www.fapepi.pi.gov.br
RN	Rio Grande do Norte	FAPERN	BR 101 - KM 94 - Centro Administrativo s/n - Lagoa Nova - Natal/RN CEP 54064-901	(84) 3232-1728	fapern@rn.gov.br	www.fapern.rn.gov.br
SE	Sergipe	FAPITEC	Travessa Baltazar Gois, n° 86, Edifício Estado de Sergipe (Maria Feliciano), 10° Andar, Centro - Aracaju/SE - CEP: 49010-907	(79) 3259-3007	fapitec@fapitec.se.gov.br	www.fapitec.se.gov.br
PR	Paraná	FA: Fundação Araucária	Av. Comendador Franco, 1341 - Jardim Botânico - CEP: 80215-090 - Curitiba - PR	(41) 3218-9250	assessoriajornalistica@hotmail.com	www.faprr.pr.gov.br
RS	Rio Grande do Sul	FAPERGS	Av. Borges de Medeiros, 261 / 2º andar - Centro Histórico, Porto Alegre - RS - CEP: 90020-021	(51) 3221-4922	fapergs@fapergs.rs.gov.br	www.fapergs.rs.gov.br
SC	Santa Catarina	FAPESC	Parque Tecnológico ALFA - Rodovia SC 401, Km 01	(48) 3665-4802	fapesc@fapesc.sc.gov.br	www.fapesc.sc.gov.br
ES	Espírito Santo	FAPES	Av. Fernando Ferrari nº 1080, Ed. América Centro Empresarial - Torre Norte - 7º andar, Mata da Praia - Vitória - ES - CEP: 29066-380	(27) 3636-1851	diore@fapes.es.gov.br	www.fapes.es.gov.br
MG	Minas Gerais	FAPEMIG	Rua Raul Pompéia, nº 101, Bairro São Pedro - Belo Horizonte - Minas Gerais CEP 30.330-080	(31) 3280-2100	ci@fapemig.br	www.fapemig.br
RJ	Rio de Janeiro	FAPERJ	Av. Erasmo Braga, 118 - 6º andar - Centro - Rio de Janeiro - RJ - CEP: 20.020-000	(21) 2333-2000	presidencia@faperj.br	www.faperj.br
SP	São Paulo	FAPESP	Rua Pio XI, 1500 - Alto da Lapa - CEP 05468-901 São Paulo-SP	(11) 3838-4000	fapesp-imprensa@fapesp.br	www.fapesp.br

Appendix 14: Detailed Summary of Existing Scottish HEI Links with Brazil

University of Aberdeen

The University of Aberdeen receives students from Brazil as part of the Science without Borders programme, mainly in the energy area but also in Life Science and Medicine. From what was a relatively piecemeal relationship with Brazil until a few years ago, and more specific to particular disciplines than as a university, Aberdeen has realised the need to have a stronger focus on Brazil, particularly in the energy work it is doing within the Energy Institute.

As a result it hired a member of staff with particular responsibility for Brazil, Daniela Tolezano Madureira, College Development Officer In the College of Physical Sciences. It is also looking to hire an additional Dean with responsibility for Latin America, including Brazil in order to give the market a more strategic focus.

Daniela's job (since Feb 2014) is funded by both the university and BG Group. The main focus is energy in a broad sense. Her role is to manage the relationships that have already been started, and to broaden out and develop business across the Brazil sector as a whole. This has included trying to map all the one-to-one relationships the university has with Brazil, and of who has interests in working with Brazil. It also involves visiting Brazil to show the universities there what Aberdeen has and where they might work collaboratively together. The university is focusing on Brazilian universities in energy and ones where there are individual academic relationships. The plan is to build agreements and larger projects from these relationships from the bottom up. It also involves meeting with oil and gas companies in Brazil in order to secure corporate funding.

The university would like to be much more involved in Brazil, but it recognises that much of the money that is in Brazil for research has to stay in Brazil. It is looking at how it can engage with strong partners there to access the funds available through the energy levy, and what the potential models are for accessing this resource. Options open to institutions include; setting up a university Institute in Brazil (although this would then compete directly with Brazilian institutions), working with other UK institutions in this way to share the risk, or going in with a Brazilian partner. All institutions are now looking at this challenge.

Links and activities

In September 2012 a £4.5 million research partnership was signed between BG Group, the University of Aberdeen and University of Rio Grande do Sul. Funded by BG and CNPq the cooperation agreement involves a total of 25 PhD students and post doc researchers from the UK and Brazil spending time in each other's countries on joint projects. The goal is to contribute to research and development, with a focus on technology for the Brazilian oil and gas industry. The agreement, which is part of Brazil's Science without Borders programme, was the first of its kind to be concluded between the Brazilian government, a UK university and an industrial sponsor.

The University of Aberdeen is partnering with Cambridge and Oxford in the UK, and with the Federal Universities of Rio Grande do Norte, Pernambuco and Bahia, University of Brasilia, and the Brazilian National Observatory, in a project aiming to improve the understanding of the geological evolution and resource potential of the onshore Parnaíba Basin in Northeast Brazil.

The most active collaborations between Aberdeen and Brazil are via the College of Physical Sciences, especially related to geosciences and energy.

The university has a number of staff with extensive experience in Brazil. Case studies and detailed examples of some of these links and activities at Aberdeen are illustrated below:

School of Engineering Links to Brazil:

Ben Kneller, Chair in Geology & Petroleum Geology

Ben has a relationship with BG Group, the partner with Petrobras in the first pre-salt discovery, and has relationships with a number of Brazilian institutions. In addition to the above BG partnership agreement Ben helped set up two BG projects with two universities in Brazil; UFRGS and Unisinos. Both these were funded by BG from its special participation levy.

Dr Jefferson Gomez

- Proposal submitted to ITF (" Multiphase Flows in Carbonate Fractured Reservoirs: Strategies for Remediation and Mitigation of Water Production") involving UoA, Imperial College London, Narvik University College (Norway) and the Brazil's Federal University of Rio de Janeiro (UFRJ), Federal University of Parana (UFPR) and State University of Santa Cruz (UESC). The proposal was not successful on funding but we are still looking for other financial venues to enable the collaborative project.
- Collaboration with the Applied Mathematics and Simulation Group at the State University of Santa Cruz (UESC): we are developing a proposal to be submitted to the Brazilian Research Council as part of the Science without Borders Programme (mobility and research). The proposal, "Developing an Integrated Advection-Diffusion-Reactive System Modelling Framework for Environmental and Industrial Flow Applications", has already received local funding to support UG (Aug/2014) and MSc research students (Mar 2015) and is focusing on designing a model framework for parallel computation. The proposal will be submitted in December 2014 and will allow Brazilian academics to spend one year (Sabbatical) in SoE/UoA. The initial development of the model led to a conference paper presented in July 2014.
- Collaboration with the Computational Methods and Simulation Laboratory (LASME) at the Federal University of Rio de Janeiro (UFRJ). This is a long-term collaboration (7+ years) on thermo-hydraulics models and simulations in pressurised water nuclear reactors (PWR). This has led to a few conference papers and MSc-research students' supervision.
- Recently initialised collaboration with the Computer Science Department at the State University of Londrina (UEL). We are currently writing a proposal to be submitted to the Brazilian research council on platform-independent framework for symbolic solvers of ODEs.

Professors Marian Wiercigroch and Ekaterina Pavlovskaja

Professor Marcelo A. Savi – Federal University of Rio de Janeiro

Joint research in the area of dynamics of systems with SMA, drilling and pendulum dynamics.

A number of joint publications:

- Divenyi, S., Savi, M.A., Wiercigroch, M. and Pavlovskaja, E.E. (2012) Drill-string vibration analysis using non-smooth dynamics approach. *Nonlinear Dynamics* 70(2), 1017-1035.
- de Paula, A.S., Savi, M.A., Wiercigroch, M. and Pavlovskaja, E.E. (2012) Bifurcation control of pendulum dynamics. *International Journal of Bifurcation and Chaos*, 22(5), 1250111 (14 pages).
- Sitnikova, E., Pavlovskaja, E.E., Wiercigroch, M. and Savi, M.A. (2010) Vibration reduction of the impact system by an SMA restraint: Numerical studies, *International Journal of Nonlinear Mechanics* 45, 837 - 849.

Professor Carlos Mazzilli – University of Sao Paolo

Joint research in the area Nonlinear Dynamics of Offshore Risers, a joint project funded by the Royal Society of London, 2006-08.

- Mazzilli, CEN., Sanches, CT., Baracho Neto, OGP., Wiercigroch, M. & Keber, M. (2008). 'Non-linear modal analysis for beams subjected to axial loads: Analytical and Finite Element solutions'. *International Journal of Non-Linear Mechanics*, vol 43, no. 6, pp. 551-561.

Dr Aline S. de Paula – University of Brasilia

Joint research in the area of pendulum dynamics – see publication above.

Dr David Vega-Maza Lecturer in Engineering, CCS

David's Discipline is Carbon Capture and Storage and he works closely with oil and gas companies. In addition to Brazil David has a lot of experience in Mexico.

Professor Dubravka Pokrajac and Dr David Vega-Maza

Professor Marcelo de Lemos – Instituto Tecnológico de Aeronáutica (ITA), Sao Jose dos Campos

Joint research on the application of double-averaging methodology to porous media flows. So far this work has produced the following joint publications:

Pokrajac, D. and de Lemos, M.J.S. (2014) Spatial averaging over a variable volume and its application to boundary layer flows over permeable walls, *ASCE Journal of Hydraulic Engineering*, in press

Pokrajac, D. and de Lemos, M.J.S. (2014) Double Averaging Methodology and double-decomposition: description of intermediate scales between a fluid particle and a catchment, Invited Commentary *Hydrological Processes*, in press

Pokrajac, D. and de Lemos, M.J.S. (2014) A coupled surface-subsurface model of overbank flood flow and air entrapment in a permeable floodplain, in the Proceedings of the International Conference River Flow 2014, Lausanne

Joint grant application, through Industry Technology Facilitator to Agência Nacional do Petróleo, D. Pokrajac and D. Vega-Maza: *Smart Water Flooding for Deep Offshore Reservoirs in Brazil*. Generated a lot of interest, shortlisted but not funded. ITF is looking for an alternative model to fund the project.

Case Study. An example of the challenges faced when trying to set up corporate collaboration in Brazil:

David is about to start a large \$4m project with 3 multinational oil and gas companies, corporately funded by the 1% research levy in Brazil through ITF (Industry Technology Facilitator) a consultancy and research company, a not-for-profit organisation, between universities in the UK and countries looking for expertise in the energy sector. It puts researchers in the UK in touch with universities and oil and gas companies in Brazil (<http://www.itfenergy.com/>). Companies with a problem in Brazil (always including Petrobras) get in touch with ITF, and they launch a call to researchers in the UK.

A number of problems were encountered:

- Due to the levy, all the money has to stay in Brazil. But the expertise and the equipment to be used for the research are not in Brazil, but in the UK. For a \$4m project you'd need to spend \$40m recreating all these in Brazil, which you can't do.
- You need Brazilian researchers, but it is hard to get them.
- English is a problem. You need academics here who can speak Portuguese.
- The political situation in Brazil is quite unstable – e.g. Petrobras has had a financial downturn and drop in share price and is having a corruption scandal, so Petrobras is subject to public funding cuts now, has less money and has stopped its investment in oil and gas for 2 years. An unstable environment where suddenly projects can be frozen, or you are asked for bribes etc.

David is currently unsure if the project will happen or not.

[School of Social Sciences links to Brazil](#)

Professor Christian W Haerper

Christian did the World Values Survey in Brazil in spring 2014. He was the PI of this study in Brazil. It was a social science face-to-face survey with 1 500 respondents, representative for the society of Brazil. The research partner in Brazil was Dr Henrique Carlos de Oliveira de Castro, Universidade Federal do Rio Grande do Sul.

Andrea Oelsner,

Andrea is a Senior Lecturer, Politics and International Relations. She holds a British Academy/Leverhulme Trust small research grant in collaboration with a Brazilian colleague from the Pontifical Catholic University in Rio (BRICS Policy Centre/PUC-Rio), Dr Monica Herz, and an Argentine colleague (University Torcuato Di Tella), Dr Rut Diamint, on new security configurations in Latin America. As part of this project, they have held two one-day workshops with academic experts on the matter and diplomats. The first workshop took place in Rio last December and the second one in London in October. They are in the process of preparing their outputs - policy papers, a special issue proposal to a journal, and report.

Department of Computer Science links to Brazil

Wamberto Vasconcelos

A Brazilian national, Wamberto has been collaborating in Brazil for around 10 years. He has had ongoing collaborations with Brazilian institutions, especially the University of Sao Paulo (Institute of Mathematics and Statistics) and the Pontifical Catholic University of Rio Grande do Sul (Institute of Informatics). These collaborations consist of writing joint papers and visiting one another – the visits have been sponsored by, for instance, the Royal Society of Edinburgh (to host a colleague from Sao Paulo in Aberdeen) and CAPES (to fund his visit to Rio Grande do Sul, last May). They have also submitted joint proposals to the European Commission but these have not been successful. He has also interacted with the research unit of Petrobras. He has been trying to engage in joint research with Ambipetro (www.ambipetro.com.br <<http://www.ambipetro.com.br>>) in Rio de Janeiro and is in close contact.

University of Abertay

The University of Abertay has had to date no engagement with Brazil for various reasons. Prior to its international office being set up a year ago, responsibility for partnerships at different levels was devolved to the separate Schools. This has now changed.

The university's traditional recruitment markets have been China, India and Nigeria. This is also changing and it is engaging now additionally with the US and Asian markets such as Malaysia and Singapore. Last year Abertay had discussed links with a Brazilian institution, but the timing and level of investment required were not right then. The university is open to potential engagement with Brazil, and it would like to participate in the SwB programme, both at UG and PhD levels, which has not yet been possible. This will however depend on the criteria going forward as it did not meet them institutionally last time.

Abertay concentrates on niches where it can make an impact, rather than on general areas which compete with larger or more traditional universities. Possible areas of interest and collaboration include the Creative Industries and well as some of its other flagship areas of specialism:

- Computer games.
- Digital security.
- Renewable energy. Mainly wind, also wind and water.
- Business School which focuses on oil and gas *management* and *accounting* (and is therefore different to RGU's or Aberdeen's engineering focus).
- Food and nutrition – research and teaching provision.

It is also interested in looking at joint and dual degrees, at UG and PG level. The university's heads of school are very keen to get engaged with Brazil, but it has had to focus as resources are limited.

As a consequence of the above, the university's knowledge of where the corresponding university skills in Brazil reside, and of funding opportunities in Brazil is also limited.

University of Dundee

Brazil is a key priority within the University of Dundee's international strategy and one of the top 3 regions designated by the university for partnerships. It has spent around 3 years developing its understanding and collaboration with Brazil. It is working to increase SwB recruitment and has a number of small research projects that it is hoped will develop into bigger things over time.

The university has around 6-8 MoUs spread geographically in Sao Paulo, Brasilia, and also in the north of Brazil, which it has deliberately targeted in addition to the south, to try to move into areas where there is less university activity and where there are areas of deprivation. In the main these are health and life sciences focused, and include:

- A joint project in research with University of Ceara which includes research, staff exchange, PhD supervision. A grant application is being submitted for early next year for funding.
- A project with Police in Rio and the Scottish Policing College.
- A CAPES PhD programme in Life Sciences. Funded by CAPES, through SwB. This identifies Dundee as a destination of choice for PhD students of life sciences.
- A lot of co-authored publications in Life sciences (especially plant sciences), and concentrated around USP.
- Many individual PIs have significant links especially in Life Sciences and drug discovery, and especially with USP.

The university considers the SwB programme to have been a major success this year. It has around 50 students this year on SwB and around 80 students from Brazil in Dundee now, spread across the faculties. There are few students from Brazil received outside this. The university has had high-level engagement with SwB in London and has developed good links with Tania Lima there. In specific response to CAPES it now provides English language provision ahead of study, and has a 'Friends of Brazil' group to support students.

The university wants to encourage more of its staff and students to be more mobile to Brazil, but believes that this first requires the conditions to be created through research partnerships. These require leaders on both sides, and there is a dependency on a senior academic leader in the field to help the university work its way through what level of detail/focus is required to be effective.

The main challenges the university has found in its engagement with Brazil to date include:

- The complexity of navigating the landscape in the market
- Having the capacity to understand this environment
- Working out how to match fund opportunities there
- Challenges on the learning and teaching side e.g. with joint degrees

University of Edinburgh

Brazil is a priority for the University of Edinburgh in its international strategy. With its high quality institutions Brazil was identified as the most suitable base for the university's Latin America Office (which launched in 2013 but is not yet functioning in Brazil) and is therefore a key priority for the university in its commitment to the region as a whole. Dalinda Perez-Alvarez is the Director of Edinburgh's Office of the Americas. The office helps the university to be well positioned to develop and support partnerships across academia, business and industry in Latin America. The initial focus is to support its partnerships in the region and to provide intelligence and support for staff across the university who are seeking to develop their collaboration with the region. The university recognises that it is still at quite an early stage of development regarding Brazil, and the current focus is on running workshops aimed at getting academics together from institutions on both sides. A number of MoUs have been signed since Dalinda started almost 2 years ago. The new office launch events included an academic workshop with a climate change and environment focus. The seminar was entitled "Brazil and Latin America in a Fast Changing World: Society, Environment and Technology for the 21st Century". This seminar was jointly organized with UKTI and FAPESP.

Edinburgh recognises that in recruitment terms, Brazil is a long-term market. It sees Brazil as an important partner and as host to some very strong research opportunities. It considers the Newton Fund as now being key, and it is keen to better understand how to take advantage of the 1% levy, an opportunity which it has not yet properly exploited, although it is working with Petrobras there.

The key ongoing areas of the university's activity in Brazil are:

- Geosciences – covering climate, energy, environment etc
 - There are important research links in oil and gas, for example through the agreement it has with Petrobras.
 - Water and water management issues, not only in rivers but in mega cities and their water problems. Sao Paulo is one of them.
- Public Health/Public Sciences.
 - Working with University of Sao Paulo. Will be holding a public health seminar in November with University of Sao Paulo on urban diseases and other health issues that both institutions are working on.

Plus Future/Smart Cities, social and political sciences and some work around education and language training (ongoing discussion with University of Sao Paulo).

With its regional presence the university is able to look widely at a number of interest areas where it believes it has strengths such as those included in the Chevening Scholarships areas of focus.

http://www.chevening.org/partnerships/our_partners/chevening_edinburgh_partnership

The following are the stated list of existing links between Edinburgh and Brazil.

Types	Partner Institutions	UoE Subject Areas	Start Date	End Date
Research Collaboration	Universidade Estadual do Norte Fluminense , Universidade Federal de Santa Catarina	GeoSciences		
Research Collaboration, Staff Mobility, Student Mobility	UNESP Rio Claro	GeoSciences		
General MOU	University of Sao Paulo	a wide range of subjects	26/01/2012	25/01/2017
General MOU	Unicamp, UFRJ, UNEF / LENEP Macae, UFSC	GeoSciences		
Research Collaboration	Fundacao de Amparo a Pesquisa do Estado de Sao Paulo (FAPESP)	Science	19/06/2012	18/06/2017
General MOU	UFRGS	a wide range of subjects	12/12/2013	11/12/2018
Student Mobility	Universities UK	a wide range of subjects	28/06/2012	27/06/2016

SwB

To date Edinburgh has worked via the researcher strand only but may look at further work with the broader SwB programme in the future. It is actively promoting Newton Fund opportunities. Outside of SwB Edinburgh has a small number (3-5) UG students from Brazil, and it engages in exhibitions, recruitment trips, and virtual information sessions in the market.

The university is keen to investigate the opportunities for dual/joint degrees and would like more corporate engagement.

Two case studies below illustrate examples of Edinburgh's current collaborations with Brazil.

Case Study 1: Dr Antonio Ioris, from the School of Geosciences (<http://www.geos.ed.ac.uk/homes/aioris/>) is a human geography lecturer with a particular interest in the political aspects of the interconnections between nature and society. He has conducted extensive research in several countries, including Scotland, Brazil, Bolivia, Peru and Portugal, using water management as an entry point into the political ecology of the allocation, use and conservation of natural resources. Dr. Ioris has a long experience with policy-making and project management in the UK (at the Scottish Environment Protection Agency), in Chile (at the UN Economic Commission for Latin America and the Caribbean) and in Brazil (at the Ministry of the Environment). Main areas of research are related to the search for environmental justice in the urban and regional context and the multiple obstacles faced by marginalised communities to influence environmental decision-making. New research projects deal with the politics of agriculture modernisation and the expansion of agribusiness. He is a Fellow of the Royal Geographical Society (FRGS) and is Director of the MSc programme on Environment and Development. His main research interests are:

Environment and society

- Material and symbolic basis of nature production
- Values, meanings and cooperation around environmental problems
- Creativity and agency of marginalised communities and civil society organisations

Political economy of development and environmental regulation

- The questionable sustainability of plans, programmes and policies
- Controversies related to new legislation and regulation (e.g. of water, agriculture, climate change, etc.)
- Effectiveness and contradictions of policy instruments (e.g. charges and incentives)

Environmental politics

- Conflicts over the allocation, use and conservation of sociomateriality
- Environmental justice and political ecology in rural, urban and peri-urban areas
- The changing geography of the state: between modernity(ies) and post-modernity(ies)

He has received the following research grants for work connected with Brazil.

- "Water Resources Management in the Hydrographic Region of the Guanabara Bay", funded by FAPERJ. Role: international PI. 2014-2016.
- "Water as the Frontier of Agribusiness: Politico-Ecological and Socio-Economic Connections from Farms to Global Markets";, funded by the Newton Fund via FAPESP-British Council. Role: UK PI. 2004-2015.
- "Agribusiness, Water Resources and Institutional Complexity: Integrated Assessment Sustainability", funded by CAPES/Brazil through the Programme "Science Without Borders". In collaboration with various academics at the Federal University of Mato Grosso (UFMT); case studies in the Cuiaba River Basin and in the Pantanal. 2013-2016.

Dr Ioris has been involved in collaborative projects with Universidade Estadual do Norte

Fluminense & Universidade Federal de Santa Catarina, and with UNESP Rio Claro.

The sustainability of the Pantanal, South America, Dr. Antonio Ioris

As a geography lecturer at Aberdeen University and research fellow at the Aberdeen Centre for Environmental Sustainability, I have been particularly interested in the territorialisation of water policies and the formulation of environmental management strategies. Between 2000 and 2002, I had been the water manager of the Pantanal Programme, an initiative of the Brazilian government that aimed to restore and preserve this extraordinary biome in the heart of South America. The Pantanal is a huge complex of savannah wetlands with a floodplain area of 160,000 km² in the upper reaches of the Paraguay River, in Brazil, Paraguay and Bolivia. Therefore, when a colleague from The Macaulay Institute visited the Pantanal in 2007, we immediately started to dream about an innovative research project on water conservation.

With the funding I have received for this International Network I have been able to put this dream into reality. I will be working with Brazilian and European colleagues to explore river modelling, informed data capture and scenario analysis that can be used in a participatory way to inform future policy-making in the Pantanal, a highly vulnerable ecosystem of global significance.

Despite limited scientific information, there is strong evidence of a growing degradation of the Cuiab River, an important tributary of the Paraguay River, which will be the focus of this international network. The main environmental pressures in the catchment are related to diffuse water pollution from agriculture and urban sewage and road runoff from the capital (Cuiab city, with 525,000 inhabitants) and other neighbouring urban settlements. Additional threats include the canalisation of the river system for large-scale navigation, mercury inputs from gold mining, deforestation to enhance cattle grazing in upstream plateaus and in wetland areas, hydroelectric damming and the construction of a major road across the floodplains.

The network will develop a conceptual model and facilitate the subsequent development of a process model of the hydrology and pollutant hydrochemistry of the region. The research will be jointly conducted by an interdisciplinary team of scientists to assess cumulative impacts and synergies. A sequence of workshops will be organised, one per year, to stimulate the dialogue between scientists, local stakeholders and practitioners. At the end of three years, we expect to have a better understanding of how the multiple pressures on the Cuiabá River impact on sustainability of water management and the ecological stability of wetland areas in the Pantanal.

Dr. Antonio Ioris Aberdeen University

Dr Ioris was awarded an International Network Grant by The Leverhulme Trust in June 2008; providing £14,600 over 36 months.

Case Study 2: Charlie Jeffery is Senior Vice Principal; Professor of Politics in the School of Social and Political Science.

Charlie Jeffery Heads New ESRC Project with Brazil "Place Inequality": A UK-Brazilian Collaboration http://www.sps.ed.ac.uk/about/news/2010/new_uk-brazilian_collaboration , <http://www.esrc.ac.uk/my-esrc/grants/RES-238-25-0007/outputs/Read/0f68963b-61b7-4add-b17f-de1afe043a53>

Charlie Jeffery of Politics/IR will be working with Marta Arretche of the Center for Metropolitan Studies, Sao Paulo on a project titled "Exchanging Data and Skills on 'Place Inequality': A UK-Brazilian Collaboration". The project is part of the ESRC 'Pathfinder' initiative designed to prompt collaboration around data and methods between UK and Brazilian researchers.

This collaboration focuses on 'place inequality', that is variations from place to place within states in the availability of public services to citizens (as sometimes described in the UK as a 'postcode lottery' in the availability of services). Both Brazil and the UK are (part-) decentralised states in which there are significant place inequalities, around which there are high profile policy debates. But the debates pull in different directions. In Brazil there is a strong policy commitment to reduce place inequalities which is in some respects very

effective, for example in the territorial evenness of spending on healthcare and education (though in other public services there are wide territorial variations). In the UK there has been an intense debate for more than a decade about the appropriate ways of governing the four component nations of the UK, which has responded to popular demand for (further-reaching) devolution outside England. The devolution reforms that have resulted have widened place inequalities between the nations of the UK. Only more recently has the question of how far (or whether) to address, and/or limit, place inequalities been a focus of policy debate. These differences in the direction of debate are reflected in differences in research focus and the data collected to support research. In Brazil there are very extensive datasets on the revenues and expenditures of sub-state governments, measures taken by central government to equalise revenues and direct spending in some policy fields, and the impacts on policy outcomes from place to place. In the UK such data is in part flawed, in part simply unavailable, at the level of the four component nations of the UK. These data gaps have become increasingly significant as a series of official enquiries by UK and devolved institutions have considered and recommended measures to limit (or equalise) place inequality.

But in the UK there is extremely good public attitudes data on what citizens want central and devolved governments to be responsible for, and what they think about variations in services from place to place. There is growing evidence that they see sub-state, rather than statewide scales of government - Scotland, or England, rather than the UK as a whole - as the relevant one for the pursuit of equality (implying that some level of place inequality across the UK as a whole is seen as legitimate). In Brazil - a large and diverse country - there have been very few attempts to disaggregate public attitudes at sub-state scales and explore whether citizens there favour the current statewide or alternative sub-state approaches to (in)equality in the provision of services. That data gap is becoming significant as growing attention is focused on place inequalities not addressed by current measures, and as 'loser' places and social groups challenge current patterns of distribution of revenues and spending.

This collaboration is based on a simple premise. Brazilian and UK research communities each have areas of expertise that are less well developed in the other research community. The collaboration is designed to exchange the expertise that UK researchers have in exploring citizen understandings of place inequality with the expertise Brazilian researchers have in measuring the effects of equalisation policies. It will raise mutual awareness of the types of data needed to explore particular aspects of place inequality, exchange expertise in the methods of analysis of that data, and enable researchers in each country to engage more effectively with emerging policy debates in areas where data is underdeveloped. It will do so through a structured programme of exchange over twelve months involving both senior researchers and cohorts of early career researchers, and carried out through data trawls, workshops and immersion visits by the early career researchers.

Edinburgh Napier University

Edinburgh Napier University receives undergraduate students on the SwB programme. Although the university is not on the International Committee we spoke to Dr Karen Diele, a Senior Lecturer within the School of Life Sport and Social Sciences and a Reader in Marine Science. She has research links with Brazil where she has been working for over 15 years in the field of Mangrove Ecology - see also <http://www.napier.ac.uk/faculties/health-life-social-sciences/life-sport-social/Pages/International-outlook.aspx> and <http://www.napier.ac.uk/research/Pages/Research.aspx>

Karen started working with Napier in 2012 only, so some of the below listed are pre-Edinburgh Napier activities. Karen did her PhD and Postdoc research in Brazil and her involvement with Brazil includes:

- Co-ordinated a large German-Brazilian research project on-site in Northern Brazil; has published extensively with Brazilian colleagues and/or on research performed in Brazil
- Supervised/co-supervised 4 Brazilian PhD students (one received a “merit honour” from the Brazilian Research Council for exceptional good work), 2 MSc and 2 TCC students, from 3 different Universities
- Supervised a Brazilian Postdoc student funded by Science without Borders Programme for 6 months in 2013/2014, he worked with Karen at our new AquaLab on Sighthill Campus
- Nominated overseas partner of Brazilian led Science without Borders project submitted in September 2014, status: pending
- Received a small Carnegie Grant as well as a Napier Competitive Research Grant for research stays in Brazil in 2013 and 2014
- Has active (informal individual) partnerships with research colleagues from multiple Brazilian institutions, the main ones listed below
 - Federal University of Pará (UFPA)
 - Federal University of Sergipe (UFS)
 - Sao Paulo State University (UNESP)
 - Federal University of Paraná (UFPR)
 - ICMBIO CEPENE (Centro de Pesquisa e Gestão de Recursos Pesqueiros do Litoral Nordeste / ~ Center for Research and Sustainable Fisheries Resource Management of the Coastal NorthEast)

Two case studies illustrating the types of engagement Karen has had are included below:

Case Study 1

<http://www.napier.ac.uk/research/Documents/11048%20Napier%20Impact%20Document%20rfw.pdf>

Edinburgh Napier Conserving Brazilian Mangrove Crabs: Sustaining a national delicacy

In the tropics, mangrove forests that grow at the interface between land and sea form highly productive ecosystems that protect coastlines and support a rich fish and invertebrate fauna. In Brazil, caranguejo-uçá, a large intertidal mangrove crab, is a key species in this system, as it consumes most of the fallen leaves, thereby retaining energy and accelerating nutrient cycling. This crab is also a national delicacy, and there’s a lucrative market supplied by local crab fishermen.

Dr Karen Diele of Edinburgh Napier has been leading projects studying the ecological role and the artisanal fishery of these crabs. Her research has been instrumental in improving fisheries legislation aimed at the sustainable use of this species, which is also a major interest to fishermen and the wider community. Working with Dr Anders Schmidt and other Brazilian collaborators, she has now established a North to South mass mate-searching monitoring network to help improve the temporal placement of crab capture bans.

My research addresses many applied questions that are of direct interest to the local people. Working closely with fishermen and managers to deliver solutions has been a great experience,” said Dr Karen Diele. Her work has also featured on a popular documentary series on Brazilian TV and on BBC Radio 4, taking the message beyond the immediate area

of her study sites in Northern and Northeastern Brazil.

Case Study 2

<http://www.napier.ac.uk/faculties/health-life-social-sciences/life-sport-social/Pages/International-outlook.aspx>

Visit of Postdoctoral fellow Dr. Anders Schmidt from Brazil leading to further international research collaborations between Scotland, Brazil, Italy and Saudi Arabia

There are other interesting things happening in Brazil than just the World Cup, and some involve Edinburgh Napier University. In April 2014, a new grant from the Brazilian Government was approved to support a network coordinated by Dr. Karen Diele from the School of Life, Sport and Social Sciences, Edinburgh Napier University and Dr. Anders Schmidt from CEPENE Station (Center for Research and Management of Fishery Resources of the Northeastern Coast), in Bahia/Brazil.

The aim of the network, called REMAR, is to monitor the synchrony of reproductive activities of intertidal crabs (e.g. the harvested mangrove crab *Ucides cordatus*) with geophysical cycles in order to improve the correct placement of temporal fisheries bans. The new grant provides resources to enable the crab monitoring at three coastal locations in Brazil, supplementing the national network of currently nine researchers spread from north to south along the Brazilian coast. The network was initiated 2013, when Anders Schmidt stayed for six months at Edinburgh Napier University, funded by the Brazilian Science Without Borders programme, to work with Karen Diele. Besides the joint development of the crab monitoring network, Anders and Karen converted the Universities 25m² constant-temperature room to a fully functional experimental laboratory, the AquaLab.

The facility now holds tidal tanks that allow the study of entrainment and dis-entrainment of tidal and light-dark cycles, such as of the European green crab *Carcinus maenas*, one of the top invasive species of the world. Together with Dr. Marco Fusi, a physiologist from the University of Milan, Italy and King Abdullah University of Science and Technology, Saudi Arabia, the three conducted experiments studying the behaviour and physiology of shore crabs during their simulated transport as stowaways in ship ballast water to the warmer waters of South America.

The initial results were exciting and sparked the planning of more comprehensive experiments comparing the plasticity of internal biological rhythms and activity patterns of different crab species from Scotland, Brazil and Saudi Arabia. For the Brazilian researcher Anders Schmidt accompanied by Tatiana Gomes, who helped as a research assistant in the AquaLab, the fruits of the Post-Doctoral stay at Edinburgh Napier University are maturing into a long-term collaboration. Anders says "in addition to the great professional experience at Edinburgh Napier University, I carry wonderful memories back home regarding the culture, friendliness and natural beauty of Scotland"

University of Glasgow

The Americas is a key market for Glasgow, and it recruited from there in 2008 before SwB.

- It has spent a lot of time building a profile.
- There is a new Dean for the Americas – Rosa Greaves (law) who is a Portuguese speaker and understands how the market operates.
- Glasgow is looking at partnership development across whole of Latin America and Brazil, looking to capitalise on SwB.
- Brazil has overtaken Canada as Glasgow's 2nd biggest market in the Americas after the US.

Brazil is a priority market for the University of Glasgow. It has relationships with 5 or 6 Brazilian institutions at different levels, as well as SwB, principally in the Law School (active in student mobility/UG exchanges with the University of Sao Paulo, and PUC Sao Paulo) and the College of Medical, Veterinary and Life Sciences which has MoUs.

139 students have enrolled on SwB in 2013/14 and there are currently 6 PhD students. There is only a small amount of direct recruitment from Brazil outside of this. The university does not do any joint or double degrees, and as most activity has been through SwB, there have been no significant regulatory problems in dealing with the market.

A number of research and teaching links exist with universities such as the State University of Sao Paulo (UNESP), University of Sao Paulo (USP), Federal University of Rio de Janeiro (UFRJ), PUC-Sao Paulo (Catholic University of Sao Paulo) and the University of Brasilia (UnB).

Responsibility for the University of Glasgow's activity in Brazil is shared between the International Dean (Latin America): Prof. Rosa Greaves (School of Law) and Senior International Officer (Americas): Rory McDiarmid (Recruitment & International Office). Both will be visiting Brazil in November 2014 to coincide with British Council hosted exhibitions in Sao Paulo, Rio de Janeiro and Belo Horizonte.

Summary of Key Partnerships (University wide agreements)

Institution	Background
UNESP	<ul style="list-style-type: none"> • Undergraduate exchange programme • Agreement signed in 2012. • Typically 1-2 students per year exchanged in academic areas across both institutions. • Wider memorandum of understanding between UNESP & GU expected to be signed in Nov 2014
UFRJ	<ul style="list-style-type: none"> • Memorandum of understanding signed in 2012. • MoU supports a variety of potential activity including staff and student mobility and research and teaching collaboration. • Undergraduate exchange agreement is currently being negotiated.
UnB	<ul style="list-style-type: none"> • Memorandum of understanding signed in 2013. • MoU supports a variety of potential activity including staff and student mobility and research and teaching collaboration. • March - May 2014: UnB visiting Law professor based at Glasgow.

Summary of College level partnerships

Institution	Background
USP	<ul style="list-style-type: none"> • Undergraduate exchange in the School of Law. • Agreement signed in 2013. • At present the exchange supports only incoming students to Glasgow with the School of Law accommodating one student per semester.

PUC-Sao Paulo	<ul style="list-style-type: none"> • Memorandum of agreement with the School of Law allowing final year LLB students at PUC to complete one year LLM programmes at GU. • Agreement signed in 2014.
Fiocruz	<ul style="list-style-type: none"> • Memorandum of Understanding between Fiocruz (a medical research institute based in RJ) and Glasgow's College of Medical, Veterinary & Life Sciences. • Agreement signed in 2013

Research Collaborations

Institution	Background
UNESP	<ul style="list-style-type: none"> • Active research collaborations in Geographical & Earth Sciences and Veterinary Sciences • Current focus on veterinary clinical biochemistry and pathology • <p><i>Lead academic: Prof David Eckersall (david.eckersall@glasgow.ac.uk)</i></p>
UFRJ	<ul style="list-style-type: none"> • Ongoing research in the field of molecular parasitology. • Bid being prepared through the Newton Fund to focus on 'Research and Training in the Neglected Tropical Disease Leishmaniasis.' <p><i>Lead academic: Prof Jeremy Mottram (Jeremy.mottram@glasgow.ac.uk)</i></p>
USP	<ul style="list-style-type: none"> • 17 active research collaborations. Current areas include: Infection, Immunity and Inflammation; Immunology; Cardiovascular and Medical Sciences; Health and Wellbeing; Dentistry; Medicine; Cancer Sciences; Psychology.

Priorities for Market Visit (November 2014)

Institution/Organisation	Actions
FAPESP	As the largest of the state research funding agencies, GU is prioritising a direct agreement to support research initiatives expected to be signed during the market visit in November.
UFRJ	GU delegation including representatives from the Colleges of Science & Engineering & the college of Medical, Veterinary & Life Sciences will visit UFRJ to explore future areas of collaboration. Priority areas include; Nanotechnology, Earth Science, Physics, Engineering, & Molecular & Cellular Biology.
UFMG (Minas Gerais)	Delegation to visit UFMG to deliver guest lecture on Earth Sciences and discuss potential for University wide MoU.

Below are two examples of how Glasgow University is working and engaging with Brazil, and the challenges and successes it has experienced in doing so.

Case Study 1. The Wellcome Trust Centre for Molecular Parasitology

Background: The Wellcome Trust Centre for Molecular Parasitology (WTCMP) studies basic biological processes that are of fundamental importance to parasites. The research is primarily funded by the Wellcome Trust, MRC, BBSRC and EU. An important country for the WTCMP's internationalisation agenda is Brazil, which is endemic for many parasites, included a variety of neglected tropical diseases. WTCMP has been developing partnerships with Brazilian Institutions for research and training in molecular parasitology. The main partners are Universidade Federal do Rio de Janeiro (UFRJ), Universidade Federal do Minas Gerais (UFMG) and Fiocruz (Science and technology Health Institute).

Successes

- The University of Glasgow has signed a Memorandum of Understanding with Universidade Federal do Rio de Janeiro; UFRJ (2012), which facilitates exchange of

staff and students. 6 UFRJ students and postdocs have studied molecular parasitology in Glasgow.

- Dr Lima (UFRJ) and Professor Mottram (University of Glasgow) have a long-standing research collaboration that has resulted in 8 joint publications on molecular parasitology. Their joint research has been supported by grants from the EU and Wellcome Trust.
- Dr Lima and Professor Mottram co-ordinated a two-week Advanced School in Molecular and Cellular Parasitology held at UFRJ in 2014. Six invited speakers from the University of Glasgow lectured on the course and 2 early career researchers from Glasgow provided hands-on training in state-of-the-art techniques of genetic manipulation of protozoa.
- Professor Mottram was awarded Special Visiting Researcher Status from CNPq at UFRJ (2014-2017)
- Dr Lima was awarded Honorary Senior Lecturer Status at the University of Glasgow (2014-2017) and is a co-supervisor of a Glasgow PhD student.
- Professor Mottram lectured at Fiocruz/Rio de Janeiro (2013) and Fiocruz/Salvador (2014), promoting the signing of a Memorandum of Agreement. This agreement facilitates exchange of staff and students and provides a framework for joint projects. Two postdocs from the Mottram laboratory will teach on a two week bioinformatics course at Fiocruz/RJ in Nov 2014.
- Professor Meissner is co-organising a workshop on “hot topics of apicomplexan research” at Fiocruz/Curitiba 27-31 October 2014. Professor Meissner has collaborative projects with Dr Avila at Fiocruz/Curitiba.
- Dr McCulloch has a long standing collaboration with Professor Carlos Machado (UFMG) resulting in 6 publications and the exchange of 4 early career researchers, in addition to Professor Machado taking a 6 month sabbatical in Glasgow.
- The high profile of WTCMP researchers in Brazil has resulted in 10 Brazilian Early Career Researchers training in Glasgow in the last 12 months (7 different Universities/Research Institutes from 7 States).

Challenges: Sustained partnerships require funding. The majority of funding for researcher mobility has been provided by Brazilian funding agencies (Science without Borders, CNPq, CAPES). This has resulted in a large number of early career researchers travelling to Glasgow to train (usually between 6 months and 1 year). Few early career researchers travel from the UK to Brazil. There are few funding opportunities for longer-term (e.g. 3-5 year) joint research projects – the RCUK-FAPESP bilateral agreement for research grants is restricted to partnerships within the State of Sao Paulo. Most of our partnerships are outside Sao Paulo state and are therefore not eligible. Language is not an issue.

Case Study 2

The second case example has not been funded yet but it does illustrate one funding call and some of the challenges/benefits of international collaboration generally.

Background

Researchers from the University of Glasgow have recently submitted a joint bid with colleagues from the Universities of Campinas and Sao Paulo to undertake a 3-year research project analyzing widening participation policies and activities.

The joint bid was submitted to this call <http://www.esrc.ac.uk/funding-and-guidance/funding-opportunities/30827/fapesp-esrc-nwo-joint-call-for-proposals-on-sustainable-urban-development.aspx> <<http://www.esrc.ac.uk/funding-and-guidance/funding-opportunities/30827/fapesp-esrc-nwo-joint-call-for-proposals-on-sustainable-urban-development.aspx>>

Summary of the project

The project, ‘Governing the participation of disadvantaged groups in higher education:

Widening access interventions (WIDEN)', will comparatively analyse widening participation policies and activities in the state of Sao Paulo, Brazil (Sao Paulo) and in Scotland, United Kingdom (Glasgow) in order to find out 'what works' in 'what contexts' by taking into account the national, regional and local path dependency of policy implementation. Despite a wealth of existing data it continues to remain a 'black box' which policies and actions can actually achieve a better participation and educational attainment of underrepresented groups in higher education.

The added value of the international cooperation

The composition of the research team is uniquely constructed to provide synergy of the various areas of expertise rather than overlap. Both Prof Barbara Kehm and Dr. Oscar Valiente, University of Glasgow have cooperated with members of the Brazilian team in previous projects so that it is assured the cooperation of the two teams will work well. Cooperation and distribution of work will basically be arranged over the three stages of the project. At the beginning of the project close cooperation with frequent communication via email and skype is required to establish a common framework. During the phase of the field work each team will collect information in its own region on the basis of the agreed common framework with regular exchanges between the two teams. In the final phase frequent and intensive communication is required to carry out the comparison, finalise the results and arrive at common conclusions and recommendations. Over the course of the project three face-to-face meetings of the whole project team are envisaged. In addition, each group will guide and nurture one postdoc researcher throughout the project as a central member of the project team.

Future collaborations

Finally, long term scientific collaboration will be very likely to develop as Dr. Valiente and Prof. Kehm are already now collaborating with members of the Brazilian team in the framework of other projects. This implies that both teams share the same international networks and are likely to recruit each other on future occasions for international and comparative work.

Challenges

Typically international collaborations require more time and are more intensive in making the cooperation work and develop a common language and understanding. However, the results are usually more rewarding and more insightful as benchmarks can be established and trajectories of successful policy interventions can be determined without neglecting national and local contexts.

Glasgow Caledonian University

Brazil is a priority market within Glasgow Caledonian University's internationalisation strategy. It has MoUs and strong partnerships with two Brazilian institutions:

- Universidade Federal do Rio de Janeiro (UFRJ). As well as creating a collaborative education relationship the memorandum will allow the universities to establish research links and staff and student exchanges. The relationship will focus on the School of Engineering and Built Environment, and URFJ's Centro de Tecnologia (COPPE).
- Universidade Federal de Rio Grande do Norte (UFRN). Research-based relationship plus some UG SwB students from UFRN each year

A further institutional MoU with Universidade Federal de Rio Grande do Sul (UFRGS) has been approved, to be signed over the next few weeks.

GCU receives around 40 UG students across the School of Health and Life Sciences, and the School of Engineering and Built Environment as part of the SwB programme. It has no PhD students. Most students come from the two above institutions but the relationship with them predates SwB and was originally faculty-led rather than recruitment.

Outside of SwB students from Brazil GCU participate in fairs 2 - 3 times per year. In Autumn 2014, Scottish Universities representing the Latin American Recruitment Group (LARG) will also have a collaborative approach to promoting Scotland as a study destination to Brazilian students.

The university has experienced no significant regulatory issues as most engagement has been through the established process and structure of SwB.

The focus areas for GCU in which it would be keen to develop research collaborations (and for any sector visit to the market) are:

School of Health and Life Sciences

Public Health

- Active Living
- Parenting and Family Support
- Substance Use and Misuse
- Sexual Health and Blood Borne Viruses
- Healthcare Associated Infection

Long-Term Conditions

- Diabetes and Biomedical Science
- Musculoskeletal Health
- Living with Stroke
- Healthy Ageing
- Applied Vision Research
- NMAHP Research Unit

School of Engineering and Built Environment

Engineering and Energy Systems

- Diagnostic Systems and Sensors
- Energy and Power Systems
- Design, Process and Manufacturing

Interactive and Communications Engineering

- Networks and Communications
- Interactive and Trustworthy Technologies
- Visual, Affective and Pervasive Systems

Sustainability in the Built Environment

- Sustainable Urban Environments
- Construction Management and Economics
- Environmental Technology and Management

The university is keen to see what happens in SwB Phase 2, in particular whether this will extend to some Humanities subjects so that it might be able to take its third school (Glasgow School for Business and Society) both UG and PhD programmes to the Brazil market.

It also has strong niche portfolios e.g. the suite of programmes under the British School of Fashion which it believes it could do well with and will actively look at itself.

Heriot-Watt University

There are many links between Brazil and Heriot-Watt University, with the strongest connections being through the Institute of Petroleum Engineering, which has for a long time had collaborations with Petrobras and other Brazil-based companies.

Brazil is a strategic priority for the university. It has a Brazil strategy group, a new initiative, whose role is to develop strategy and KPIs for the university's work in Brazil and to decide how the strategy is going to be funded and sustainable. The strategy for Brazil is research-led. Work is currently going on to map the universities and sectors it is working with in Brazil,

The university's recent activity in Brazil includes: a visit to the market by the Principal this year, agreements with FAPESP, UFRJ, USP and UNICAMP and involvement in the SwB Programme. Prof Patrick Corbett is BG Visiting Professor at UFRJ 2014-17. The HWU/FAPESP agreement is to set up workshops, once a year in the areas around geoscience, earth science, civil engineering, water/flooding, consequences of climate change.

Heriot Watt is pleased with its engagement with SwB. It recruited about 50 students this year, 25 last year, and 7 the year before. It is planning for growth in undergraduate student numbers across the different Schools:

	2012/13	2013/14	2014/15	2015/16	2017/18
EGIS	7	24	37	40	40
EPS	0	0	5	10	20
MACS	0	3	1	3	5
TEX	0	0	6	10	15
Total	7	27	49	63	80

HWU has engagement with a number of universities in Brazil, at both the university and individual schools level. These include active research projects in the School of Energy, Geoscience, Infrastructure and Society with URFJ and Unicamp, and USP and PhD student partnerships across a number of schools including the above, Engineering and Physical Sciences, and Mathematical and Computer Sciences.

Ongoing activities include workshops in Brazil and the UK to foster engagement (research proposals) with Brazilian Universities, to support and build on activities at the existing peer-peer level of engagement and to promote recruitment of Brazilian Research Staff and Students. It has prioritised removing barriers to joint PhD programmes by arranging agreements with strategic universities and engaging and supporting other universities (UK and abroad) in building research capacity in Brazil).

It is looking at research collaboration with a very particular area of focus in its oil and gas/petroleum engineering specialism:

- Enhanced oil recovery
- Carbonate Reservoirs (the university has a recent £4.4M project signed with Petrobras and BG Group, jointly with Edinburgh University under the banner of the International Centre for Carbonate Reservoirs).
- Oil field scaling
- Rain, rivers and reservoirs
- And in areas around life sciences.

The university believes that there are opportunities in these areas to collaborate with very high quality universities in Brazil.

Heriot-Watt has a number of corporate-funded projects in Brazil, for example:

- Enhanced Oil Recovery Lab – UFRJ funded by BG Group – 4 PhD's started 2014
- Carbonate reservoir upscaling – PhD cluster funded by BG Group – 10 PhD's/2 PDR HWU/UFRJ/UNICAMP/Aberdeen Univ – start 2016
- Oilfield Scaling Cluster – 6 PhD's UFPE/UFRJ funded by BG Group – start 2015

Areas highlighted for future projects include:

- Rain, Rivers, Reservoirs workshop (FAPESP application pending) – 2015 EGIS
- Carbonate Fracture Processes – SwB PhD application – 2015 EGIS
- Amphipod Ecotoxicity – PhD proposal – 2015 SLS

Heriot Watt is developing a HWU Brazil Research Academy to be one of the leading UK-Brazil Research Portfolios, and aims to attract significant student numbers from Brazil as a leading international institution in its areas of interest.

Although student recruitment outside SwB scheme is currently small, the university's research-led strategy is intended to lead to more recruitment from Brazil. It believes that research collaboration can lead to more teaching collaboration and study abroad or student exchange and recruitment to HWU's campus location. The university will be measuring the KPIs of success in specific programmes and broader academic activity around the research-led strategy which is at the core.

It has not looked at validation of degrees, but believes that MoUs are essential to enter into a collaboration in Brazil where agreements have to be signed off at a very high level (whereas in other markets it considers MoUs as less important).

The latest HWU Brazil research project has just been announced:

New Research Project at the International Centre of Carbonate Reservoirs (ICCR)

Hard-to-reach oil and gas reserves in the South Atlantic Ocean will be subject to an integrated and comprehensive study, thanks to a strategic research alliance between Heriot-Watt University, the University of Edinburgh, and the University of Oxford operating as the International Centre for Carbonate Reservoirs (ICCR).

Researchers at ICCR will create models of the subsurface environment off the Brazilian coast to build a clearer picture why oil and gas has accumulated and how the geological setting impacts the migration of oil and gas.

Experts estimate that about 50 billion barrels of oil, as well as natural gas resources, are held in an 800 km length of the Brazilian shelf, from Santa Catarina to Espirito Santo. Almost two-thirds of this area is not yet tendered for exploration.

Reaching the oil and gas is a major technical challenge, scientists say. It is buried under a thick layer of salt and several kilometres of limestone rock, under the seabed of the deep ocean. Emerging technologies and capabilities are enabling a closer look at the reserves.

ICCR researchers hope that discoveries made during the £4.4 million project, which will start in January 2015 thanks to funding by BG Group and Brazilian firm Petrobras, will help us to understand the geological environment in which oil and gas has accumulated, how oil and gas move within pores and cracks in the rock, and how this knowledge may aid our understanding of hydrocarbon reserves in other locations.

More than 60 per cent of the world's remaining oil and gas reserves are believed to be contained carbonate reservoirs. Currently, about four-fifths of these are unrecoverable, owing to limitations in technology.

ICCR was founded in 2011 as part of the Edinburgh Collaborative of Subsurface Science and Engineering (ECOSSE). It is the largest non-industrial carbonate research centre world-wide and directed jointly by Professor Rachel Wood of the University of Edinburgh's School of

GeoSciences and Professor Sebastian Geiger at the Heriot-Watt Universities Institute of Petroleum Engineering

Pat Corbett and Ted Henry are key people within HWU with Experience in Brazil.

Patrick Corbett has been visiting professor at UFRJ for BG Group for number of years, and is experienced in working with Brazilian universities. Funded by BG Group, will be working on projects there for the next 4 years and is in the middle of a 6 year project to build capacity between Scotland and Brazil. The following case studies illustrate some of these experiences of collaborating with Brazil.

Case Study 1

Fundamental Research - The 2014 BRASIL-HERIOT-WATT UNIVERSITY INTERNATIONAL WORKSHOP

The 2014 INTERNATIONAL WORKSHOP BRASIL-HERIOT-WATT UNIVERSITY held in UNICAMP on 9-11th April brought HWU researchers together with key Brazilian researchers to develop collaborative projects in underpinning science and technology as applied to energy, public health/food and environment. Building on existing collaborations and relationships, the workshop was opened by Principal Steve Chapman at UNICAMP, Campinas, Sao Paulo. The workshop offered an opportunity to build long term collaborations with universities – particularly in SP state. The exchange of experiences and expectations among the academics and researchers, companies, and government members was profitable in order to identify opportunities and obstacles, develop effective strategies and reach sustainable development in these areas, benefiting the whole society and consolidating the links between Heriot-Watt University and Brazilian universities and institutions.

The event succeeded in bring into discussion important topics concerning “**Science and technology for energy, environment and food/health**”, opening possibilities for Heriot-Watt researchers to engage with Brazilian companies, universities, and research centres in order to develop projects and technologies to fulfil the immediate needs in energy, sustainable development, environment and social issues.

Heriot-Watt committed to organising workshops on an annual basis for five years in an agreement signed with FAPESP. The planning of a conference for 2015 entitled “**Rain, Rivers and Reservoirs**” is being proposed for 2015 and will bring together geoscientists and civil engineers from UK and Brazil. Aberdeen University (Prof Hartley) are working in this area in Brazil and will be encouraged to participate. The objectives are to generate joint research projects for possibly Brazil and/or UK government (Newton Fund) or industry funding. Such contributions in support of the research agenda and researchers in Brazil are considered very valuable for the Brazilian academics and will be designed to help them meet their (and Brazil’s) international aspirations.

Case Study 2

Industrially-focussed research – Trans-National Research Projects in the Oil and Gas Industry

A track record of industry research was the key to establishing HWU’s current position in the Oil and Gas sector in Brazil. Building on successful research activities with BG Group and Petrobras and the secondment of Prof Patrick Corbett (funded by BG Group) to UFRJ, a number of research projects are developing with several Brazilian Universities (UFRJ, UNICAMP, UFPE, UFSC) in the three areas of carbonate reservoirs, increasing oil recovery and formation scale prevention. These projects will lead to ca.10 PhD students coming to HWU on a two plus two basis (i.e., Dual Degree Programs) over the next few years. Some of these projects are in close cooperation with Edinburgh University (Prof Wood) or Aberdeen University (Dr Neilson) in a clear spirit of collaboration leveraging complimentary expertise to maximum benefit. These projects have a long gestation time and are difficult to set in motion because of the relative novelty of such arrangements for Brazilian operating companies, Brazil government funding arrangements and the requirement to put in place novel University-University trans-national agreements. Negotiations across English/Portuguese academic institutions takes time and great persistence will hopefully be rewarded with a successful and

sustainable trans-national PhD programme with real partnership. Heriot-Watt's ambition is to establish an effective trans-national research capability in partnership with a relatively limited number of Brazilian Universities.

Ted Henry is a Reader in the School of Life Sciences and Director of the Zebrafish Research Facility at Heriot-Watt University. He is the main contact with experience in Brazil for the School of Life Sciences at HWU. Water systems and environmental systems is a key area for Brazil (waterways provide services which have value such as fisheries, transport, waste etc. If these systems deteriorate then these services are lost and there is an economic benefit to retaining the integrity of these systems). The below project was recently funded as the result of a 3-4 year process to get to this stage.

Case Study 3 <http://epaquatic.org/brazil-cnpq/>

Project title: Development of native aquatic organisms and innovative methods for investigating ecotoxicity of Brazilian surface waters

Principal Investigator: Profa. Dra. Gisela de Aragão Umbuzeiro (University of Campinas, SP, Brazil)

Pesquisador Visitante Especial: Dr. Ted Henry (Heriot-Watt University, UK)

Project period: July 2014- July 2017

Project abstract: Surface waters of Brazil contribute extremely important services that include provision of human water supplies; waters for use in industry, agriculture, and aquaculture; removal of waste, and generation of productive wild fisheries for commercial and recreational exploitation. Provision of these services is dependent on maintenance of water quality and ecological integrity of the aquatic environments. Inputs of anthropogenic pollutants are a major threat to aquatic resources and effective monitoring and protection of surface waters must include toxicity testing of representative organisms from these environments. For these test organisms to be most useful, standardized methods must be established and considerable information obtained on organism pathophysiology and toxicology. The objective of this project is to use state of the art techniques to develop standardized test methods and understanding of test organism pathophysiology for two critical organisms native to surface waters of Brazil. The first organism, the amphipod *Parhyale hawaiiensis*, is a benthic invertebrate that feeds on detritus and is vulnerable to toxicants that tend to accumulate on the surface of sediments [e.g., engineered nanomaterials (ENMs), to be investigated in this proposal], and the second is a native freshwater fish, the curimatá *Prochilodus lineatus*, which is a species of considerable ecological and economic (wild and aquaculture fisheries) importance. Curimatá are abundant in reservoirs and associated aquaculture facilities that are frequently exposed to blooms of toxic cyanobacteria [(e.g., *Microcystis* sp.), toxin microcystin (MC) to be investigated in this proposal] that are a prominent consequence of anthropogenic eutrophication of Brazilian surface waters. The proposed research will build on our existing international research collaboration (Brazil, UK, and US) and expertise with *P. hawaiiensis* and curimatá to apply advanced techniques of toxicogenomics and organism pathophysiology to enhance the ability to link toxicological mechanisms of action with higher order biological responses. Specifically, we will investigate toxicological responses to ENMs and to MCs, which are prominent toxicants of concern. This research will develop these two aquatic organisms as ecotoxicity test models to enhance the ability to monitor and protect Brazilian surface waters.

PI- Brazil (Aragão Umbuzeiro, G) **Henry**
TB: Pesquisador Visitante Especial)

MEC/MCTI/CAPES/CNPq/FAPS- Bolsa
Pesquisador visitante especial – PVE
2014(2014-2017)

434,942 R\$
(\$200,000)

Ted's experience of best practice to make projects work:

The above project came about as a result of several years of communication and visits for presentations with the Brazilian research partner who had mutual interests. One of their

Brazilian students then came to work here for the summer. Further trips to Brazil followed and a proposal was developed and funded by FAPESP for supervision of a Brazilian PhD student, including funding within it for the student to come for a year to HWU. The colleague in Brazil was the one who identified the funding available and initiated that. It has not been a problem submitting proposals to get funding – they have been receptive to everything we have proposed. Without the personal contact in Brazil and getting to know my partner well (e.g. feeling comfortable in their lab in Brazil etc) this kind of opportunity would not have been of interest.

Queen Margaret University

Queen Margaret University is not active in South America at all. Its only current work with Brazil is a speech research project with one particular university department. In addition there is one PhD link between QMU and the Federal University of Bahia.

While Brazil is not currently a priority, the university is supportive of the International Committee's priority countries selection and believes that this will inform the current refresh of its international strategy.

Robert Gordon University

Robert Gordon University has no active research or recruitment partnerships with Brazil, very little engagement with Brazil and no significant plans. The university implemented the new strategy in January 2014 which will focus on 11 core markets including China, Malaysia, and others, but not including Brazil. Although RGU is involved in some areas of oil and gas it does not consider Brazil a significant market at this level as it is not a research-intensive institution, and therefore PhD opportunities are limited. The focus is instead is on applied research in oil and gas engineering, and in health.

RGU considers the SwB programme potentially worthwhile but too resource intensive and, with its UG-only focus, not workable for them from a ROI perspective. Commercial work in the oil and gas sector (consultancy and applied research) have a greater priority, and it is working with a network of oil and gas and related support companies. The key subject-specific areas are:

- Engineering – mechanical and offshore
- Drilling and well expertise
- Business school – oil and gas law, oil and gas accounting, project management, built environment around oil and gas

In these areas it currently engages with Brazil in a reactive, not proactive way, through SDI e.g. for UKTI missions. It notes that it is important for this that the different parts of SDI (e.g. education, oil and gas) are interconnected to flag such opportunities, even when the people there change.

There would be an interest in overseas in-country market visits if they include B-to-B visits to speak to key companies and government bodies regarding areas such as commercial training. RGU has a separate business development unit to student recruitment with an international remit and focuses on its own priority markets.

University of St Andrews

The University St Andrews receives both UG and PhD students on the SwB programme. The university feels it is just starting out really with its engagement in Brazil. Although it is not its main priority (Brazil was not on St Andrews' radar and there had been no physical activity in Brazil until SwB was announced, other than UG and PG students who may have applied independently) there is now a plan for Brazil. It has 4 MoUs at the moment, two specific to SwB and two to the Faculty of Science. There are no outbound exchanges with anyone in Brazil, and this is fairly low down the university's priorities.

The university has the following links with Brazil:

Co-tutelles created through SwB

School	Mode	Duration	Brazilian Institution
Earth Sciences	Proposed co-tutelle PhD (Vinicius Louro)	Apr 2013 - Apr 2014 USP May 2014 – May 2015 St Andrews May 20125 – April 2017 USP	Universidade de So Paulo

Other links with Brazil:

- MOU with Universidade de Brasilia, signed June 2012 for 3 years; SwB specific
- MOU/Protocol with Universidade Federal de Pernambuco, signed December 2013 for 3 years; Faculty of Science specific
- MOU with Pontifícia Universidade Católica de Minas Gerais, signed August 2012 for 3 years; Faculty of Science specific.

Visits from Brazil:

- Dr Ranilson Bezerra, co-ordinator, PG Biosciences, Universidade Federal de Pernambuco (UFPE), Recife; Successful signing of MOU with UFPE – see above.

Institutions visited and meetings held in Brazil since 2012

April 2012 – Julie Ramsay & Professor Malcolm Macleod

- FAPESP (São Paulo Research Foundation)
- British Ambassador to Brazil, Brasilia
- Deputy Consul General, São Paulo
- Ministry of Science, Technology and Innovation, Brasilia
- Ministry of Fisheries and Aquaculture, Brasilia
- Universidade Federal de Pernambuco
- Universidade Federal de Santa Catarina
- Universidade de Brasilia

October 2013 – Julie Ramsay

- Universidade Estadual Paulista (UNESP)

March 2014 – Julie Ramsay

- Universidade de So Paulo
- Universidade Estadual de Campinas
- FAPESP (São Paulo Research Foundation)

In addition to the above there are some research and engagement links the university is aware of:

- Nick Tosca – oil & gas exploration (Nick has however left and it appears that the work has gone with him.)
- Ian Johnston – did consulting for Brazil on food security and aquaculture.
- Anne Magurran – environmental tropical ecosystems

Current or recent Brazil related grants include:

- **Past lessons for future challenges in the Brazilian Amazon** Harris, M. 1/08/13 → 31/07/16, £176,514, The Leverhulme Trust
- **Documenting Brazilian Amazonian History, 1750-1850** Harris, M. 1/07/05 → 31/01/07, £5,460, The British Academy
- **Risk sensitive behaviour in red-bellied piranhas** Magurran, A. 1/11/05 → 31/10/07, £11,880, The Royal Society
- **Enemies, Friends and Allies: Social Upheaval in the Brazilian Amazon in its Latin American context, 17th-19th centuries** Espelt Bombin, S., 1/05/14 → 31/10/15, £9,788, The British Academy

In addition St Andrews can cite a number of examples of research outputs, academic conferences and publications as well as editorial work, visiting speaker and external examiner activity etc over the years which have a connection to Brazil.

The University of St Andrews' biggest overseas market is the USA, then Canada, India and the Middle East. It has only been visiting Brazil since 2012 and although it is on the radar it is not its main market. Having visited the market a few times, the university considers it more a Foundation market for UG students coming from high school – i.e. an English language market. It will be visiting in November to investigate such Foundation opportunities i.e. with international schools/the IB etc for direct entry to St Andrews' Foundation programme.

The university does not have any agents in Brazil, but the upcoming November BC visit includes 'speed-dating' with agents, and it is hoping to find one or two.

The university's SwB success has been in the UG, not the PhD programme. It has had a cap of 10 students due to housing restrictions, and could have taken more. It is finding that these UG students are now reapplying to come back for PhDs. So its focus will now be to concentrate on UG and to try to convert to PG. It plans to take more UG students next year. It is subsidising the shortfall in the SwB funding and the fees through a fee discount.

The university has 4 full time SwB PhDs (2 in Biology, and 2 in Geosciences) and 2 visiting ones (Chemistry and Earth Sciences). It has found that Earth/GeoSciences is a popular area for PhDs from Brazil. Other subject strengths of the university popular with Brazilian applicants on SwB PhD include; Biology, Chemistry and Sustainable Development (although it is not clear if all projects within this area are covered as a 'science' by SwB as it extends beyond science – e.g. sustainable communities, craftwork etc).

The university has experienced some issues in dealing with Brazil.

- It took 14 months for a PhD agreement to get signed, so long that the student was not in the end able to come and has had to reapply for the funding for next year.
- It has found agreements and co-tutelles to be plagued by bureaucracy, and the challenge and time it takes in mapping the two agreements to something that is agreeable to both partners has been an issue.
- English language level for undergraduates, who often don't meet the university's required IELTS level (as it does not have a pre-sessional for the Brazilian students) is also a problem.
- Validation of degrees when the University's single PhD degree is not recognised in Brazil. When the student goes back to Brazil, they usually have to go through a Brazilian university and pay a sum of money to have their degree validated as a 'true' degree.
- Joint/double degrees. Following a discussion of this at the Brazilian Universities' delegation meeting in Edinburgh in September 2014, the university notes:
 - *"We are keen to find a way to work with Brazilian universities to establish Joint PhD awards, rather than double degrees. So far, we have done so on an individual student basis (co-tutelle) with a few institutions, with varying degrees of success. Monday was very helpful for me in clarifying that some of the problem relates to terminology – the Brazilian reps seemed happy with one certificate of award, but less happy with the concept of Joint.*
 - *I also understood that they require significant approvals to set up a Joint PhD*

programme, and so this is quite challenging on their side, in comparison with double degrees or individual co-tutelles.

- *It was helpful to have the discussion, and hopefully there will be more – it was great to hear that the QAA is also involved, as this should help us to move forward on this particular issues, or at least establish the guiding principles from a QAA perspective.”*

University of Stirling

The University of Stirling accepts undergraduate and PhD Students through the Science without Borders Programme. It has received 23 students (2011 to 2014) and in July 2014 it hosted a visiting student as part of the SwB promotional campaign. It will be taking part in the British Council exhibition in November 2014.

Stirling is quite new to the Brazil market, but it has identified a number of academics who have been doing research work in Brazil in Environmental Science, Aquaculture, and Marine to make them aware of money within the university and the Newton Fund for research and for visiting these partners. It has identified that there is an opportunity for the University to increase the number of students coming both via the undergraduate route but also to build links with partner institutions in Brazil in order to attract fully funded PhD students for one year.

Research Links

The School of Natural Sciences at the University of Stirling has a number of long established research links with Brazil and is engaged fully with the Science without Borders programme and with pursuing new links for further research. In particular it has established projects in the following areas:

1. Through the Institute of Aquaculture, sustainable management of natural resources:
 - Enhancing breeding and farming of *arapaima gigas* – the largest freshwater fish in South America - for the diversification of aquaculture in South America (with EMBRAPA)
 - Predictive modelling of landowners' responses to incentive schemes both to encourage conservation of native fish species

The Institute of Aquaculture has had long-standing links with Brazil and several well-known Brazilian aquaculture specialists have studied with the University over the years, including Daniel Bennetti (Marine fish reproduction), Alex Hilsdorf (Tilapia genetics), Philip Scott (GIS&Remote Sensing supported studies), Carlos Proença (Shrimp Nutrition) and Fernando Starling (aquaculture-based freshwater ecosystem management).

The university has identified Brazil as having enormous potential as a major aquaculture producer because of its water and protein resources. The present industry is still fairly small but is developing using existing species such as tilapia but there are many endemics that potentially would make very good, farmed species- fast growing herbivores. They also have some iconic species such as the arapaima that are large carnivores.

The Institute has developed some links with EMBRAPA particularly in the identification of potential farm sites and environmental monitoring as well as breeding and domestication of some of their potential farmed species. It has had various visits from Brazilian delegations that it plans to follow-up in Brazil before the end of the year with some of the larger universities there with aquaculture teaching and research interests.

At this stage the university believes it needs to develop communications with potential partners and work through some of the issues so we can accurately identify potential areas of mutual interest.

The university would like to get a small number of specialist workshops that bring together scientists with similar interests (e.g. reproductive biology, feed formulation, fish health, genetic management, environmental impacts) These specialisations exist within the Institute but also other MASTS Research Pool partner institutes. So the university has its own training and research interests, but various sectors of the Scottish Aquaculture industry are also well placed to help in the development of the industry in Brazil.

2. Through the Biological and Environmental Sciences Division:

- Earth Observation: A NERC funded consortium project led by Stirling entitled *Global Observatory of Lake Responses to Environmental Change* looking at near real time monitoring capability of 1000 lakes around the world – including at least 30 lakes in Brazil (with National Space Research Institute (INPE) in Sao Paulo)
- Tropical Forest Ecology: Impacts of climate change on tree growth, productivity and supply of non-timber forest products, and carbon stocks
- Biodiversity: Local ecosystems in Brazil are facing unparalleled challenges for their preservation so we are developing conservation strategies for protection and sustainable exploitation

3. Through the Behaviour & Evolution Group in the Psychology Division:

- Nutritional ecology of southern muriquis – the ‘woolly spider monkey’ - (*Brachyteles arachnoides*) (with Universidade Federal de São Paulo)
- Evolution of tool use among capuchin monkeys (with Universidade Federal da Paraíba)

The Schools of Biology and Mathematics and Statistics have research links with Fundação Oswaldo Cruz, Rio de Janeiro.

The School of Computer Sciences has research links with Pontifícia Universidade Católica do Rio de Janeiro (PUC).

The university is keen to develop recruitment and research links in Brazil and to explore agreements with prestigious Brazilian universities to develop joint research and other types of activity including student exchange.

The university has identified the following priority areas:

- Sustainable Aquaculture
- Aquatic Resources and Environment
- Marine Biosciences and Biotechnology
- Environmental Sciences, Policy and Management
- Computing and Information Technology
- Mathematics
- Clinical and Health Sciences

Stirling has identified a small number of partners it wants to work with, including those outside Sao Paulo or Rio de Janeiro, mostly coastal and mostly in the south.

SRUC

SRUC’s focus is agriculture and rural science. It is a relatively small organisation but with a broad range of interests. SRUC’s international strategy focuses in three areas:

- European collaboration
- Emerging economies. Of the BRICs, it is focusing its efforts on Brazil and China as there is already a lot going on in environment, climate change, carbon management etc research areas in these markets.
- Developing countries, particular sub-Saharan Africa. Principally to help develop the livestock sector.

SRUC already has some good links to Brazil, although these are somewhat fragmented, and it is keen to work at a more strategic level in the market. Most international activity has been in research which has come about from meetings at conferences etc. There are some PhD studentships but no undergraduate teaching or involvement in SwB. As well as research and teaching, consultancy is an important activity for SRUC and is keen to explore these

opportunities in Brazil. SRUC's focus areas of strength include:

- Carbon management
- Mitigation of methane emissions from livestock
- Soil science activities
- Animal welfare collaborative project
- Greenhouse gas modelling

SRUC has the following links with Brazil:

1. High level collaboration frameworks/Memorandum of understanding

Project	Country	Institution(s)	Subject of collaboration	SRUC lead staff	Division / Group	Completed / Ongoing link
High level collaboration frameworks /Memoranda of understanding						
1	Brazil	Universidade de Sao Paulo/Universidad Estadual de Maringa	Research, staff and student exchange in relevant areas, but particularly soil Science	B Ball		Ongoing
2	Brazil	Universidade de Sao Paulo	Staff and students exchange; research in meat quality and genetics	E Navajas		Ongoing
3	Brazil	Empresa Brasileira de Pesquisa Agropecuaria (EMBRAPA)	Animal Welfare – FP7 and Sow Housing and Welfare; discussions on cooperation in animal health	C Dwyer		Start 21 Dec 2011 End 21 Dec 2016
4	Brazil	Empresa Brasileira de Pesquisa Agropecuaria	Methane emissions	E Navajas J Rooke D Ross		Ongoing
5	Brazil	Polo de Excelencia em Genetica Bovina	Dairy cattle; sustainability and genetic improvement	E Navajas		Ongoing
6	Brazil	UFRGS	Joint Research and Education projects	?		Start 02 Sep 2013 End 02 Sep 2017
7	Brazil	UNESP	Joint Research and Education projects	?		Start 02 Sep 2013 End 02 Sep 2018
8	Brazil	University de Passo Fundo	Joint Research and Education projects	?		Start 20 Dec 2012 End 20 Dec 2017
9	Brazil	University de Sao Paulo	Joint Research and Education projects	?		Start 27 March 2009 End???

2. International Network

Project	Country	Institution(s)	Subject of collaboration	SRUC lead staff	Division / Group	Completed / Ongoing link
International Network						
10	Brazil	Federal University of Mato Grosso (UFMT), Federal University of Rio Grande do Sul (UFRGS), Embrapa Pantanal	Environmental Management in Pantanal	K Glenk		Ongoing

3. Sabbatical/Staff Exchange/Secondment

Sabbaticals / Staff exchanges / Secondment						
1	Brazil	?	Matheus Reis 6 Month Visit	J Houdijk		Start 7 October 2013 End 28 February 2014

4. Joint Research Projects

Joint research projects					
1	Brazil	EMBRAPA	Modelling greenhouse gas mitigation measures in agriculture	D Moran	Ongoing
2	Brazil	Indiana University			
		University of Positivo			
		University of Cambridge			
1	EU, Norway	UMB	WP2 As above 1024338	C Dwyer	Start May 2011 End Apr 2015
	Italy	University of Milan			
	Portugal	Technical			
	Spain	University of Lisbon			
	Germany	Neiker-Tecnalia			
	Czech Republic	Havelland Pferdklinik			
	USA	Institute of Animal Science			
	Brazil	Indiana University			
		University of Positivo			
		University of Cambridge			
2	EU, Norway	UMB	WP 3 as above 1024339	C Dwyer	Start May 2011 End Apr 2015
	Italy	University of Milan			
	Portugal	Technical			
	Spain	University of Lisbon			
	Germany	Neiker-Tecnalia			
	Czech Republic	Havelland Pferdklinik			
	USA	Institute of Animal Science			
	Brazil	Indiana University			
		University of Positivo			
		University of Cambridge			
3	EU, Norway	UMB	WP4 as above 1024340	C Dwyer	Start May 2011 End Apr 2015
	Italy	University of Milan			
	Portugal	Technical			
	Spain	University of Lisbon			
	Germany	Neiker-Tecnalia			
	Czech Republic	Havelland Pferdklinik			
	USA	Institute of Animal Science			
	Brazil	Indiana University			
		University of Positivo			
		University of Cambridge			
4	EU, Norway	UMB	WP5 as above 1023306	C Dwyer	Start May 2011 End Apr 2015
	Italy	University of Milan			
	Portugal	Technical			
	Spain	University of Lisbon			
	Germany	Neiker-Tecnalia			
	Czech Republic	Havelland Pferdklinik			
	USA	Institute of Animal Science			
	Brazil	Indiana University			
		University of Positivo			
		University of Cambridge			

5. Students: PhD and Visiting Students

Students: PhD and Visiting Students					
1	Brazil	Universidade Federal de Pelotas	Joint Ph.D. and M.Sc. supervision; dairy cattle pain and sheep welfare	A.J.Zanella	Ongoing

In collaboration with the Roslin Institute and The Edinburgh Vet School it is running a joint BBRSC symposium in Edinburgh in December with a group of visiting Brazilian scientists in the area of animal welfare and infectious disease management.

Ambition for Brazil

SRUC is just at the start of developing its strategy for Brazil. It is looking to develop collaborations in the above fields. Its goal is to attract students at all levels from UG to research, which it has not been able to do significantly to date. Also to generate consultancy revenue, which is not a mainstream academic activity, but is a priority for SRUC.

SRUC recognises that, like some other Scottish institutions, it does not have a high profile internationally (all its degrees for example are awarded through Edinburgh or Glasgow). It wants to use research links to leverage teaching opportunities and income generation.

It also sees potential partnerships with Brazil as important in its strategy for sub-Saharan Africa, although again this is just starting, and in North-South, South-South partnerships. The aspiration is to develop something like this with Brazil for sub-Saharan Africa.

- Brazil has its own sub-Saharan African strategy in agriculture, livestock and emissions, and there are funding opportunities for them partnering with European organisations. Although still at the early stages, this is something SRUC wants to tap into, particularly in the area of emissions.

SRUC needs to develop dialogue with Brazilian colleagues. Other than individual contacts in specific institutions or through organisations like EMBRAPA it does not yet have a clear idea of who these people are.

SRUC believes that to be represented in any kind of mission would be useful, and a helpful focus would be on expanding research collaborations in the areas above; greenhouse gas emissions, animal welfare etc. EMBRAPA is a key partner in the market with its administrative and research roles, but SRUC does not know a lot about it. It believes that meeting some of the senior technical people within EMBRAPA and 2 or 3 key universities it has connections with would be of benefit.

Below are two press releases illustrating SRUC's engagement with Brazil:

SAC Delegation Back Buoyant after Brazil Visit. Tuesday, 1st May 2012, Research News

An SAC-led party of 19 UK scientists has returned from the Brazilian capital Brasilia. They were there to take part in successful meetings and workshops with 60 researchers from the nation's giant agricultural research organisation EMBRAPA, together with several Brazilian Universities. Brazil has a booming economy, including agriculture, with ambitious plans through the Science Without Borders Programme.

It was the logical destination for the SAC led team with an international record in animal and veterinary sciences. The visit was partially sponsored by BBSRC (Biotechnology and Biological Sciences Research Council).

EMBRAPA has many similarities to SAC, but as with all things Brazilian it is huge. It networks through 38 research centres and is present in almost all the states of the Union, each with its own ecological conditions. EMBRAPA's annual research budget is close to £250 million with 9,800 staff. They interact widely with Brazil's many universities teaching agriculture, animal and veterinary science.

The SAC party of 7 included Professor Geoff Simm, Academic Director and Vice Principal Research, together with Animal Welfare Specialist Professor Adroaldo Zanella, who is himself Brazilian. They were accompanied by colleagues from University of Edinburgh, R(D)SVS, the Roslin Institute, Moredun, the BBSRC Institute of Animal Health, with a representative from UK Trade and Industry.

The UK is recognised for its strengths in multidisciplinary research and the discussions were across 5 strategic areas of animal health, animal welfare, animal genetics, sustainable agriculture and climate change, where SAC and Scotland are making particular contributions. Staff at EMBRAPA support Brazilian research and KE programmes aimed at increasing agricultural production, repairing degraded pastures and preventing further loss of virgin forest. All this whilst meeting greenhouse gas targets. The Government of Brazil is committed to protecting their natural forests and remaining vast areas of land, where recent agriculture has had little or no effect.

One of early outcomes of the visit was an invitation for SAC to become an international

partner of PECUS – the Brazilian Greenhouse gas inventory project. A workshop on integrated livestock-crop-forestry is a key part of this programme and SAC researchers have already been invited to contribute towards this. EMBRAPA are in the midst of an ambitious programme to build methane measurement chambers for cattle and are modelling this programme on SAC's novel GreenCow facility in Edinburgh, visited by many EMBRAPA members in the last two years.

The Brazilian Ministry of Agriculture's newly formed animal welfare department, hosted Professors Simm and Zanella with discussions on immediate links between UK and Brazil in animal welfare sciences. The subject is also very high in the research, teaching and outreach agendas of EMBRAPA, Brazilian Universities. During the workshop the scientists proposed creating a Brazilian Network of Excellence in Animal Welfare and the UK institutions were invited to collaborate. SAC already has ongoing relationship with researchers in Brazil ,through the FP7 project, Animal Welfare Indicators.

Professor Zanella visited the EMBRAPA sheep and goat research centre in, Sobral, in the NE of Brazil while SAC poultry specialist Dr Nick Sparks went south to EMBRAPA's pig and poultry centre, in Concordia. Both centres have already ongoing collaborative work with UK teams. Dr David Smith of the Moredun Research Institute is currently evaluating a novel vaccine for Haemonchus in sheep with Brazilian colleagues.

The returning group paid tribute to the support of the British Embassy in Brazil where Professor Simm and colleagues presented a brief report to Jonathan Dunn, Economic Counsellor, British Embassy, Brasilia, Dr Cornelia Huelsz, Deputy Director, Science & Innovation Network, British Consulate General, Sao Paulo. They discussed progress made and options for taking the initiative forward. They also thanked Professor Zanella and Dr Christine Moinard for their work in preparing the visit. It is hoped a Brazilian delegation will visit Scotland in 2013.

SRUC Strengthens its links with Brazil, Wednesday, 5th December 2012, Research News

The Animal and Veterinary Sciences Research Division recently welcomed visitors from the Brazilian agri-business and research organisation Embrapa. Two years ago Embrapa established its first UK base at Rothamsted Research with its labex (laboratory exterior) programme and it was scientists from this project who travelled to Scotland to meet SRUC's Animal Welfare and Behaviour Team.

Professor John Lucas, Dr Alexandre Morais do Amaral and Pedro Arcuri, Coordinator of Labex Europe, met with Team Leader Professor Cathy Dwyer and her group to discover more about the work SRUC is doing in this area and how our organisation could collaborate with Embrapa in the future.

Cathy began the day with overview of the team's current projects focusing in on areas such as pig aggression, cow welfare assessments and our new online Msc in International Animal Welfare. Professor Malcolm Mitchell then spoke on animal transportation and the new EU regulations on slaughter which become law in January. He was followed by Professor Adoraldo Zanella who spoke about his Europe-wide AWIN project before noting the importance of connecting with the Brazilian livestock sector.

He said: "We need to have a good collaborative programme to ensure we have productive interactions with Brazil." Professor John Lucas stressed that while Embrapa's UK base was down south at Rothamsted the BBRSC was keen to see institutes throughout the country working together. He said: "There are some areas where a concerted effort would make a difference. Animal health is one of these, as is crop improvement and food security." After lunch Dr Jos Houdijk and Dr Ross Davidson were on hand to talk about parasitology and epidemiology respectively before the group concluded their day with a visit to the GreenCow facility. GreenCow allows SRUC researchers to measure the methane output of cattle and a similar centre – developed using SRUC learning – has just opened in Brazil. The tour – led by researcher Dave Ross – proved incredibly popular, one that the visitors will not quickly forget.

University of Strathclyde

The University of Strathclyde receives a significant number of undergraduate and also PhD students from Brazil through the SwB programme.

SwB numbers

Strathclyde UG Science without Borders

Date/Year	Intake
Sep-12	11
Jan-13	44
Sep-13	65
Jan-14	144
Sep-14	176

Strathclyde PGR Science without Borders

13/14	4
14/15	5

SwB recruitment has been the main area of success in Brazil for the university although it does not have a specific numbers target. Strathclyde is one of the largest recipients in the whole of the UK, and has benefited from having both a September and December start, which not all institutions in the UK are able to do (it was decided to make an exception for this programme). Strathclyde has benefited also from the strong industry links it has in Scotland for SwB UG research projects. The small number of PhDs stem from the existing research links of Strathclyde's own research staff in Brazil.

Current Partnerships in Brazil

Name of institution	Nature of partnerships (excluding research partnerships)
Universidade Federal de Minas Gerais (UFMG)	Undergraduate exchange within Engineering/Memorandum of Understanding
Universidade Federal do Rio de Janeiro (UFRJ)	Undergraduate exchange within Engineering/Memorandum of Understanding
Universidade Federal de Bahia (UFBA)	Memorandum of Understanding
Universidade Federal de Parana (UFPR)	Memorandum of Understanding
Universidade de Sao Paulo - Poli (USP)	Undergraduate exchange within Engineering/Memorandum of Understanding

The university's goal is to balance the one-way traffic from SwB to help to build longer-term links with Brazilian institutions through a research led strategy.

Student Exchange

Strathclyde has student exchange programmes with three universities. Exchanges are limited by the classes in English available on the Brazil side. Normally exchanges happen in 2nd or 3rd year of an UG degree programme, but as the university does not teach Portuguese, for students to study in Brazil, classes need to be taught in English. And there are very few universities that teach whole classes in English. So exchange happens in the 5th year of engineering programmes, and is project based.

The university has however experienced delays and challenges with the bureaucratic elements in Brazil to make this happen. To allow these kinds of exchange a signed MoU is required, which takes time on both sides.

The university does not have double or joint degrees. "We can't do double degrees as a matter of university policy. It is an issue with Scottish institutions in general. We have never really discussed with Brazilian partners. For a joint degree, the Brazilian institutions need to apply for approval for that through the different mechanisms in Brazil which can delay things."

Research Collaboration
 Research Links and Subject areas of focus

Academic Lead	Department	Area	Collaborating Institution
Brian Garvey	Human Resource Management - Strathclyde Business School	Employment and migration	Federal University of Goias
Srinil, Narakornnarakorn	Naval Architecture, Ocean and Marine Engineering - Faculty of Engineering	Offshore Structures	University of Sao Paulo
Jonathon Charley	Architecture - Faculty of Engineering	Urban cultures	Federal University of Minas Gerais
David Greenhalg	Mathematics and Statistics	Strategy	University of Sao Paulo
Alessandro Tarantino	Civil and Environmental Engineering	Climate Change	Universidade Federal de Pernambuco; Universidade de Brasilia
Vladimir Stankovic	Electronic and Electrical Engineering	Mobile Wireless Devices	Universidade Tecnologica Federal do Parana
Cameron Johnstone	Mechanical and Aerospace Engineering	Marine Renewables	Instituto de Pesquisas Tecnologicas do Estado de Sao Paulo SA, Sao Paulo
Marcelo Sanchez	Civil and Environmental Engineering	GEO-engineering exchanges	Universidade Federal de Pernambuco
Anthony Gachagan	Electronic and Electrical Engineering	Non-destructive evaluation	Universidade de Brasilia

These research links relate to European/UK initiatives. The university does not yet have the experience of accessing the funding groups in Brazil. For example the university has not had any experience of meetings with the FAPs and is not clear on their sector priorities are and who the best people to speak to are.

It is a Santander university, so it receives staff mobility grants which it uses to send staff out to Brazil to meet with potential researchers and institutions there. It is interested in the Newton Fund through the university's staff with links to Brazil in order to build further links.

Strategy

Brazil is a priority market for the university's international strategy for both student mobility and research. It is more important for the faculties of Science and of Engineering, and less so for those of Social Sciences and the Strathclyde Business School as these are not covered by SwB. The university has found from its experience that the funding at state level is also very much science and engineering focused. So it believes a collective focus in Scotland should be in these areas and that the opportunities for Scottish institutions in Brazil outside these areas are somewhat limited.

The key university's sector focus reflects where it believes Brazil has its key issues:

- Urban planning
- Health
- Energy
- Engineering

Since June 2014 Strathclyde has had a representative (ex British Council, Rodrigo Gaspar) on the ground. This is a shared resource with Bristol University.

"He can guide us regarding both recruitment and research and will be identifying research and knowledge exchange opportunities for the university. We believe that having someone on the ground who has the contacts is key to build these links/get MoUs in place. We have already noticed a difference in a few months in our understanding of the market, of how things work within institutions and being able to push along agreements that have been stalling."

Appendix 15: Recent Engagement with Brazil: Missions and Visits

There have been a number of recent missions/visits to or from the UK/Scotland to Brazil:

1. March 2012 UUK IU outward delegation of 23 UK HEIs and 21 Brazilian universities.

Mission was funded by the Commercial Diplomacy Project 'Forging Academic Partnerships in Brazil', with the objective of developing joint courses, exchange programmes, R&D projects and provision of secondments to British companies.

18-22 March 2012, Sao Paulo - Brasilia

The UK Universities who took part, including those from Scotland:

Institution	Representative	Title
UniversitiesUK	Joanna Newman	International Unit
UniversitiesUK	George Grayson	International Unit
Brunel University	Luiz C. Wrobel	Professor and Deputy Head of School
University of Central Lancashire	John Quirk	Director of International Affairs
Bangor University	Iwan Roberts	Head, International Partnerships
Glasgow Caledonian University	David Beeby	Executive Director of Finance and Vice Principal International
University of Bristol	David Clarke	Deputy Vice-Chancellor
University of West England	Hugo Gaggiotti	Associate Head Of Department MBA Programmes
University of Strathclyde	Colin Grant	Deputy Principal
University of Northampton	Rashmi Dravid	Senior Lecturer
University of Glasgow	Rory McDiarmid	Senior International Officer
Aberystwyth University	Athro Andrew Evans	Professor
University of Birmingham	Regina Santos	Professor
Harper Adams University College	Peter R Mills	Vice Principal
University of Edinburgh	Tom Higgison	IP & Strategic Project Manager
University of St Andrews	Malcolm MacLeod	Dean of the Faculty of Science
University of Dundee	Brendan Barker	Head of International Development
Middlesex University	Mark Gray	Director of Knowledge Transfer
Swansea University	Iwan Davies	Pro-Vice-Chancellor Internationalisation & External Affairs
University of Ulster	Anne Moran	Pro-Vice-Chancellor Educational Partnerships and International Affairs
Durham University	Andrew Deeks	Pro-Vice-Chancellor
Cranfield University	Feargal Brennan	Professor
University of Southampton	Andrew Joseph Bird	Pro Vice-Chancellor, International

Staff

Institution	Representative	Title
UK Trade & Investment	Paula Abreu	Sector Manager, Power & Petrochemicals
UK Trade & Investment	Lara Baptista	Deputy Sector Manager
FCO	Jaqueline Wilkins	Consultant for Education

There is no information from Universities UK on which Brazilian universities attended.

2. October 2013 inward CONFAP delegation of nine state research funding agencies with 16 UK universities. The British Science & Innovation Network (SIN) in Brazil organised, with the Confederation of Brazilian Funding Agencies (CONFAP), a mission to the UK to showcase British new research in low carbon energy and its financing mechanisms, as well as to foster mutual knowledge and cooperation in the sector.

The International Unit (IU) hosted a one-day event as part of this mission. This event was attended by the President of CONFAP, representatives from nine of Brazil's state research funding agencies and representatives from 16 UK universities. The event included

presentations from the Brazilian research agencies and matchmaking opportunities with the UK Universities.

The state funding agencies which took part were:

- FAPESC
- FAPESB
- FAPEMIG
- FACEPE
- FCO
- Araucária Parana
- FAPEG
- FAPEAM
- FAPERJ
- FAPEMA
- FAPERGS

The UK universities were:

- University of York
- Centre for Low Carbon Futures
- Durham University
- University of Edinburgh
- Aston University
- Cambridge University
- University of Leeds
- LSE
- Queens' University Belfast
- Cardiff University
- University of Nottingham
- University of Reading
- University of Sheffield
- University of Southampton
- University of Strathclyde
- UCL

3. March 2014 outward delegation of 10 universities from the UK and around 40 Brazilian universities. UK-Brazil PhD Workshops and Networking Sessions

In conjunction with the Science and Innovation Network (SIN) and the British Council, the IU organised a series of UK-Brazil PhD Workshops and Networking Sessions with Brazilian Universities. The week-long event (17-21 March) was held in three Brazilian cities; Recife, Belo Horizonte and Porto Alegre and attended by 10 UK Universities and over 40 universities from across Brazil. The event included one-to-one matchmaking sessions, with the aim of developing and expanding partnerships between UK and Brazilian universities and state research funding agencies.

During the same visit, the Brazilian Confederation of State Funding Agencies (CONFAP) and the International Unit (IU) signed a Memorandum of Understanding (MoU) at a ceremony attended by several Brazilian funding agencies (FAPs), as well as 16 UK universities. The MoU will see the two organisations work together to support increased cooperation between the UK and Brazil in the fields of higher education, research, and innovation. The MoU was signed by Professor Sergio Luiz Gargioni, CONFAP President and Dr Tania Lima, Programme Director - Science without Borders UK.

Attending from the UK were:

- Aberystwyth University
- University of Bath
- Brunel University

- University of Dundee
- University of Hull
- University of Leicester
- Newcastle University
- Queen Mary University of London
- University of Stirling
- Swansea University

Brazilian Universities taking part were:

Recife

- Universidade Federal de Pernambuco (UFPE)
- Universidade de Pernambuco (UPE);
- Universidade Católica de Pernambuco (Unicap);
- Universidade Federal do Ceará (UFC);
- Universidade Estadual do Ceará (UECE);
- Universidade Federal da Bahia (UFBA);
- Universidade Federal do Recôncavo Baiano (UFRB); Universidade Federal do Pará (UFPA);
- Universidade de Fortaleza (UNIFOR);
- Universidade Federal da Paraíba (UFPB);
- Universidade Federal de Campina Grande (UFCG);
- Universidade Federal do Amazonas (UFAM);
- Universidade do Estado do Amazonas (UEA);
- Universidade Federal de Alagoas (UFAL);
- Universidade Federal do Rio Grande do Norte (UFRN);

Belo Horizonte

- Universidade Federal de Minas Gerais (UFMG);
- Universidade Federal de Viçosa (UFV);
- Universidade Federal de Ouro Preto (UFOP);
- Universidade Federal de Uberlândia (UFU);
- Pontifícia Universidade Católica de Minas Gerais (PUC-MG);
- Universidade de São Paulo (USP);
- Universidade Estadual de Campinas (Unicamp);
- Universidade Federal de São Paulo (Unifesp);
- Universidade Federal de São Carlos (Ufscar);
- Universidade Estadual Paulista Júlio de Mesquita Filho (Unesp);
- Universidade Federal do ABC (UFABC);
- Universidade de Brasília (UnB);
- Universidade Federal de Goiás (UFG);
- Universidade Federal do Espírito Santo (UFES);
- Universidade Federal do Rio de Janeiro (UFRJ);
- Universidade Estadual do Rio de Janeiro (UERJ);
- Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio);

Porto Alegre

- Universidade Federal do Rio Grande do Sul (UFRGS);
- Universidade Federal de Santa Maria (UFSM);
- Universidade Federal de Pelotas (UFPEL);
- Universidade de Caxias do Sul (UCS);
- Universidade Federal do Rio Grande (FURG);
- Universidade do Vale dos Sinos (Unisinos);
- Pontifícia Universidade Católica do Rio Grande do Sul (PUC-RS);
- Universidade Federal de Santa Catarina (UFSC);
- Universidade do Estado de Santa Catarina (UDESC);
- Universidade Federal do Paraná (UFPR);

- Universidade Estadual do Paraná (UNESPAR);
- Universidade Estadual de Londrina (UEL);
- Universidade Estadual de Maringá (UEM);
- Pontifícia Universidade Católica do Paraná (PUC-PR).

4. September 2014: BC-FAUBAI Mission to the UK.

A group of selected research-oriented Brazilian institutions (and the ones with the highest number of students coming to the UK) visited the UK, including Scotland, to explore new cooperation opportunities.

Participating Brazilian Universities:

- Federal University of São Carlos (UFSCar)
- Federal University of Minas Gerais (UFMG)
- São Paulo State University (UNESP)
- State University of Campinas (Unicamp)
- Federal University of Santa Catarina (UFSC)
- Federal University of Rio Grande do Norte (UFRN)
- Federal University of Pernambuco (UFPE)
- Federal University of Rio Grande do Sul (UFRGS)
- University of São Paulo (USP)
- Federal University of Ceará (UFC)

The detailed profiles of these universities and their representatives are included in Appendix 16 below.

In November 2014 there is the British Council UK Universities Fair in Brazil

This is the biggest UK HE exhibition in the Americas, and the second largest in the world. It will take place in November 2014 in four Brazilian cities (08th Nov in Sao Paulo; 10th Nov in Rio and 12th Nov in Belo Horizonte). The following Scottish universities are registered for this:

- Edinburgh Napier University
- Glasgow Caledonian University
- Heriot-Watt University
- The University of Edinburgh
- University of Aberdeen
- University of Dundee
- University of Glasgow
- University of St Andrews
- University of Stirling
- University of Strathclyde

The agenda is as follows:

Dates and Events			
São Paulo			
Thursday, 6 November	Friday, 7 November		Saturday, 8 November
- Market Briefing* - HE Speed Dating* - Networking Cocktail*	- Agents Speed Dating*		- Exhibition
Sunday, 9 November	Monday, 10 November	Tuesday, 11 November	Wednesday, 12 November
	Rio de Janeiro	Rio de Janeiro	Belo Horizonte
Rest day	- Exhibition	- HE Speed Dating*	- Exhibition

Below is a summary provided by the British Council in Brazil in September of the other most significant programmes and activities in which they are involved:

Going Global 2015: the call for proposals are now open at <http://www.britishcouncil.org/going-global/programme/proposals> and there could be sessions about UK-Brazil HE cooperation, as well as any other theme that could showcase the cooperation between the two countries.

Global Innovation Initiative: the call for a HE trilateral cooperation among Brazil-UK-US is also open to researchers from the three countries at <http://global-innovation-initiative.org/>.

FAUBAI Conference 2015: FAUBAI is the Association of Brazilian HE Offices of International Relations, which gathers the top 115 Brazilian universities. The next edition of the annual meeting will

happen in 25-29 April 2015 in the city of Cuiabá (Mato Grosso State) at the Federal University of Mato Grosso (UFMT). The British Council is willing to become a diamond sponsor of the event and, if that happens, it would like to invite all the UK universities to participate.

UK Universities Fair in March: We are also planning another UK HE exhibition in March 2015 in the cities of Recife, Porto Alegre and Brasilia, but dates and details are still TBC.

BC-FAPESP Researcher Links: We have just finished a call with FAPESP and the results should be announced next week. We might have a couple of Scottish universities receiving grants in this round. Last year, Brazil was the country with the largest number of proposals and the largest investment on this programme.

Newton Fund: Brazil will receive £ 9 million per year for the next 3 years (2014, 15 and 16) from the UK to invest on HE initiatives, provided that there's match funding from Brazilian counterparts. The British Council is one of the delivery partners in partnership with UUK. The other delivery partners are: RCUK, RCUK-MRC, Innovate UK (TSB) and Met Office. More information on all of our available programmes are listed on www.britishcouncil.org/education/science/newton.

HE Series. We are planning three seminars about HE in Brazil, to which Scottish universities are more than welcome to participate:

- **In partnership with FAPEG:** In the city of Goiania on 16 October about "Innovation and Collaborative Research between Universities and Enterprises"
- **In partnership with UFRGS:** In the city of Porto Alegre on 05 November about "The Search for Quality and Academic Excellence"
- **In partnership with FAPESC:** date and theme still TBD

UNESP Mobility Programme. We are partnering with Sao Paulo State University (UNESP) to bring 11 English graduate students to spend one year in Brazil on a sandwich programme where they will develop research and also teach English as part of the university's internationalisation programme. Registrations will be reopened from Feb-Mar 2015.

Appendix 16: Brazil University Participant Profiles of BC - FAUBAI Mission to the UK, 20-30 September 2014

Title	Name	Institution	Position
Dr.	Camila Höfling	UFSCar - Federal University of São Carlos	Head of International Office
Dr.	José Celso Freire Jr.	FAUBAI - Brazilian Association for International Education / UNESP - São Paulo State University	FAUBAI President, Head of International Relations Office
Dr.	Eleonora Cavalcante Albano	UNICAMP - State University of Campinas	Advisor for Science Without Borders, International Relations Office
Dr.	Luiz Carlos Pinheiro Machado Filho	UFSC - Federal University of Santa Catarina	Head of International Office
Dr.	Márcio Venício Barbosa	CEGRIFES - Association of Federal Universities / UFRN - Federal University of Rio Grande do Norte	Head of International Office
Dr.	Maria Leonor Alves Maia	UFPE - Federal University of Pernambuco	Head of International Office
Dr.	Nicolas Bruno Maillard	UFRGS - Federal University of Rio Grande do Sul	Head of International Office
Dr.	Raul Machado Neto	USP - University of São Paulo	Head of International Office
Dr.	Tito Lívio Cruz Romão	UFC - Federal University of Ceará	Head of International Office

UFSCar, Federal University of São Carlos



Professor Camila Höfling, PhD, has got undergraduation course in Languages and Literature – License in English and Portuguese at São Paulo State University UNESP (1996); Master's Degree in Linguistics at UNESP (2000) and Doctor's Degree in Linguistics at UNESP (2006). She has experience in the Linguistics area of knowledge, with emphasis on Applied Linguistics, acting mainly in the following areas: Teaching/Learning of English as a Foreign Language (EFL), Applied Linguistics, Lexical studies, Lexicography and Lexicology, Pedagogical Lexicography, Bilingual Dictionaries.

She has been the vice-president of the Association of English Teachers in the state of São Paulo (APLIESP) for 5 years, since 2009. She has been a professor at the Languages Department at UFSCar (Federal University of São Carlos) since 2008, and has been acting on Higher Education for 10 years, teaching courses related to English as a Foreign Language, EFL, ESP, Applied Linguistics, EFL/ESL Methodology. Since March 2013, she has been the Head of the International Relations Office at UFSCar. Her areas of interest in research are EFL, TESOL, ESP and teachers' formation, as well as the studies of lexicon and lexicography.

UFPR, Federal University of Paraná



Edilson Sergio Silveira received his B.Sc. (1990) and M.Sc. (1993) from the Institute of Physics of the Universidade Estadual de Campinas (Campinas, Brazil) and his Ph.D. (1998) from the Walter Schottky Institut of the Technische Universität München (Munich, Germany). The research conducted for his master and doctoral degree involved optical properties of materials and its relations with their electrical properties. Since 1999 he has a permanent position at the Universidade Federal do Paraná (UFPR in Curitiba, Brazil), where he is now an associate professor at the Physics Department. Since 2005 he is head of the optical and electronic properties and photonics group at the physics department of the Universidade Federal do Paraná. He spent a sabbatical year (2004) studying the optical properties of III-nitrides, mainly bulk AlN, at the Naval Research Laboratory (Washington, DC). From 2009 to 2012 he was the general director of graduate studies and deputy vice-president for research and graduate studies. Since 2013 he is the vice-president for research and graduate studies at UFPR. He has published more than 34 papers in specialized journals. His publications have been cited more than 500 times. He is also reviewer of specialized journals on condensed matter physics.

UNICAMP, State University of Campinas



Eleonora Cavalcante holds a bachelor's degree and a license in psychology (1972, 1973), as well as a master's degree in Linguistics (1975) from the Federal University of Rio de Janeiro. She has a PhD in Linguistics from Brown University (1980) and was also a post-doctoral fellow in Comparative Epistemology at Collège de France (1989-1990). I work on the border between linguistics and psychology, focusing on the study of speech sounds.

She is currently a professor of phonetics and phonology in the Linguistics Department of the Institute of Language Studies (IEL), which she founded in 1991, directing the Phonetics and Psycholinguistics Laboratory (Lafape) from 1991-2008. She has directed about 70 student research projects, from scientific initiation to post-doctoral fellowships. She was the editor in chief of the journal *Cadernos de Estudos Linguísticos* (1993-2004) and on the editorial board of several national and international journals.

Her research group, DINAFON (Speech Dynamics) includes 30 researchers from universities all over Brazil and investigates the relationship between phonological grammar and articulatory gesture coordination in the acquisition and use of native or foreign language, from the perspective of a model called Gestural Phonology.

UNESP, São Paulo State University



Prof. José Celso Freire Junior is an Electrical Engineer graduate from Federal University of Rio de Janeiro (UFRJ). He has a Master's degree in Computer Science from University of São Paulo (USP) and a PhD degree in Computer Science from Université de Grenoble I (Joseph Fourier University), France. He is an Associate Professor at São Paulo State University, UNESP in Brazil.

He is now the current Head of the International Office of São Paulo State University and was formerly Head of the Department of Electrical Engineering and Coordinator of the Undergraduate Program in Electrical Engineering of the School of Engineering of Guaratinguetá/UNESP. He is also the President of the FAUBAI – Brazilian Association of International Education and as such has participated as a panelist to several international events like Going Global, EAIE, AIEA, CAIE and NAFSA.

UFSC, Federal University of Santa Catarina



Luiz Carlos Pinheiro Machado Filho is Associate Professor at the Department of Zootechny, UFSC since March 1983 and Secretary for International Affairs since 2012. He is also Coordinator of the Laboratory of Applied Ethology since 1997 and was Head of the Department of Zootechny from 1998-2002. He is Coordinator of the Graduate Program on Agroecosystems.

He has a Ph.D. on Ethology Applied to Animal Science from the University of Guelph, Ontario, Canada and an MSc. in Agronomy – Ruminant Nutrition from the Federal University of Rio Grande do Sul, Brazil. 2002-2003: Post-Ph.D. on Ethology and Animal Welfare of Dairy Cows on Pasture. University of British Columbia, Canada. He is a member of three scientific societies, has coordinated several research projects, coordinated several international conferences and peer reviewed research articles (46 articles in several international journals), books and book chapters (4 books and 5 book chapters).

UFRN, Federal University of Rio Grande do Norte



Dr. Marcio Barbosa has a MSc and PhD in Literary Studies from the Universidade Federal de Minas Gerais. He is an associate professor at UFRN and is currently the Officer for International Affairs. Dr Barbosa participates as Director of the CGRIFES /ANDIFES (Federal Higher Education Institutions of Brazil) and, as Deputy Secretary of the GCUB Directorate. My academic interests are Comparative literature and Semiotics studies applied to literature.

UFPE, Federal University of Pernambuco



Maria Leonor Maia is Director of International Office at Universidade Federal de Pernambuco. She majored in Architecture at Universidade Federal de Pernambuco (1985), obtained a Master's degree in Urban Development Planning at University College London (1991) and PhD in Urban Development Planning also at University College London (1996), UK. Concluded in 2009 a post-doctoral internship in Urban Development Planning at Bartlett School of Planning, University College London, UK, focusing on urban sustainable mobility. Associate professor at Universidade Federal de Pernambuco, currently holds a productivity scholarship from CNPq and is a member of RESET – Network for studies in Engineering and Socioeconomics in Transportation, a research and consultancy group composed by scholars from many institutions and a member of RedPGV – Ibero-american Network of Studies in Trip Generation, formed by 26 universities from 9 different countries. Experienced in the area of Urban Planning, focusing on Transportation and Land Use, acting mainly on the following themes: urban planning, accessibility, transportation, urban mobility and urban management.

UFMG, Federal University of Minas Gerais



Míriam Lúcia Jorge is Associate Professor of Applied Linguistics at UFMG. Ph.D., Linguistics, Universidade Federal de Minas Gerais. Areas of specialization: English language teaching and learning, second language teacher education, critical pedagogy, literacies, critical literacy, affirmative action, race and education, Latin American Studies, Race Relations and Brazilian Identities.

Administration: Associate Dean of International Relations. Teaching: 15 years of teaching experience in higher education. Coordinator of Brazilian National Program of Textbook Evaluation: invited by the Ministry of Education to coordinate a national team of scholars in the evaluation of English and Spanish Textbooks to be used in Brazilian public schools.

UFRGS, Federal University of Rio Grande do Sul



Nicolas Maillard is head of the International Office at UFRGS, where he started to work in Oct. 2012. He graduated in 1996 at the French "Grande École d'Ingénieur" ENSIMAG – INPG and obtained a PhD in Information Sciences and Technologies at the Université Joseph Fourier, in 2001. He has been "Professor Adjunto" at the Federal University of Rio Grande do Sul, Porto Alegre, Brazil, since 2004.

He teaches Compilers and Parallel Programming and his research field is Parallel Programming. In 2012, he spent 6 months as invited scholar at the University of Pittsburgh, USA. He has advised 14 Master's and 3 PhD students and is currently advising 2 PhD students and 1 Master's student. He has published 22 papers in international conferences with editorial review and 6 in international journals.

USP, University of São Paulo



Professor Raul Machado-Neto is Vice-President for International Cooperation and a Full Professor of Animal Science at University of São Paulo (USP). He earned his MSc at USP and a Ph.D. from University of Illinois and has been with the Luiz de Queiroz College of Agriculture (ESALQ) at USP since 1974. His teaching and research activities are related to animal physiology with focus on passive immunity in domestic animals.

Professor Machado-Neto also dedicates himself to numerous academic administrative roles at USP. He is a member of the University's Board, Head of Zoology Department, President of Research Committee and Vice Dean of ESALQ/USP. He is also the coordinator of Interamerican Bank of Development Program and CNPq Scholarships for Undergraduate Research Students, the President of Undergraduate Research Program and USP Call Technology Academic Committee, Associate Provost for Research, Assistant of Pro-Rector of USP Graduate College and Assistant of Research Pro-Rector.

UFC, Federal University of Ceará



Tito Livio Livio Cruz Romão: Translation Studies PhD (Federal University of Santa Catarina / Brazil); Applied Linguistics (Translation) M.A. (Johannes Gutenberg-Universität Mainz / Germany); Specialization in Conference Interpreting - Simultaneous and Consecutive Interpreting (Karl Ruprecht-Universität Heidelberg / Germany); Bachelor's degree in English, French and Brazilian Portuguese language and literatures (State University of Ceará / Brazil).

Head of the International Office and Coordinator of the Science Without Borders Program at Federal University of Ceará (UFC). Public Translator and Commercial Interpreter appointed by the Commercial Registry of the State of Ceará (Brazil) for the German language. Since 1993, German language and culture professor at the Bachelor's degree course German language and literature (UFC) and professor of the Specialization Course in Translation Studies (UFC). Translator of several books, book chapters and articles from German, French and English into Portuguese. Between 1997 and 2001 professor for Brazilian culture and language at the University of Vienna Translation Studies Center.

UFSCar, Federal University of São Carlos

Represented by: Camila Höfling, Director for International Relations, UFSCar - Federal University of São Carlos

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- MOU - Cranfield University, Cranfield Defense and Security. General Cooperation Agreement between UFSCar and Cranfield University (Cranfield Defense and Security) – valid through December 2016.

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK. Please indicate if you wish to have any meetings with partners when in the UK.

Once I'm participating in such an event/mission, and getting to know different institutions and people responsible for the internationalization, I'd be able, as soon as I return to my institution, to contact diverse faculty members in order to show them what I have learned about the institutions from United Kingdom, to facilitate the exchange of information for future international cooperation.

As the Head of International Relations Office at UFSCar, I'd like to meet possible partners to give them an idea of our comprehensive university, in terms of courses in undergraduation and postgraduation levels, in order to start a possible partnership that could grow into a MoU or a Cooperation Agreement between the institutions, especially those which had already received our students in the Program SwB.

I would also like to hear from those institutions a feedback concerning this government program (SwB) and the Brazilian students they have already received.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	X
Teaching partnerships	x	Joint degrees	x	English training	X

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Subject areas: We are a very comprehensive institution concerning the postgraduate program we offer at our 3 campuses. We have 03 excellence programs (with the highest grade – 7 – at CAPES evaluation) in the Chemistry Engineering, Chemistry and Materials Engineering areas that look forward to have more research partnerships. Besides, areas in the Humanities and Biological and Hard Sciences are equally eager to have the same opportunities concerning research partnerships.

Models of partnerships: we have always thought about student and faculty exchange.

4. About your university

1. Number of undergraduate students: **14,807**
2. Number of postgraduate students: **3,780**
3. Number of undergraduate courses: **63** (58 on site and 5 distance learning)
4. Number of postgraduate programmes: **39** programs (academic Master's); **8** programs (professional Master's); **27** programs (Doctor's degree); **72** Lato Sensu courses.
5. Number of teaching staff: **1,100**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **6**
7. Total number of international agreements: **89**
8. Number of international students currently enrolled: **27** undergraduation; **126** postgraduation
9. Total number of students participating in Science Without Borders that went to the UK: **205**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **451**
11. Number of subjects taught in English: With the exception of the subjects taught in the English License of the Languages Undergrad Course, there are no subjects taught in English at UFSCar.

UFPR, Federal University of Paraná

Represented by: Edilson Sérgio Silveira, Pro-Vice Chancellor for Postgraduate and Research, UFPR - Federal University of Paraná

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- Plymouth University
- University of Strathclyde

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

The meetings will give us the opportunity to have a closer look into the UK universities and find common interests with better chance for a long term relation regarding exchange of faculty and students within research projects. We will be able to stimulate and continue to convince the faculty in our institution to initiate dialogues with their counterparts in the UK universities and think of ways to interact more effectively.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	X
Teaching partnerships	x	Joint degrees	x	English training	x

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Recent breakthroughs to come out of UFPR's research include the description of the genome of *Herbaspirillum seropedicae*, a bacterium capable of fixing nitrogen and promoting the growth of important plant crops such as maize, rice, and sugar cane. Our research focuses on some of the most fundamental issues in genomics and proteomics, biotechnology, environmental science, development of new materials, molecular diagnosis, and epidemiological studies. Development of two of our new research centres has begun. The first interdisciplinary centre will focus on environmental sciences and computational modelling and will congregate research groups from different areas when it opens in 2016. The second one will be a cutting-edge facility for research and innovation in materials science and technology. For the near future new research facilities are planned, as for instance, The Genomics and Proteomics Centre, Biocollections Facility Building, including a Natural History Museum. Major part of our success in research has been lying on the graduate programs. The best graded graduate programs at UFPR are in Biochemistry; Entomology; Economic Development; Chemistry; Physics; Biotechnology; Law. Other well graded graduate programs at UFPR and with possibilities in establishing long term partnerships with foreign universities are Agronomy; Cell and Molecular Biology; Ecology; Education; Physical Education and Sport Science; Mechanical Engineering; History; Linguistics and Literature; Microbiology, Parasitology and Pathology; Geodesy; Philosophy; Geography.

4. About your university

1. Number of undergraduate students: **26458**
2. Number of postgraduate students: **4137**
3. Number of undergraduate courses: **114**
4. Number of postgraduate programmes: **76**
5. Number of teaching staff: **2374**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **7**
7. Total number of international agreements: **128**
8. Number of international students currently enrolled: **272**
9. Total number of students participating in Science Without Borders that went to the UK: **201**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **423**
11. Number of subjects taught in English: approx. **14**

UNICAMP, State University of Campinas

Represented by: Eleonora Cavalcante Albano, Assistant to Science Without Borders, Vice-Rectorate for International Relations, UNICAMP - State University of Campinas

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- Heriot-Watt University
- University of Edinburgh
- Aston University
- Durham University
- Liverpool School of Tropical Medicine
- The University of Manchester
- University of Bath
- University of Birmingham
- University of Bristol
- University of Essex
- University of Leeds
- University of Liverpool
- University of London
- University of Nottingham
- University of Oxford
- University of Sheffield
- University of Southampton
- Wessex Institute of Technology

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK. Please indicate if you wish to have any meetings with partners when in the UK.

It is too early to define such a schedule. As an advisor to Unicamp's international office, I may be interested in meeting representatives from our UK partners depending on the outcome of our meetings with the local community concerning the preparation of the October meeting. I do not envisage having information about this before mid September.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	X
Teaching partnerships	x	Joint degrees	x	English training	X

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Subject areas: We are interested in all subject areas. Before October, we will circulate information about the aims of the UK meeting and organize local meetings with researchers who may be interested in sharing their concerns with me so that I can convey them while in the UK.

4. About your university

1. Number of undergraduate students: **18,338**
2. Number of postgraduate students: **16,195**
3. Number of undergraduate courses: **68**
4. Number of postgraduate programmes: **72**
5. Number of teaching staff: **1,759**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **33**
7. Total number of international agreements: **366**
8. Number of international students currently enrolled: **~1,000**
9. Total number of students participating in Science Without Borders that went to the UK: information not available from Capes/CNPq
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **734**
11. Number of subjects taught in English: **~30**

UNESP, São Paulo State University

Represented by: José Celso Freire Jr., Associate Provost for International Relations, UNESP - São Paulo State University / FAUBAI President

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

UNESP has been selected for the Global Innovation Initiative project: Increasing Energy Efficiency Using Rapid Smart Grids. The project leaders are N. Athula Kulatunga, director of Grid Efficiency Lab at Purdue University; Subhes Bhattacharyya, from the De Montfort University; and Dionizio Paschoareli, from UNESP's Faculty of Engineering of Ilha Solteira.

We are actively participating at the Erasmus Mundus Projects, the projects we have currently enrolling UK institutions are BE Mundus, as partner institutions, with Cardiff Metropolitan University, and EuroInka, as Co-coordinator, a project developed with the Manchester Metropolitan University Business School that have been selected this year by the European commission.

UNESP currently have 15 Cooperation agreements in general and specific fields of knowledge, with some of the best United Kingdom Higher Education Institutions. They are University of Birmingham, Open University, University of Bath, University of Oxford, Bangor University, University of Northampton, CAB International – CABI, University of Southampton, King's College London, Queen Mary University of London, BioMed Central Ltd., British Council, Northwick Park Institute for Medical Research, University of Edinburgh and University of Glasgow.

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

The goals of UNESP participation on the Mission to the UK is to expand collaborations with UK universities, broaden research capabilities, by organizing research workshops in Brazil or UK, as well as enable students and staff mobility, and strengthen new and on course cooperation, with the aim of developing long term high quality partnerships.

- Disseminate the opportunities that UNESP offers for foreign students, such as our courses in English.
<http://www.unesp.br/international/>

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	X
Teaching partnerships	x	Joint degrees	x	English training	X

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

UNESP is a research intensive university that comprehend most fields of knowledge.

Subject areas:

Our most developed research areas are:

- Alternative and Renewable Energy
- Animal Science
- Bioactive Natural Products
- Bioenergy
- Biotechnology and Biomaterials
- Electrical Engineering, Campus of Ilha Solteira
- Food and Food Security
- Material Science
- Nanotechnology
- Ocean Science
- Pharmaceutical Science and Biotechnology
- Pre-Clinical and Clinical Research
- Public Policy
- Theoretical Physics

Models of partnership: We would like to develop joint investigation projects, promote the interchange of researchers, and discuss the possibility of specific research projects.

4. About your university

1. Number of undergraduate students: **36,000**
2. Number of postgraduate students: **15,000**
3. Number of undergraduate courses: **179** Undergraduate programs
4. Number of postgraduate programmes: 231 (**128** Masters, **103** PhDs)
5. Number of teaching staff: **3,700**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards):
HUMAN SCIENCES: Geography, Linguistics, Portuguese, Education.
NATURAL SCIENCES: Physics, Chemistry, Material Science, Electrical Engineering,

Information Sciences.

BIOLOGICAL SCIENCES: Animal Science, Agronomy, Aquaculture, Biosciences and Biotechnology, Kinesiology, Dentistry, Genetics, Veterinary Sciences, Animal Biology.

7. Total number of international agreements: **415** international agreements.
8. Number of international students currently enrolled: **143** international students 2014/1.
9. Total number of students participating in Science Without Borders that went to the UK: **208** UNESP students.
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **705** groups.
11. Number of subjects taught in English: 4 Programs in English, with **50** disciplines
(<http://www.unesp.br/international/>)

UFSC, Federal University of Santa Catarina

Represented by: Luiz Carlos Pinheiro Machado Filho, Director of International Relations, UFSC - Federal University of Santa Catarina

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- British Universities with whom UFSC has institutional agreements (all in England):
- University of Bristol: open to all areas and to student mobility. Expiry: December 2017.
- University of Nottingham: open to all areas and to student mobility, with special application conditions for 1 year for students at the Faculty of Arts. Expiry: February 2016.
- University of Southampton: agreement with focus on the area of language and literature, open to student mobility. Expiry: June 2015.
- University of Birmingham: open to all areas and to student mobility. Expiry: December 2015.
- University of Essex: open to all areas and to student mobility. Expiry: December 2014.

We have an important agreement being built by our Research VP with BG oil, in the frame of Science without Borders and oil exploration by BG in Brazil. We also have some discussion with the University of Newcastle, in the engineering area (Joinville campus).

There are several collaborations at faculty level, post-doctoral internship and sandwich doctorate. Currently we have PhD students in "sandwich" in the following British institutions: 2 at the University of St. Andrews, Scotland; 2 at the University of London, 2 at the University of Birmingham, 1 at the University of Manchester, 1 at the University of Sussex, all England.

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

To strength the current ties with UK's Universities and research institutions, as well as opening new collaboration possibilities, always based on the principle of mutual benefits, academic solidarity and reciprocity. As we already have agreements with some English Universities, we would like to have the opportunity to meet institutions from Wales, Scotland and Northern Ireland. Although we don't have any strong contact in Wales and Northern Ireland, in Scotland we would like to meet with St. Andrews University and with the University of Edinburgh, with whom we had previous contact and students or faculty visiting. In England, we would like to expand our contacts to the University of London and University of Manchester.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	x
Teaching partnerships	x	Joint degrees	x	English training	

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Subject areas:

All areas, once our University has currently more than 70 Graduate Programs in all areas of knowledge.

Model of partnership: The model we use to work more often, without excluding other possibilities, is involving graduate students internship, co-tutelle and/or "sandwich-doctorate" and post-doctoral studies by faculties.

4. About your university

1. Number of undergraduate students: **30,000**
2. Number of postgraduate students: **12,000**
3. Number of undergraduate courses: **78**, distributed in five campi, all areas of knowledge;
4. Number of postgraduate programmes: **47**
5. Number of teaching staff: around **2,200**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **18 (38%)**.
7. Total number of international agreements: **403**
8. Number of international students currently enrolled: 212 one-semester internship + 15 AUGM + 99 USAC + 116 PEC-G e Pró-Haiti = Total **442**
9. Total number of students participating in Science Without Borders that went to the UK: **2013 - 92**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **573**
11. Number of subjects taught in English: one undergraduate, occasionally, in the Business area is taught to Canadian and Brazilian students. Occasionally, a graduate course is taught in English, usually "topics" on a subject, by a foreigner visiting professor.

UFRN, Federal University of Rio Grande do Norte

Represented by: Márcio Venício Barbosa, Director for International Relations, UFRN - Federal University of Rio Grande do Norte / President, CEGRIFES – International Association of Federal Universities

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- Department of Earth Sciences – University of Cambridge
- University of Ulster

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

We wish to know the United Kingdom HE and establish the initial relations in order to improve our academic cooperation profile in this region, which is one of the top choice of our students in terms of mobility.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training
Teaching partnerships	x	Joint degrees		English training

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Subject areas:

- Physics
- Engineering
- Neurosciences
- Tropical Medicine
- Energy
- Human Sciences

4. About your university

1. Number of undergraduate students: **approx. 40,000**
2. Number of postgraduate students: **approx. 10,000**
3. Number of undergraduate courses: **85**
4. Number of postgraduate programmes: **103**
5. Number of teaching staff: **2,000**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **3**
7. Total number of international agreements: **170**
8. Number of international students currently enrolled: **110**
9. Total number of students participating in Science Without Borders that went to the UK: **62**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **223**
11. Number of subjects taught in English: **15**

UFPE, Federal University of Pernambuco

Represented by: Maria Leonor Alves Maia, Director for International Relations, UFPE - Federal University of Pernambuco

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

CURRENT AGREEMENTS

- Bangor University
- Institute of Child Health – University of London
- Middlesex University
- Study Abroad UK
- Kent University – Canterbury
- University of St. Andrews
- King's College

AGREEMENTS IN PROGRESS

- London School of Hygiene and Tropical Medicine
- Northumbria University

INTERNATIONAL PROJECTS WITH UK

Science Without Borders

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

The Science Without Borders program has enabled us to send many students to UK, especially to the following institutions:

University of East London - UEL (England)
University of Liverpool (England)
University of Surrey (England)
Newcastle University (England)
University of Manchester (England)
University of Strathclyde (Scotland)
Coventry University (England)
Roehampton University (England)
Swansea University (England)
University Kent at Canterbury (England)

On one hand, the visit to the UK will be an amazing opportunity for us to be able to visit some of these universities that have received so many of our students and to be able to experience the environment they are studying in. On the other, it will be an opportunity to introduce UFPE to our or new partners and to strengthen our academic cooperation.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training
Teaching partnerships		Joint degrees	x	English training

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Subject areas:

ICT
Engineering
Biomedicine/Health
Ocean and Maritime Science
Creative Industries
Energy
Urban and Social Development
Environment

Models of partnership:

Researchers and graduate students mobility
Visiting fellow
Joint research

4. About your university

1. Number of undergraduate students: **33.616**
2. Number of postgraduate students: **10.019**
3. Number of undergraduate courses: **103**
4. Number of postgraduate programmes: 180
5. Number of teaching staff: **2.590**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **8**
7. Total number of international agreements: **158**
8. Number of international students currently enrolled: **65**
9. Total number of students participating in Science Without Borders that went to the UK: **246**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **464**
11. Number of subjects taught in English: **0**

UFMG, Federal University of Minas Gerais

Represented by: Míriam Lúcia dos Santos Jorge, Assistant Director for International Relations, UFMG - Federal University of Minas Gerais

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

Scotland:

University of Edinburgh - General Cooperation Agreement

England:

Cardiff University - General Cooperation Agreement

Institute of Freshwater Ecology - Letter of Intent

King's College London - University of London - Letter of Intent

University College London - Memorandum of Understanding

University of Leeds - Academic Cooperation Agreement

University of Southampton - General Cooperation Agreement

University of Nottingham - Academic Cooperation Agreement

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

The Universidade Federal de Minas Gerais (UFMG) is committed to the highest levels of academic excellence in teaching and research. Regarding internationalization, UFMG is committed to creating strong and long-lasting partnerships with research institutions. As a comprehensive research university, UFMG values partnerships that promotes student, faculty or staff mobility; supports international research teams; fosters collaboration through cotutelle agreements, joint degrees and academic exchange, as well as other modes of cooperation. UFMG's internationalization goals include the principles of reciprocity, complementation, equity and solidarity.

UFMG is willing to have more international students on campus, enrolled in our graduate and undergraduate programs as well as in our Portuguese as a Foreign Language programs.

Meetings:

University of Oxford

Queen Mary University of London

Queen's University Belfast

King's College London

University of Cambridge

University of Bristol

University of Leeds

University of Liverpool

Cardiff University

University of Edinburgh

University College London - Memorandum of Understanding

University of Leeds - Academic Cooperation Agreement

University of Southampton - General Cooperation Agreement

University of Nottingham - Academic Cooperation Agreement

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	X
Teaching partnerships	x	Joint degrees	x	English training	

4. About your university

1. Number of undergraduate students: **33142**

2. Number of postgraduate students: **14428**

3. Number of undergraduate courses: **75**

4. Number of postgraduate programmes: **77**

5. Number of teaching staff: **2819**

6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards):

Administration, Bioinformatics, Cellular Biology, Biochemistry and Immunology, Animal Science, Computer Science, Information Science, Political Science, Biological Sciences: Physiology and Pharmacology, Rehabilitation Sciences, Health Sciences: infectious diseases and tropical medicine, Social Communication, Demography, Law, Economy, Education: knowledge and social inclusion, Electrical Engineering, Metallurgy and Mine Engineering, Linguistic Studies, Literary Studies, Philosophy, Physics, Genetics, History, Microbiology, Odontology (Dentistry), Parasitology, Pathology, Chemistry, Public Health and Sanitation, Environment and Water Resources.

7. Total number of international agreements: **408**

8. Number of international students currently enrolled: **200**
9. Total number of students participating in Science Without Borders that went to the UK: **574**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **1022**
11. Number of subjects taught in English: **17** subjects at postgraduate programmes.

UFRGS, Federal University of Rio Grande do Sul

Represented by: Nicolas Bruno Maillard, Director for International Relations, UFRGS - Federal University of Rio Grande do Sul

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- British Council
- University of Salford
- University of Aberdeen
- Health Protection Agency - NIBSC
- University of Nottingham
- University of Durham
- University of the arts London
- University of Edinburgh
- University of Manchester

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

UFRGS is engaged in a process of:

- increasing its incoming flow. This is a specific problem with UK: we have sent more than 150 students to UK these last two semesters, but receive only a few individuals. I would like to discuss the reasons for this situation, as well as possible solutions – for instance, we could work on receiving English monitors to improve the training of our staff and academics in your language, and thus be able to receive more English-speaking students.
- Coupling student mobility to joint research. At PhD level, one step towards this is Double Degree. We need to use Science without Border and our undergraduate students as a vehicle to develop long-term, research oriented projects.

The HEIs that we have most met these last two years, and that we would like to visit or meet again are:

- Swansea + Aberdeen + Dundee (Geography coastal sciences, ocean studies)
- Nottingham (Fluid Dynamics; Urbanism & Architecture)
- Saint Andrews to prepare their visit at UFRGS.
- Newcastle
- Stirling
- Durham (Staff mobility)
- Glasgow (Science w/ Border mobility)
- Kent (Law school)

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	x
Teaching partnerships		Joint degrees	x	English training	

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Double degree PhDs would be an interesting tool to foster joint research.

Besides the areas that have been mentioned above, Engineering in general, Computing, Agronomy, and Business/Administration would be the topics most internationalized at UFRGS.

4. About your university

1. Number of undergraduate students: **31,000**
2. Number of postgraduate students: **17,000**
3. Number of undergraduate courses: **90**
4. Number of postgraduate programmes: **81**
5. Number of teaching staff: **2,600**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **30**
7. Total number of international agreements: **110**
8. Number of international students currently enrolled: **850**
9. Total number of students participating in Science Without Borders that went to the UK: **237**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **770**
11. Number of subjects taught in English: **3**

USP, University of São Paulo

Represented by: Raul Machado Neto, Vice-Rector for International Relations, USP - University of São Paulo

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- Proudman Oceanographic Laboratory and University of Liverpool: Academic Agreement with Instituto Oceanográfico of Universidade de São Paulo, until 22/11/2014.
- Birkbeck, University of London: Academic Agreement with Instituto de Psicologia of Universidade de São Paulo, until 02/02/2015.
- Swansea University: Letter of Intent with Escola de Engenharia de São Carlos of Universidade de São Paulo, until 19/03/2015.
- Queen's University Belfast: Memorandum of Understanding with Universidade de São Paulo, until 30/05/2015, and an Academic Agreement until 07/05/2017.
- Lancaster University: Letter of Intent with Instituto de Ciências Matemáticas e de Computação of Universidade de São Paulo, until 07/07/2015.
- University of Exeter: Letter of Intent with Universidade de São Paulo, until 14/08/2015.
- The University of Sheffield: Academic Agreement with Faculdade de Odontologia de Bauru of Universidade de São Paulo, until 11/10/2015.
- CAB International: Memorandum of Understanding with Escola Superior de Agricultura "Luiz de Queirós" of Universidade de São Paulo, until 06/12/2015.
- University of Kent: Memorandum of Understanding with Faculdade de Economia, Administração e Contabilidade de Ribeirão Preto of Universidade de São Paulo, until 25/01/2016.
- St. Mary's University College: Academic Agreement with Faculdade de Filosofia, Letras e Ciências Humanas of Universidade de São Paulo, until 10/11/2016.
- The University of Edinburgh: Memorandum of Understanding with Universidade de São Paulo, until 25/01/2017.
- The University of Nottingham: Memorandum of Understanding with Universidade de São Paulo, until 25/03/2017, and an Academic Agreement until 05/03/2018.
- Durham University: Memorandum of Understanding and Academic Agreement with Universidade de São Paulo, until 11/06/2017.
- University of Cambridge: Memorandum of Understanding with Universidade de São Paulo, until 07/07/2017.
- King's College London: Memorandum of Understanding between Division of Women's Health, School of Medicine and Faculdade de Saúde Pública of Universidade de São Paulo, until 12/06/2017; Academic Agreement with all institutes of Universidade de São Paulo, until 24/01/2019.
- University of Southampton: Memorandum of Understanding with Universidade de São Paulo, until 12/08/2017.
- City University London: Memorandum of Understanding with Instituto de Matemática e Estatística of Universidade de São Paulo, until 15/08/2017.
- University of East Anglia: Academic Agreement with Escola Superior de Agricultura "Luiz de Queirós" of Universidade de São Paulo, until 22/08/2017.
- University of Bath: Memorandum of Understanding with Universidade de São Paulo, until 10/09/2017.
- University of Worcester: Academic Agreement with Escola de Educação Física e Esportes of Universidade de São Paulo, until 1^o/10/2017.
- Bangor University: Memorandum of Understanding with Escola Superior de Agricultura "Luiz de Queirós" of Universidade de São Paulo, until 01/11/2017.
- University of Birmingham: Memorandum of Understanding with Universidade de São Paulo, until 11/11/2017, and an Academic Agreement until 10/04/2018.
- University of Reading: Memorandum of Understanding with Universidade de São Paulo, until 11/11/2017.
- Harper Adams University College: Memorandum of Understanding with Escola Superior de Agricultura "Luiz de Queirós" of Universidade de São Paulo, until 17/12/2017.
- University of Liverpool: Memorandum of Understanding with Universidade de São Paulo, until 13/01/2018.
- University of East Anglia: Memorandum of Understanding with Universidade de São Paulo, until 10/04/2018.
- Heriot-Watt University: Memorandum of Understanding with Universidade de São Paulo, until 21/08/2018.
- University of London: Memorandum of Understanding with Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Instituto de Geociências e Instituto Oceanográfico of Universidade de São Paulo, until 28/08/2018.
- Queen Mary University of London: Memorandum of Understanding with Universidade de São Paulo, until 13/09/2018.
- London School of Hygiene and Tropical Medicine: Memorandum of Understanding with Universidade de São Paulo, until 28/11/2018.
- University of Hull: Memorandum of Understanding and an Academic Agreement with Universidade de São Paulo, until 15/01/2019.
- The University of Manchester: Memorandum of Understanding with Universidade de São Paulo, until 16/01/2019.
- Cardiff University: Memorandum of Understanding with Universidade de São Paulo, until 18/02/2019.
- University of Newcastle upon Tyne: Memorandum of Understanding with Universidade de São Paulo, until 22/07/2019.

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK. Please indicate if you wish to have any meetings with partners when in the UK.

- 1) King's College;
- 2) University of Bath;
- 3) University of Surrey;
- 4) University of Edinburgh;
- 5) University of Oxford.

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training
Teaching partnerships		Joint degrees	x	English training

4. About your university

1. Number of undergraduate students: **58,204**
2. Number of postgraduate students: **29,547**
3. Number of undergraduate courses: **289**
4. Number of postgraduate programmes: **665**
5. Number of teaching staff: **6,008**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards):
 - Programmes with Capes concept 6: **47** (Master/PhD)
 - Programmes with Capes concept 7: **45** (Master/PhD)
7. Total number of international agreements: **997**
8. Number of international students currently enrolled:
 - Students from foreign universities in exchange in the USP: **2.659**
 - Foreign students enrolled as regular students postgraduate in the USP: **1.587**
 - Foreign students enrolled as regular undergraduate students in the USP: **385**
 - Foreigners in post doctoral training in the USP: **356**
9. Total number of students participating in Science Without Borders that went to the UK:
 - Irlanda: **77**
 - Reino Unido: **649**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa: **1,866**
11. Number of subjects taught in English: **20**

UFC, Federal University of Ceará

Represented by: Tito Lívio Cruz Romão, Director for International Relations, UFC - Federal University of Ceará

1. Engagement with the United Kingdom HE sector

Please list the current agreements, MoUs and international projects your university currently has with UK institutions.

- MoU between the Universidade Federal do Ceará and the University of Manchester (Chemistry) - 2012 – 2015;
- MoU between the Universidade Federal do Ceará and the University of Salford M5 4WT – 2012-2015;
- MoU between the Universidade Federal do Ceará, the Open University of (Milton Keynes) and the Universidade Caxias do Sul.

2. Institutional objectives

Please state what you wish to achieve for your institution by participating in the visit to the UK.

Please indicate if you wish to have any meetings with partners when in the UK.

As the Head of the International Office of Universidade Federal do Ceará (UFC) I would like to help it to cultivate / to strengthen its relations with UK universities, especially with those to which students of our institution have been sent in the framework of the Brazilian Program "Science Without Borders". Being in the UK will help me to understand better how its universities are run, for instance regarding the European ECTS system and the British grade system, as well as general requirements for foreign students etc.

I do wish to have some meetings with partners in the UK

3. Areas of interest

Please indicate which of the following are of interest for your institution:

Student mobility	x	Research partnerships	x	Staff training	
Teaching partnerships	x	Joint degrees	x	English training	x

If you selected research partnerships please indicate which subject areas you would like to pursue for partnerships and what model of partnerships you would like to take forward.

Subject areas:

- Engineering
- Medicine
- Biology
- English and Translation Studies

Model of partnerships: MoU, Joint PhD Agreements, Student Exchange Programs

4. About your university

1. Number of undergraduate students: **31,386**
2. Number of postgraduate students: **8,022**
3. Number of undergraduate courses: **110**
4. Number of postgraduate programmes: **68** (52 academic masters, 8 professional masters, 3 professional masters in networks, 36 PhD courses, 5 PhD courses in networks)
5. Number of teaching staff: **2,052**
6. Name of postgraduate programmes with CAPES concepts 6 and 7 (international standards): **4**
7. Total number of international agreements: **112**
8. Number of international students currently enrolled: **200**
9. Total number of students participating in Science Without Borders that went to the UK: **175**
10. Number of Research Groups registered at CNPq's Diretório de Pesquisa:
11. Number of subjects taught in English: (all subjects taught in English are in the domain of the Course of English language and literature)

Appendix 17 university members of LARG (Latin America Regional Group (LARG))

- University of Edinburgh
- Glasgow Caledonian University
- University of Aberdeen
- Heriot-Watt University
- University of St Andrew's
- Queen Mary University
- University of the Highlands and Islands
- SRUC (Scotland's Rural College)
- Edinburgh Napier University
- University of Stirling
- University of Glasgow
- University of Strathclyde

Appendix 18: UK Universities and other countries active in Brazil

Kings College London

Kings College London set up a Brazil institute in 2008 to research, develop and encourage Brazilian studies in the UK.

<http://www.kcl.ac.uk/aboutkings/worldwide/initiatives/global/brazilinstitute/aboutus/index.aspx>

It aims to develop an international reputation through a programme of activities focussed on contemporary Brazil, including:

- Providing a focal point for PhD research on Brazil within the UK.
- Hosting new research projects in different fields related to Brazil.
- Hosting and encouraging the exchange of students and researchers from/to Brazil.
- Developing academic links with Brazilian higher education institutions.
- Organising high profile guest lectures by prominent Brazilian figures.
- Organising symposia or lecture series on issues relating to Brazil.
- Sponsoring conferences and publications.
- Inviting Visiting Professors to deliver lectures and seminars.
- Acting as an umbrella for the creation of new courses and academic appointments concerning Brazil.
- Fostering links with Brazilian organisations in the UK and Brazil, for example through the Embassy of Brazil and the Brazilian Chamber of Commerce in Great Britain, as well as with British organisations interested in Brazil.
- Promoting existing Brazil-related events such as the Latin American Film Festival.
- Hosting joint events with organisations committed to promoting an awareness of Brazil in the UK, such as Canning House, the Barbican Centre and the Institute of Contemporary Arts.

The university has the following partners in Brazil:

- Universidade de São Paulo (USP is one of seven key strategic overseas partners for King's. The partnership agreement, signed in 2008, is College-wide and builds on a range of links at School and department level. It aims to foster cooperation in various areas, including staff visits in both directions, exchange of students (up to 5 each year from each institution), the development of joint research and the development of joint PhD programmes. See <http://www.kcl.ac.uk/aboutkings/worldwide/partners/partners/usp/index.aspx> for more details.
- Universidade Federal do Rio de Janeiro (King's has a College-wide cooperation agreement with UFRJ, which focuses particularly on staff and student exchanges).
- Universidade Federal de Minas Gerais (King's signed a College-wide cooperation agreement with UFMG in 2013, building on the relationship developed by the Department of Spanish, Portuguese & Latin American Studies and its long-standing student exchange agreement).
- Pontifícia Universidade Católica do Rio Grande do Sul (King's has a College-wide MoU with PUCRS since 2012, focused on collaboration between the School of Biomedical & Health Sciences at King's and the Centre of Microgravity, Faculty of Engineering, at PUCRS. Agreements also exist covering collaborative activities in aerospace, physiological research and medicine. New research links are now developing between the Division of Women's Health and PUCRS).
- Universidade Estadual Paulista
- Universidade de Brasília
- Universidade Federal da Bahia
- Universidade Estadual da Paraíba (Dept of Geography at King's has a cooperation agreement with UEPB to foster joint activity in the exchange of doctoral students).
- Academia Brasileira de Letras
- FAPESP (King's signed a cooperation agreement with FAPESP in September 2009, becoming FAPESP's first university partner in the UK. The agreement aims to support the development of joint research projects between associated Brazilian and British researchers in all areas of knowledge in the sciences, social sciences and

humanities, by providing funds for the exchange of researchers and post-doctoral fellows).

We understand the university is opening a Brazil office and is investing significantly in its development of the market.

University of Nottingham

The University of Nottingham is investing significantly in its Brazil activities to support training for students and collaborative research. Its activities draw on the strengths of the university and the needs of Brazilian universities and students. As Brazil continues to grow and flourish economically, socially and culturally, The University of Nottingham aims to become a leading UK university supporting partnerships with universities across the country.

It is making significant joint investments, in partnership with the University of Birmingham to support partnership development and research collaboration with leading universities and key public and private organisations in Brazil. They have established a joint research investment fund with FAPESP and offer PhD scholarships and Visiting Fellowships.

The university's themes for working with Brazilian universities are:

- Global food security
- Biomedical Science and Magnetic Resonance Imaging
- Energy - including research into oil and gas
- Drug Discovery

Research funding

The university has established a collaborative joint research investment fund with FAPESP and the University of Birmingham worth £480,000. This fund is supporting collaborative research projects with Brazilian universities.

It also promotes other opportunities for research funding from the BBSRC including the following:

- Brazil Partnering Awards
- International workshops
- International Scientific Interchange Scheme
- BBSRC-Brazil (FAPESP) Research Fund
- Exchange of New Entrepreneurs between the Federative Republic of Brazil and Europe

Visiting Fellowship Scheme

The University has pioneered a Brazilian Visiting Fellowship Scheme funding a number of early stage researchers at Brazilian universities to undertake research at the University of Nottingham for three months. It is hoped that these visits will result in long-term collaborations.

Full-time scholarships

There are 20 full fee PhD scholarships available per annum for students from Brazil. These scholarships are in collaboration with CAPES and are divided between the University of Nottingham and the University of Birmingham.

The universities of Birmingham and Nottingham have shared an office in Joinville in the southern state of Santa Catarina since 2011. The office, set up 10 years ago by Nottingham, promotes in-country research and links with businesses, government and higher education.

University of Birmingham

<http://www.birmingham.ac.uk/International/global-engagement/brazil/Index.aspx>

Birmingham's Brazil-focused schemes include:

UNESP/Birmingham Visiting Fellows

Funding is available for three permanent early-career academic staff from UNESP (full or part time) and three early-career staff from the University of Birmingham (full or part time) to undertake fellowships of one to three months' duration, during which time they will be visiting researchers at the other university. The aim of the scheme is to build lasting research links between the two institutions and will provide each Visiting Fellow with travel expenses and a monthly stipend for up to three months to help cover living expenses and accommodation.

Visiting Fellows Scheme

The Brazil Visiting Fellows Scheme 2014/15 provides early career university lecturers or post-doctoral researchers currently working at recognised universities in Brazil the opportunity to spend three months at the University of Birmingham carrying out identified research projects.

The aims of the Scheme are to:

- Support the professional development of early career researchers at Brazilian universities
- Enable Visiting Fellows to obtain insight into the organisation and conduct of research, training and administration at Birmingham University
- Promote research collaboration between leading groups in Birmingham and Brazil through projects undertaken initially in the UK
- Support partnership development and collaboration between the University of Birmingham and institutions in Brazil

The scheme will provide each Visiting Fellow with travel expenses of up to £850 and a monthly stipend of £1200 for three months to help cover living expenses and accommodation. Accommodation can be booked on Fellows' behalf and the cost deducted from the stipend.

Further insight into the approach and strategy the university has taken to its international development in Brazil can be seen in a recent presentation by Dr Marion Fleming-Froy, the International Partnerships Coordinator at Birmingham. The key points are summarised below:

The University of Birmingham has:

- c.100 Brazilian students
- 8 Brazilian staff
- 250+ Brazilian alumni

UoB Engagement with Brazil

- Collaborative research and staff development links with UFSC going back 37 years
- Pre-2011 ad-hoc research collaboration with Brazilian universities across a number of disciplines
- 2011 UoB review of global engagement led to Brazil being designated as 1 of 4 strategic territories for collaboration
- Institutional support for systematic engagement with Brazil backed up with financial investment and staffing
- Coincided with increased UK government engagement with Brazil

Achievements to date

- Academic engagement with all major Brazilian research-led HEIs
- 20+ early career researchers hosted to date
- Co-funding secured for workshops
- 6 funded pump-priming projects through FAPESP
- Bi-lateral strategic partnerships secured: INCA, Ministry of Sport
- Strong support of UK and Brazilian government – UoB as 'go-to' institution

- 100+ Science without Borders Students since 2011
- Threefold increase in jointly authored publications from 2011 to 2012 (224)

Why Brazil?

- Leading global economy
- Increasing impact of research on international stage – 2.7% share of scientific papers and growing
- Sector to sector opportunities created through strengthening inter- governmental relations
- Leading research intensive universities
- Opportunities for mutually beneficial partnerships which are well- resourced through joint funding schemes
- Opportunities for business engagement through government policies which require reinvestment of profit from natural resources

Our Approach

- Identification of clear priority areas
- Strategic partnership with University of Nottingham to create critical mass
- Academic to academic led projects
- Listening to partners and agreeing joint priorities
- Joint development of projects
- Developing relationships with facilitators and funders
- In-country presence to support stakeholder relations

Our Commitment

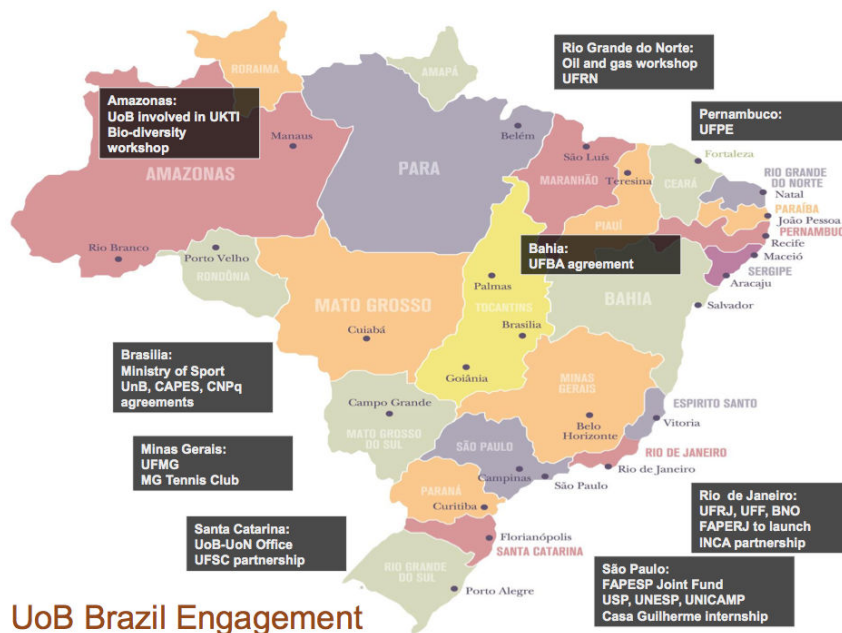
- UoB and UoN £4 million (14.8 million BRL) up front investment
- Dedicated staff team with consistent approach
- Academic buy-in encouraged through pump-priming
- Long-term commitment to partnership development
 - Joint PhD Awards
 - Academic workshops
 - Visiting Fellows scheme
 - Joint pump-priming funds
 - Travel Fund

Common Priority Areas

- Sporting mega-events: Legacies and Education
- Brazil as an emerging power
- Energy - low carbon agenda, bio-fuels
- Oil and Gas
- Cancer Studies
- Biodiversity
- Smart Cities
- Biomaterials

Finding Partners

- Academic led
- Rankings
- Beyond the 'Golden Triangle'



How?

- Mapping existing engagement
- Travel fund to explore collaborative opportunities
- Workshops
- Visiting Fellows
- Pump-priming projects
- Funding applications

Sustainability

- Building networks
- Early career researcher mobility
- PhDs
- The next phase – increased teaching collaboration and the development of joint/dual degrees

Science without Borders

- UoB one of largest recipients of UG students- 70+ enrolled at present
- Growing number of full PhD students
- Opportunities to build long term links with Brazil through the development of a significant alumni base and establishment of additional institutional agreements
- Potential to engage with industry in the region for mutual benefit in order to provide work experience for SwB students
- What next? Plans to increase flow of sandwich PhD students linked to ongoing research collaborations

Aligning engagement across different regions

- Bringing together the best possible teams of academics to collaborate on common challenges and shared problems
- Global Innovation Initiative UK + US + 1 (or 2)
- Horizon 2020
- Erasmus +

Success Factors

- Need to identify common challenges and shared problems
- Understand what partners are looking for from UK/partnerships Importance of up front investment

- Focus on mutually beneficial, long-term partnerships
- Value of personal relations
- In-country presence to supporting relations and activity
- Close relationship with Consulate, Science and Innovation teams, Embassy and Brazilian stakeholders
- Collaboration with other UK organisations where appropriate
- Learn the language!

What other countries are doing in Brazil

US universities are very active in Brazil and many have set up a base there. Harvard University has an office in São Paulo to support its US- based David Rockefeller Center for Latin American Studies, Columbia University has an office in Rio de Janeiro aimed at developing research initiatives across a number of faculties, and the University of Southern California also has a São Paulo office focused on recruiting Brazilian students and organising programmes for US students in Brazil. Via local funding through alumni donations or corporate investment some have set up their own research bases there. DeVry Education Group and Laureate International Universities, the privately held American education company, have entered the private higher education market through acquisitions. Laureate Education has made 12 acquisitions since it entered Brazil in 2005 and now has more than 200,000 students in the country.

Germany has longstanding links with Brazil and it is Germany's most important partner in Latin America for cooperation in education and research. A number of universities are engaged in the market but of particular interest in terms of options for support for Scottish universities is the German House concept. From its origins in 2008, in 2012 the German House of Science and Innovation (DWIH) was opened in São Paulo (where the largest concentration of researching German companies outside Germany is located). Its role is to intensify the scientific and technological exchange with partners in Brazil and generate interest in Germany as a research, science and innovation location.

The Federal Foreign Office is promoting the worldwide development of German Houses of Science and Innovation within the framework of the Research and Academic Exchange Initiative and together with the Federal Ministry of Education and Research. São Paulo is one of five locations alongside New York, Moscow, New Delhi and Tokyo. The house is home to around 12 universities (FU Berlin, Bochum, Duisburg-Essen, Münster), technical universities (Munich, Dortmund) universities of applied sciences (UAS7), and research institutions and innovation agencies under one roof. The German Academic Exchange Service (DAAD), which has an information centre there, developed the house together with the German Chambers of Commerce (AHK) in São Paulo. Other important partners with their own offices are the German Research Foundation (DFG), and the Alexander von Humboldt Foundation. It is understood that the German House contains a shared meeting room and reception area. Each institution is autonomous, does its own individual work and has its own priorities e.g. research, promotion and recruitment etc but they are there as a group.

The development of the DWIH is an expression of the growing German desire to intensify cooperation with Brazil. It offers many opportunities for academic exchanges and bilateral research relationships and in future the House wants to offer seminars and workshops on the development of new bilateral research projects, demonstrate an increased presence at research fairs, stimulate dialogue with political circles and intensify business-world contacts together with the AHK.

<https://www.daad.de/portrait/presse/pressemitteilungen/2012/19791.en.html>

The Freie Universität Berlin is one of eleven German universities of excellence at the German House of Science and Innovation (DWIH) in São Paulo. As an international network university, it has established offices abroad in New York, Beijing, Delhi, Moscow, Brussels and Cairo. In October 2010, another office was inaugurated in São Paulo in order to increase academic and scientific cooperation between Freie Universität and universities and research centres in Brazil and South America. The primary concern of the office is to attract promising

talents from the region for a study or research stay in Berlin, to facilitate scholarly cooperation, and to identify suitable instruments for cooperation in student exchange.

<http://www.fu-berlin.de/en/sites/brazil/>

More generally, Germany is a significant research partner of Brazil in project-related cooperation. In addition to bilateral cooperation between research institutions and universities (there are currently more than 440 university partnerships), organisations that are particularly engaged in Brazil include:

- The Helmholtz Association of German Research Centres (HGF) (www.helmholtz.de)
- The DFG (www.dfg.de)
- The FhG (www.fraunhofer.de)
- The Max Planck Society (MPG, www.mpg.de)
- The AvH (www.humboldt-foundation.de)
- The Leopoldina (www.leopoldina.org)

http://www.auswaertiges-amt.de/EN/Aussenpolitik/Laender/Laenderinfos/01-Nodes/Brasilien_node.html

According to the German government, researchers from the two countries are currently working together in the following major research projects:

- BRAGECRIM (including the DFG): 30 scientific institutions are cooperating in the area of production technology
- ATTO (including the Max Planck Institute for Chemistry in Mainz): construction of the 320 metre high Amazonian Tall Tower Observatory to examine the climatic function of the rain forest.
- BRAMAR (including the University of Göttingen and the RWTH Aachen): strategies and technologies for reducing water scarcity in the semi-arid north-eastern region of Brazil.
- CarBioCiol (including the Universities of Göttingen, Hanover, Hamburg, Kassel, Freiberg and Berlin – the Humboldt-Universität and the Freie Universität –, Kiel and Hohenheim and the Helmholtz Centre for Environmental Research (UFZ) in Leipzig): carbon-optimised land management in the Southern Amazonia.
- Innovate (including the TU Berlin, the Leibniz Institute of Freshwater Ecology and Inland Fisheries in Berlin, the Potsdam Institute for Climate Impact Research, the University of Hohenheim and Dresden University of Applied Sciences): improving agricultural yield, reducing greenhouse gases and protecting biodiversity through optimised multiple use of water reservoirs for energy generation and irrigation.
- INTECRAL (including Cologne University of Applied Sciences, the Friedrich-Schiller University Jena and the University of Leipzig): providing tentative solutions in the service and technology sectors with the aim of promoting sustainable development in the environmental and economic sectors in the federal state of Rio de Janeiro.
- IEPALT (including Clausthal University of Technology): developing a process for the residue-free recycling of the complete spent pot lining from the electrolytic cells (carbon and fireclay) in the pyrometallurgical reactors used in primary aluminium production; the idea is to save raw materials and primary energy sources and reduce highly toxic hazardous waste.
- There are further cooperation projects in the area of marine research, the aerospace sector and agricultural research. The Forschungszentrum Jülich and the Brazilian Agricultural Research Corporation (Embrapa) have both opened external laboratories (Labex) in the partner country representing each country's entire spectrum of agricultural research and intensifying cooperation.

In addition there have been recent agreements signed with FAPESP

<http://www.fapesp.br/en/8997>

Two new agreements aimed at promoting cooperation among researchers from the state of São Paulo and Germany were signed by FAPESP on October 15th 2014 during the FAPESP Week Munich symposium. Partnerships were formalized with the Federal Ministry of Education and Research of the Federal Republic of Germany and the University of Münster, one of the three most important institutions of higher education in Germany.

Many British universities are interested in looking at replicating the German House model of a united approach. Some of the Scottish universities are aware of the initiative and although its level of success needs more investigation, many think it does offer potential lessons for what Scotland needs to do in terms of a commitment to the market.

The Map of Science

It is interesting to note Germany's attempts to promote, via the DAAD website, the mapping of science links between Germany and Brazil.

<http://www.dwih.com.br/index.php?id=188>

"The aim of the German House of Science and Innovation São Paulo (DWIH) is to strengthen the German-Brazilian Science and innovation network through information about existing scientific and R&D cooperation between universities, research institutions and innovative companies of the two countries. In this context the DWIH is building a German-Brazilian Map of Science. The Map of Science provides an overview over the broad variety of existing cooperation between the two countries. You can help us to make the Map of Science an important tool for the German-Brazilian Science cooperation which shows the broad range of already existing cooperation by submitting information about your cooperation to us."

German House of Science and Innovation São Paulo presents German-Brazilian Map of Science

Guideline

- 1 Go to www.dwih.com.br**
Click: Help us map the German-Brazilian science cooperation
- 2 Fill the cooperation form**
One of the partners completes the form on an existing cooperation. Please specify which data can be published using YES/NO in the respective fields.
Please save and send the document to: smetz@ahkbrasil.com
Our staff will contact your German/Brazilian partner to verify the data.
- 3 Show cooperation in the Map of Science**
Only verified and liberated data goes online and will be displayed in the Map of Science.
Thank you for your cooperation!

Logos: DAAD, Deutscher Wissenschafts- und Innovationsrat, Centro Alemão de Inovação e Ciência São Paulo



Appendix 19: FAP sector and industry priorities

FAPS	State	Region	Themes and research priorities
FAPERJ	Rio De Janeiro	Southeast	Agribusiness, agro food, food security, biotechnology,(including forestry and fishery) Health Energy, biofuel, bioenergy, renewable energy Information and Communications Technologies Biodiversity Nanotechnology Basic sciences (in Mathematics, Physics, Chemistry, Biology and Geosciences)
FAPES	Espirito Santo	Southeast	Technological innovation Competitiveness in industry Governance in the public sector
FAPEMIG	Minas Gerais	Southeast	Innovation Climate Change Solar Energy: Photovoltaic Cells, Smart Grid. Water Resource, and Renewable Forest Biofuels: Technologies, fuels Photovoltaic cells
Fundação Araucária	Parana	South	Solar Energy Wind Power Biofuels: Biodiesel, Ethanol, biofuel, biomass Water Resources Plants Producing Hydrogen Smart energy Georeferencing and Geoprocessing Infectious diseases Agriculture
FAPERGS	Rio Grande do Sul	South	Technological innovation Medicine (public health) Biomedicine Human Resources development (scholarships) Internationalization
FAPESC	Santa Catarina	South	Technological innovation Biodiversity Mining and energy Human Resources development (scholarships) Microbusiness Environmental protection
FACEPE	Pernambuco	Northeast	Technological innovation Human Resources development (scholarships)
FAPERN	Rio grande do Norte	Northeast	Microbusiness Agribusiness and fisheries Human Resources development (scholarships) Health sciences Mining and energy Water management Biotechnology Nanotechnology Renewable energy
FUNCAP	Ceará	Northeast	Veterinary science technical innovation and knowledge transfer Biochemistry Molecular biology Social health
FAPEG	Goiás	Center west	Training of researchers; Attraction and retention of researchers; Special programs of research in strategic areas; Infrastructure for scientific and technological research; Research programs for technological innovation.
FUNDECT	Matto Grosso Sul	Center west	Technological innovation Human Resources development (scholarships) Tourism Scientific journalism

			Agriculture (soy production)
FAPEAM	Amazonas	North	Hydrology, micrometeorology Ecological dynamic of the Amazon Rainforest Biodiversity Climate Change Biotechnology Biofuels Nanotechnology Tropical and re-emergent diseases Smart cities Smart grids Solar Energy
FAPESB	Bahia	North	Wind power

Source: Based on information provided by Universities UK International Unit and Internet research.

Appendix 20: Scotland's Research Pools

In our original research last year all the Research Pools were contacted to understand their international market priorities for collaborative research. Three of these indicated a high level of prioritisation for Brazil. These three, as well as the Energy Technology Partnership (ETP), were contacted again to understand more about how they saw the opportunities and possible benefits from engaging with Brazil through the Research Pools, and how the agencies such as SDI, British Council Scotland and Universities Scotland might best provide support in this. A summary of the ideas and opinions expressed in these interviews is included below:

SULSA

<http://www.sulsa.ac.uk/>

Scottish Universities Life Sciences Alliance (SULSA) is a research pooling partnership between the Universities of Aberdeen, Dundee, Edinburgh, Glasgow, St Andrews and Strathclyde that is supported by the Scottish Funding Council.

There are no SULSA-initiated projects in Brazil yet, but it rates reasonably high as a priority market (the focus has been to date more on India and Hong Kong). It was noted that in general the level and quality of research excellence in Brazil is not as high as for example Hong Kong, the US or Singapore. However for some of the more applied fields such as energy, bio-energy, agribio applications (e.g. achieving better crop yields etc) Brazil has both the capacity and the problems that make these areas a priority. These would be the best fields for collaboration, in addition to areas such as plant sciences and tropical diseases.

Known institutions of excellence in Brazil

The researchers who are members of the SULSA board identified the following as the key institutions in Brazil with which it would likely be important to engage or collaborate:

- USP
- UNESP
- UFRJ
- UFMG
- UNICAMP

Lessons from experience in Hong Kong

SULSA believes that the best way for a collective approach, not only for SULSA, but possibly also for other Research Pools, is the one that was used recently for Hong Kong. A pump-priming fund was set up through SFC and SULSA to initiate the collaboration through visits to some of the key institutions. This could be done to the institutions identified above by SULSA with the aim to set up a call for projects, and giving them small amounts of funding to get going.

In Hong Kong the best institutions were visited to link up with the academics and deans of Research at these universities. In Hong Kong match funding was negotiated with the equivalent funding agency there. There are of course many possible sources in Brazil and Brazil, like Hong Kong is open to external business and international approaches.

This approach was seen as having the benefit of giving us control as we can decide which projects we think should be funded, and to allow the best capacity in Scotland to be aligned with the best capacity in Brazil i.e. a mechanism where the best partnerships can be created.

Benefits of a collective approach

By linking with SULSA Brazilian scientists will get access to the best scientists for the job across the 6 SULSA universities, which is a good selling proposition alongside the Connected Scotland offer, and which has benefits for Brazil over collaborating with Scottish institutions on an individual basis.

The lesson from a similar engagement with India was that it is important to ensure you meet the right people, at the right level. And therefore for engagement with Brazil it will be important

to do the due diligence in this respect. In Hong Kong this was done and as a result the right people were met, and each knew what the other was looking for.

In Hong Kong SULSA went out with ETP which was a good match because of cross-cutting topics between energy and life sciences. This might also be the case and an option for Brazil due to the areas of priority and focus in the country.

Details of the Hong Kong agreement can be seen in Appendix 21

Workshop Option

SULSA believes that workshops work well to get people together. The participants need to be chosen carefully. You need open-minded people who are not in it just for themselves (e.g. when a colleague would be more appropriate for a particular project, they should be able to say that), which is not always easy.

What works well is to use the workshops to agree what the big scientific questions are, what fields might be required to address them and then to define a call for applications/proposals. Workshops should include deans of research who have a broad knowledge of the research in the institution, and senior scientists on the ground (PIs, not post-docs).

Potential areas of focus for Brazil workshops:

- Energy
- Bio-energy
- Agro-bio
- Plant sciences
- Tropical diseases.

Mission in spring 2015

SULSA could easily put a delegation together for a visit next spring. The starting point would be the academics with the existing contacts, but in conjunction with SDI they would do work to verify this and to find out if they have missed institutions that they could work with. Then go on to indentify the right contacts from this. I.e. it should not be about rekindling what is already being done but about looking deeper at the areas above to see where there are opportunities that cannot be addressed by the individual institutions themselves.

SULSA is a well functioning Research Pool, used to large projects and to developing links to industry, and to what it takes to make these work internationally. SULSA's priorities longer-term are to create large projects, especially with money that is difficult for the individual universities to access, or is money that has been created in response to good ideas SULSA has put forward. I.e. create its own opportunities and new sources of funding, rather than simply to answer calls that are out there (such as projects largely funded by industry).

For overseas projects it is good to get small projects going with some interaction and collaboration with pump-prime funding (£20-100k per project) but for this in the long term (after you get the collaboration and research going, get publications etc) to lead to much bigger projects that are funded from more unusual sources. So for Brazil, SULSA would want to create opportunities for projects that would lead to wholly or partially industrial investment and for large projects.

This will require work to clarify how to access this level of funding in Brazil, given some of the restrictions highlighted in this report in terms of how funding has to be spent. Perhaps there is a chance to influence this more effectively under a banner of 'Connected Scotland' and 'Research Pools'. Research Pools will require support from SDI and the British Consulate on the ground to make this happen.

Energy Technology Partnership ETP

<http://www.etp-scotland.ac.uk/>

The Energy Technology Partnership (ETP) is an alliance of twelve independent Scottish Universities, engaged in world-class related energy Research, Development and Demonstration. ETP is the largest power and energy research partnership in Europe and promotes greater levels of collaboration between universities and industry to deliver unparalleled energy RD&D capability across a spectrum of energy technologies.

Like SULSA, ETP considers the Hong Kong model a good template for engagement with international markets, and would be keen to pursue similar projects in Brazil. As a result of its members, such as Heriot Watt, Edinburgh and Aberdeen already being very involved in Brazil, ETP is not currently engaged directly as a Pool in the market. Where cross disciplinary opportunities exist for example with Life Sciences, as was the case in Hong Kong, it would see its role in possible engagement with Brazil to be one very much of supporting where it can contribute additionality, rather than get in the way of making things happen the ground if the universities can do this collectively themselves. This might include assisting in procedures, negotiation, representing the Scottish sector in higher level or government discussions, or a vehicle for channelling funding e.g. from the SFC to enable the development of projects such as that in Hong Kong.

MASTS

<http://www.masts.ac.uk/>

The Marine Alliance for Science and Technology for Scotland (MASTS) is a consortium of organisations engaged in marine science and represents the majority of Scotland's marine research capacity.

Opportunities with MASTS for collaboration with Brazil

- Aquaculture - Have university links already so there is a base to build on.
- Renewables - Interest in renewables connected with river systems from both Scottish companies and also from Brazil
- Deep water oil and gas – specific expertise in the North Sea
- The Galway Agreement on Atlantic Ocean Cooperation between US, Canada and EU to encourage transatlantic research collaboration includes opportunities to collaborate with Brazil regarding large scale south Atlantic issues. Eligibility for funds available under this accord may include projects with Brazil. Oceanographic observations monitoring climate change, Deep Sea Mining, Aquaculture, Renewables, Oil and Gas, Fisheries management could be included.
<http://www.marine.ie/NR/rdonlyres/89AC763E-9DCC-4D84-AF34-1EF363B3994B/0/SignedGalwayStatement24MAY2013.pdf>
- Engagement with CREW, Scotland's Centre of Expertise for Waters. MASTS commission their research. It is a partnership between the James Hutton Institute and all Scottish Higher Education Institutes. The Centre is funded by the Scottish Government. There are direct connections between Brazil and some of the graduate students employed within CREW. A Brazilian member of staff at Dundee has been cultivating these links for some time. There is a lot of interest in Brazil in management of water resources.
<http://www.crew.ac.uk/home>
- Hydro Nation: The Scottish Government is keen to promote and sell Scottish Water's expertise, including academic expertise, on water management through this initiative. It is understood they have funding but this needs further investigation to see how it may apply to Brazil. The contact is John Rathjen: jon.rathjen@scotland.gsi.gov.uk
<http://www.scotland.gov.uk/Topics/Business-Industry/waterindustryscot/ScotlandtheHydroNation>

'The Scottish Government will support the development of Scotland's hydro

economy and the enormous potential that this brings. There are 3 main aspects of the Hydro Nation agenda:

- *Utilising Scottish expertise to maximise the economic benefit of our abundant water resources within a sound ecological context by reducing energy use, improving efficiency and creating a low carbon water nation.*
- *Raising our international profile through recognition of Scotland as an international leader on water management and governance – The first Hydro Nation.*
- *Developing a water centre of expertise and research with international reach.*

We are working with the enterprise agencies to identify any further areas for action.'

The Sustainable Aquaculture Forum:

Professor Brendan McAndrew describes the aquaculture-related opportunity and experience in Brazil as follows:

"Brazil has enormous potential as a major aquaculture producer because of its water and protein resources. The present industry is still fairly small but is developing using existing species such as tilapia but there are many endemics that potentially would make very good farmed species- fast growing herbivores. They also have some iconic species such as the arapama that are large carnivores. The Institute has developed some links with EMBRAPA particularly in the identification of potential farm sites and environmental monitoring as well as breeding and domestication of some of their potential farmed species. The Institute have had various visits from Brazilian delegations that we plan to follow-up in Brazil before the end of the year with some of the larger Universities with aquaculture teaching and research interests. At this stage we need to develop communications with potential partners and work through some of the issues so we can accurately identify potential areas of mutual interest. We would like to get a small number of specialist workshops that bring together scientists with similar interests (e.g. Reproductive biology, feed formulation, fish health, genetic management, environmental impacts). These specialisations exist within the Institute but also other MASTS partner institutes. So we have an obvious training and research interest but various sectors of the Scottish Aquaculture industry is also well placed to help in the development of their industry."

The Institute of Aquaculture at Stirling has been visited by a number of Brazilian delegations, including EMBRAPA, which has its own money, outside of the SwB scheme. EMBRAPA is starting to get into aquaculture is keen to build links. They are proactive and are already doing so with Norway, the leading developed country in terms of aquaculture (as well as oil). The recent Brazil delegation to Scotland included three universities who are involved in this sector: Parana, Sao Paulo State and Santa Catarina, and who would like the Institute to interact with them. The sense is they want a quick response now in setting up meetings, workshops etc to get down to the individual scientist level so that those involved can talk the same language, rather than more 'generic' visits.

There have been small links with one or two academics, and interactions at an individual fish farm level, on and off over the years with Brazil, but there is not comprehensive visibility of where the expertise in Brazil lies, and it has never been approached at the more strategic/formal level that would allow the Pool to do all the things it has potential to do. Brazil is so large and engagement with it is quite new.

Consideration should be made also of other overlapping science disciplines that have interests in that part of the world.

There are opportunities to leverage and expand the contact they have at EMBRAPA to the individual universities, in particular re teaching and training, and to go beyond PhDs to UG.

There are also overlapping opportunities with the Innovation Centre for Aquaculture, as the companies involved in this are mostly international players. This could enable Scottish industry to get involved in what is going on in Brazil.

Workshops

Workshops would be a useful next step. “Cash is needed to get people from both sides together with the same language in terms of the science, identify the issues and the advantages of working together, so we can put together a programme that we could put forward for funding for larger projects.”

There is a belief that the potential is enormous, especially as MASTS can bring in Scottish industry (it is involved for example with food and pharmaceutical companies so would be able to involve them and Scottish interests too). Although around 50% and the core base of the capabilities in Scotland are in the Institute, they are spread around a number of institutions which is why the Pooling mechanism would work well for this.

“However, MASTS is more of an enabling initiative and does not have a lot of cash to do this kind of thing. It would not have the funds by itself to set up a meeting of consequence in Brazil e.g. to take 5 or 6 different scientists covering 5 or 6 scientific areas of interest in aquaculture and gather 15-20 Brazilians. They are likely to be well dispersed over Brazil, so it might require a more than one workshop or meeting in different locations to catch them all. There is some Santander funding which will be used to go and meet with EMBRAPA this autumn, but not enough to go and meet 4 or 5 other universities and get those people together. It would require something like £20-25k at this end (rather than the £4-5k to send one or two people over).”

“We are not too worried about getting the cash once we get the ideas. We need the money to get the people together to generate these ideas.”

SDI support/mission

“To make a mission or visit to the market worthwhile, it needs to involve individuals who are directly involved in the science we are interested in or it will only be a talking shop.” The feedback from Brazilian universities is that they wanted us to be involved with them in aquaculture. But the impression is that they want this sooner rather than later. “If this gets buried in a long discussion about how to do this will be funded then we might miss our chance.” So a visit next spring would be a workable timeline.

The impression is that the Brazilians have themselves quite well organised so we have to be as well or better organised than them in how we approach them. So it will be important to keep the approach joined up so it does not look amateurish to them. The money is needed to get this off the ground quickly.

It is also important to consider the competition from Norway. They are very proactive and get things moving easily, so we have to be able to move on this sooner than later – get it off the ground quickly.

SE Asia model

MASTS have a workable model for engaging through workshops in international markets. Mark James explained how this has been successful in Thailand and Malaysia with the following experience and approach:

- Money from UK Science and Innovation Network to pay for travel for really targeted groups.
- There is a problem if you go in at too high a level – you end up with lots of superficial conversations. That happened the first time. Lots of platitudes but we didn't get to the level of individual researchers talking to each other.
- Next time we had a very clear agenda, focused on fish disease as the core issue, and also fish nutrition. We brought the experts together from a number of SE Asian countries for a few days.
- A lot of work went into the workshops but as a result there are 2 or 3 projects that came out of it, which represents good value.
- This is a good principle for Brazil too and it could be supplemented by higher-level

- 'delegation' type meetings.
- It needs a staged approach and needs more than a one-off workshop to be enough to go and get funding. The successful process was:
 - The first workshop got a series of contacts together.
 - Out of this a specific opportunity involving e.g. universities and industry was identified. A second mission was then run specifically as a subset of the first one to talk about how to actually do and resource this piece of work. In this second workshop people on the funding side were engaged to explain what funding opportunities there might be (on the UK side as well – the British High Commissions from Science and Innovation Network in Singapore was able to provide the latest information about funding opportunities such as the Newton Fund).
- These are relatively small investments – travel, time and accommodation. But this is a hurdle where help is required in order to get people together to build trust etc.

MASTS suggests using the template that was used in SE Asia, which they know worked.

- At a scientist to scientist level
- Sufficient funding to take a small group of around 8 individuals from Scotland
- Get people out for an intensive 3-day period of meetings, presentations, workshops. They get to know people. Some time for field visits and time off for them to go off to various institutions on their own volition, and continue more detailed discussions.

Details of the SE Asia approach can be found in a full report at:

http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0CEoQFjAF&url=http%3A%2F%2Fwww.masts.ac.uk%2Fmedia%2F113895%2Fuk_sea_aquaculture_workshop_report_-_7-7-14_-_final_with_presentations.pdf&ei=khxJVLiFB-SC7gb-o4D4Ag&usq=AFQjCNEGsxA0kjcaTsQHYBgZbQVwvmbEOW&bvm=bv.77880786.d.ZGU

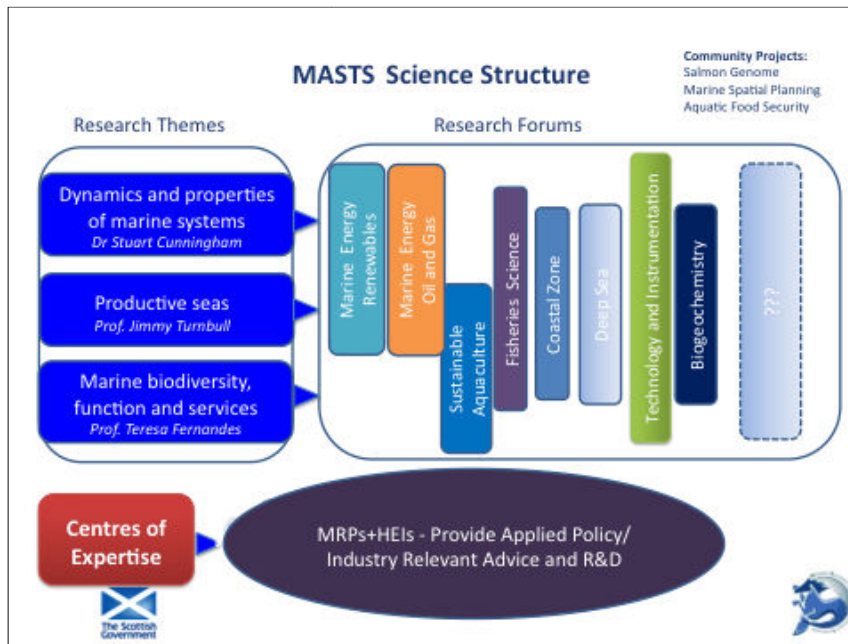
With this kind of agreed template for its activity in Brazil, MASTS could then go to its various forums that have direct interests and identify where the specific areas would be (e.g. not just talking about marine renewables per se, but a specific subset of what we want to talk about within this which is relevant to both us and to the Brazilians).

In aquaculture in Asia the focus was on fish disease, sustainability of fish feeds which was successful because it subject did get too diluted – i.e.” we weren't talking about genetics, other issues which might be relevant. But decided to focus on just one or two.”

MASTS is currently also able to put up 50% funding for PhD studentships from its member institutions. Perhaps an arrangement could be developed where these could work half their time in each of Scotland and Brazil. MASTS can broker these and so are a good focal point for discussion about funding with Brazil rather than the institutions doing this individually.

How MASTS could engage

MASTS now has a structure (see below) which means it is well positioned to engage in this way as an entity. It is now a single legal entity so now in a position for example to sign MoUs so is in a good position to work with organisations in Brazil. Organisationally, the three themes link to Scotland's Marine Science Strategy, and under them sit the various Research Forums. These would be vehicles at the right level for facilitating this kind of work across the various disciplines within MASTS e.g. for setting up reciprocal workshops between Scotland and Brazil, to frame the right context for the workshops, make sure the right people are involved from the outset from Scotland, both from academia and industry, and many will have contacts in Brazil to engage.



SAGES

<http://www.sages.ac.uk/themes/>

*SAGES builds on selected research strengths that encompass the main elements of the Earth system, to address some of the *grand challenges* of Earth systems science and environmental change. Our work is based on three interrelated research Themes: Landscape dynamics, Terrestrial carbon cycle and Atmosphere, Oceans and Climate.*

Brazil features as one of the top 2-3 international markets of priority for SAGES and for the academics in individual institutions. It believes there are many good reasons to engage with Brazilian universities and to work more in South America as a whole, especially with issues in the climate science area, which are critical in the country.

International engagement to date has been rather piecemeal and more through research groups that have got good connections and ongoing collaborative research, or carrying out work in different regions.

Experience in Brazil

For one of SAGES' key themes, carbon cycle, the Amazon rainforest is a key part of the global carbon cycle so it has carried out a lot of research projects in that region, although more to date based in Peru – including funding PhD studentships, paying for equipment etc.

SAGES is currently negotiating with SFC the funding for its next phase, and built into this is a much stronger international commitment. The aim is to agree 2-3 regions where its can support PhD recruitment and sponsorship to place, though the Pool, students in the best institutions.

Brazil is, as a country, doing things in the areas such as environmental change, water quality, water supply, soil erosion etc. The message from the Brazilian universities SAGES speaks to is that the Brazilian government is keen to gain a better understanding of environment and environmental change, that the science behind that is crucial, and that they want to train more students in those areas.

Within SAGES there is not yet a detailed action plan. But Brazil is a priority to get more PhD training in SAGES' field as a whole. SAGES and MASTS both have the advantage that environmental science in most countries is tied up with government organisations. So it is usually reasonably obvious which government or provincial ministry one needs to speak with

about environmental management and regulation and what their needs are. Although it is not yet very well progressed with this in Brazil, the aim is to have the Pool engage in conversations with funding bodies and ministries in Brazil.

Most of SAGES' institutions have some activity in Brazil – from PhD students from Brazil, carrying out joint projects, hosting SwB students and trying to build on that as a way of developing research links etc. But up until now this has not been focused. The plan is to identify exactly what it has got in hand and work out who to talk to in Brazil.

Corporate opportunities

SAGES has had some interaction with Petrobras. Because of the 1% levy it is aware they want to spend money in these areas. Scotland has lab facilities that don't exist in Brazil. By default Brazil would be going to the US for this work. These are areas where SAGES could enter into agreements. E.g. if Petrobras were to co-fund a PhD studentship the student could do the fieldwork in Brazil and be based there, but spend 18-24+ months in the UK, get the training for lab work experience at this end. So that when they go back to Brazil and are working they then have a relationship with Scotland's labs. Then, when they are developing research of their own with universities and companies, they will come back to Scotland for ongoing business. There are very real benefits also for opening up research potential for some of its staff getting access to samples and data from Brazil, or logistical support for fieldwork there etc.

SAGES believes that the important sales pitch on this is that we are looking for partnership.

"We are not saying 'Petrobras have to spend some money, lets see if we can get some of it'. We are saying, 'We are interested in carrying out some research. If we can get something co-funded at the Brazilian end that enhances our research potential at this end as it makes it easier for us to get funding at this end too because we can then show we have already paid for some of the costs.'"

This ties in with Brazilian institutions' priority which is partnership. It also differentiates Scotland from a large number of universities and organisations visiting Brazil who do not seem to have this sense of partnership.

"The Pools show that we in Scotland are willing to work with each other, and therefore we are more likely to be willing to work with them as overseas partners on an equal basis."

SAGES is keen to speak to the corporate sector. With SAGES' focus, Mining, Oil and Gas, Mineral exploration is a key area, but equally sectors such as water supply, renewable energy etc which it engages with in the UK and could do so in Brazil. E.g.

"We know of people who are working with Brazilian water supply companies. There are definite possibilities to use our expertise to help them solve problems, and to do this at the same time as train some students for them who will go back and carry on the work in their own organisations. A win-win. "

Benefit from a collective Research Pools approach

Individual institutions can do things themselves up to a point. But even Edinburgh, which is the largest member in terms of people involved in SAGES, is not able to cover the breadth of areas of science or techniques or skills that PhD students might want. Therefore the Pool can offer more than any of Scotland's individual institutions can. E.g. access to facilities, equipment, training in multiple methods, internships in companies or government departments as part of the PhD.

"Our selling point as a Pool is if partners buy into the concept of the Pool, then we can say that within the pool we have real strength in science in particular areas, and we can ensure your students will be supervised by staff from 2 universities, both of whom have distinct contributions to make to that project. So the student is going to get a better training and experience that they would do going to any one of our universities."

There is also the opportunity to link up e.g. between SAGES and MASTS.

"For any of our international activities we would talk to MASTS before hand and find out

how we can coordinate with them. A lot of environmental science crosses over with them. E.g. a SAGES student in Glasgow but who needed access to time on a ship to go and collect ocean samples, we could arrange this through the Scottish Association for Marine Science (partner of SAGES and MASTS), but also have the link with the analytical facilities at the Scottish Universities Environmental Research Centre (SUERC).”

SDI support: Clarify what Pooling is

SDI should make sure that whoever we are speaking to in Brazil such as the state or federal funding bodies such as CAPES, CNPq, the FAPs, are fully aware of what ‘Pooling’ is, what the concept is, and where it comes from.

To differentiate ourselves from other groups of universities one sees in Brazil from different countries, Brazil should have the clarity that this is a Scottish Government/Scottish Funding Council-supported collective initiative and that it carries clout because it has this government level support (i.e. not just that these universities have chosen to get together). This is an important message to get across, and it would be better if this message comes from the Scottish Government/SDI etc.

“If SDI and partners arrange the contact in Brazil, and are then able to introduce the Pooling Directors and make it clear that this is a relationship where both parties understand the position of the other and that this really is something that has very strong political support in Scotland and which we are all signed up to, then this allows the Pools to have their discussions (which may in the end turn into institutional level discussions in some areas if appropriate, but that wouldn’t matter).”

“When the concept of Pooling is explained internationally, people are quite jealous of it. So it is a good thing to have but it needs to be explained at that higher level initially. This also differentiates Scotland from others in a saturated market in some states.”

Workshop idea

SAGES agree with this approach. Within SAGES they are moving to a structure similar to MASTS where under the broad themes there will be more specific areas (like MASTS forums) so they can have a more targeted working group structure, which will be very amenable to a workshop-type approach.

“For example, in the Carbon Cycle theme, carbon cycling in tropical forest ecosystems would be a likely theme to be supported by SAGES and a very marketable theme in Brazil. It is not too focused to still attract a substantial number of relevant people from Brazilian institutions.”

Key questions – where does the bigger funding come from?

SAGES is not clear yet about where the significant funding comes from.

“There are many opportunities such as the Newton Fund at this end for small amounts of funding to help get things going. But SAGES need to be more proactive about how we provide this support. There is for example a proposal for SAGES and MASTS to go to Brussels to get a better understanding of the EU funding opportunities in this area. We also want to get better corporate sources of funding at this end so that when we do come up with these kinds of projects we have the links better established. Academics have some of these links but they are not established with the Pool, which will be important to get these bigger international projects to work.”

Timing

March 2015 onwards would be good timing to engage as a Pool with the Brazil market. SAGES will have the new structure in place by then.

Appendix 21: SULSA Hong Kong Case Study

Report on SFC: UGC research collaboration scoping workshops

Hong Kong 5th to 7th November 2013

SULSA was a key-player in the mission to Hong Kong for the SFC: UGC research collaboration scoping workshops. These workshops were a follow up on the initial visits to HK Universities that were made in June by SFC, ETP and SULSA. The aim of these workshops was to bring together interested Hong Kong scientists with a team of selected Scottish scientists to explore in a structured manner a range of opportunities for collaborative research in Energy and the Life Sciences. SDI and British Council Hong Kong expertly made and delivered the logistical arrangements. ETP interests were represented by Robin Wallace, and SULSA interests by Denise Barrault. The two afternoons of work between Hong Kong and Scottish colleagues straddled the signing of a Framework Agreement between SFC and UGC covering collaborative research in Energy and Life Sciences, in the presence of First Minister Alex Salmond.

Key players

SFC was represented by

Professor Albert Rodger – Chair of the Research and Knowledge exchange committee at the SFC

Dr Yan Wang – University of Aberdeen

SULSA was represented by

Professor Eddy Foo Liew – University of Glasgow

Professor Graeme Milligan – University of Glasgow

Professor Nigel Pyne – University of Strathclyde

Dr Stuart MacNeill – University of St Andrews

Dr Denise Barrault – SULSA

The ETP delegation included

Prof Robin Wallace – ETP and University of Edinburgh – Marine Energy, Smart-grids

Prof David Infield – University of Strathclyde – Wind Energy, PV Systems, Demand Response

Dr Scott Lilley- St Andrews University - Energy Storage and energy materials

Prof Martin Tangney – Edinburgh Napier University - Biofuels, bioenergy and waste recovery

Other non-academic contributors

Mark Newlands of SDI and Fiona Donnelly also took part and made invaluable contributions.

British Council support team: Sophia Chan-Combrink, May Yuk Lee and Cissy Low

Process

The workshops followed a widely accepted and practiced RCUK procedure to identify and refine opportunities for collaborative research. After an overall briefing of aims and aspirations of the funding bodies by Robin Wallace, the overall delegation split into two groups (ETP and SULSA) initially with twelve participants in Life Sciences and ten in Energy.

Two sessions on Tuesday afternoon mapped the R&D landscape in Hong Kong and Scotland to identify overlaps and synergies in capacity and facilities between the two countries. The discussion then identified a few themes that were obvious contenders for collaboration. We also discussed and agreed the Grand Challenges that needed to be addressed in each of the identified themes, to remain competitive and to ensure world-class outputs. We finally outlined the necessary R&D required to address these Grand Challenges and refined the potential areas of collaboration by defining a few exemplar projects that could hypothetically form the basis of grant proposals to the fund offered by SFC:UGC.

Following the signing of the Framework Agreement on Wednesday morning, another afternoon session expanded the nature of the research and potential partners, recognising that a reduced attendance meant many Hong Kong institutions were being identified by others or by reputation.

Outcomes

The outcomes from the workshops are split into the three themes that were identified by the process, and considered to be areas that Scottish and Hong Kong academics would find mutual benefit in collaborating on.

Theme 1: Medical technologies and translational medicine

Theme 1a: Medical technologies - Justification for picking this research area

HK and Scottish Strengths: Biosensing (biomarkers and disease management), Bio-imaging, wound healing (hydration), skin (iontophoretic), muscle, artificial joint development and modelling.

Grand challenges:

- a) How do you design an effective biosensing method so that it achieves?
- b) Early detection
- c) Real-time monitoring
- d) Big data analysis
- e) Mobile wearable

Theme 1b: Translational Biology - Justification for picking this research area

HK and Scot strengths: Drug discovery, target discovery and characterisation, ethnic basis for drug discovery, bioinformatics, stem cells and bio-banking, new technologies for stem cell sciences, gene therapy.

Grand challenge:

How do you design an effective drug?

- a) Efficacy in different ethnic groups – using stem cells
- b) Achieving efficacy of drugs in stratified groups of patients
- c) Building chirality
- d) Drug resistance
- e) Chemical biology / chemical tools

Theme 1, exemplar 1: Biosensor, bioimaging in disease management

Partners: University of Strathclyde + Hong Kong Polytechnic University

Commending features: Fully Complementary skills base that fills gaps

Use of funding: Meetings of founding labs to allow project design

Theme 1, exemplar 2: Ethnicity and drug efficacy

Partners: CUHK and University of Glasgow/Stratified Medicine Innovation Centre

Commending features: Drive to understand the basis of clinical trial and drug effectiveness between Han Chinese/Caucasian populations. Increasing incidence of obesity/diabetes in Hong Kong will western drugs be as effective?

Use of funding: Meeting of companies/academic staff/bioinformaticians

Theme 1, exemplar 3: Vascular disease repair

Partners: University of Glasgow + CUHK – Song Won + Andrew Baker

Commending features: Large well matched and complementary teams/skills base. Project has medical importance and disease relevance

Use of funding: Meeting between key PIs to scope project design specifics in stem cell/miRNA gene therapy

Theme 1, exemplar 4: Development of a new breast cancer drug

Partners: University of Strathclyde – HK PolyU (Prof Thomas Leung)

Commendable features: Specific knowledge from HK PolyU on breast cancer treatment coupled to complimentary drug development skills from University of Strathclyde and other SULSA partners.

Use of funding: Travel, generation of preliminary data, and meetings to establish needs of project and to identify contributors.

Theme 2: Biotechnology, Synthetic biology and Industrial biology

Justification for picking this research area

HK and Scot strengths: Biopharmaceutical development – bio-similars, Tissue engineering, Biofuels - μ algae, bio-remediation, synthetic biology in antibiotic production

Grand challenges:

How do you adapt the biopharmaceutical process to achieve the following:

- Reduction in development time?
 - Scaling of the biopharmaceutical process?
- How do you remove toxic metals from water and soil?
How do you produce biofuels from water/land not used for crops?
How do you grow an organ?
How do you develop new chemical scaffolds?

Theme 2, exemplar 1: Targeting sphingosine kinase in cancer cells by bacterial delivery

Partners: University of Strathclyde + Hong Kong University (Jian-Dong Huang)

Commending features: from target identification to translational medicine

Use of funding: Project design, proof of principle, preliminary data collection

Theme 2, exemplar 2: Biopharmaceutical process and stem cell development

Partners: IBIC, University of Strathclyde and HK Institute of Biotechnology Ltd.

Commending features: World expertise in both institutions in the generation of stem cells

Use of funding: Travel for meetings that will allow a discussion between lab partners on how to take the project forward.

Theme 2, exemplar 3: Developing biomaterials for toxic waste removal

Partners: CUHK – University of Edinburgh.

Commending features: TBD

Use of funding:

Support faculty seminar.

Support of student exchange

Theme 3: Cell biology

Justification for picking this research area

HK and Scot strengths: genomic stability, structural biology, protein transport, signal transduction, , plant biology

Grand challenge: How does a cell work?

- a) Genomic stability
- b) Protein transport
- c) Signal transduction
- d) Structural biology
- e) Plant biology

Theme 3, exemplar 1: Symposium on Organelle biogenesis and function

Partners: multiple from several unis

Commending features: Protein transport, 5-6 invited speakers from Scotland/HK Budget: £100K

Use of funding:

- Learn from each other
- Match partners for next level of grant application

Theme 3, exemplar 2: Structural and molecular biology of eucaryotic replicative helicases

Partners: MacNeill lab / Blow lab Scotland – Liang Zhu (HKUST)

Commending features: Closely linked research groups with complimentary expertise in diverse model organisms (yeasts, xenopus) and experimental techniques (genetics, mol. Biol., biochem, structural biology) Key topic: Understanding genome stability

Use of funding:

- PI visits to Scot/HK to formulate research plans, meet PhD students + postdocs etc...

Reflections and Actions

The first day was better attended than anticipated, but the second day reduced to key activists. There is a clear indication that the seed-corn funding can catalyse collaborative research and maybe even drive a slight culture shift in the industry engagement and increase traction with the Science Park for Hong Kong academics. This is a key-selling point for the UGC and could prove useful when securing future funding. The concept of a tripod relationship between ETP, the Science Park and Hong Academics emerged and was envisaged as a virtuous circle, either completed or accelerated by the Scottish presence, playing into the opportunities in Shenzhen and in the Pearl River Delta. The processes to award and administer the HK and Scottish contributions need to be mirror-imaged so far as is possible, and must essentially be light touch and enabling. Many concerns were raised by HK scientists about grant administration and submission and selection processes.

It will be critical to increase the sign-posting of greater and more sustained support, if we are to engage with the pre-eminent academic researchers in Hong Kong. We should also include on merit, opportunities for the early career researchers in Scotland and Hong Kong.

We have agreed to arrange a SULSA:ETP:BC:SDI event in Scotland in Spring 2014 to bring potential or, by then, newly-funded collaborators to showcase the work planned, learn more of the initiatives underway in Scotland, network with the Scottish community and broaden and cement relationships.

SULSA and ETP catalyse new research collaborations with HK

SULSA and ETP catalyse new research collaborations between Hong Kong and Scotland in the Life Sciences and Energy

Through a series of workshops facilitated by SULSA and ETP, and an agreement signed by SFC and UGC, new research collaborations will allow university researchers in Scotland and Hong Kong to share cutting-edge expertise in life sciences and energy.

During the trip to Hong Kong that involved a delegation of Life Sciences researchers from SULSA and ETP institutions, First minister Alex Salmond witnessed the signing of a framework agreement between the Research Grants Council of Hong Kong and the Scottish Funding Council.

First Minister Alex Salmond has welcomed this new agreement that will see new research collaborations emerge between Scotland and Hong Kong. The First Minister witnessed the signing of a framework agreement in Hong Kong between the Research Grants Council (RGC) of Hong Kong and the Scottish Funding Council (SFC) to bring teams from higher education institutes in both areas together and explore innovative new ways of working together.

Mr Salmond said the agreement would allow the world-leading Scottish research sector to share knowledge in a key overseas investment market, building on Scotland's reputation for innovation and excellence in the life sciences and energy sectors. Dr Denise Barrault (Executive Director SULSA), Prof Eddy Foo Liew (University of Glasgow), Prof Graeme Milligan (University of Glasgow), Prof Nigel Pyne (University of Strathclyde) and Dr Stuart MacNeill (University of St Andrews) made up the delegation of scientists representing SULSA in Hong Kong.

The agreement was signed on the fourth day of the First Minister's trade mission to China, which has already seen the signing of Sino-Scottish partnership deals worth £40 million and an agreement for Heriot Watt to become Scotland's fifth Confucius Institute, focused on Chinese business and communication.

Speaking from Hong Kong the First Minister said: "Scotland is home to some of the best universities in the world, and is at the forefront of higher education when it comes to research, with more citations per head of population than anywhere else in the world.

"I am delighted that today's agreement will bring the benefits of Scotland's world-leading reputation for excellence in higher education to Hong Kong. It sends a clear message that Scotland and Hong Kong are working closely together, with life sciences and energy industries being examples of two industries that stand to gain from our close partnership.

"The framework agreement is part of Scotland's strategy to widen and deepen our links, share our expertise and develop new partnerships with Hong Kong as we both seek to promote sustainable economic growth.

"It will allow researchers from Scottish universities to work with their counterparts in a key overseas investment market, building on Scotland's reputation for excellence in innovation in sectors such as life sciences and energy."

The signing of the agreement was also witnessed by Mr Eddie Ng, Hak-Kim, Secretary for Education in Hong Kong who encouraged the development of joint academic research, he said: "We are committed to supporting academic research in the Higher Education sector. The Research Endowment Fund, set up in 2009, has provided long-term funding stability support to all the RGC activities. This is the Government's recognition of the excellent research work undertaken by academics and their students in the higher education sector."

Signing the deal on behalf the Research Grants Council of Hong Kong, Professor Benjamin Wah said: "It has been a major mission of the Research Grants Council to promote research collaboration and exchanges between academics in Hong Kong and other regions through the implementation of Joint Research Schemes"

Chief Executive of the SFC, Laurence Howells said: "Collaboration between universities to accelerate progress in research has been a great success for Scotland. Today's agreement with the RGC builds on that success. It will give Scotland's next generation of research leaders some wonderful new opportunities and will further enhance the reputation of Scottish university research."

Julian Taylor, Executive Director for Asia Pacific, Scottish Development International said "Scottish Development International is proud to have supported the Scottish Funding Council, the Research Grants Committee of Hong Kong and their respective research communities in identifying this new partnership. Both Scotland and Hong Kong are home to some of the best universities in the world and Scotland's innovative research pooling collaboration model helps advance the country's position as a leading knowledge partner for Hong Kong in areas of mutual interest, such as life sciences and energy."

Call for proposals - Hong Kong: Scotland Collaborative Research Partnerships

Scottish Funding Council (SFC) - Research Grants Council (RGC) Joint Research Scheme 2014/15

Following the signing of a Framework Agreement in 2013, initial pump-priming funding is available to promote collaboration between scientists in Hong Kong and Scottish Universities in the fields of Life Sciences and Energy. The Scottish Funding Council and the Research Grants Council (RGC) of Hong Kong have jointly committed up to £100,000 and HK\$1,250,000 to promote and support collaboration between scientists and engineers in the Scottish Life Sciences Association (SULSA), the Scottish Energy Technology Partnership (ETP) and the University Grants Committee (UGC)- funded institutions in Hong Kong.

In life sciences the identified areas of potential collaboration include: Medical technologies and translational medicine; Biotechnology; Synthetic biology and industrial biology; and Cell Biology.

In energy the identified areas of potential collaboration include: Advanced materials for Photovoltaic Devices, Energy Storage or Fuel Cells; Renewable energy; Smart-grids and smart-cities.

Collaboration in biofuels and bioenergy research may be in either the life sciences or energy areas or be a cross-cutting topic.

It is expected that up to ten projects of normally up to 12-month duration will be funded. Applications will be selected on the extent to which they satisfy the following criteria: the scientific quality of the proposed collaborative research; the potential for long-term collaboration; the complementarity of the research environments in the respective partner institutions and the added value arising from the collaboration.

Allocation of funding will be on a competitive basis following an open applications process. For Scottish applicants, the funding amount per project will not exceed £10,000. For Hong Kong applicants, the RGC grants sought for each project will not exceed HK\$125,000 (exclusive of on-costs, which as is normal, will be granted to the related Hong Kong institutions of funded projects). No second-stage funding for projects will be provided under the current scheme. The expectation is that successful applicants will establish collaborative projects with the potential to secure follow-on funding from other schemes.