STATE OF THE ART REPORT in UNIVERSITY-INDUSTRY CO-OPERATION AT REGIONAL LEVEL

London Region - UK

Second Draft Report

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University-Industry Co-operation at Regional Level

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1. Background

1.1. Theoretical framework

The general policy context of university-industry co-operation in the UK and London is the so-called 'third stream' activities of universities that sit alongside the first two streams of teaching and academic research. This applies to universities in England at least, as Scotland exercises its own education policy. The Higher Education Funding Council for England (HEFCE) has supported the policy through project and service development funds: initially, the Higher Education Reach Out to Business and the Community (HEROBC), and followed by the Higher Education Innovation Fund (HEIF), now into its third round of funding. HEFCE is now considering making this third-stream funding a permanent part of university formula funding.[1]

Within the Department for Trade and Industry (DTI), the new Office for Science and Innovation (OSI) – formerly Office for Science and Technology (OST) - also has a keen interest in university third-stream activity: 'the OST runs several schemes in order to promote greater collaboration between the research base and industry' (OST website). But this is perhaps a limited conception of 'third stream' if it is to be knowledge transfer in all its guises. In this report we stress that London's economy requires innovative approaches to what 'innovation' is really about. As one author notes, 'there is no fixed recipe or 'right answer' as to what comprises third stream activities - and indeed there is an expectation that each university can and should respond differently. Different approaches may be needed by different institutions for building institutional capacity for a range of various third stream activities (Hatakenaka, 2005:7)

Being a post-industrial world city, London faces complex issues in innovation that involve a diversity of sectors and interests. Innovation is the successful exploitation of ideas and is a vital ingredient for competitiveness, productivity and social gain

[1] It is timely that the Higher Education Funding Council for England (HEFCE) is now suggesting that 'third stream' should become the second priority insome universities, ahead of research.

within businesses and organisations. 'Innovation cannot be limited to high technology products and processes but must be extended to include innovation in the value–added creative and service sectors required in a vibrant successful economy of the 21st century (LDA 2003:4). London is also a top city for business in Europe, with strengths in finance, business and professional services, entertainment and media, as well as in science-based fields of medicine, digital technology and pharmaceuticals. The context of university-industry collaboration in the region therefore goes well beyond the realm of physical manufactured products but encompasses more virtual and creative arena.

Innovation also does not solely concern business and the economy but also the welfare and wellbeing of communities. Higher Education funding policy in England aims to 'enhance the contribution of higher education to the economy and society… (aiming) to support all institutions in making a significant and measurable contribution, through knowledge transfer and related activities, to economic development and the strength of communities' (HEFCE).

But in Britain there has long been a tendency in higher echelons of learning to avoid sullying ones hands through contact with commerce and industry, to the detriment of economic and social development. The pioneering economist, Alfred Marshall, observed almost a century ago: 'numerous cases in which members of the small band of British scientific men have made revolutionary discoveries in science; but yet the chief fruits of their work have been reaped by businesses in Germany and other countries, where industry and science have been in close touch with one another', *Industry and Trade*, 1919 (quoted in HM Treasury 2003:10). Hence, the priority in the London region within RUISNET is less one of collaboration theory and more a matter of practice: both breaking down 'cultural' resistance to business partnership within universities and building up ideas into entrepreneurial ventures, however small or away from the technology mainstream.

1.2. Conceptual and methodological framework

The question as to how university-industry co-operation can be measured is both quantitative and qualitative. In this report, use has been made of statistical performance indicators that have been collated at UK and European Union levels for comparison. These include:

- UK Regional Trends reports
- London higher education institution (HEI) data and annual reports
- UK Research Councils' funding information
- European Innovation Scoreboard
- Other Eurostat science & technology statistics
- Other UK official economic and labour market data

But statistics cannot tell the complete story and are inevitably constrained by collection methods and classification. A large extent of the relevant activity highlighted in this report could not be guaranteed to be reflected in official statistical measures. This report is therefore based as much on a textual and interpretative assessment of information gathered from HEI and agency publications. It is also supplemented by a brief survey of business partnership and technology transfer offices (TTOs) within HEIs, to ascertain recent *actual* co-operation activity. (There is some tendency for universities to present an ambitious 'offer' of services and schemes whose actual take-up by and involvement of businesses is less certain). In this analysis there is very much a hierarchy (or progression) in the depth of university-business links, and also a segmentation of London's universities according to their strategic remit.

1.3. Aim of the study

The aim of the present study is to carry out an analysis about the state of the University-Industry cooperation at the regional level in Europe, emphasizing those practices developed by universities to cooperate with firms in issues such as training and labour market, research and development, and the creation of start-up companies or spin-off enterprises based upon university technology.

The structure of the remainder of this report is as follows:

2. Socioeconomic structure of the region

In this chapter a spatial and socio-economic overview of the London region is provided, which highlights the diverse locations and communities in which HEIs are set.

3. Characteristics of the University-Industry cooperation in the region

This main chapter of the report assesses the role and activities of London's universities in relation to businesses and industry. The analysis takes an institutional-level bottom-up approach and arrives at a segmentation of universities according to their strategic remit.

4. Innovation policy

In this chapter the response of regional and national policy to the different contexts of innovation and collaboration is considered. A top-down review is made of HH and regional development support policy and funding.

5. Conclusion remarks: Strengths and weaknesses of University-Industry cooperation in the region

Some attempt is made in this final chapter to summarise what are London's strengths and weaknesses in university-industry co-operation.

Finally, it should be noted that this report has necessarily looked at the 21 main (out of 42 HEIs in total) universities in London. This is a far greater number that in other RUISNET regions (and three times the number of universities in the template Valencia region). However, if a smaller sample of London's universities had been considered at this stage (the first of two RUISNET state-of-the-art reports) then the diversity in the region would not be revealed. Hence, this first report is only able to go into a certain level of quantified detail in each university. The second state-of-the-art report will be an opportunity to investigate further some key issues (comparative weaknesses, in particular) of university-industry collaboration in London. These issues cannot be identified in this report but should be considered in light of other RUISNET partners' regional reports.

2. Socioeconomic structure

The aim of this chapter is to offer an homogeneous socioeconomic overview of the region that allows us to better understand the nature of the University-Industry cooperation.

2.1. Macro magnitudes

Greater London is a large city-region that, economically, makes a greater national contribution than any of the other eight administrative regions in England, and of Scotland, Wales and Northern Ireland. The region is made up of 32 Boroughs, each housing populations of up to 250,000 or more, and the City of London Corporation area which supports the Square Mile of the City financial and business district.

Population

Greater London has a total land area of 1,583.7 sq km and population density of 4,654.4 persons per square kilometre. The UK average population density is 243.3 persons/sq km, hence London is almost 20 times more populace than the country as a whole. Population densities vary between London's sub-regions, as follows (persons per sq km):[2] Outer London – South, 3,233.4; Outer London - West and North West, 3,778.6; Inner London – West, 9,575.1; Inner London – East, 8,738.4; Outer London - East and North East, 3,555.1.

Table 1: London Population Statistics

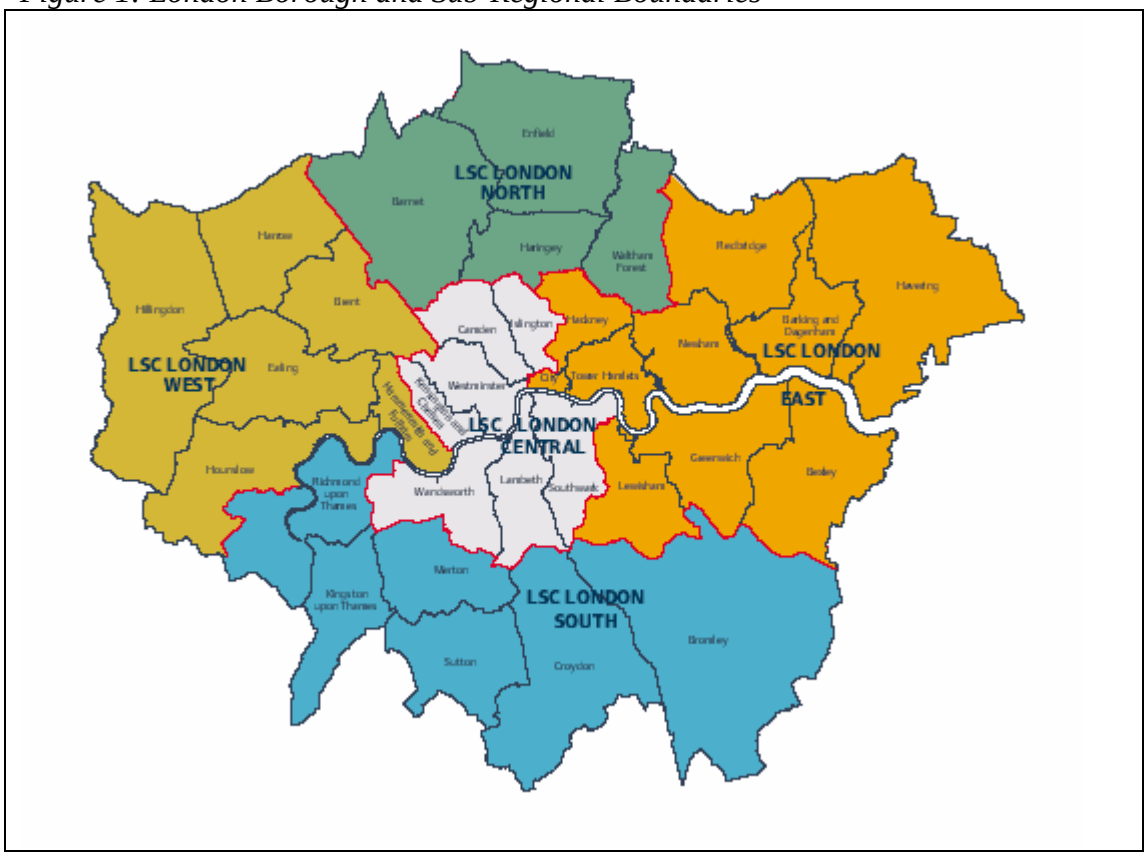
	Inner London	Outer London	Greater London	UK
Total Population 2003	2,867,337	4,488,017	7,355,354	59,231,915
Population Density 2002	9,022.9	3,546.1	4,654.4	243.3

Source: Eurostat

[2] Source: Eurostat

London's population density compares with a density of 231 across Germany and 3,803.3 in Berlin (16.5 times), while in France the national average density is 109.4 and in the capital Ile de France region it is 924.6 (only 8.5 times more dense). Hence, London offers the high concentration and *milieu* that can foster collaboration of all kinds.

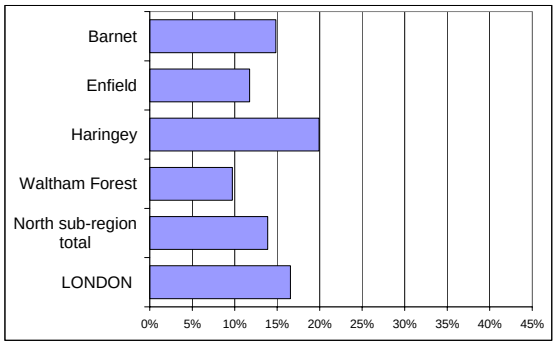
Figure 1: London Borough and Sub-Regional Boundaries

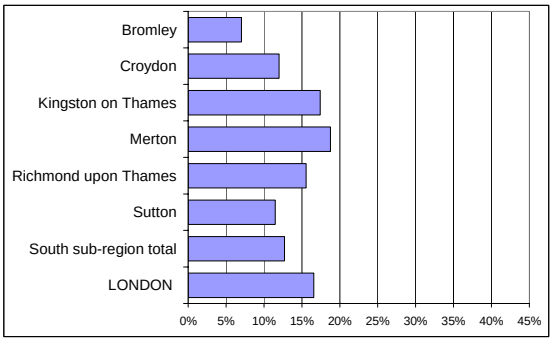


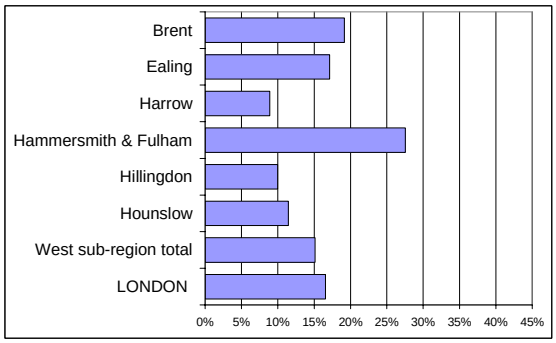
Source: Economic Development Strategy – Evidence Base, London Development Agency

A closer look at population density change over the last decade in London's sub-regions shows that people are increasingly living in more central, fashionable locations: Kensington & Chelsea, Camden, Hammersmith & Fulham have fastest growing populations. But the other dynamic is a new population emerging in east London, from Hackney and Tower Hamlets out to Barking & Dagenham, where living is more affordable and lifestyle perhaps more diverse.

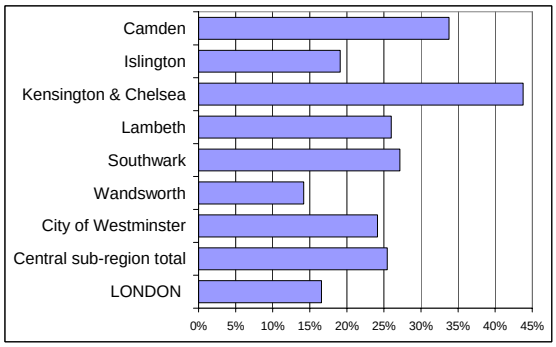
Figure 2: Population/Density % Change 1991-2001

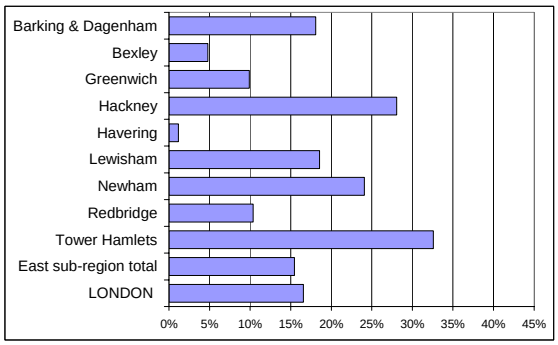






Source: Census of Population (UK Office of National Statistics)



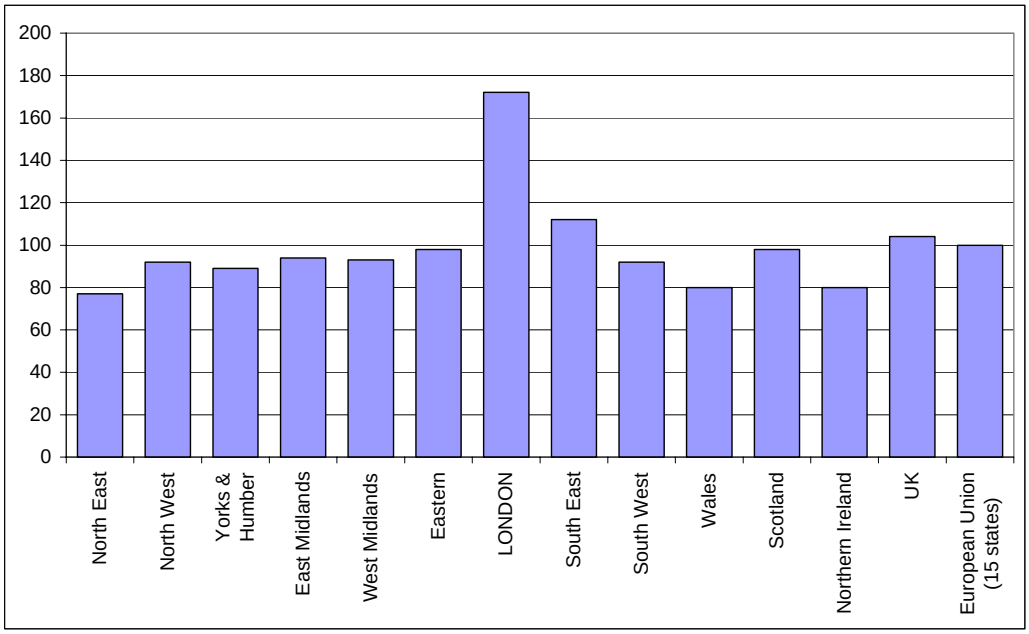


London's total population has expanded 17% in the latest decade and this does not include the increasing popularity of the city as a short-term destination for tourism, travel or study.

GDP Output

London's gross domestic product (GDP) per capita is more than 70% above the EU15 regional average (2000), and also significantly higher than any other UK region. More interestingly, London and South East regions are the only two in the UK that are above the EU15 average GDP per capita.

Figure 3: Gross Domestic Product (GDP) per Head Index, 2000 (EU15 = 100)



Source: Eurostat / UK Office for National Statistics (Regional Trends)

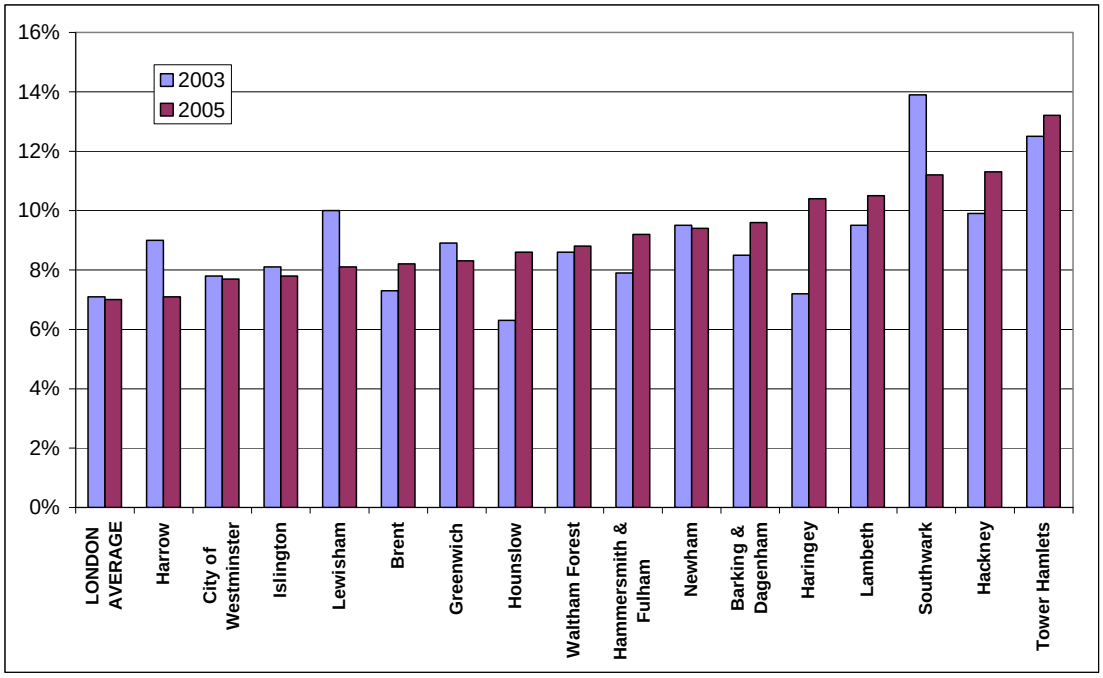
There is also therefore the question whether the concentration of wealth in the capital region is placing other universities – in Birmingham, Leeds, Manchester and Newcastle – at an economic disadvantage in relation to industry collaboration.

Labour Force

In spite of London's aggregate wealth there exist wide wealth disparities within London itself. Rates of economic participation are below the UK average and range, with a London average of 74.6% of the working-age population (age 16 to 60 female / 64 male) in 2003, from 83.5% in the suburban borough of Bromley, down to 57.9% in the highly ethnically diverse east London borough of Newham. In more recent years participation rates have fallen slightly during a period of weakening employment levels.

London's unemployment rate (ILO definition) at 7% is considerably higher than the UK average of 4.8%. To a great extent through national labour market programmes (New Deal etc) unemployment has fallen sharply since the mid-1990s. The number of young unemployed, and long-term claimants, has been reduced and more people are entering education and training schemes, or sustainable employment. But exactly half of London's 32 boroughs have unemployment rates above the regional average (see chart below). These are mainly east London and inner London areas, but in recent years (2003-2005) there have also been increases in unemployment in Brent, Hammersmith & Fulham and Hounslow to the west.

Figure 4 - Unemployment Rates above the London Average (% of economically active)

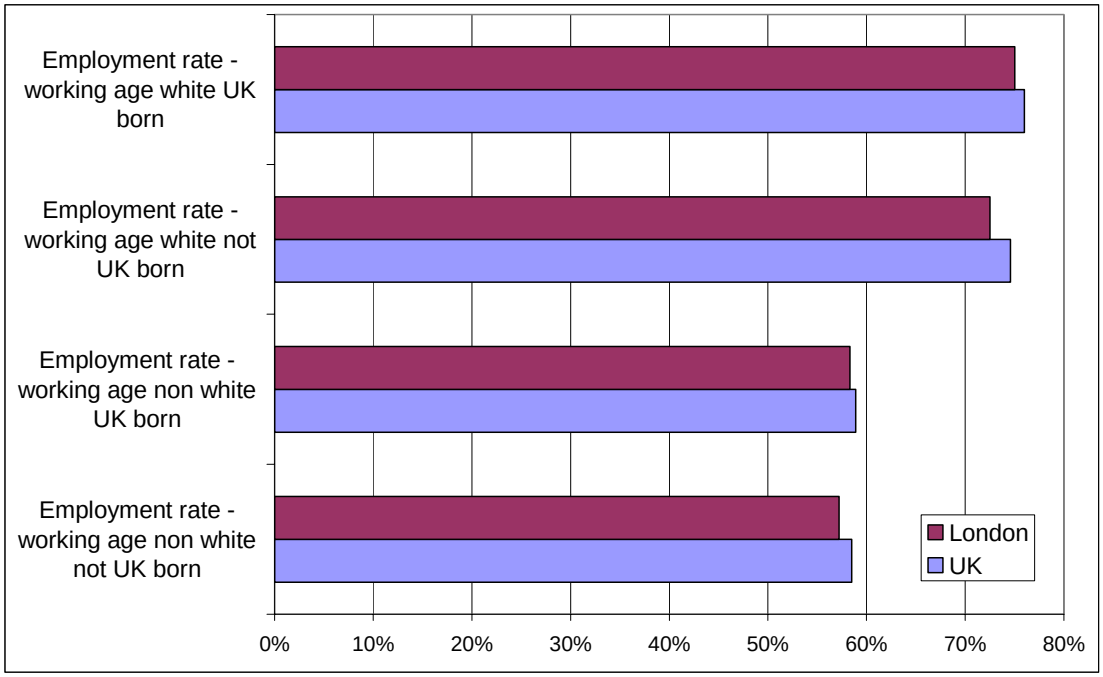


Source: Annual Labour Force Survey (UK Office of National Statistics)

In London's boroughs with greater employment disadvantages (n.b. Greater London is technically a single labour market and travel-to-work area) the black and minority ethnic (BME) population can reach half of the total population. Employment rates (percentage of all working-age adults in employment or self-employment) among BME groups are mostly below the rate not just for UK-born white residents but also white short-stay workers and immigrants (see chart below).

Under Commonwealth country agreements, London has accepted migrant workers from Australia, New Zealand and South Africa, who now have large communities in particular London neighbourhoods and also tend to be successful in both professional and hospitality (bar work etc) sectors. US and Canadian citizens are allowed shorter visa permits.

Figure 5: Employment Rates by Ethnicity and Origin, 2005



Source: Annual Labour Force Survey (UK Office of National Statistics)

Traditional European migrants from Italy, Spain, Portugal, Greece and Turkey have more recently been joined by those from former Yugoslav states, Poland (in large numbers, particularly in building trades, to the extent that London's sector and productivity is possibly currently dependent on them), and the new Baltic states. Some argue that this influx of, often younger and possibly better skilled, workers has placed minority ethnic and working class residents at a further disadvantage. At the higher education level, added to this influx are those EU (or non-EU where a permanent employment case is made) who remain in London after graduate study.

In economic terms London benefits greatly from the level and quality of skills and ideas it attracts from overseas. But socially, if regional university-industry co-operation is to benefit the socio-economic development of the territory then disadvantages among the majority existing resident populations would need to be addressed.

2.2. Productive structure

The most important dynamic in London's productive structure is that it is now predominantly based on service industries, or 'invisibles' in balance-of-trade terms. Primary and manufacturing industries account for only 8.5% of gross value-added and 6.0% of jobs in the region, and this could be less rather than more in future. Construction output in London is currently buoyant but it is both temporary in nature and increasingly using pre-fabricated materials from outside of the region. London's small-firm and self-employment building trades are largely excluded from major development projects (Olympics sites, new Wembley Stadium, City and Docklands office towers etc). Although the UK government has sought productivity gains in the construction sector this is largely a national (if not international) issue rather than regional one.[3]

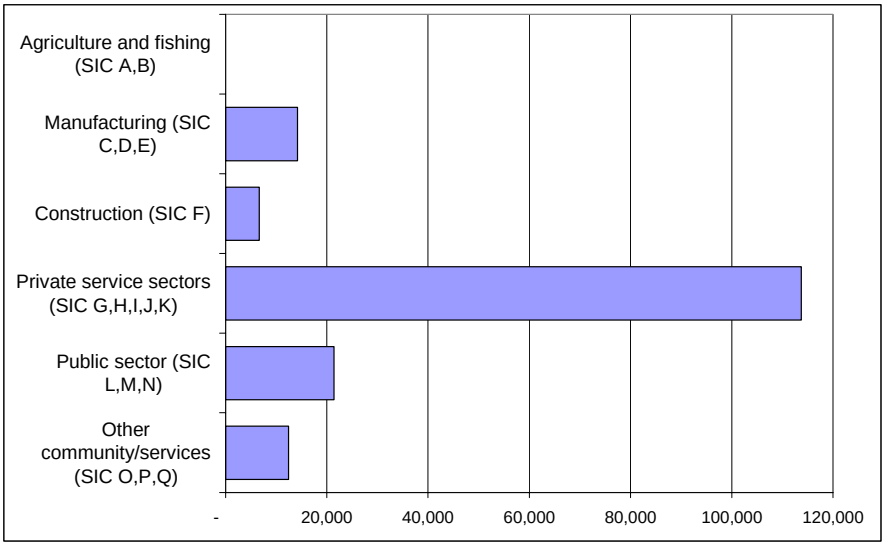
Whereas improvements in factor inputs in productive industries are more clearly defined, those in service sectors are more abstract and concern organisational management, business cultures, and external partnership and cluster relations *within the region*. Maximising London's competitive service-sector advantages therefore entails close examination of internal and external relations at all levels in organisations. It is about ideas and knowledge-based market differentiation, whole workforce development, organisational flexibility, and tapping into London's diverse creative cultures.[4]

In the five years to 2003 London's performance in terms of gross value added has weakened in relation to other UK regions. Total GVA increased 5.5% compared with 5.6% nationally, while per capita GVA grew by only 4.4% (5.2% nationally).[5] Private service-sectors account for two-thirds of wealth creation in the region such

[3] The Bartlett School of Planning at University College London is a leading institution but has little contact with local building trades in London.
[4] To the benefit of all sectors (not just 'creative industries'), whether in media/advertising, food purveying/restaurant sectors, or
[5] Office of National Statistics.

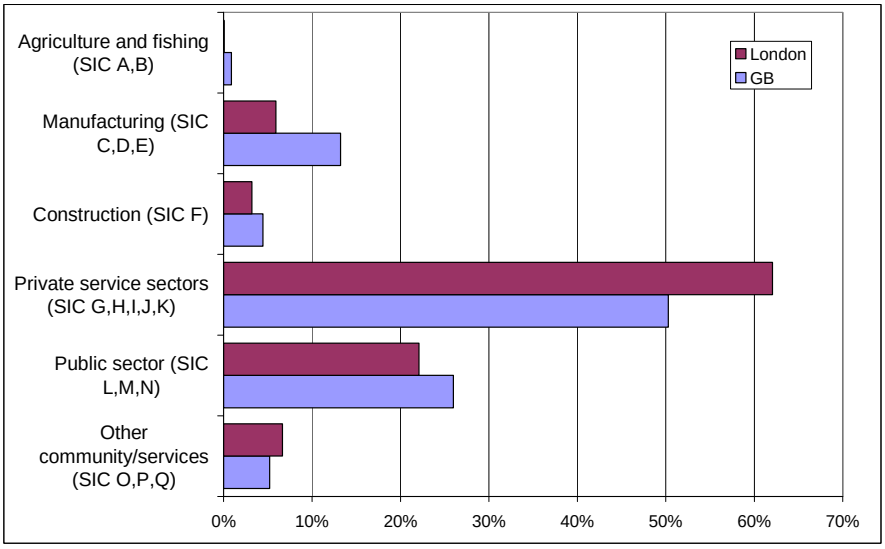
that future improvements would be needed in finance and business services, distribution and other commercial services for overall improvement in the economy.

Figure 6: London Region Gross Value Added by Broad Sector, 2002 (£m)



Source: UK Office of National Statistics

Figure 7: Employment by Broad Industry Sector, 2003

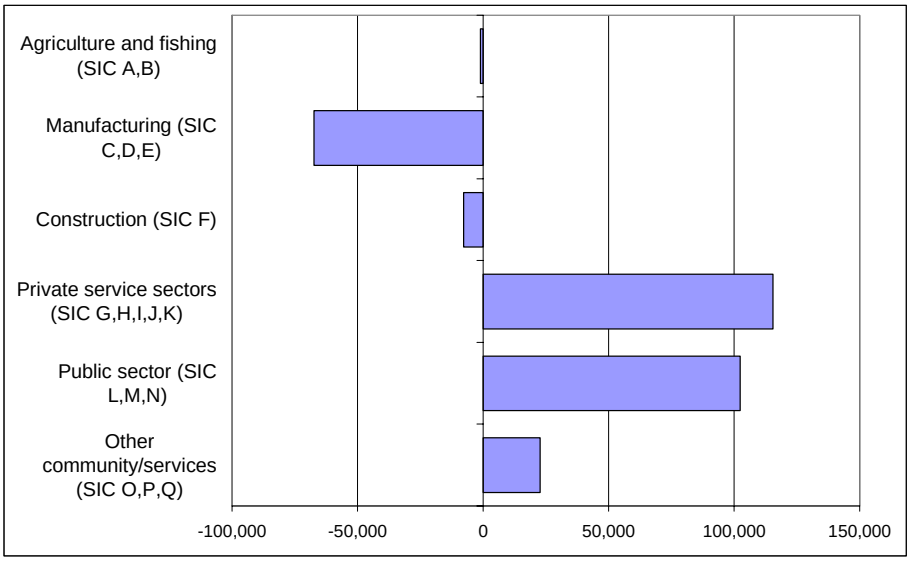


Source: Annual Business Inquiry (UK Office of National Statistics) – workplace-based data

The trend of the five years to 2003 is that London is strengthening its competitive advantages in service sectors and further revealing its weakness as a place for (large scale) production industries. While the number of private service jobs increased by 115,000 those in primary, manufacturing and region-based construction sectors

decreased by 76,000. Another phenomenon under the current government is that large state fiscal injections into education and health (and to a lesser extent regional and local administration) sectors has translated into a net increase in public sector jobs in London alone of more than 100,000 over the five years.

Figure 8: London Region Employment Change by Broad Sector 1998-2003



Source: Annual Business Inquiry (UK Office of National Statistics) – workplace-based data

There is currently an intense policy debate in the UK around the restructuring and outsourcing of local and regional public sector activity to the private sector. This is being driven by an overriding policy aim of better fiscal management, cost-savings and encouraging innovation and flexibility in the delivery of public services. The major private-sector companies that are engaged in government contracts and public outsourcing markets[6] are leading the way in service delivery innovation and productivity, encouraged by agencies such as the Improvement and Development Agency (IDeA). An important sector of university-industry co-operation in future is therefore in public service procurement and delivery.

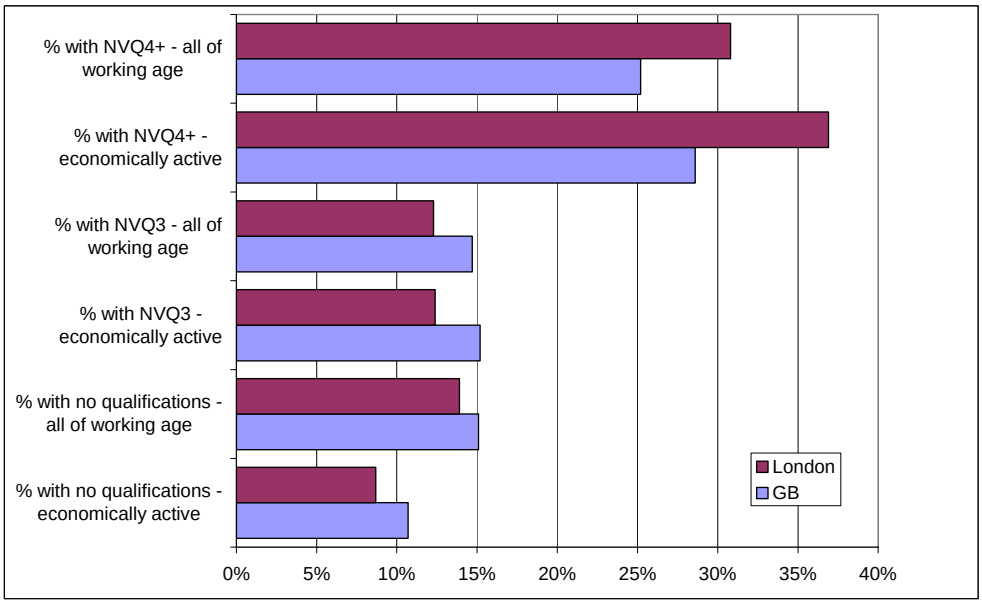
[6] Under schemes such as private finance initiative (PFI), local government 'Best Value' and wholescale asset and service transfer (or agency privatisation).

2.3. Training of human resources

As with London's labour market performance, there are disparities in the production and supply of its skilled workforce. In general, the region 'imports' a large proportion of its graduate-level (Level 4+) professional workforce via university intake and retention by the city's leading companies through pro-active graduate recruitment and fast-track schemes. The same interaction cannot be found at intermediate technical and vocational levels (Level 3), however, involving local young people and where Further Education colleges and work-based sector training are the key actors.[7]

Resident Level 4+ qualification rates in London are significantly higher in the London region than UK overall, particularly among those who are economically active. But at Level 3 (A Level or technical/vocational qualification) London lags the national average, while the rate of people (particularly those not currently in the labour force) with no qualification at all is 1 in 7 adult residents in Greater London.

Figure 9: Tertiary and No Qualification by Labour Force status, 2003 (% of total)

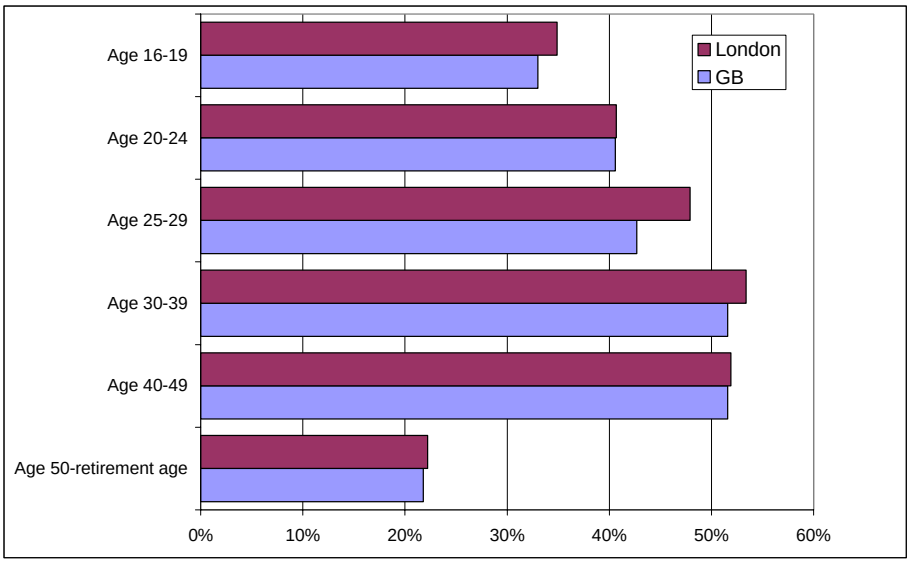


Source: Labour Force Survey (UK Office of National Statistics) – residence-based data

[7] It should be noted that the RUISNET project and partners have focussed on Higher Education Institutions producing graduate-level output, and has not included the intermediate FE/training sector responsible for Level 3 vocational skills that are comparatively weak in the UK and a government skills priority. (FE/training co-operation assessment)

It might be argued that Level 3 qualification is proportionately lower in London since Level 4+ graduates make up a greater share of the total. However analysis by age-group shows that immediately after usual school-leaving age (i.e. those aged 20-24 years) London is no different to the national average for Level 3+ (i.e. vocational and graduate level) qualificsations. The London difference is more pronounced among the prime working age of between 25 and 39 years, suggesting that these higher-level skills tend to be 'imported' from elsewhere.

Figure 10: Higher (Level 3+) Qualification by Age-Band, 2003 (% of total)



Source: Labour Force Survey (UK Office of National Statistics) – residence-based data

Training of human resources in the London region while relatively strong at the graduate and higher level is weaker both in supply of sub-graduate industry-relevant skills, and in progressing locally educated people within communities and local industries onto university level.

2.4. Resources in R&D and innovation

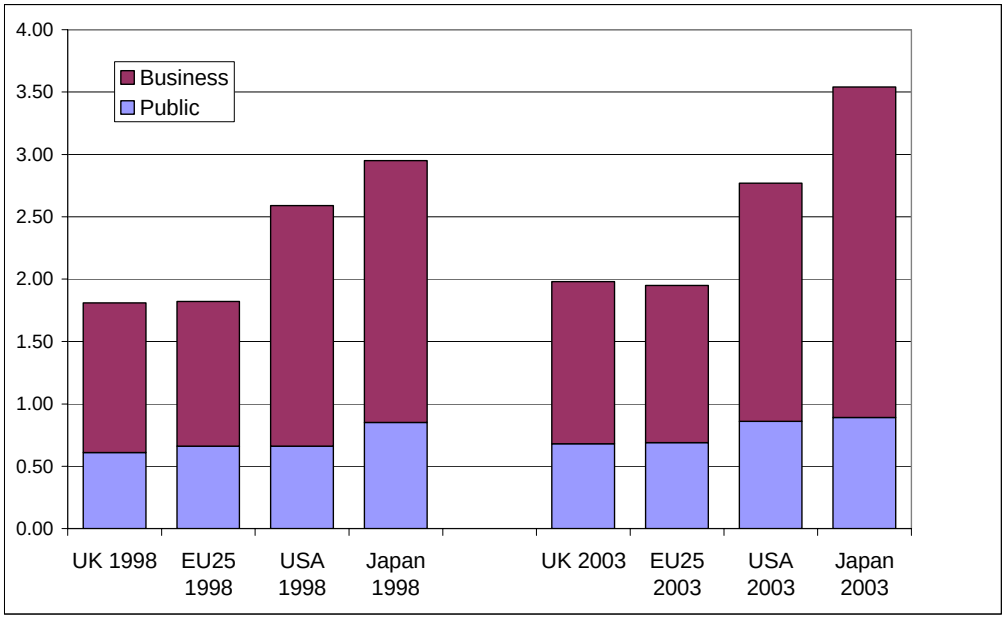
London's business sectors will need to maintain improvement in their innovation and technology capacity, in relation to international industry trends, but the UK currently lags major global competitor regions in research and development expenditure.

London's R&D activity is disproportionately within universities, which supports external and international interests as much as London's regional business priorities. There is a question as to whether increasing public sector R&D is 'displacing' (in terms of retaining researchers and technicians) private business investment in research. In spite of the evident need, private service sectors are not investing sufficiently themselves in future innovation.

R&D spending

In terms of research and development spending as a percentage of GDP (GERD) the UK is similar to the EU 25-member average, and who both have had similar rates of public spending as the US. But when it comes to private business R&D spending the UK and EU in 2003 mustered only 1.3% of GDP compared with 1.9% in the US and 2.6% in Japan.

Figure 11: R&D Intensity – R&D expenditure as % of GDP



Source: European Innovation Scoreboard

Total R&D spending in London region in 1998 was £1.63 billion (2.41 billion euros), of which 39% was in enterprise sectors, 13% Government sector and 48% in Higher

Education. The HE share of all R&D in London (almost half) region compares with UK and EU averages of only around a fifth.

Table 2: Research & Development Expenditure by Sector

	London	UK	EU15	EU25
R&D expenditure 1998 (% of All sectors)				
Business enterprise	39.4%	66.7%	64.2%	64.0%
Government	13.0%	13.5%	14.9%	15.2%
High Education	47.5%	19.8%	20.9%	20.9%
R&D expenditure 1998-2003 (%pa change)				
Business enterprise	3.4%	6.1%	6.1%	6.1%
Government	5.7%	-1.1%	2.1%	2.3%
High Education	7.0%	8.7%	7.1%	7.2%

Source: Eurostat

Higher Education R&D spending since 1998 has grown at a similar rate to 2003 as the EU average (7% per year), but slower than UK growth. Business enterprise R&D has grown more slowly in London over 1998-2003 (3.4% per year), and slower than UK and EU averages (6.1% per year). Government R&D spending in London (5.7% per year) has grown more rapidly than the EU25 average (2.3%), and contracts with a decline of -1.1% per year across the UK.

Human resources

The dependence in London on public-led research and development is also found in relative employment levels. London has three times as many R&D personnel in business compared with government (excluding higher education), but the UK average is seven times as many (and this increased from five times as many over 1998 to 2003). However London's ratio is similar the EU 25-member balance between business and government employment in R&D. The weaknesses in the London region is that private business would seem not to be increasing its employment of in-house R&D staff, in contrast to the EU trend.

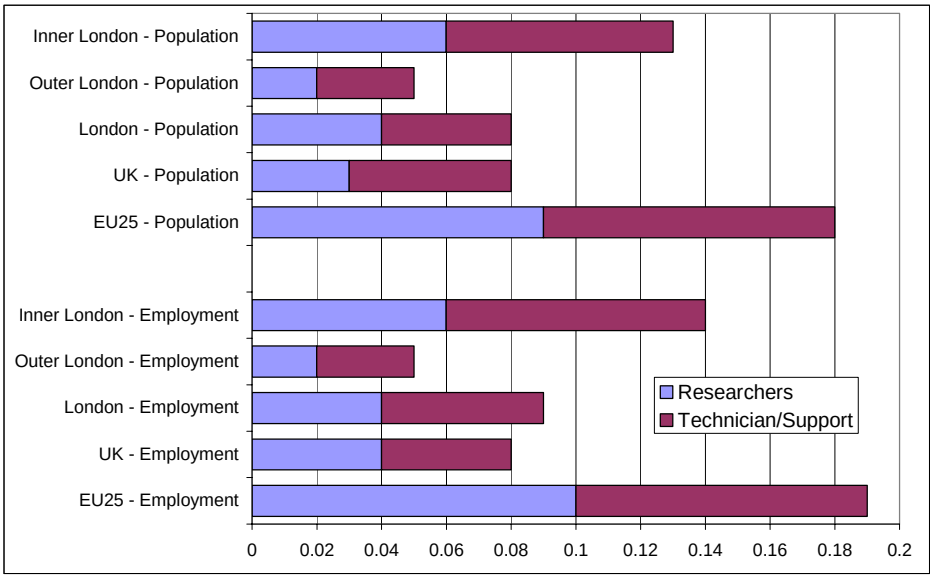
Table 3: Research & Development Personnel by Sector (Full-time equivalents)

	1998		2003		% ch pa
Business Enterprise sector					
London	9,292	76%	8,980	75%	-0.7%
UK	149,695	84%	162,863	89%	1.8%
EU15	905,590	78%	1,036,159	81%	2.9%
EU25	956,565	76%	1,079,424	78%	2.6%
Government sector					
London	2,977	24%	2,953	25%	-0.2%
UK	29,196	16%	20,956	11%	-5.6%
EU15	251,665	22%	249,362	19%	-0.2%
EU25	302,250	24%	297,688	22%	-0.3%

Source: Eurostat

In relation to territory size, the London region's government R&D sector also has a relatively low density of personnel compared with its total resident or workforce population (see below). It is higher in 'inner London', as would be expected due to the location of central government departments. But on the whole, major government R&D investment (for example in particle physics) is more likely to be found in areas such as East Anglia and Oxfordshire.

Figure 12: Government Sector R&D Personnel as % of Active Population and Employment, 2003

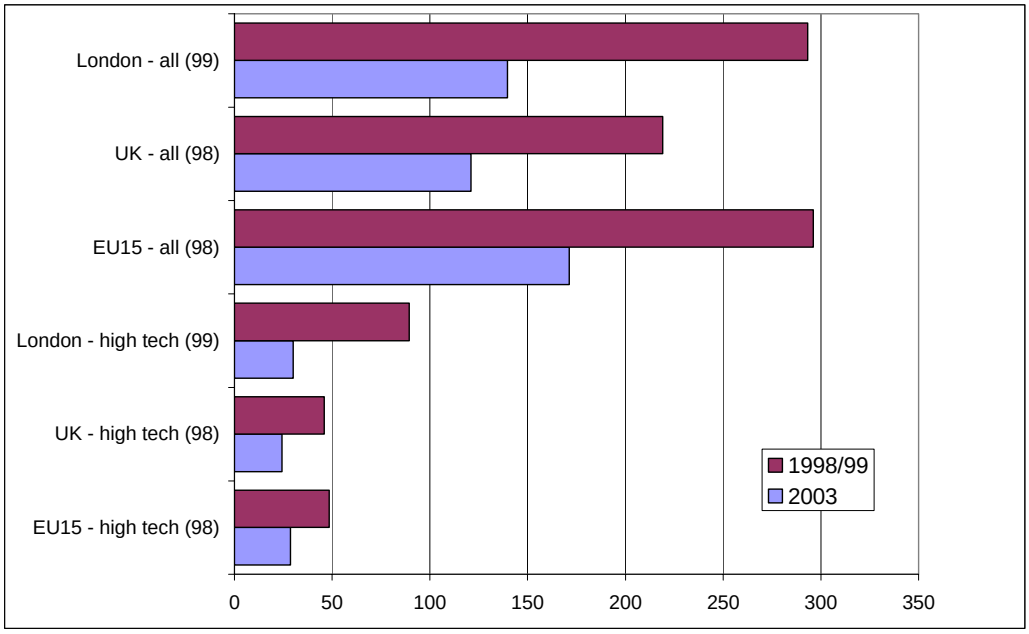


Source: Eurostat

Innovation patents

Indicators on patent applications are possibly misleading at the London regional level, and data between 1998/99 and 2003 differs greatly. In relation to population size, the UK overall has fewer patent applications (107 per million inhabitants) to the European Patent Office (EPO) than the EU 15-member average (135 per million).

Figure 13: Patent applications to the European Patent Office (EPO) per million labour force



Source: Eurostat

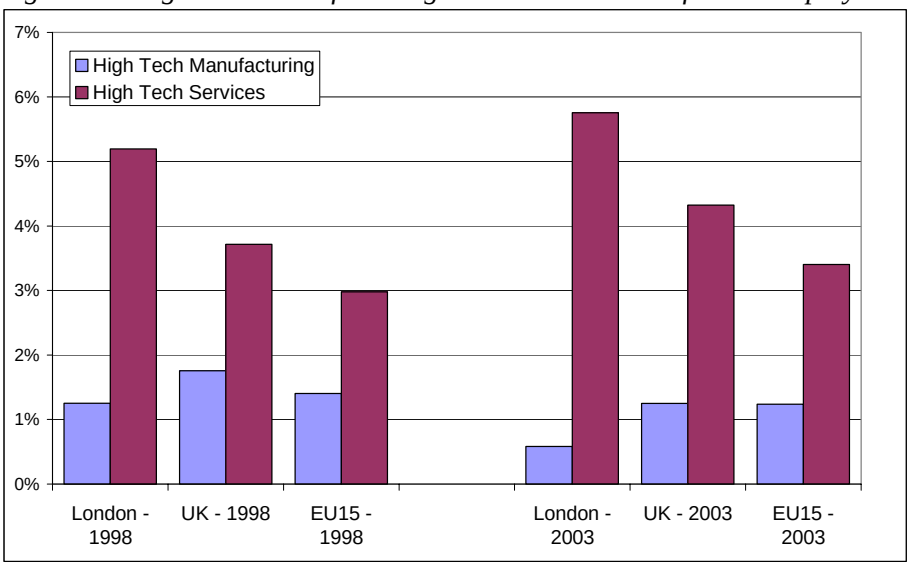
The London application rate compared with its labour force size dropped sharply over 1999 to 2003, as did the EU average. High-technology applications also fell in both areas.

High-tech employment

Consistent with the general theme that London's future innovation interest lies in service sectors, the balance between service and manufacturing high-technology activity in London would seem to be shifting. The two graphs illustrated this: while service sector high-tech employment in London would be expected to be higher overall, as a proportion of the service it has been much lower. But between 1998 and

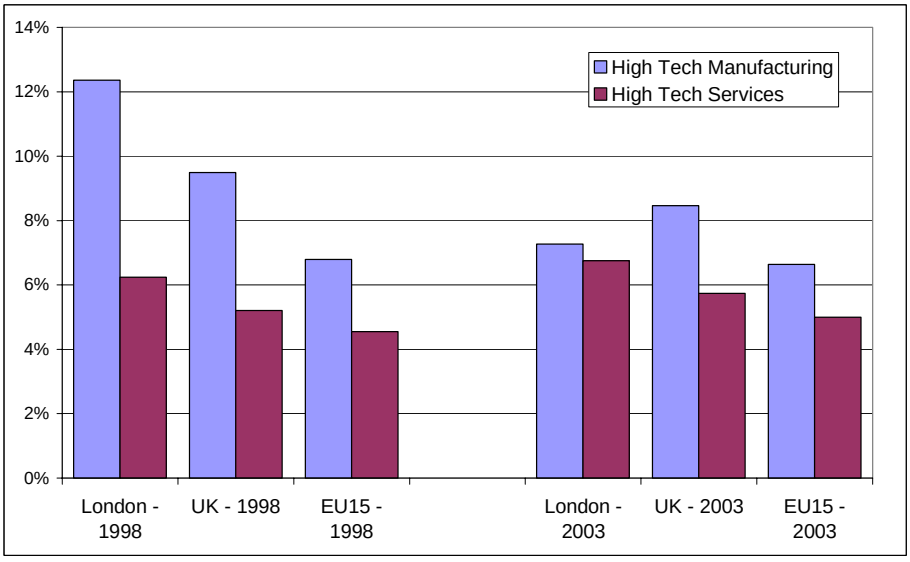
2003 (according to Eurostat data), high-tech in service sectors increased from 6.2% to 6.7% but in manufacturing fell from 12.4% to 7.3%.

Figure 14: High Tech Manufacturing and Services as % of Total Employment



Source: Eurostat

Figure 15: High Tech Manufacturing and Services as % of Sector Employment



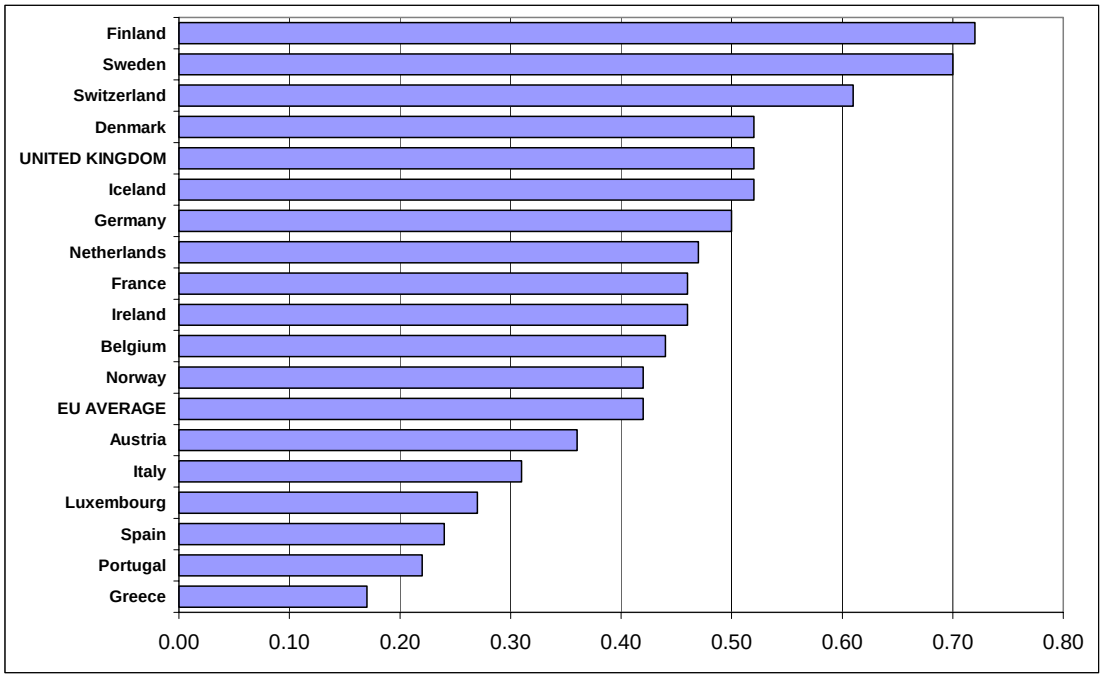
Source: Eurostat

The London economy is therefore showing signs of shifting its focus from high-tech activity in manufacturing to high-tech priorities in service sectors.

2.5. European Innovation Scoreboard (RNSII)

A final, summary look in this chapter at comparative performance can be via the European Innovation Scoreboard (EIS) matrix of a collection of statistical indicators. This is presented below at national level but the EIS ranking incorporates regional performance.

Figure 16: European Innovation Scoreboard 2003 - Summary Ranking



Source: European Innovation Scoreboard 2003 (European Commission)

The UK was ranked fifth in 2003 out of the eighteen countries listed. The scoreboard takes a critical look at innovation performance and highlighted the following strengths and weaknesses. London region is behind South East, Eastern and South West regions, which are highlighted as 'leading regions' in the UK in the Scoreboard.

Table 4: European Innovation Scoreboard 2003 – United Kingdom

Major relative strengths	**Major relative weaknesses**
o Current and trend for education (1.1 and 1.3) o Trend for EPO high-tech patents (2.3.1) o Trend for early stage venture capital (4.2)	o Trend for med/high tech manufacturing employment (1.4) o Trend for US Patent and Trademark Office (USPTO) high-tech patents (2.3.2) o SMEs innovating in-house (3.1)

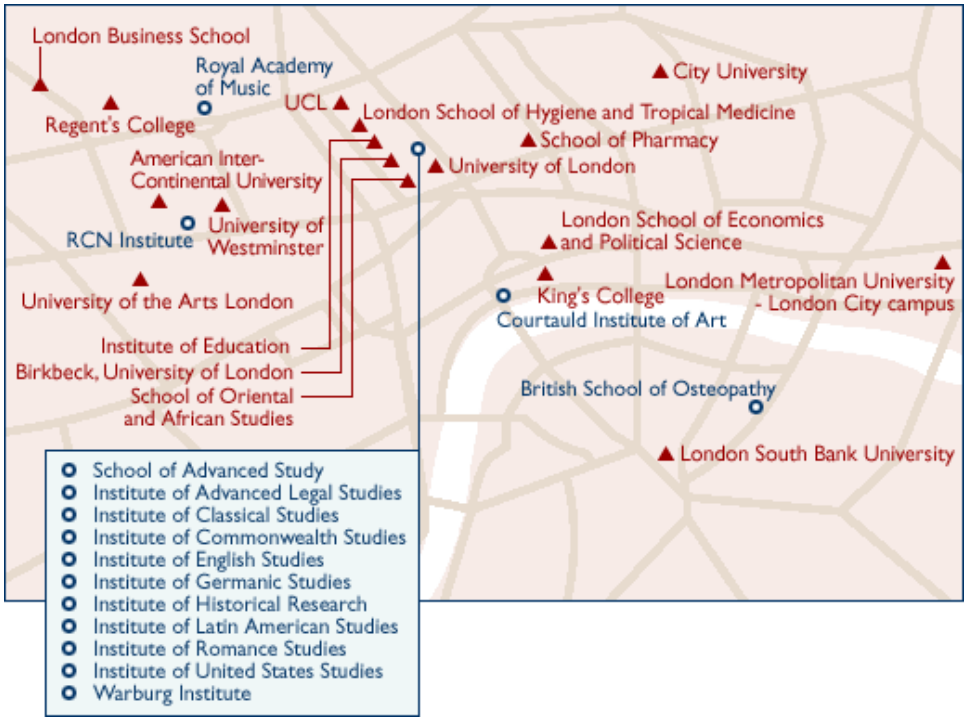
Source: European Innovation Scoreboard 2003 (European Commission)

3. Characteristics of UIC in the region

The aim of this chapter is to identify and describe the main regional actors involved in the University-Industry cooperation, the relationship among them and to present a general vision about the state of the University-Industry cooperation.

Greater London has a considerable number and diverse mix of universities and other higher education institutions. In this chapter we assess the 21 universities and colleges that account for most HE activity in the region (although it should be noted that many have some establishments located beyond the Greater London boundary and we are not always able to differentiated these). The two maps below locate all of the region's establishments.

Figure 17: London Higher Education Institutions



Source: http://www.hero.ac.uk/uk/universities___colleges/london.cfm

London's universities have evolved over long histories, with some colleges dating back to the 18th century. The many colleges that make up University of London have gained their status at different times, and as recently as the 1980s, but they largely retain distinct college identities. The principle UL colleges are Imperial College, University College, King's College, London School of Economics and Political Science, Queen Mary, Goldsmiths and Birkbeck. The other key periodisation to note is that legislation enabled former Polytechnics (which themselves were amalgams of technical colleges) to hold 'university' status from 1992. London South Bank, Middlesex, East London, Westminster, Thames Valley and London Metropolitan (a recent merger of North London and London Guildhall) are all former Polytechnics. London also has smaller, eminent institutions in the arts, international studies, education and health and medicine that have world status.

3.1. Description of the actors

3.1.1 Governance structures

In this second section we summarise the policy structures and implementation frameworks at national, regional and sub-regional levels that affect London.

Central Departments

Central Government innovation and technology programmes include the following:

- Department of Trade and Industry (DTI) - Working with businesses, employees and consumers to drive up UK productivity and competitiveness to deliver prosperity for all.
- Office of Science and Technology - provides advice to the Government on science, engineering and technology (SET) matters. The Director General of Research Councils advises on the allocation of the UK science budget, currently just under £2.4 billion.
- Foresight - and its associated horizon scanning centre aims to provide challenging visions of the future, to ensure effective strategies now. It does this by providing a core of skills in science-based futures projects and unequalled access to leaders in government, business and science.
- Department for Education and Skills (DfES) – responsible for government policy and programmes in higher and statutory (pre age 16) education; and vocational education and training.
- Higher Education – DfES leads on all aspects of university sector policy and support.
- HEROBC and HEIF – two successive university-industry links programmes to assist universities to develop external business relations and services, particularly within their own regions.

Regional Governance

London's new regional government has been in place since 2001, while central government also maintains 'government offices for the regions' (GORs).

- Government Office for London - GOL is one of nine GORs and acts as a bridge between Whitehall and the community, working with partner organisations throughout London.
- Greater London Authority (GLA) and London Mayor – the GLA effectively replaces the old Greater London Council (GLC), abolished in the 1980s, and holds strategic planning powers and general development and well-being for the capital. It is headed by and works on behalf of the London Mayor.
- London Development Agency (LDA) – one of nine regional development agencies (RDAs) in England[8] and also responsibility to the London Mayor and the London Plan.

  London Innovation Strategy and Action Plan 2003-2006.[9] Partners:

  - Government Office for London
  - Business Link for London
  - CBI London
  - London Chamber of Commerce & Industry (LCCI)
  - Department for Trade & Industry (DTI)
  - London First
  - London Higher Education Consortium
  - London Innovation Centres
  - Local Authority representatives
  - Individual HE and FE institutions
  - Large corporates
  - Sector Skills Councils
  - Learning and Skills Council
  - Research and Technology Organisations

[8] The equivalent bodies in Scotland and Wales are Scottish Enterprise and the Welsh Development Agency.
[9] London Development Agency website.

The LDA has a dedicated London Innovation website (www.london-innovation.org.uk)

Local Boroughs, Agencies & Partnerships

Borough-level and sub-regional investment, innovation and business development support is noted on websites for the following 33 London boroughs:

North

- LB Barnet - North London Limited is an agency set up to help relocate or develop business in Barnet
- LB Enfield – Brimsdown Business Association; LBE Business Initiatives Team; Enfield Business Centre
- LB Haringey – Haringey Business Development Agency; Tottenham Green Enterprise Centre; North London Chamber of Commerce; North London Ltd
- LB Waltham Forest – New Opportunities for Walthamstow (NOW) SRB; Prevista Ltd; Integria; Hackney Business Venture.

West

- LB Brent – none local
- LB Ealing – West London Business; Gateway Enterprise; Action Acton; Southall Regeneration Partnership; Park Royal Partnership; London Sustainability Exchange.
- LB Harrow – Smart Connections website; Business Connection; The Food Club; Harrow in Business; North West London Chamber of Commerce; West London Business; ABi Associates Ltd
- LB Hammersmith & Fulham – Business Enterprise Centre; Park Royal Partnership; H&F Chamber of Commerce; West London Business; Instant Muscle; Prince's Trust; Gateway Technology Centre; Intermedia; Notting Dale Technology Centre; Opportunities Centre
- LB Hillingdon – none local

- LB Hounslow – West London Enterprise Consortium; West London Business; Winning in Business (Manufacturing)

Central

- LB Camden – Holborn Business Partnership; CENTA
- LB Islington – Islington Chamber of Commerce; Islington 4 Business
- RB Kensington & Chelsea – Economic Development Team; Portobello Business Centre; North Kensington Opportunities Centre
- LB Lambeth – South Central Business Advice; Brixton Online; Social Enterprise Training & Support
- LB Southwark – Bankside Business Improvement District (BID); Cross River Partnership; Southwark Chamber or Commerce
- LB Wandsworth – Economic Development Office; Fredericks Foundation; One London; Wandsworth Chamber of Commerce; Central London Partnership; Cross River Partnership; Innovate South London; London South Central; New Business Voice
- City of Westminster – Portobello Business Centre; CENTA

East

- LB Barking & Dagenham – CEME; B&D Chamber of Commerce; East London Small Business Centre (ELSBC); Gateway to London; London Riverside Ltd; Thames Gateway Technology Centre
- LB Bexley – Economic Development Unit; Belvedere Business Centre; Innovate Thames Gateway; Sira DDA Alliance
- City of London – Business Information Focus; Shell LiveWIRE
- LB Greenwich –Greenwich Enterprise Board (GEB); Global Trade Centre; Business Works
- LB Hackney – Inspire Technology & Learning Centre
- LB Havering – ELSBC; Havering Chamber of Commerce; CEME
- LB Lewisham – Business Advisory Service
- LB Newham – Newham4Business

- LB Redbridge – none listed
- LB Tower Hamlets – East London Business Alliance; East London Centre; Gateway to London

South

- LB Bromley – Bromley4Business; Innovate South London
- LB Croydon – Croydon Business Venture; SLEMBA; KINESIS; Innovate South London; Croydon Chamber of Commerce; Croydon Innovation Centre
- RB Kingston on Thames – Shell LiveWIRE; Kingston Chamber of Commerce; Kingston Innovation Centre; Innovate South London
- LB Merton – Merton Chamber of Commerce; One London Business Enterprise; South London Business
- RB Richmond – South London Business
- LB Sutton – Sutton Chamber of Commerce

3.1.2 University and research system

This sub-section focuses on analysing the regional university and research systems, based on those relevant data to examine the University-Industry cooperation.

Universities

This section is based on analysis of 21 university institutions in London.

Table 5: University Student and Teaching Populations

HEI	No. students	% London students	No. teachers/ researchers	% London teachers/ researchers
Birkbeck, University of London	20,100	7.0%	1,600	6.8%
Institute of Cancer Research (ICR)	134	0.0%	1,000	4.2%
City University	11,800	4.1%	763	3.2%
University of East London (UEL)	15,700	5.5%		0.0%
Goldsmiths College, University of London	7,400	2.6%	378	1.6%
University of Greenwich	16,200	5.6%	771	3.3%

HEI	No. students	% London students	No. teachers/ researchers	% London teachers/ researchers
Imperial College of Science, Technology & Medicine, University of London	11,100	3.9%	3,000	12.7%
King's College, University of London (KCUL)	19,100	6.6%	2,500	10.6%
University of the Arts	24,000	8.4%	3,874	16.4%
Kingston University	17,700	6.2%	700	3.0%
London Business School	1,200	0.4%	400	1.7%
London School of Economics & Political Science (LSE)	6,200	2.2%	580	2.5%
London Metropolitan University (LMU)	26,000	9.1%	1,100	4.6%
London South Bank University (LSBU)	20,800	7.2%		0.0%
Middlesex University	22,000	7.7%	1,000	4.2%
School of Oriental and African Studies, University of London (SOAS)	3,700	1.3%	200	0.8%
Queen Mary, University of London (QMUL)	9,200	3.2%	1,200	5.1%
Roehampton University		0.0%	300	1.3%
Thames Valley University (TVU)	17,700	6.2%		0.0%
University College, University of London (UCL)	14,200	4.9%	3,500	14.8%
University of Westminster	23,000	8.0%	800	3.4%
LONDON (21 HEIs)	**287,234**	**100.0%**	**23,666**	**100.0%**

Source: HEI websites and annual reports.,

London has more than 290,000 students enrolled at its universities, a community equivalent in size to a medium-sized city. Approximately one third (32%) of the total are at University of London colleges and more than half (55%) of the student population is at 'new' (former-Polytechnic) universities. There are around 24,000 teaching and research staff, and from this analysis only just under one fifth (18%) are at the new universities while more than half of teaching and research staff (55%) are at University of London colleges.

Figures collated for numbers of post-graduate students are incomplete (see Annex 2), but show that as a proportion they range from 10% at the University of the Arts[10] to 100% at London Business School. The median average proportion of total students is around 30% post-graduate but this does not represent any kind of progression from undergraduate study as each college has a particular structure. Birkbeck, for example, has both strong pre- and first degree adult education and specialist post-graduate programmes.

Analysis of financial reports of twenty London institutions shows that total HE funding in the London region is in excess of £2.9 billions per year (2bn euro). The aggregated research budgets for these universities amounts to £0.6bn per year (415m euro) or 21% of the total. London's (and UK's) universities are mostly public funded, through central Higher Education Funding Council for England (HEFCE) and UK Research Council budgets, as well as discretionary schemes. In most universities the amount of private sector funding levered in (aside from fee-paying students) is relatively small.

There is a general distinction made between (a) research universities, which are mostly the 'old universities', and (b) teaching universities, commonly the newer, former-Polytechnic institutions. (The old tertiary education division between 'old' and 'new' still largely exists today). Beyond teaching and research all universities are now engaged to some degree in 'third stream' activity that is surplus income-generating and therefore a commercial arm (with some HEIs having set up separate limited companies, e.g. KCL Enterprises, for this purpose). There is in any case a grey area between 'pure' funded research and applied research, consultancy and knowledge transfer.

[10] University of the Arts is an umbrella institution for London's art schools and creative colleges, including Central St. Martin's, Camberwell Art Collge and the London College of Communication, among others.

Table 6: London University Budgets and Research Funds

HEI	Total annual budget (£m)	Annual research budget	Research % of HEI Total	Total % of London	Research % of London
Birkbeck, University of London (1)	56.8	9.0	15.8%	1.9%	1.5%
Institute of Cancer Research (ICR) (2)	60.0	54.0	90.0%	2.1%	9.0%
City University (3)	118.0	8.0	6.8%	4.0%	1.3%
University of East London (UEL) (4)	55.4	1.0	1.8%	1.9%	0.2%
Goldsmiths College, University of London (5)	51.9	2.1	4.0%	1.8%	0.3%
University of Greenwich (6)	123.8	7.7	6.2%	4.2%	1.3%
Imperial College of Science, Technology & Medicine, University of London (7)	434.4	171.9	39.6%	14.9%	28.5%
King's College, University of London (KCUL) (8)	364.0	101.0	27.7%	12.5%	16.8%
Kingston University (9)	121.6	2.4	2.0%	4.2%	0.4%
London Business School (10)	77.4	4.8	6.2%	2.7%	0.8%
London School of Economics & Political Science (LSE) (11)	135.0	15.0	11.1%	4.6%	2.5%
London Metropolitan University (LMU) (12)	147.5	3.4	2.3%	5.1%	0.6%
London South Bank University (LSBU) (13)	106.2	3.8	3.6%	3.6%	0.6%
Middlesex University (14)	130.3	2.7	2.1%	4.5%	0.4%
School of Oriental and African Studies, University of London (SOAS) (15)	40.0	2.9	7.3%	1.4%	0.5%
Queen Mary, University of London (QMUL) (16)	149.0	36.1	24.2%	5.1%	6.0%
Roehampton University (17)	41.7	0.8	1.9%	1.4%	0.1%
Thames Valley University (TVU) (18)	88.4	7.2	8.1%	3.0%	1.2%
University College, University of London (UCL) (19)	489.8	161.9	33.1%	16.8%	26.9%
University of Westminster (20)	129.0	6.5	5.0%	4.4%	1.1%
LONDON (20 HEIs)	**2920.2**	**602.2**	**20.6%**	**100.0%**	**100.0%**

Source: (1) 2004/5; (2) 2004/5; (3) 2004/5; (4) 1997/98; (5) 2004/5; (6) 2004/5 (7) 2003/4; (8) 2004/5; (9) 2004/5; (10) 2004/5; (11) 2004/5; (12) 2004/5; (13) 2004/5; (14) 2004/5; (15) 2003/4; (16) 2003/4; (17) 2004/5; (18) 2003/4; (19) 2003/4; (20) 2004/5. (N.B. Aggregated financial data was not available for the University of the Arts). SEE ANNEX.

However, from university financial reporting, three colleges – Imperial, Kings and UCL – accounted for almost three-quarters (72%) of research funding among the 20

HEIs analysed. This research funding covers income from Research Council, private industry, government contract and charitable sources. By contrast the eight former Polytechnics – East London, Greenwich, Kingston, London Metropolitan, London South Bank, Middlesex, Thames Valley and Westminster – attracted only 6% of the London universities' external research and enterprise income analysed. This quantitative imbalance does not necessarily translate into a qualitative one since much research in the three core colleges is large and intensive science-based projects, whereas research income in other institutions can be through a wide range of different collaborations.

Research centres

In London, the concept of a 'research centre' in an economy that is geared to commercial and creative sectors is a broad one. The source of ideas can be found in anything from a small private consultancy, a 'think tank', a charitable or community-based trust, a design company, or within academic structures. It is beyond this report to analyse all of these different sectors, hence the focus here is on research centres located in universities or funded by the discipline-based national Research Councils.

There are seven UK Research Councils, in the following fields:

- Arts and Humanities Research Council (AHRC)
- Biotechnology and Biological Sciences Research Council (BBSRC)
- Economic & Social Research Council (ESRC)
- Engineering & Physical Sciences Research Council (EPSRC)
- Medical Research Council
- Natural Environment Research Council (NERC)
- Particle Physics and Astronomy Research Council (PPARC)

There is a large number research awards in London, ranging from a few thousand pounds to multi-million pound centres and projects (see Annex 4). Engineering and science (EPSRC) accounts for by far the largest total and as such, only those awards in London above £1m were analysed; similarly, only AHRC awards above £100,000 were analysed. Meanwhile, PPARC represents those large-scale science research projects that are all located outside of London, as was mentioned earlier.

Table 7: Research Council Funding in London

Council	% total	Mean average award (£m)	Main HEIs awarded
AHRC	3%	0.31	Birkbeck, Courtauld Institute of Art, Goldsmiths, City, UEL, University of the Arts
BBSRC	3%	2.42	Birkbeck, UCL, Imperial
ESRC	2%	1.32	LSE, UCL, Institute of Fiscal Studies, LSBU
EPSRC	73%	5.59	Imperial, UCL, Kings, QMUL, Brunel, Royal Holloway, City
MRC	10%	3.67	Kings, UCL, Imperial
NERC	9%	0.34	Policy Studies Institute (fund management body), Imperial, UCL
Total analysed	100%	1.87	

Source: UK Research Councils. N.B. Awards above thresholds (£1m+for EPSRC, £100k+ for AHRC.

Of the other six centres, analysis of funding awards at London region centres finds a research portfolio covering the period 1995 to 2011 of some £329million (227m euro). Examples of largest awards are:

- MRC National Institute for Medical Research £25,000,000 (MRC)
- Chemistry (Imperial) £23,143,431 (EPSRC)
- Physics (Imperial) £18,825,922 (EPSRC)
- Physics and Astronomy (UCL) £14,513,291 (EPSRC)
- Computing (Imperial) £13,485,079 (EPSRC)
- Chemistry (UCL) £13,423,483 (EPSRC)
- Materials (Imperial) £12,444,311 (EPSRC)
- Biochemical Engineering (UCL) £11,559,857 (EPSRC)
- Computer Science (UCL) £10,678,966 (EPSRC)
- Civil and Environmental Engineering (Imperial) £10,232,386 (EPSRC)

Apart from medical research's engagement in London's hospitals, these largest awards highlight the priority given to core science, which is of strategic national importance but not related to the industrial/commercial interests of London's regional economy. London's research centre base is therefore as much a location for national and international research interests.

By contrast, the second largest AHRC award, to the Centre for British Film and Television Studies (at Birkbeck), amounted to £888,326 (the largest AHRC was to the Courtauld Institute of Art, University of London for art historical research). Media and the film industry in the UK, and in London in particular, is a leading growth sector that is perhaps not gaining comparable technological and creative research investment. London has a world-class cluster of post-production digital editing and computer generated image (CGI) firms that essentially compete with Hollywood and Silicon Valley. There would seem to be whole sectors that are of major importance to London being overlooked by research.

3.1.3 Industries

The broad industrial structure of the Greater London economy was highlighted in the previous chapter. In comparison to the key university and research centre actors in university-industry co-operation it is worth identifying private sector interests in key sub-sectors.

Table 8: Main Industrial Sub-Sectors in London's Economy

Sector (2 digit SIC)	Employees, 2003	pa%ch 1998-2003	GB pa%ch 98-03	Business units, 2003
74 : Other business activities	696,130	0.9%	2.3%	85,333
52 : Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	373,417	1.3%	2.4%	39,844
85 : Health and social work	350,762	2.7%	3.4%	14,342
55 : Hotels and restaurants	298,955	4.4%	2.2%	23,083
80 : Education	283,507	3.8%	5.0%	6,515
75 : Public administration and defence; compulsory social security	233,822	1.3%	0.7%	4,582
65 : Financial intermediation, except insurance and pension funding	179,094	-1.3%	0.9%	5,484
51 : Wholesale trade and commission trade, except of motor vehicles and motorcycles	166,978	-1.7%	-0.8%	23,694
92 : Recreational, cultural and sporting activities	161,864	3.1%	5.0%	26,674
45 : Construction	126,296	-1.2%	0.5%	20,425
67 : Activities auxiliary to financial intermediation	104,676	6.3%	4.0%	4,826
64 : Post and telecommunications	98,471	-1.9%	1.7%	3,741
72 : Computer and related activites	97,301	1.5%	5.7%	24,847

Sector (2 digit SIC)	Employees, 2003	pa%ch 1998-2003	GB pa%ch 98-03	Business units, 2003
70 : Real estate activities	94,753	4.4%	5.6%	23,871
22 : Publishing, printing and reproduction of recorded media	90,725	-1.1%	-1.4%	7,875
All sectors	**3,927,895**	**0.9%**	**1.2%**	**365,693**

Source: Annual Business Inquiry (ONS)

Other business services (85,000 firms, mostly small and in a wider range of markets), retail (40,000 outlets), health and social care (14,000 institutions), hotels and restaurants (23,000 premises) represent the largest sectors (at 2-digit standard industrial classification level) in terms of workforce. Of the fifteen largest sub-sectors in London listed above, only nine are expanding faster than the regional growth rate; and only three of the 15 have been growing at a faster rate than the Great Britain average for the sector. Hence, there would seem to be underperformance – whether due to market penetration, productivity or innovation – in a large part of London's man sectors of activity. Those with weak recent performance of particular concern include: Business services; Financial intermediation; Construction. These sectors are key components of London's on-going competitiveness and expansion (and might warrant further research in their regional links with universities).

The UK's contribution to the Community-wide annual innovation survey provides some quantitative evidence as to the extent to which private businesses cooperate in innovation.

Table 9: UK Innovation Survey 2005 – Main Indicators (% of enterprises responding)

			UK – by firm size (no. staff)			
	London	**UK**	**10-49**	**50-249**	**10-249**	**250+**
Innovation active	**57**	**57**	**55**	**67**	**57**	**72**
Product innovator	27	25	23	33	25	39
of which, new to market	*63*	*59*	*60*	*58*	*59*	*61*
Process innovator	17	16	14	21	15	31
of which, new to industry	*35*	*30*	*31*	*28*	*30*	*31*
Ongoing or abandoned activities	10	10	9	14	10	21
Innovation-related expenditure	53	54	52	64	54	68
Either product or process innovators	33	30	28	40	30	48
Both product and process innovators	11	11	10	15	10	22
Cooperation agreements	14	13	12	16	13	22
Wider Innovator	37	33	30	45	32	58

Source: DTI.

Table 10: UK Innovation Survey 2005 – Innovation Activity 2002-2004 (% of enterprises)

			UK – by firm size (no. staff)			
	London	**UK**	**10-49**	**50-249**	**10-249**	**250+**
Any of those below	**53**	**54**	**52**	**64**	**54**	**68**
Intramural R&D	28	26	24	35	26	43
Extramural R&D	11	10	9	13	9	21
Acq of machinery, equipment & software	40	42	41	47	42	54
Acq of external knowledge	13	12	12	14	12	20
Training	36	37	35	45	36	52
All forms of design	15	15	13	21	14	28
Marketing expenditure	22	22	21	28	22	36

Source: DTI.

Table 11: UK Innovation Survey 2005 – Cooperation Agreement 2002-2004 (% of enterprises)

			UK – by firm size (no. staff)			
	London	**UK**	**10-49**	**50-249**	**10-249**	**250+**
Cooperation agreement	**14**	**13**	**12**	**16**	**13**	**22**
of which,						
Cooperation partners						
Within your enterprise or enterprise group	56	50	47	55	48	70
Suppliers	81	76	76	74	76	78
Clients or customers	72	74	75	68	74	78
Competitors	41	44	44	40	43	49
Consultants, commercial labs, private R&D institutes	52	42	41	44	42	51
Universities or other HEIs	32	33	32	36	33	43
Government or public research institutes	35	31	31	29	31	34

Source: DTI.

3.1.4 Technology centres

RUISNET defines technology centres as 'centres working in close cooperation with the productive system'. However there is not a clear distinction between what is a research centre and what is a technology centre, but focus is given here to bodies and initiatives that have sought to build direct links between learning institutions and enterprise (see Annex 4 for full Technology Centres list and Annex 5 for enterprise / start-up initiatives of universities). Those analysed include:

- **Brunel Enterprise Centre** (Brunel University) – gateway for firms and individuals
- **Hoxton Bibliotech / The Innovatory** – specialist e-commerce and digital training centre
- **Imperial Innovations** – subsidiary company of Imperial College providing spin-out, incubation and technology transfer services.
- **KCL Enterprises** – commercial arm that pro-actively seeks to forge successful partnerships.
- **London Bioscience Innovation Centre** – the only biotechnology incubator in central London.

- **London Food Centre** (London South Bank University) – one of six food technology transfer centres in the country
- **New Media Knowledge** (University of Westminster) – learning and business information hub
- **The Knowledge Dock Centre** (University of East London) – start-up and business growth support
- **UCL BioMedica** – aims to generate income and create capital value for UCL though commercial exploitation of science.

These centres point towards knowledge transfer approach that genuinely seeks close alliance with industry interests. But there is an element of packaging and presentation of 'services for business' involved and one would need a thorough survey of business clients and users of such centres to find their true worth. The expressed aims of the University of London Colleges (Kings, Imperial, UCL) would seem to be more to the point, in that they clearly seek capital accumulation based on their intellectual assets. The question for new universities and public-funded schemes should be what is our key asset and unique selling point (USP) on which a sound commercial technology transfer venture can be based.

3.2. Training and the labour market

The division between higher (academic) and further (vocational) education and training was highlighted in the previous chapter. It has also been noted that government policy has at least sought a better level-playing-field in regional training and labour markets. But clear differences remain and London's universities do effectively serve different segments and areas of social and economic need.

It has not been possible to collate for this report a concise breakdown of student data by education/training field (Humanities, Natural sciences, Social sciences, Technical sciences, and Medical sciences) for all 21 universities. Most of the universities have some provision in most of these areas, but the level of participation and quality of output is likely to vary in any case. What programmes of study can provide, however,

are links and an introduction to particular key employment sectors in London (which become established more due to track record of recruitment rather than a subject fit). An alternative breakdown of education/training that would relate it more closely to the business and organisational sectors in which graduates from universities get recruited might, however, be as follows: Science & Technology; City Finance & Law; Government and Policy; Media, PR & Advertising; Corporate Management; Arts, Cultural & Heritage; NGOs & Social Care; Other.

The subject of study does not necessarily give an indication of work destination of graduate leavers, since leading employers tend to recruit from leading institutions almost regardless of subject (e.g. many history, languages or economics graduates might go into the media; while law, classics or social science graduates might enter a City finance institution). Further analysis of institutional-level graduate destinations data would reveal the actual recruitment links between subject and economic sector.

It is pertinent in this section to suggest that there is a three-way segmentation of the university sector in London, with labour market implications:

- **'Old' universities**: retain a blue-chip status among applicants, from throughout the UK and from overseas; academic staff and post-graduates engaged at national/international policy and research levels; have strong reputations among major UK and global corporate recruiters.
- **'New' universities**: have a closer link to regional and national occupational interests; more successful in widening HE participation in regional communities and attracting students from diverse backgrounds; engaged with local/sub-regional social renewal and community development.
- **Creative universities**: bridge both national/international and local student intake, often from non-conventional applicants and at different work-life stages; strong emphasis on self-employment, creative start-ups and employability; contribute to the cultural capacity of London.

This classification provides a backdrop for assessing different actors and initiatives in supporting student transition into vocations and employment, and the university-industry interfaces seeking to achieve this.

Careers guidance

London would seem to have a good level of provision in careers guidance for current students and graduate leavers. All universities have their own in-house service and University of London colleges also benefit from the CareersGroup careers service, which provides the following:

- C2 - careers advice and support to those who have already graduated.
- Online Careers Library - information on developing careers
- Bookshop - entitled to some publications for free
- Reach - Diversity Mentoring Programme matching students with employers
- GradClub – services for finishing students
- Services - brief advice sessions, CV checking, career consultancy

Of those HEIs analysed, staffing in in-house services range from 5 to 18 people. Typical services provided by careers services include:

- library, online and other careers information
- drop-in and in-depth consultation appointments
- vacancy listings and publications
- testing and assessment
- CV, application and interviewing advice
- employer liaison, job fairs and workshops
- employability skills guidance

Some universities have designed a programme of services that seek a closer, more pro-active link between students and employers. For example, University of Greenwich's *Personal Development & Employability* service provides the following:

- Community Base Volunteering Programme
- Jobs and Opportunities Website
- University of Greenwich JobShop
- Shell STEP placements

- Mentoring Programmes
- Labour Market Information (DLHE)
- Keynote Project (personal development planning)
- Careers Guidance
- Student Satisfaction Survey
- Student Study and Work Abroad

Work placements etc

The traditional 'gap year' work placement system is not as common in London as it once was. This is probably due to the less obvious transition from subject area into employment sector (noted earlier), fast-tracked and part-time degree programmes, and general labour market flexibility. Placements do not have the job-for-life type of implication but are more a combination of taster-experiences, work practices awareness, and focusing marketable skills.

Modern-day examples of work placement schemes in London universities (see Annex 6) include the following:

- **Birkbeck** – graduate placement as a 'catalyst' for knowledge links between university and arts/humanities sectors.
- **City** – *CASS Business School Year Out Placement*, with postgraduate students working on specific research and consultancy assignments.
- **UEL** – *Enterprise Bureau Programme*, where a graduate 'Associate' helps a firm with its development over a 12-week period.
- **Greenwich** – *Mentoring for Success*, a scheme in partnership with Business Link Kent and local SMEs with students placed for up to 10 weeks.
- **University of the Arts** – two mentoring schemes: *Inter Connect* for UK black and minority ethnic (BME) students and *Connect Able* for arts students with disabilities.

Professional courses / adult learning

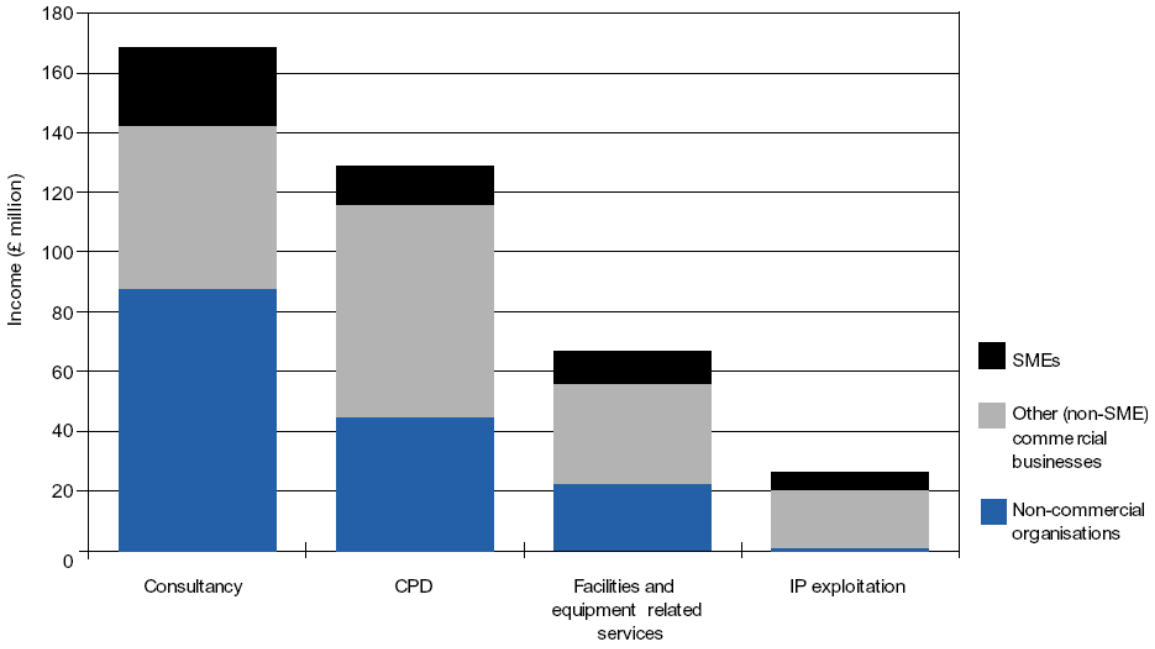
In the area of continuing professional development (CPD) and adult (or lifelong) learning courses, the market provision in London of courses is generally guided by the motivation for studying and where funding is coming from. A general split is as follows:

- **Adult learning programmes** – these are wide ranging from academic and vocational short, taster and foundation courses through to leisure and lifestyle interest courses; fees normally paid directly by students, unless having unemployment or low-income concessions (e.g. Birkbeck, City, Goldsmiths).
- **Executive education** – aimed squarely at corporate business training, for older and employed professional participants, and can include business skills such a languages; premium fees, including summer schools etc can be charged (e.g. City, LSE, London Business School)
- **Enterprise and start-up short courses** – designed for students or non-students to develop small business ideas, including networking and workshops; services often grant-supported in target locations, free at point-of-use (e.g. UEL, Greenwich, LSBU, Kings, University of the Arts).
- **Subject/vocational short courses** – offered as 'taster' introductions for those considering (usually post-graduate) full-time study; fees can be charged, but CATS point can contribute to a full course (most universities).

3.3. Innovation and territory: An approach through the University-Industry cooperation

Each year HEFCE (at the England national level) monitors progress in co-operation through a survey of university external enterprise (or 'third stream') offices. The results from the 2004 survey found that nationally there is a continuing upward trend in interaction with business. Consultancy income (of approximately £170m or 117m euro) was the largest source, followed by continuing professional development (CPD) course income (approx. £130m or 90m euro).

Figure 1 **Summary of knowledge transfer income by partner type**



Source: HEFCE (2005). Data for England.

The HEIs across England surveyed reported much less income from intellectual property (IP) spin-out venture, however.

So far, this survey and assessment of university-industry business activity across a large mix of institutions in the London region has highlighted the diversity of activity and provision. But is there anything like a coherent structure? All of the universities essentially operate within the same regional economy and with students who hope to enter the same labour market (if remaining in London). It is the same group of industries, businesses and corporate interests with which individual HE institutions seek to engage, but is there any co-ordination between them? The short answer is 'no' in that UK universities compete for students and compete for private business expenditure as an additional source of income. But are universities aware as to whether this competition is conflicting and possibly having a negative impact on business interest? After all, from the private business perspective London's universities may all be seen as part of the same sector in that they're sought to serve a particular function (and are largely public institutions).

Even within each university there is a question as to whether separate offices and support units that happen to have some engagement with business employers are completely co-ordinated in their actions. From the analysis of the universities, the table below lists offices that could have a co-ordinated external focus with industry, or even inter-university arrangements.

Table 12: University External Business/Employer Liaison Offices in London

HEI	**External office(s)**
Birkbeck, University of London	Business Relations Unit Regional Liaison Office Specialist Institutions' Careers Service School of Continuing Education
City University	Centre for Career and Skills Development (CCSD) CASS Business School Career Resource Centre Centre for Innovation and Knowledge Transfer
University of East London (UEL)	Business Services at UEL Employability Unit Enterprise Bureau Programme Knowledge Dock Business Centre
Goldsmiths College, University of London	Office for Business and Community Development Goldsmiths Careers Service Professional & Community Education (PACE) PureGoldmsiths (spin-outs)
University of Greenwich	Research, Enterprise and Regional Affairs Office Personal Development and Employability KTP Consultancy Centre for Entrepreneurship
Imperial College of Science, Technology & Medicine, University of London	Business Development Services Centre for Professional Development Careers Advisory Service
King's College, University of London (KCUL)	King's College Careers Service KCL Enterprises SIMFONEC
Kingston University	Careers Service Enterprise Exchange
University of the Arts	Creative Careers a number of enterprise interface start-ups
London Business School	Careers Service Executive Education Global Leadership Assessment for Managers (GLAM)
London School of Economics & Political Science (LSE)	LSE Careers Service Enterprise LSE Ltd LSE Business Alumni Network (LBAN)
London Metropolitan University (LMU)	Career Development and Employment Service (CDES) Business Links
London South Bank University (LSBU)	Careers and Student Employment Unit (CaSU) Research & Business Development Office (RBDO)
Middlesex University	Careers Advisory Service Middlesex University Business Solutions MU Ventures
School of Oriental and African	Careers Service

Studies, University of London (SOAS)	External Relations Department Executive Training Programme (ETP)
Queen Mary, University of London (QMUL)	Careers Service Queen Mary Innovation and Enterprise London Centre for Arts and Cultural Enterprise (LCACE)
Roehampton University	Employment & Careers Academic Enterprise Office at Roehampton
Thames Valley University (TVU)	Careers and Employment service WestFocus partnership
University College, University of London (UCL)	UCL Careers Service UCL Business
University of Westminster	Careers and Student Employment (Case)

Source: Annex 6

There are therefore at least 55 London university-based external liaison offices that could be making contact with businesses and employers at any one time. The case for greater co-ordination and synergies would be whether there are inter-dependent benefits between functions and institutions that could be found. Could the value of co-operation be greater than that of competitive advantage in engaging more closely with industry and business?

Each of the following questions are considered based on the evidence collated in Annex 6 and the small survey of enterprise offices.

1. How do universities manage the University-Industry cooperation?

Most of the London universities have at least two offices making regular contact with regional businesses – the 'careers development' office and the 'business services' office. Central university management may also have strategic or sponsorship links with larger companies. Where professional and adult learning courses are co-ordinated at university level, this department will also have contact with employers. On the other hand, a particular academic department may have established its own relationship with companies or regional sectors, whether for training or providing research and consultancy services. The central business services unit may provide administration of contracts but the co-operation and development of external relations can be at an academic staff or department level. There is a less of a tendancy for 'business servces' staff to pro-actively 'sell' the university's services to external clients.

What is less certain is the degree of co-ordination within a university between these different points of contact, as perceived by the business. A careers service would normally deal with the human resources/personnel department of a company, but a professional course provider elsewhere in the university may be approaching the same company's HR department for training. Were an integrated 'client management' approach to co-operation be taken then not only would the university's service offer be co-ordinated but any initial links might be expanded on with other service relations. This would equally apply at the industry sector level.

University-industry links, in terms of specific areas of service and benefit, tend to be defined by initiatives and programmes that are dictated by central public funding that is made available to universities and service beneficiaries (e.g. KTPs). The result is that many universities could appear (to companies) to be providing identical and undifferentiated services (although some universities 'brand' their offer). Services, in the way they are promoted, are less likely to be defined in specific areas where university-industry collaboration would have mutual benefit (e.g. workforce development, product/service design and development, planning and business strategies etc).

2. What kind of University-Industry relationships are mainly developed by universities?

As mentioned earlier, there is likely to be something of a gap between the rhetoric of business engagement expressed in university websites and publications and what it constitutes in reality.[11] The national picture is that research and consultancy is the largest source of income but more than half of this is with non-business clients and the large contracts involved would mean that relatively fewer companies are engaged. Professional development courses is the second largest income source but universities account for only 5% of the total business training market (HEFCE). Innovation, IP and other technology transfer is a smaller source of income, nationally, and in terms of business relationships are more prevalent in computing, bioscience and other technical fields.

[11] Within the limits of this report the in-depth management information and one-to-one interviews required to establish exact business relationships in each university were not possible.

The potential relationships developed and their relevance to industry can be listed progressively as follows:

- Corporate links – relationships found through membership of HEI governors, sponsorship/grant support or policy/partnership board membership
- Networking and knowledge exhange – seminars, workshops, information services that provide initial contact and bring business sectors together
- Careers events etc – raising awarness and the public profile of a company as an appealing employer
- Graduate recruitment advertising – priority access to quality new workforce and skills
- Work placements and projects – practical experience, suitability and knowledge-sharing
- Learning culture – encouraging staff to take up further/higher education for their own self-development
- Staff training – specific skills-needs based professional and workforce development for the company's benefit
- HE consultancy – company procuring university expertise for its business (or sector) development
- Incubation/premises – university becomes landlord to the business, giving it access to on-site support services
- Start-ups / spin-outs / joint-ventures – university takes a close and (financial) vested interest in a new enterprise development

These relationships represent progressively closer forms of engagement. Universities will tend to find most contact at the 'lighter' end of information transfer and networking. Most common direct business benefit is still through careers service and graduate recruitment, but with lower penetration the value of professional and workforce development training to businesses is less certain. In some cases, the short courses offered by universities will not differ greatly from their academic programmes and business may perceive them accordingly (and regard private professional trainers as giving them bottom-line value).

Relationships around specific technology transfer and enterprise are fewer, and likely to be a small share of the total market. Knowledge Transfer Partnerships (more than 40 in London) are an example, where London South Bank University has a large portfolio, though what would be of interest is whether KTPs are used as a core element in a business's strategy.

3. Do universities have science or technology parks to promote the cooperation?
London universities in general face a scarce supply of affordable land and premises for science park development (compared with Cambridge, Oxford and other provincial-set universities). Some universities have rentable small office space which may develop a cluster of similar technology companies, while others have or are developing small incubation space within innovation centres. But much of this activity is not highly visible or large scale. Unlike those found in other regions (mostly outside of the UK), London does not have a university campus that encompasses a science or business park with a concentration of high-profile private company regional headquarters or research centres.

3.4. Entrepreneurial practices in universities

In the course of this report we have highlighted anecdotal examples of business start-ups, technology transfer and commercialisation of intellectual property. The list of Knowledge Transfer Partnerships (KTP – see Annex 7) shows an impressive mix of projects that have been set up, with London South Bank University being the most active in its KTP programme. The leading research colleges – Imperial, UCL, Kings – have also got strong track records in spin-out firms, mainly in highly specialised areas of biosciences and computer engineering. These spin-outs are far from mainstream and have no direct link with London's economy.

It is apparent that London universities generally do not have their own or access to fully-serviced business incubation units, although there are some encouraging developments. Queen Mary College is involved in new creative business space in

Whitechapel, a nearby disadvantaged neighbourhood; meanwhile, London South Bank University is in partnership with its local borough-based business support centre to provide small start-up units.

4. Innovation policy

4.1. Level of regional decentralization

London re-established a degree of regional government autonomy from 2001 with the creation of the elected Greater London Authority (GLA), the London Development Agency (LDA), and the new office of the Mayor of London. The capital region had been without regional government from the late 1980s when the Greater London Council was abolished. In the intervening years, the 32 London Boroughs maintained some degree of co-ordination through bodies such as the Association of London Government. However, since 2001 London regional government has assumed greater influence and powers away from both central government (Whitehall) and the Borough Councils.

Innovation and competitiveness policy comes within the remit of the LDA. *London Innovation* was set up as a channelling body for various funding streams and oversee regional policy and action plans in innovation. The LDA also has a growing interest in strategic planning in skills development at vocational level via further education colleges. But it does not have a direct policy remit with regards Higher Education policy, although it does distribute support funding to HEIs in support of enterprise and knowledge transfer initiatives. London's universities, on the other hand, do not have a joint body for promoting and instigating an HEI-led innovation strategy. They will also collaborate in accessing funding, such as the 'Proof of Concept Fund' four London university consortia, but generally compete for finite support fund distribution, that ultimately comes from central government.

Funding of research and innovation in London's universities comes through channels that to some extent reinforce older two-tier university structures. Core technical and academic research is from the UK's Research Councils, which distribute central government science and innovation investment. However, the 'third stream' approach

to technology transfer is via the Higher Education Funding Council for England (HEFCE), which is also responsible for university's core infrastructural funding.

National universities policy comes through the Department for Education and Skills (DfES). The 2003 White Paper *The Future of Higher Education*, sets out central government's priorities for universities. In relation to 'third stream' and enterprise activities, it notes that 'Higher education in the UK generates over £34 billion for our economy and supports more than half a million jobs. But less than one in five businesses taps into universities' skills and knowledge. Universities and colleges can play a bigger role in creating jobs and prosperity'. It also calls for 'stronger partnerships between HE institutions and regional development agencies (RDAs), with RDAs playing an increasing role allocating HEIF [Higher Education Innovation Fund]' (DfES, 2003:10). This would suggest that London regional government will gain an HE innovation remit in future.

But the London colleges that receive the lion's share of core technical research funding are wary of regionalisation. Imperial College, King's College, London School of Economics & Political Science, and University College London have representation in the form of the *Russell Group*, which upholds the interests of the UK's leading universities. In response to government policy on science and innovation, the group opposes a regionalisation of national strategy: 'The strategy cannot be devolved to geographic regions, nor be a managed assimilation of regional strategies. Otherwise inefficient duplications or strategic gaps will appear in the medium term and undermine our research capability. Regional Development Agencies can make important contributions to knowledge and technology transfer, to the development of SET skills, and to the support locally of national R and D developments. The funding of fundamental research must follow a national research strategy led and managed by Universities and the Research Councils, supported and underpinned by Government' (Russell Group response to Science and Innovation Investment Framework).

The Higher Education Funding Council for England (HEFC) has distributed innovation and business engagement funding schemes to universities since 1999, ona an increasingly formula (rather than competitive bidding based on strengths of project idea) basis. The Office for Science and Innovation (OSI) within the Department for Trade and Industry (DTI) is the national agency for implementing policy and support in research and development.

4.2. Main features of the regional and/or national innovation policies

Policy instruments and programmes aimed at enhancing innovation are identified through national (HEFCE and OST) and regional (London Innovation) channeled schemes.

4.2.1. Policy tools to enhance University-Industry cooperation

Table 13: Higher Education Funding Council for England (HEFCE) support programmes for university-industry co-operation in London

Programme / Project	Description	London HEI partners (project industry sector)
Higher Education Reach Out to Business and the Community (HEROBC) Fund	Activities to increase their capability to respond to the needs of business, including companies of all sizes and the wider community, where this would lead to wealth creation - first round of HEROBC funding ran from January 2000 to July 2003 with 87 awards - second round ran from August 2000 to July 2004 with 50 awards.	Birkbeck: R1 = £466,000 City: R1 = £1,100,000 UEL: R1 = £550,000 Goldsmiths: R2 = £541,229 Greenwich: R2 = £550,000 Imperial:R1 = £1,100,000 Kingston: R1 = £550,000 King's: R1 = £1,100,000 LBC: R2 = £275,000 LSE: R1 = £100,000 LMU: R1 = LGU £975,000; R2 = UNL £550,000 Middlesex: R1 = £550,000; R2 = £100,000 QMUL: R2 = £550,000 Ravensbourne: R2 = £556,000 Royal Holloway: R1 = £480,000 LSBU: R1 = £966,000 TVU: R1 = £550,000; R2 = £150,000 London Institute (UoA): R2 = £550,000 UCL: R1 = £1,100,000 Westminster: R1 = £550,000 London total: R1 = £10.687m (7.37m euro); R2 = £5.922m (4.084m euro)

Programme / Project	Description	London HEI partners (project industry sector)
Higher Education Innovation Fund (HEIF)	The Higher Education Innovation Fund (HEIF) supports higher education institutions (HEIs) in knowledge exchange and productive interactions with business, public sector organisations and the wider community, for the benefit of the economy and society.	Birkbeck: R1 = £400,000; R2 = £900,000; R3 = £1,050,000 City: R1 = £250,000; R2 = £1,931,750; R3 = £2,061,302 City collaboration: R2 = £730,153 UEL: R1 = £456,000; R2 = £2,400,000; R3 = £1,800,000 UEL collaboration: R2 = £1,000,000 Goldsmiths: R3 = £300,000 Greenwich: R1 = £495,000; R2 = £1,750,000; £1,500,000 ICR: R1 = £370,000; R2 = £500,000; R3 = £375,000 IOE: R2 = £400,000; R3 = £544,545 Imperial: R2 = £2,400,000; R3 = £3,000,000 Imperial collaboration: R2 = £1,850,000 + £210,000 King's: R1 = £700,000; R2 = £1,500,000; R3 = £3,000,000 King's collaboration: R2 = £1,450,000 Kingston: R2 = £440,000; R3 = £1,858,500 LBS: R3 = £1,532,851 LBS collaboration: R1 = £4,000,000; R2 = £600,000 + £1,380,000 LMU: R1 = LGU £500,000 UNL £577,500; R3 = £1,500,000 UoA (London Institute): R1 = £500,000; R2 = £2,290,000 UoA collaboration: R2 = £850,000; R3 = £2,287,500 LSBU: R2 = £2,258,976; R3 = £1,694,232 LSE: R1 = £500,000; R2 = £1,200,000; £900,000 Middlesex: R1 = £500,000; R2 = £1,200,000; R3 = £900,000 QMUL: R1 = £500,000; R2 = £2,265,000; R3 = £2,077,125 QMUL collaboration: R2 = £2,000,000 Ravensbourne: R1 = £500,000; R2 = £600,000; R3 = £450,000 Royal Holloway : R2 = £700,000; R2,120,250 SOAS: R1 = £399,909; R2 = £353,000; £470,970 TVU: R3 = £871,150 UCL: R1 = £800,000; R3 = £3,000,000 Westminster: R3 = £1,204,500 London: R1 = £11.45m (7.89m euro)

Source: HEFCE website

Table 14: London Innovation *support programmes for university-industry co-operation in London*

Programme / Project	**Description**	**London HEI partners (project industry sector)**
Jumpstart	2-year and €5.4 million programme: · Up to 50% of project costs with a maximum of £10,000 for London-based SMEs to connect with Higher Education Institutes (HEIs) or Research and Technology Organisations (RTOs) · Up to £100,000 to inspire London's minority business communities to improve access and uptake of innovation · Up to £1 million to strengthen and enhance new and existing networks to promote London as a Centre for Innovation and strengthen engagement of businesses in innovation	Imperial (telecoms) School of Hygiene and Tropical Disease (medical) UCL (software)
SME Innovation Support	Assists small businesses to exploit innovative opportunities by drawing on the skill base of London's Universities: - free to SMEs - up to £6,000 specialist support - up to £30,000 Grant support	City University (bio-technology) Imperial College Medical School (medical) London South Bank University (manufacturing) Middlesex University (medical; recycling)
Proof of Concept Funds	invested £3.2m in 4 London Proof of Concept Funds, launched in March 2005, which will ensure that ideas/technologies emerging from 24 of London's Higher Education Institutions are taken to market through spin-out company or licensing opportunities Grants range between £5k-£25k (with occasional larger grants being awarded in exceptional cases) **West Focus:** PARK Seed Fund - £1m seed fund for 'proof of concept' activity, as well as a £2m seed fund for further development work. **Imperial et al:** **Emerald Fund:** pre-commercial fund (PCF). These funds will be distributed in the form of grants to academics in the partner universities on a competitive basis to enable them to establish the	**West Focus:** Brunel University (lead); Royal Holloway University of London; Kingston University; University of Westminster; Roehampton University; Thames Valley University **Imperial et al:** Imperial College London (lead); University College London; University of the Arts London; Royal College of Art **Emerald Fund:** London Metropolitan University (lead); University of Greenwich; University of East London; Goldsmiths College, University of London; City University; London Southbank University; Ravensbourne College; Middlesex University **Heptagon Fund:** Queen Mary

Programme / Project	Description	London HEI partners (project industry sector)
	commercial potential of a concept resulting from their research. Emerald is worth just under £1m in total to be distributed as grant income to applicants from the London Universities. The grants will be distributed in two forms as: Mini Grants - up to £10k (typically £6k); Standard Grants - up to £40k **Heptagon Fund:** for the Life Sciences and Healthcare - awards up to £100,000; Commercial assessment - up to £25,000 will be available for detailed assessment of the technical and commercial risks, analysis of competitive technologies and patent position, and identification of potential markets; Technology validation - up to £100,000 in total (including any commercial assessment award) will be available for applied research to develop a prototype or demonstrate an invention.	and Westfield College, University of London (lead); Royal Veterinary College; School of Pharmacy; Birkbeck College; St. Georges Hospital medical School; Kings College London; London School of Hygiene and Tropical Medicine

Source: London Innovation website etc

The SME Innovation Support programme 'has engaged with 106 companies, supporting over 20 University linkages in areas as diverse as art & design, engineering, food, ICT, marketing and medicine, facilitated over 15 new product/process developments, disbursed over £300k of financial support and generated over £660k of SME R&D investment. Also 20 new business start-ups have been advised of which 13 have strong exploitable IP' (London Innovation website).

5. Conclusion: Strengths and weaknesses of UIC in the region

5.1. Summary of UIC in London Region

The Higher Education sector is large compared with other RUISNET regions as it is that of a capital region with a population of 8 million. There are 42 HEIs in total and this report has focused on the 21 universities that account for the majority of university-industry activity. Within this 21 there is a mix of: University of London Colleges; 'new' former-Polytechnic universities; and creative arts institutions. Although there is much overlap in their function, each of these groups of universities plays a distinct role in the regional HE and knowledge transfer offer:

- The major University of London colleges (Imperial, King's, UCL) account for the majority of academic research funding and also represent a national expertise in sciences (particularly medical and biosciences)
- The 'new' universities have a reputation for widening university access to a broad social mix, with high proportions of minority ethnic students, from within the region or from overseas; they also are active in reginoal-based knowledge transfer initiatives;
- Creative arts institutions provide foundation, undergraduate and postgraduate study and opportunities to creative individuals, with a strong emphasis on commercialisation of their work.

London is a dynamic service-sector oriented economy where industrial productive activity has declined and associated private industrial research and development activity tends not to be located in the region. The scarcity and high of cost of suitable land and premises does not make London a preferred R&D location. Hence, compared with other EU and UK regions London's research capacity exists predominantly within public sector institutions. The culture of innovation is service and creative sectors is still evolving and much of London's future competitveness concerns promoting technology and innovation *within* business workplaces.

London university institutions are engaged with industry, government and third-sector organisations (NGOs) often more so at national and international levels rather than at a regional level that is directly relevant to the London economy. Although since 2001 encouraged by London government, regional economic development has not bee systematically approached by London's HE sector and there is not an obvious 'fit' between London universities and the region's principle business sectors.

5.2. Strengths and Weaknesses in London Region

In the table below we attempt to summarise London region's strengths and weaknesses that are of relevance to university-industry co-operation.

Theme	Strengths	Weaknesses
Socio-economic structure:		
Economy	World city status that attracts global investment, large-scale regional and extra-regional (labour market) resources for continues growth	Caught between European and North American business and investment cycles; risks losing central presence in EU economy
Productive structure	Financial services; Media, design and creative arts; Retail / tourism; Education; Community services	Less advanced industrial presence; costly location for expanding SMEs; dependence on cyclical construction/ domestic property markets.
Training and human resources	Labour market size, diversity and ability to import skills; High qualified workforce.	Many residents with no or low qualifications; Poor local production of technical / vocational skills; private employers reluctance to invest in training
R&D and innovation	Design skills and creative diversity; relatively flexible business structures	Relatively low in private (service) industry; research capacity concentrated in public institutions
UIC characteristics:		
Universities	Large and multi-layered HE sector and vibrant regional student population; international reputation; local/sub-regional universities in communities	Prevailing two-tier university culture (old and 'new'), with former less associated with regional economic interests
Research centre	Leading research investments that benefit international commercial and governmental development	Lack of major research investment directly linked to London's priority sectors (e.g. media, finance)
Industry sectors	Dynamic SME sectors that can	Lack of real regional co-

Theme	Strengths	Weaknesses
	drive market innovation and knowledge base; commercialised art, fashion, digital media	ordination between leading growth sectors and university knowledge transfer
Technology centres	Possibly digital media	A general lack of major technology transfer centres embedded in the commercial sector
Professional training	Highly accessible and flexible places of learning, and mixed offer; means to elevate and accredit experience into qualifications	Quite specialist and segmented between executive and community-based; lack of credible mainstream training (n.b. only 5% market share)
Employment agencies	Good regional and college-level graduate careers support; close relationship with employers	HE services not linked with other private and community job brokerage and local/regional employment needs
Business services	Most universities have dedicated business support and rekations offices	Service generally provided at academic staff/department level; not sufficently commercial oriented
Co-ordinating offices	Emerging network of London offices	Risk of business confusion between HE's corporate, careers and business service interface
Technology parks	Only small clusters of incubator and small business units	Lack of significant and visible parks and clusters that would place London alongside US and EU equivalents
Enterprise / spin-outs	Bioscience; computing; arts, creative and media	Relatively few and not a significant share of London's enterprise growth
Regional innovation policies:		
Policy tools	National (HEFCE) programme support steadily increasing 'third stream' capaicty of universities	Resistance by some universities to regional co-ordination of HE innovation support

5.3. Further study and analysis in London (SOTA2)

This first university-industry co-operation (UIC) state-of-the-art report for the London region has highlghted th following issues that would warrant further research in the second SOTA report.

- **Public Procurement Innovation** – analysis of how enterprises in government and local service contracting markets are engaging with Higher Education knowledge transfer.

- **FE-Business Co-operation** - education-business links and skills supply at the regional Further Education/sector training level, including networking and progression into the HE sector.
- **Underperforming Sub-Sector University Links** – address competitiveness and innovation issues in London's main sectors for small enterprise.

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Annex Information

Annex 1: Population and Labour Market Participation

		Population						Labour Force Participation Rate (% of working-age population)		
2001 CENSUS PROFILE	**Area (hectare)**	**Popul-ation 1991**	**Popul-ation 2001**	**Density 1991 (persons / hectare)**	**Density 2001 (persons / hectare)**	**% change**	**London = 1.00**	**2000**	**2003**	**2005**
LB Barnet	8,666	273,923	314,564	31.6	36.3	14.8%	0.90	78.1	75.0	74.9
LB Enfield	8,093	244,796	273,559	30.2	33.8	11.7%	0.71	73.9	75.7	70.6
LB Haringey	2,958	180,552	216,507	61.0	73.2	19.9%	1.20	66.0	61.7	69.2
LB Waltham Forest	3,885	198,988	218,341	51.2	56.2	9.7%	0.59	75.6	70.2	70.5
North sub-region total	**23,602**	**898,259**	**1,022,971**	**38.1**	**43.3**	**13.9%**	**0.84**	**73.8**	**71.3**	**71.6**
LB Brent	4,326	221,090	263,464	51.1	60.9	19.2%	1.16	69.9	70.6	71.0
LB Ealing	5,553	256,957	300,948	46.3	54.2	17.1%	1.03	69.8	76.6	76.2
LB Harrow	5,044	189,891	206,814	37.6	41.0	8.9%	0.54	82.4	76.7	78.7
LB Hammersmith & Fulham	1,639	129,547	165,242	79.0	100.8	27.6%	1.66	74.9	78.9	75.8
LB Hillingdon	11,572	220,960	243,006	19.1	21.0	10.0%	0.60	77.9	77.2	80.2
LB Hounslow	5,603	190,502	212,341	34.0	37.9	11.5%	0.69	79.1	76.6	75.6
West sub-region total	**33,737**	**1,208,947**	**1,391,815**	**35.8**	**41.3**	**15.1%**	**0.91**	**75.1**	**75.9**	**76.1**
LB Camden	2,181	148,029	198,020	67.9	90.8	33.8%	2.04	71.8	75.8	69.4
LB Islington	1,486	147,611	175,797	99.3	118.3	19.1%	1.15	66.8	71.3	71.7
RB Kensington & Chelsea	1,213	110,543	158,919	91.1	131.0	43.8%	2.64	74.1	73.2	66.7
LB Lambeth	2,683	211,269	266,169	78.7	99.2	26.0%	1.57	78.1	72.8	74.4
LB Southwark	2,884	192,565	244,866	66.8	84.9	27.2%	1.64	70.4	74.2	72.4
LB Wandsworth	3,426	228,039	260,380	66.6	76.0	14.2%	0.86	83.0	80.9	78.4
City of Westminster	2,148	146,059	181,286	68.0	84.4	24.1%	1.46	71.1	68.6	69.9
Central sub-region total	**16,021**	**1,184,115**	**1,485,437**	**73.9**	**92.7**	**25.4%**	**1.54**	**74.3**	**74.2**	**72.3**
LB Barking & Dagenham	3,611	138,837	163,944	38.4	45.4	18.1%	1.09	66.7	70.8	68.8
LB Bexley	6,064	208,311	218,307	34.4	36.0	4.8%	0.29	79.2	80.5	81.7

		Population						Labour Force Participation Rate (% of working-age population)		
2001 CENSUS PROFILE	**Area (hectare)**	**Popul-ation 1991**	**Popul-ation 2001**	**Density 1991 (persons / hectare)**	**Density 2001 (persons / hectare)**	**% change**	**London = 1.00**	**2000**	**2003**	**2005**
City of London	290	3,277	7,185	11.3	24.8	119.3%	7.20	78.3	72.5	72.3
LB Greenwich	4,733	195,118	214,403	41.2	45.3	9.9%	0.60	65.2	64.8	62.6
LB Hackney	1,906	158,360	202,824	83.1	106.4	28.1%	1.70	81.8	83.7	79.2
LB Havering	11,212	221,673	224,248	19.8	20.0	1.2%	0.07	77.4	76.2	78.3
LB Lewisham	3,516	209,976	248,922	59.7	70.8	18.5%	1.12	58.7	57.9	60.7
LB Newham	3,624	196,569	243,891	54.2	67.3	24.1%	1.45	73.2	75.4	76.2
LB Redbridge	5,641	216,216	238,635	38.3	42.3	10.4%	0.63	61.0	63.3	62.2
LB Tower Hamlets	1,977	147,896	196,106	74.8	99.2	32.6%	1.97	**71.5**	**71.8**	**71.5**
East sub-region total	**42,575**	**1,696,233**	**1,958,465**	**39.8**	**46.0**	**15.5%**	**0.93**			
LB Bromley	15,002	276,121	295,532	18.4	19.7	7.0%	0.42	79.5	80.2	81.7
LB Croydon	8,654	295,230	330,587	34.1	38.2	12.0%	0.72	79.2	81.3	78.4
RB Kingston on Thames	3,728	125,428	147,273	33.6	39.5	17.4%	1.05	78.3	84.3	79.3
LB Merton	3,758	158,206	187,908	42.1	50.0	18.8%	1.13	87.0	77.4	75.7
RB Richmond	5,745	149,136	172,335	26.0	30.0	15.6%	0.94	87.7	80.0	82.9
LB Sutton	4,385	161,233	179,768	36.8	41.0	11.5%	0.69	**82.2**	**80.4**	**80.7**
South sub-region total	**41,271**	**1,165,354**	**1,313,403**	**28.2**	**31.8**	**12.7%**	**0.77**			
								75.0	**74.6**	**74.3**
								75.0	**74.6**	**74.3**
LONDON REGION TOTAL	**157,283**	**6,152,908**	**7,172,091**	**39.1**	**45.6**	**16.6%**	1.00	**2000**	**2003**	**2005**

Source: Census of Population (ONS); Annual Labour Force Survey (UK Office of National Statistics)

Annex 2: Industry Sector Trends – Businesses and Employees (London and GB)

	Employees			Business units			London % of Total Employees			
Sector (2 digit SIC)	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**Micro units (1-10 staff)**	**Small units (11-49 staff)**	**Medium units (50-199 staff)**	**Large units (200+ staff)**
74 : Other business activities	696,130	0.9%	2.3%	85,333	5.0%	5.1%	23.2%	16.5%	23.2%	37.1%
52 : Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	373,417	1.3%	2.4%	39,844	-0.1%	-0.3%	28.2%	21.5%	19.8%	30.6%
85 : Health and social work	350,762	2.7%	3.4%	14,342	0.3%	0.7%	12.2%	24.0%	18.1%	45.6%
55 : Hotels and restaurants	298,955	4.4%	2.2%	23,083	2.0%	1.2%	24.8%	37.3%	23.1%	14.7%
80 : Education	283,507	3.8%	5.0%	6,515	1.4%	3.1%	3.6%	23.4%	44.4%	28.6%
75 : Public administration and defence; compulsory social security	233,822	1.3%	0.7%	4,582	8.3%	-0.3%	3.8%	14.5%	26.8%	54.9%
65 : Financial intermediation, except insurance and pension funding	179,094	-1.3%	0.9%	5,484	-2.2%	0.7%	7.4%	14.9%	14.9%	62.8%
51 : Wholesale trade and commission trade, except of motor vehicles and motorcycles	166,978	-1.7%	-0.8%	23,694	-0.9%	-0.6%	33.2%	29.7%	21.8%	15.2%
92 : Recreational, cultural and sporting activities	161,864	3.1%	5.0%	26,674	2.0%	1.6%	27.5%	17.7%	23.1%	31.7%
45 : Construction	126,296	-1.2%	0.5%	20,425	1.5%	2.0%	31.7%	21.3%	20.4%	26.6%
67 : Activities auxiliary to financial intermediation	104,676	6.3%	4.0%	4,826	3.8%	3.6%	10.8%	15.6%	19.4%	54.2%
64 : Post and telecommunications	98,471	-1.9%	1.7%	3,741	4.7%	9.4%	7.6%	13.0%	29.3%	50.1%
72 : Computer and related activites	97,301	1.5%	5.7%	24,847	-0.3%	2.7%	38.8%	20.9%	20.3%	20.0%
70 : Real estate activities	94,753	4.4%	5.6%	23,871	6.1%	8.0%	52.8%	19.3%	17.6%	10.3%
22 : Publishing, printing and reproduction of recorded media	90,725	-1.1%	-1.4%	7,875	-1.2%	0.0%	20.0%	20.5%	21.1%	38.3%

	Employees			Business units			London % of Total Employees			
Sector (2 digit SIC)	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**Micro units (1-10 staff)**	**Small units (11-49 staff)**	**Medium units (50-199 staff)**	**Large units (200+ staff)**
63 : Supporting and auxiliary transport activities; activities of travel agencies	83,038	1.4%	5.1%	5,375	-0.9%	1.0%	18.4%	19.4%	27.7%	34.6%
60 : Land transport; transport via pipelines	79,461	-0.4%	0.1%	4,345	-1.3%	-0.7%	12.2%	11.8%	21.4%	54.6%
50 : Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	50,531	-1.8%	-0.8%	7,047	-2.1%	-0.5%	39.1%	33.7%	20.9%	6.3%
91 : Activities of membership organisations not elsewhere classified	46,647	4.1%	1.5%	3,659	-1.5%	-1.7%	20.0%	23.1%	22.4%	34.5%
62 : Air transport	41,533	6.5%	0.8%	339	-0.2%	-0.4%	1.5%	4.4%	6.8%	87.3%
93 : Other service activities	40,695	-1.6%	3.4%	11,990	-1.2%	0.0%	62.4%	23.3%	10.6%	3.7%
66 : Insurance and pension funding, except compulsory social security	38,932	-1.4%	-2.3%	858	-9.9%	-10.1%	3.9%	12.4%	21.2%	62.5%
15 : Manufacturing of food and beverages	28,741	0.2%	-1.9%	904	-1.6%	-2.4%	8.7%	11.8%	16.5%	63.0%
71 : Renting of machinery and equipment without operator and of personal and household goods	17,763	-3.2%	0.2%	2,577	1.0%	2.7%	33.8%	32.8%	26.4%	7.0%
73 : Research and development	14,230	-1.4%	0.4%	537	0.3%	1.4%	7.8%	14.7%	21.1%	56.4%
90 : Sewage and refuse disposal, sanitation and similar activities	12,307	-4.6%	-1.0%	365	1.2%	1.4%	5.7%	14.4%	45.7%	34.1%
28 : Manufacture of fabricated metal products, except machinery and equipment	12,051	-6.4%	-3.5%	1,678	-3.9%	-1.1%	39.5%	39.7%	16.4%	4.3%
24 : Manufacture of chemicals and chemical products	11,641	-6.4%	-3.2%	467	-2.4%	-1.1%	8.6%	16.1%	21.0%	54.3%
36 : Manufacture of furniture; manufacturing not elsewhere classified	10,651	-6.6%	-1.8%	2,183	-2.1%	-0.3%	49.7%	30.7%	12.9%	6.8%

	Employees			Business units			London % of Total Employees			
Sector (2 digit SIC)	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**Micro units (1-10 staff)**	**Small units (11-49 staff)**	**Medium units (50-199 staff)**	**Large units (200+ staff)**
29 : Manufacture of machinery and equipment not elsewhere classified	9,976	-4.6%	-5.3%	778	-4.2%	-1.8%	18.8%	31.8%	30.6%	18.8%
18 : Manufacture of wearing apparel; dressing and dyeing of fur	8,162	-10.5%	-12.9%	1,565	-9.0%	-7.4%	51.3%	37.2%	11.5%	0.0%
25 : Manufacture of rubber and plastic products	7,814	-6.4%	-3.3%	462	-3.6%	-0.9%	15.7%	28.6%	34.8%	20.9%
31 : Manufacture of electrical machinery and apparatus not elsewhere classified	6,917	-7.6%	-6.0%	508	-2.5%	-1.8%	15.6%	26.6%	42.5%	15.3%
34 : Manufacture of motor vehicles, trailers and semi-trailers	6,847	-9.9%	-3.1%	168	-0.2%	1.4%	5.5%	6.0%	7.1%	81.3%
40 : Electricity, gas, steam and hot water supply	6,218	-2.4%	-2.2%	145	6.6%	7.4%	3.8%	7.7%	26.1%	62.3%
33 : Manufacture of medical, precision and optical instruments, watches and clocks	5,209	-8.2%	-2.9%	672	-0.1%	0.5%	30.5%	31.7%	25.7%	12.1%
20 : Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	3,469	-2.5%	-1.0%	604	-2.0%	-0.4%	47.8%	45.9%	6.3%	0.0%
26 : Manufacture of other non-metallic mineral products	3,415	-5.5%	-3.6%	494	-1.5%	-0.7%	36.7%	32.2%	31.2%	0.0%
21 : Manufacture of pulp, paper and paper products	3,205	-7.8%	-4.2%	297	-5.0%	-3.7%	19.9%	36.6%	25.2%	18.3%
17 : Manufacture of textiles	3,031	-6.9%	-8.2%	536	-3.5%	-3.9%	45.0%	33.4%	21.6%	0.0%
35 : Manufacture of transport equipment	2,780	-1.8%	-2.6%	144	-3.0%	-0.9%	11.5%	20.2%	31.3%	37.0%
32 : Manufacture of radio, television and communication equipment and apparatus	2,750	-9.1%	-8.3%	312	-3.5%	-1.8%	22.3%	22.7%	33.6%	21.4%
61 : Water transport	2,388	-9.1%	-2.6%	308	-2.6%	2.5%	30.4%	29.0%	16.4%	24.3%

	Employees			Business units			London % of Total Employees			
Sector (2 digit SIC)	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**London 2003**	**London pa%ch 98-03**	**GB pa%ch 98-03**	**Micro units (1-10 staff)**	**Small units (11-49 staff)**	**Medium units (50-199 staff)**	**Large units (200+ staff)**
27 : Manufacture basic metals	1,849	-4.8%	-6.5%	154	-5.9%	-2.5%	22.0%	21.0%	26.7%	30.3%
11 : Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying	1,847	-11.9%	-3.9%	97	-3.0%	-0.5%	12.0%	16.1%	46.8%	25.1%
01 : Agriculture, hunting and related service activities	1,822	1.6%	1.4%	219	-0.1%	0.0%	33.3%	31.4%	35.3%	0.0%
30 : Manufacture of office machinery and computers	1,820	-8.5%	-7.2%	347	12.4%	2.7%	26.8%	19.6%	42.1%	11.6%
37 : Recycling	1,127	11.7%	11.9%	110	5.9%	8.9%	24.8%	45.3%	11.8%	18.0%
19 : Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	1,000	-12.8%	-12.1%	129	-8.8%	-6.4%	34.4%	13.6%	52.0%	0.0%
41 : Collection, purification and distribution of water	558	-6.8%	-4.0%	16	-14.3%	4.7%	3.8%	13.8%	82.4%	0.0%
14 : Other mining and quarry	360	-1.9%	-3.2%	47	-7.1%	-5.5%	13.9%	47.5%	38.6%	0.0%
23 : Manucature of coke, refined petroleum products and nuclear fuel	155	-14.1%	-2.0%	23	-8.8%	-5.7%	29.7%	70.3%	0.0%	0.0%
16 : Manufacture of tobacco products	135	430.0%	-7.2%	3	0.0%	-3.3%	0.0%	0.0%	100.0%	0.0%
02 : Forestry, logging and related service activities	64	-14.7%	6.4%	82	-4.2%	2.0%	50.0%	50.0%	0.0%	0.0%
05 : Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	5	-19.9%	-8.9%	11	-10.4%	-0.3%	100.0%	0.0%	0.0%	0.0%
13 : Mining of metal ores	0	-20.0%	-18.5%	2	-13.3%	-11.9%	n/a	n/a	n/a	n/a
Total	**3,927,895**	**0.9%**	**1.2%**	**365,693**	**1.3%**	**1.5%**	**20.5%**	**21.0%**	**23.2%**	**35.4%**

Annex 3: Higher Education Institutions (HEIs) in London

HEI	Year est. / Status	Funding				Human Resources			
		Total Annual Budget	Research Budget	% of Total	Research funding sources	Type A / Type B (1) student no.	Study fields (2) (no. of students)	No. of Graduate and PhD students	No. of FTE teachers / researchers
Birkbeck, University of London	1823 / public	£56.8m (04/05)	£9m	16%	Research grants and contracts	A = 7,100 B = 13,000	Humanities Natural Sci Social Sci Technical Sci Medical Sci	3,000 (15%)	Total = 1,600
Institute of Cancer Research (ICR)	Dates back to 1851 / trust	£60m (04/05)	£54m	90%	Charities, HEFCE, research, government, industry	A = 134	Medical Sc = 100%	44 (33%)	1,000
City University	1894 / public	£71.1m (97/98) £118m (04/05)	£4.9m (97/98) £8m (04/05)	7% (97/98) 7% (04/05)	Office of Science & Technology	11,800 FT = 79% PT – 21%	Humanities = 15% Social Sci = 35% Technical Sci = 15% Medical Sc = 35%	4,600 (39%)	Teaching = 607 Research = 156
University of East London (UEL)	Dates back to 1898	£55.4m (97/98)	£1m	2%		15,700	Humanities Natural Sci Social Sci Technical Sci Medical Sc	4,200 (27%)	
Goldsmiths College	1891	£51.9 (04/05)	£2.1m	4%	Research Councils	7,400	Humanities = 50% Social Sci = 45% Technical Sci = 5%	2,600 (35%)	Teaching = 331 Research = 47
University of Greenwich		£103.7m (97/98) £123.8m (04/05)	£10.3m (97/98) £7.7m (04/05)	6%		FTE = 16,200	Humanities Natural Sci Social Sci Technical Sci Medical Sc	4,400 (27%)	FTE =771
Imperial College of Science, Technology & Medicine	1907	£434.4m (03/04)	£171.9m	40%	Research Council, Charities, UK/EU govt, private industry	FT = 11,100	Natural Sci = 36% Social Sci = 4% Technical Sci = 36% Medical Sc = 24%	3,300 (30%)	FTE = 3,000 (64% research only)

HEI	Year est. / Status	Funding				Human Resources			
		Total Annual Budget	Research Budget	% of Total	Research funding sources	Type A / Type B (1) student no.	Study fields (2) (no. of students)	No. of Graduate and PhD students	No. of FTE teachers / researchers
Kings College London	1829	£364m (04/05)	£101m	28%		19,100	Humanities = 17% Social Sci = 10% Technical Sci = 10% Medical Sc = 63%	5,300 (28%)	FTE = 2,500 (50% research only)
Kingston University	1970	£121.6m (04/05)	£2.4m	2%		17,700	Humanities = 15% Natural Sci = 15% Social Sci = 45% Technical Sci = 15% Medical Sc = 10%	2,800 (16%)	FTE = 700
University of the Arts, London (UAL)	1986					A = 10,000 B = 14,000	Humanities Social Sci Technical Sci	1,000 (10%)	3,874
London Business School (LBS)	1965	£77.4m (04/05)	£4.8m	6%	Public / private	A = 700 B = 500	Humanities Natural Sci Social Sci Technical Sci Medical Sc	1,200 (100%)	400
London School of Economics & Political Science (LSE)	1895	£135m (04/05) £73.3m (97/98)	£15m (04/05)	11%	Research Councils, Government Departments, EC, Charities	FTE = 6,200	Humanities Natural Sci Social Sci Technical Sci Medical Sc		FTE = 580 (21% research only)
London Metropolitan University (LMU)	Dates back to 1848	£147.5m (04/05) LGU £45.8m + UNL £56.6m = £102.4m (97/98)	£3.4m (04/05) LGU £0.2m + UNL £0.9m = £1.1m (97/98)	2% (04/05) 1% (97/98)	Research Councils, Charities, EC	26,000	Humanities Natural Sci Social Sci Technical Sci Medical Sc		1,100
London South Bank University (LSBU)	1892	£106.2m (04/05) £83.4m (97/98)	£3.8m (04/05) £4.2m (97/98)	4% (04/05) 5% (97/98)		20,800	Humanities/ Social Sci = 42% Technical Sci = 27% Medical Sc = 31%	5,000 (24%)	

HEI	Year est. / Status	Funding				Human Resources			
		Total Annual Budget	Research Budget	% of Total	Research funding sources	Type A / Type B (1) student no.	Study fields (2) (no. of students)	No. of Graduate and PhD students	No. of FTE teachers / researchers
Middlesex University	1973	£130.3m (04/05) £95.7m (97/98)	£2.7m (04/05) £1.9m (97/98)	2% (04/05) 2% (97/98)	Research Councis, charities, government, industry	22,000	Humanities Natural Sci Social Sci Technical Sci Medical Sc		Teaching = 810 Resaearch 190
School of Oriental and African Studies (SOAS)	1916	£40m (03/04)	£2.9m	7%		FTE = 3,700	Humanities = 52% Social Sci = 48%	1,500 (40%)	200
Queen Mary, University of London (QMUL)	Dates back to 1785	£149m (03/04) QMW £115.4m (97/98)	£36.1m (03/04)	24%		9,200	Humanities = 13% Natural Sci = 11% Social Sci = 24% Technical Sci = 29% Medical Sc = 23%	1,900 (21%)	QMW FTE = 1,200
Roehampton University	1975	£41.7m (04/05)	£0.8m	2%			Humanities Natural Sci Social Sci Technical Sci Medical Sc		300
Thames Valley University (TVU)	1991	£88.4m (03/04) £60.9m (97/98)	£7.2m (03/04) £0.3m (97/98)	8% (03/04) 0.5% (97/98)		17,700	Humanities Natural Sci Social Sci Technical Sci Medical Sc		
University College London (UCL)	1826	£489.8m (03/04) £290m (97/98)	£161.9m (03/04)	33% (03/04)		FTE = 14,200	Humanities = 18% Natural Sci = 18% Social Sci = 24% Technical Sci = 18% Medical Sc = 9%		FTE = 3,500 (54% research only)
University of Westminster	Dates back to 1838	£129m (04/05) £84.3m (97/98)	£6.5m (04/05) £3.3m (97/98)	5% (04/05) 4% (97/98)		23,000	Humanities Natural Sci Social Sci Technical Sci Medical Sc	5,700 (25%)	Teaching = 800

Notes: (1) Type A = full-time / academic, Type B = part-time / vocational. (2) Study fields – Humanities, Natural Science, Social Science, Technical Science and Medical Science

Annex 4: HEI Research Centres in London

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
Aeronautics (Imperial College)		£4,761,560 (2003 – 2011)	EPSRC	70 research staff	Technical Sciences
AHRC Centre for British Film and Television Studies (Birkbeck)		£888,326	AHRC		Humanities
Bartlett School (UCL)		£2,577,176	EPSRC		Technical Sciences
BBSRC Structural Biology Centre for protein and membrane structure and dynamics (CPMSD) (BirkbecK)		£400,000 (2000 – 2003)	BBSRC		Natural Sciences
BBSRC Centre for Structural Biology: from genes to structure and function (UCL)		£1,624,304 (1998 – 2004)	BBSRC		Natural Sciences
Biochemical Engineering (UCL)		£11,559,857	EPSRC		Technical Sciences
Centre for Analysis of Risk and Regulation (LSE)	2000	£2,300,000 (2000-2005) £0.6m (2005)	ESRC, Deutsche Bank / British Academy / PWC, Deutsche Bank / British Academy / PWC	24 research staff	Social Science
Centre for Biomedical Materials					
Centre for Economic Learning and Social Evolution (UCL)	1995	£2.4m (2000 – 2005)	ESRC	35 research staff	Social Science
Centre for Economic Performance (LSE)	1995	£7,073,000 (1995-2005) annual funding of £1.7m	ESRC, Anglo German Foundation, DfES, Esmée Fairbairn Foundation, Princes Trust, Rowntree Trust, EC, Bank of England	100 research staff and associates	Social Science
Centre for Electronic Materials and Devices					
Centre for integrative systems biology at Imperial College London (CISBIC)		£6,476,157 (2005 – 2010)	BBSRC		Natural Science
Centre for Maths and Physical Science in Life Science (UCL)		£1,017,330	EPSRC		Technical Sciences
Centre For The Microeconomic	1991	£1.04m (04/05)	ESRC (2005 – 2010), charities,	IFS has a full-time	Social Science

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
Analysis Of Public Policy (IFS)			government, corporate, EU	staff of about 30 research staff	
Centre for Process Systems Engineering					
Centre for Protein and Membrane Structure and Dynamics					
Centre for the Analysis of Social Exclusion (LSE)	1997	£2,157,000 (1997 – 2002)	ESRC, Joseph Rowntree Foundation, the Nuffield Foundation, the Gatsby Charitable Foundation, the Office of the Deputy Prime Minister, the Home Office, UNICEF and the Sutton Trust	37 research staff	Social Science
Chemical Engineering and Chemical Technology (Imperial)		£8,635,226 (2003 – 2011)	EPSRC	38 staff	Technical Science
Chemistry (Imperial)		£23,143,431 (2003 – 2010)	EPSRC		Technical Science
Chemistry (UCL)		£13,423,483	EPSRC		Technical Science
Civil and Environmental Engineering (Imperial)		£10,232,386 (2002-2011)	EPSRC		Technical Science
Civil and Environmental Engineering (UCL)		£3,590,490	EPSRC		Technical Science
Clinical Trials Unit					
Computer Science (Kings)		£2,548,739	EPSRC		Technical Science
Computer Science (QMUL)		£3,545,993	EPSRC		Technical Science
Computer Science (UCL)		£10,678,966	EPSRC		Technical Science
Computing (Imperial)		£13,485,079 (2001 – 2010)	EPSRC		Technical Science
Computing Department (Goldsmiths)		£1,091,415 (2004 – 2009)	EPSRC	18 academic and research staff	Technical Science
Copyright Law (Birkbeck)		£165,276	AHRC		Humanities
Courtauld Institute of Art Gallery		£1,435,000	AHRC		Humanities
Department of Crystallography					

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
Dependability of Computer-Based Systems					
Digital and computer-based arts in the UK from their origins to 1980		£254,844	AHRC		Humanities
Digital library of British printed images to 1700 (Birkbeck)		£312,420	AHRC		Humanities
Division of Medicine (Imperial)		£1,505,703 (2003 – 2009)	EPSRC		Technical Science
Earth Sciences (Imperial)		£1,249,559 (2004 – 2009)	EPSRC	45 academic and 39 research staff	Technical Science
Electrical and Electronic Engineering (Imperial)		£7,613,486 (2004 – 2009)	EPSRC	44 academic and 76 research staff	Technical Science
Electrical and Electronic Engineering (UCL)		£5,707,890	EPSRC		Technical Science
Electronic Engineering (QMUL)		£2,678,022	EPSRC		Technical Science
Engineering (QMUL)		£2,904,246	EPSRC		Technical Science
Engineering Systems (LSBU)		£1,322,993	EPSRC		Technical Science
English Language and Literature – C19th Serials Edition Project (NCSE) (Birkbeck)		£331,803	AHRC		Humanities
Environmental Science and Technology (Imperial)		£2,052,671 (2002 – 2010)	EPSRC	academic and research staff	Technical Science
Epidemiology and Medical Care Unit					
Families and Social Capital Research Group (LSBU)			ESRC, Joseph Rowntree Foundation	18 research staff	Social Science
Imperial College Centre for structural biology		£1,167,377 (1999 – 2004)	BBSRC		Natural Science
Information Systems & Computing (Brunel)	2001	£4,088,031 (2003 – 2008)	EPSRC	60 academic and research staff	Technical Science
IRC Biomedical Materials (Queen Mary)					

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
IRC Process Systems Engineering (UCL)					
IRC Semiconductor Materials (Centre for Electronic Materials and Devices) (Kings College)					
London Centre for Nanotechnology (UCL)		£2,803,814	EPSRC		Technical Science
Materials (Imperial)		£12,444,311 (2004 – 2010)	EPSRC		Technical Science
Materials (QMUL)		£3,404,042	EPSRC		Technical Science
Mathematical Sciences (QMUL)		£1,755,120	EPSRC		Technical Science
Mathematics (Imperial)		£5,525,592 (2003 – 2011)	EPSRC		Technical Science
Mathematics (Kings)		£1,751,635	EPSRC		Technical Science
Mathematics (Royal Holloway)		£1,378,417	EPSRC		Technical Science
Mathematics (UCL)		£1,898,575	EPSRC		Technical Science
Mechanical Engineering (Brunel)		£1,089,088 (2003 – 2007)	EPSRC		Technical Science
Mechanical Engineering (Imperial)		£7,327,446 (2003 – 2011)	EPSRC	100 academic and 60 research staff	Technical Science
Mechanical Engineering (UCL)		£2,163,834	EPSRC		Technical Science
Medical Physics and Bioengineering (UCL)		£6,923,795	EPSRC		Technical Science
Medieval and Modern History – Before the Holocaust (Birkbeck)		£176,213	AHRC		Humanities
Medieval and Modern – People in Place (Birkbeck)		£309,486	AHRC		Humanities
Medieval and Modern History - Private Life in Soviet Russia (Birkbeck)		£274,976	AHRC		Humanities
Medieval and Modern History - Oxford Edition of Francis Bacon		£159,984	AHRC		Humanities
Medieval and Modern History - Soviet State and Society During		£157,937	AHRC		Humanities

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
the Postwar Reconstruction					
Medieval and Modern History - transformation of London concert life (Goldsmiths)		£160,118	AHRC		Humanities
Medieval and Modern History - Newton theological papers (Imperial)		£504,423	AHRC		Humanities
MRC -Asthma Uk Centre In Allergic Mechanisms Of Asthma (King's College London School Of Medicine)			Medical Research Council		Medical Science
MRC Cell Biology Unit (UCL)			Medical Research Council		Medical Science
MRC Centre For Developmental Neurobiology At KCL (Kings College)			Medical Research Council		Medical Science
MRC Centre For Neurodegenerative Research (Kings College)			Medical Research Council		Medical Science
MRC Clinical Sciences Centre (Imperial College, Hammersmith Hospital)	1999	£8 million (1999-2000)	Medical Research Council	Science and Research Project Support 174	Medical Science
MRC National Institute for Medical Research	2000	£25 million (2000-2001)	Medical Research Council	400 scientists	Medical Science
MRC Prion Unit (National Hospital for Neurology and Neurosurgery)	1998		Medical Research Council		Medical Science
MRC Social, Genetic And Developmental Psychiatry (Sgdp) Research Centre (Kings College)	1994		Medical Research Council		Medical Science
MRC / University College London Centre For Medical Molecular Virology (Ucl)	2005		Medical Research Council		Medical Science
Music and Performing Arts - Electronic corpus of Lute music (City)		£294,370	AHRC		Humanities

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
Music and Performing Arts - Creative Industries and social inclusion (UEL)		£178,113	AHRC		Humanities
Music and Performing Arts - Cognitive and Structural Approaches to Contemporary Audiovisual Computer Aided Composition (Birkbeck)		£202,719	AHRC		Humanities
Music and Performing Arts - Europe and Africa in Britain (Birkbeck)		£223,581	AHRC		Humanities
National Inventory Research Project (Birkbeck)		£327,930	AHRC		Humanities
Philosophy, Law and Religious Studies - Newton manuscript project (Imperial(		£332,940	AHRC		Humanities
Physics (ICR)		£1,199,064	EPSRC		Technical Science
Physics (Imperial)		£18,825,922 (2003 – 2011)	EPSRC		Technical Science
Physics (Royal Holloway)		£2,862,356	EPSRC		Technical Science
Physics and Astronomy (UCL)		£14,513,291	EPSRC		Technical Science
School of Biomolecular Sciences (Kings)		£1,000,300	EPSRC		Technical Science
School of Computing and Maths Science		£1,897,313	EPSRC		Technical Science
School of Engineering and Mathematical Science (City)	2001	£2,472,863 (2003 – 2011)	EPSRC	100 staff	Technical Science
Tanaka Business School (Imperial)		9,674,608	EPSRC		Technical Science
Technological Innovation in Physical and Digital Life					
Visual Arts and Media (UOA)		£366,060	AHRC		Humanities
Visual Arts and Media - Relics and selves : institutions of cultural nationalism in Argentina, Brazil and Chile		£113,601	AHRC		Humanities

Research Centre (Institution)	Year est. / Status (1)	Total Budget	Research funding sources	FTE researchers / other staff	Sectors of activity
(Birkbeck)					
Visual Arts and Media - Corpus Vitrearum Medii Aevi (Courtauld Inst Art)		£315,686	AHRC		Humanities
Visual Arts and Media - Digital Folders (UEL)		£156,876	AHRC		Humanities
Visual Arts and Media - Agonistic Space (Goldsmiths)		£153,700	AHRC		Humanities
Visual Arts and Media - Between Art and Business (Goldsmiths)		£153,700	AHRC		Humanities
Visual Arts and Media - Me and my camera (Goldsmiths)		£137,500	AHRC		Humanities
Visual Arts and Media - Melanesian art (Goldsmiths)		£530,221	AHRC		Humanities
Visual Arts and Media - Tatau/Tattoo (Goldsmiths)		£257,004	AHRC		Humanities
Visual Arts and Media - Constance Howard Resource and Research Centre in Textiles (Goldsmiths)		£302,176	AHRC		Humanities
Visual Arts and Media - The Emergent City (Goldsmiths)		£222,602	AHRC		Humanities
Visual Arts and Media - Translating the Image (Goldsmiths)		£362,823	AHRC		Humanities
Visual Arts and Media - Camcorder Cultures (Inst of Education)		£205,229	AHRC		Humanities

Source: UK Research Councils – Research Instututes (DTI); HERO, ESRC, EPSCR websites. N.B. EPSRC research centres over £1m, AHRC awards over £100k included.

Notes: (1) Regional government, national government, private non-profit sector etc

Engineering & Physical Sciences Research Council (EPSRC) Funding in London

Institution	No. awards	Value	% London
Birkbeck College	14	2,612,449	0.7%
Brunel University	40	11,797,948	3.1%
City University	33	6,039,010	1.6%
Courtauld Institute Of Art	1	111,974	0.0%
Goldsmiths College	10	1,392,981	0.4%
Imperial College London	370	163,140,589	43.3%
Institute of Cancer Research	7	2,030,394	0.5%
Institute of Education	3	1,224,928	0.3%
Kings College London	74	19,981,350	5.3%
London Metropolitan University	4	1,045,827	0.3%
London School Hygiene & Trop Medicine	3	700,000	0.2%
London School of Economics & Pol Sci	13	2,507,724	0.7%
London South Bank University	13	2,381,758	0.6%
Middlesex University	5	892,905	0.2%
Natural History Museum (The)	1	10,205	0.0%
Policy Studies Institute	3	1,493,571	0.4%
Queen Mary, University of London	88	22,432,227	6.0%
Royal College of Art	3	909,781	0.2%
Royal Holloway, Univ of London	25	7,649,331	2.0%
Royal Veterinary College	2	921,878	0.2%
School of Oriental & African Studies	1	125,000	0.0%
School of Pharmacy	12	2,005,252	0.5%
The Royal Institution of Great Britain	14	5,363,703	1.4%
University College London	244	114,443,372	30.4%
University of East London	2	166,742	0.0%
University of Greenwich	13	3,363,269	0.9%
University of London	1	125,000	0.0%

Institution	No. awards	Value	% London
University of the Arts London	3	236,592	0.1%
University of Westminster	6	675,568	0.2%
Zoological Society of London	2	750,000	0.2%
London total		376,531,328	100.0%

Source: EPSRC

Natural Environment Research Council (NERC) Funding in London

Institution	No. awards	Value	% London
Birkbeck College	1	£167,836	0.6%
Imperial College London	30	£6,648,911	23.7%
Kings College London	3	£298,741	1.1%
London School of Economics & Pol Sci	1	£152,481	0.5%
Natural History Museum (The)	7	£776,129	2.8%
Policy Studies Institute	1	£11,954,596	42.6%
Queen Mary University of London	8	£1,611,868	5.7%
Roehampton University	1	£88,915	0.3%
The Institute for European Environment P	1	£162,164	0.6%
University College London	26	£5,758,002	20.5%
Zoological Society of London	3	£474,310	1.7%
Total	82	£28,093,953	100.0%

Source: NERC

Annex 5: Technology Centres

Case	Year est. / status	Aims	Industry sectors / spin-outs	Partners	Total Budget	Technical / other staff
Brunel Enterprise Centre (Brunel University)		Gateway for firms and individuals to the academic and business excellence that Brunel University has to offer. Collaborative research projects, consultancy and continuous personal development	Engineering Computing Medical Environmental / geotechnical Construction			
Hoxton Bibliotech / The Innovatory	1995	Specialist business support, e-commerce and digital media training company	Education New media ICT			
Imperial Innovations	1988 / private	Subsidiary company of Imperial College London, providing business development and technology transfer services including strategic industry University partnerships, patenting, licensing, spin-out incubation and spin-out equity management	Biomedical Engineering / technology Life sciences Management		attracted £175 million of external investment creating over 550 jobs	40 staff
KCL Enterprises		King's College London through KCL Enterprises' is pro-actively seeking to forge highly successful partnerships with commercial and public organisations in many sectors	Pharmaceutical Biotechnology Medical devices			
London Bioscience Innovation Centre	2001	Only incubator for biotechnology companies in central London and is home to small start-ups as well as more established players. Provides a focus for life sciences activity in the UK capital, offering laboratory and office facilities	Biotechnology and diagnostic Life science product and services Pharmaceuticals	London Veterinary College		
London Food Centre (London South Bank University)	1998	One of six Food Technology Transfer Centres in the UK to assist small and medium sized food businesses to expand and improve their profitability	Food			15 staff

Case	Year est. / status	Aims	Industry sectors / spin-outs	Partners	Total Budget	Technical / other staff
New Media Knowledge (University of Westminster)	1997	Learning and business information hub for companies and individuals working in UK digital media	Digital media	London Development Agency		
The Knowledge Dock Centre (University of East London)		Start up business support, support to grow and develop business, tailored or in-depth specialist advice, one to one consultancy		Jack Petchey Foundation		
UCL BioMedica	1989 / private	Wholly owned subsidiary of University College London) aims to generate income and create capital value for UCL through the commercial exploitation of the bioscience research base at UCL and its associated Institutes	Medical Pharmaceutical		Investment fund of circa £1.5million	10 technical staff

Source: London Development Agency; PRAXIS (UK university technology transfer training programme)

Annex 6: University Labour Market, Training and Enterprise Services

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
Birkbeck, University of London	Business Relations Unit: Staff = 5 Partners = Regional Liaison Office: Staff = 2 Partnerships =	***Specialist Institutions' Careers Service:*** Walk-in Information Resources and IT Facilities Brief Drop-in Advice One Hour Careers Interviews Practice Job Interviews MBTI Personality Questionnaire University of London Careers Service (see above)	AHRC Knowledge Catalyst - partnerships between arts and humanities research and Enterprise Partner, employing a graduate AHRC Collaborative Doctoral Awards – between HEI and employer to enhance the employment-related skills and training a research student Collaborative Awards in Science and Engineering (CASE) Studentship - support to PhD students via Research Council and industry, government or non-profit sector partner. Birkbeck Volunteer Programme – placements in not-for-profit organisations University of London Careers Service (see above)	***School of Continuing Education:*** 700 sessional lecturers Education Partnerships (80 cultural institutions, community/voluntary and private sector) presence in 31 London boroughs No. students = 13,300: 86% credit-bearing 100% part-time 68% women 50% at partner centres Employment status = majority in employment	Knowledge Transfer Partnerships - working with a specialist KTP consultant to enable employer to draw on HEI expertise London Centre for Arts and Cultural Enterprise Free Business Start-Up Summer School – 30 places
City University	CCSD: Staff = 17 Partners =	***Centre for Career and Skills Development (CCSD):*** Careers Information Room Guidance Appointments, Mock Interviews & Drop-In Sessions Employer Liaison Vacancy Board	***Recruitment services***: two careers centres (4,000 student leavers pa) Student Employment Service - recruit students for part-time, temporary and vacation jobs Placements and work-placed learning - one-year placement in the second year of the	***Courses for business***: Executive Education - City University Cass Business School (short courses in management, business and finance, company learning programmes) Courses for adults - computing, business, and professional	***Centre for Innovation and Knowledge*** Transfer - 7 staff

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
		Individual Careers Guidance Group events, presentations and workshops Testing and other forms of assessment Volunteering and Mentoring opportunities ***Career Resource Centre (CASS Business School):*** Career planning and strategy Researching employers Looking for jobs Applications to offers Workshops and events International students Seeing a careers advisor	course Cass Business School Year Out Placement - between the second and third year Projects - applied research and consultancy projects with a business for postgraduate students	development, languages, cultural industries and more	
University of East London (UEL)	Business Services at UEL Staff = Partners = Employability Unit: Staff = 11	***Employability Unit:*** - information, advice and guidance - aptitude tests - contact with employers through presentations, talks and employability events - careers web-site - computer-based guidance and computer access.	Advice and Consultancy Knowledge Transfer Partnership Supervised Student Projects ***Shell Step Programme:*** - business and technical projects, linking the wealth of talent in the student population with small and medium sized business sector - specific business or technical projects, driven by the needs of the host business ***Enterprise Bureau Programme***: - partnership between a company, quality graduate (known as an Associate) and a	***Short Courses and Training:*** - Enterprise Zone Workshops - Innovation Services Workshops ***Networking:*** - East London Inventors Club - Business Breakfast - Entrepreneurs Society	***Knowledge Dock Business Centre:*** - Incubator units / business office space - onsite advice and training - up to 51 hours of hotdesking per month ***Knowledge Dock Expert Centres:*** - Product Design Lab - Fabric Print and Design Bureau - Simlab - Manufactured Aggregates Research Centre - Professional Qualification Labs - Pipeline Technology

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
			University 12 week in-company programme to help participating businesses		
Goldsmiths College	Office for Business and Community Development: Staff = 3 Goldsmiths College Careers Service: *Staff = 5*	***Goldsmiths College Careers Service***: - Careers guidance - Drop-in sessions, Longer interview, Computer-aided careers guidance - Careers resources – info on Occupations, Employers, Postgraduate courses, Teaching, Job hunting techniques, Vacancies, Graduate labour market, Working overseas	***Services to employers:*** - Advising on degree programmes and appropriate students - Presentation facilities for promoting opportunities - Displaying publicity and reference materials - Displaying vacancies on our website	***Professional & Community Education (PACE)***: --Community and Youth Work courses - Computing courses - Language courses - Performing Arts & Music - Psychotherapeutic courses - Social & Cultural Studies - Literature, Journalism - Anthropology, Politics - Social Work courses	***PureGoldsmiths:*** - expertise and collective knowledge made available to business and the community - contract research and consultancy services - training and development - business networking ***Spin-outs:*** Constance Howard Resource & Research Centre in Textiles Flour Design Ltd i2media research Ltd
University of Greenwich	Research Enterprise and Regional Affairs Office: Staff = Partners =	***Personal Development & Employability:*** - Community Base Volunteering Programme - Jobs and Opportunities Website - University of Greenwich JobShop - Shell STEP placements - Mentoring Programmes - Labour Market Information (DLHE) - Keynote Project (personal development planning) - Careers Guidance - Student Satisfaction Survey - Student Study and Work	***Recruitment Services:*** - paid full time sandwich courses - unpaid/paid student projects for up to 20 weeks e.g. one day/wk or block basis - postgraduate students work part or full time on a project at University (or on-site part time) - STEP programme (SMEs, 8 week project) - 'Mentoring for Success' (with SMEs/Business Link Kent, projects up to 10 weeks)	***Short Courses:*** - Continuing Professional Development courses - management accreditation (including NVQ levels 3 and 4) - designed packages in computing, business and management, biosciences, health, architecture, construction, engineering and education	Knowledge Transfer Partnerships Consultancy Centre for Entrepreneurship

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
		Abroad			
Imperial College of Science, Technology & Medicine	Business Development Services: Staff = 12 Centre for Professional Development: Staff = 6 Careers Advisory Service Staff =	***Careers Advisory Service:*** - Careers fairs at Imperial - Careers presentations - Careers talks - Drop in sessions - Employer led skills workshops - 'Focus on Management' course - Interviewing on campus at - Imperial College London - Mock interviewing	Apart from computing, very few undergraduates have a placement as part of their course ***Careers Advisory Service:*** - E-Mails are sent to the targeted students Imperial mail-box - Publications advertising: Careers Choice, Careers Service Guide, Services Leaflet, Felix (student paper) - Careers fairs at Imperial - Careers presentations - Careers talks - Employer led skills workshops - Interviewing on campus at - Imperial College London	***Centre for Professional Development:*** - Course initiation and development - Advice on course programme - Full course administration - Design and produce course - Organise and advice on marketing and webpage - online registration system - liaise with all course delegates - monitor the Course account - financial transactions - liaise with Course speakers - Collate and organise printing of Course proceedings and abstracts Organise all logistic arrangements, e.g. catering (receptions & dinner), room bookings, temporary staff support Organise reimbursements and payments to speakers Produce Course evaluation sheet and report ***Subjects:*** Civil Engineering Electrical Engineering Environmental	***Business Development Services:*** - identifies business contacts and understands business requirements - structures and creates business opportunities between business and Imperial - has the expertise and experience to ensure negotiations and collaborations are successful - Product Development; Research and Development; Strategic Planning ***Business-University Collaboration:*** - Institute of Mathematical Sciences - using expertise from other disciplines of science, technology and medicine, the Institute will address real world problems and issues. Due to open in 2005 - Clinical Imaging and Sciences Centre - world-class centre for medical research in genetics and stem cells. Opening 2006

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
				Finance Information Technology Materials Medical Mining Appraisal Other Petroleum Engineering	- Charing Cross and Kennedy Institute - international project for a multidisciplinary centre for brain and musculo-skeletal repair with a particular focus on disorders relating to ageing - Opening in 2007 - Institute of BioMedical Engineering- launched to bring together engineers, biologists and clinicians to improve human health - Nanotechnology - BioNano Centre at IBE (collaboration with UCL & NPL) ***Centre for Integrative Systems Biology at Imperial College Industry Club***
Kings College London	King's College London Careers Service Staff = King's College London Enterprises (KCLE) Staff = 20+ Partners = Seed Funds, Investment companies, Enterprise centres, London Business Networks and professional associations for Knowledge/Technology Transfer	***King's College London Careers Service:*** - library containing up-to-date information about employers - Careers Group Alert, matching on-line details to specific vacancies - Prospects Planner and The Careers Group Virtual Careers Library - employers' web sites, videos and cd roms - One-to-one guidance discussions - Careers talks - Personality questionnaires and aptitude tests	***KCLE Student Placements:*** - 'Connections' alumni student mentoring **-** WORKS - Support and guidance for students looking for work experience - free enquiry and advice service for employers - guide to courses at King's that have formal placements - external organisations links with the College, staff and students - Placement sectors: i) Biotechnology and Pharmaceuticals ii) Cultural and Creative	***SIMFONEC: Science Ideas to Market Focused ON Enterprise and Commercialisation (DTI scheme):*** Simfonec Professional Skills Programme Enterprise Courses Free Skills Workshops for Academics Courses in Entrepreneurship for Academics Short Enterprise Courses for NHS Trusts and Other Organisations Enterprise Courses for School Teachers	***King's College London Enterprises (KCLE):*** - identification of new opportunities for partnership - marketing - intellectual property protection - licensing, collaboration - consultancy - mentoring of spin-out companies - Company Creation Services - Technology Portfolio - Knowledge Transfer Partnerships

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
		- Access to courses such as Management, How the City Works, Careers in Development, Starting Your Own Business - Access to annual careers fairs - Informed referral to other specialist agencies	Industries iii) Engineering and IT ***King's College London Careers Service:*** - channel of communication with students and graduates - advising on effective ways to promote professions/business - opportunities to meet students - advertising specific vacancies - cyclical recruitment schemes.	E-Learning Undergraduate Course in Enterprise and Innovation ***London Centre for Arts and Cultural Enterprise:*** - Creative and Cultural Business Summer School - Networking events	- Business Development - ***Spin-out companies:*** Brain Resource Company CeNeS Pharmaceuticals plc Cerogenix Ltd (pharmaceuticals) Immune Regulation Ltd. Insonify Ltd (engineering) Ixico Ltd (pharmaceutical) LiDCO (health equipment) MedPharm Ltd. Odontis Ltd. (medical) Osspray Ltd (medical) Phonologica Ltd (engineering) Planet Biotechnology Inc. Proximagen Neuroscience Plc ReNeuron Holdings plc TheraGenetics Ltd Viratis Ltd. (health)
Kingston University	Careers Service: Staff = Enterprise Exchange: Staff = Partners = WestFocus, Business Link Wessex	***Careers Service:*** - Part-time, Temporary or Vacation Opportunities - Immediate Start Graduate Opportunities - Graduate Training or Development Programmes - Kingston Advantage (jobs online)	***KU Student placements and projects:*** - Kingston Business School placements - Engineering/Industrial Sandwich Year Placements - Ernst & Young Media Relations - Summer Internships - World Jewish Relief - Work Experience and Volunteering Opportunities - Paropkaar 'Volunteering Towards Sustainable Development' - other work experience and	***Enterprise Exchange:*** - Work-Based Learning Centre - Business, Design, Healthcare, Humanities, Technology - MSc Technology (Innovation & Entrepreneurship)	***Enterprise Exchange:*** - Knowledge Transfer Partnerships - The Virtual Company (TVC): guide and mentor lone inventors

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
			internships ***Careers Service:*** - Part-time, Temporary or Vacation Opportunities - Immediate Start Graduate Opportunities - Graduate Training or Development Programmes - Kingston Advantage (jobs online)		
University of the Arts, London (UAL)	Creative Careers Staff = 11	***Creative Careers:*** - Careers Information Centre - Creative Opportunities publication - ask@creative careers (guidance)	***Creative Careers:*** - publicise vacancy free of charge in Creative Opportunities weekly on-line - publicise work placement opportunity - raise the the profile of company with students and graduates - career stands in the Careers Information Centre - Inter Connect for UK Black and Minority Ethnic students and Connect Able for students with disabilities (mentoring)	***Short Courses, Study Abroad and Language Courses:*** - run over weekends, holidays, evenings and during the day to allow maximum accessibility - study abroad are available for overseas art and design undergraduate students to study for one or two terms - Language Centre at University of the Arts London offers language support and tuition to all students	***Artakt*** - curates and manages pioneering exhibitions and research projects ***ArtQuest*** – advice and information to London's visual artists and craftspeople ***Centre for Creative Business*** - inspire, educate and equip creative industry entrepreneurs ***Centre for Fashion Enterprise*** – builds new fashion ventures ***The Design Laboratory*** – creative consultancy ***Enterprise Centre for the Creative Arts*** - free creative business services and facilities ***Exchange*** – creative knowledge exchange ***Fashion Business Resource Studio*** - sharing the creative, business and technical expertise of London College of Fashion with the fashion and

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
					lifestyle industries ***Plus Equals*** - brokering collaborations between businesses and artists ***The Innovation Centre*** – Creative DNA Think Tank; Design Laboratory; Research, Innovation, Enterprise ***Own-It*** - free Intellectual Property Resource Centre ***The Design Practice*** – London College of Communication design consultancy ***Deutsche Bank Pyramid Awards*** - £8,000 award for outstanding new business idea
London Business School (LBS)	Careers Services:	***Careers Services:*** Skills Development Programme	***Careers Services:*** - Online CV search - Post a Job - Recruiter Events - Student Projects: Organisational Audit; 2nd Year Projects; Shadowing - Corporate Partnership Programme (subscription)	***Executive Education:*** - Custom programmes for organisations - Open programmes for individuals: General management; Strategy; Leadership; Financial management; Marketing ***Finance Programmes:*** - Corporate finance; Investment management; Specialist finance - Evening Programmes:	Global Leadership Assessment for Managers (GLAM)
London School of Economics & Political Science	LSE Careers Service Staff = Partners = majhor corporate 'Patrons'	***LSE Careers Service:*** - LSEJobOnline - LSEJobShop - LSE@lert - LSE City Fast Track	***LSE Careers Service:*** - Career Fairs / Summer Jobs Fair - Recruiting - LSESelect (search)	***Enterprise LSE Limited:*** - Executive education - Tailor-made Solutions - Executive courses - Executive MBA	***Enterprise LSE Limited:*** - LSE Consultancy

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
(LSE)	Enterprise LSE Limited Staff = 15 Research & Project Development Division Staff = 20 staff	- LSE Magazine	- Presentations - Skills Sessions and Forums - Drop in Sessions - raising on-campus profile (Patron scheme)	- Short courses - LSE External Study - LSE Business Alumni Network (LBAN)	
London Metropolitan University (LMU)	Career Development and Employment Service (CDES) Staff = Business Links Staff =	***Career Development and Employment Service (CDES):*** - The Employment Service - Student Development & Volunteering - Drop-in Sessions - CDES We Casts - CDES E-guidance - Career News	***Career Development and Employment Service (CDES):*** - Advertise a part time or graduate vacancy - Advertise work experience or placement opportunities - Give a presentation or workshop to our students - Attend a careers fair - Attend a part-time Employment and Recruitment Fair - Employment Online: businesses can recruit from our graduate placement, work experience and part-time opportunities	***Short Course and International Summer School:*** Short Course Unit Centre for Civil Aviation CISCO short courses Evaluation and Health and Social Care Management Innovation and Enterprise Support Unit IT Learning Exchange Language Learning and Training London Financial Academy London Metropolitan Polymer Centre Management Development Unit Microsoft IT Academy MCAD.NET courses Professional courses in Business and Management Professional training for translators and interpreters Refugee Assessment and Guidance Unit (RAGU) Sir John Cass Centre for Silversmithing and Jewellery Short Course programme Sound Recording Technology	***Business Links:*** - Innovation and Enterprise Unit: helps external organisations to identify expertise and services within the University - Sector Business Development Managers - Industry Expertise: Furniture; Polymer Technology; Computing; Food; European and Language Services; Jewellery & Silversmithing; Public and Community Services; Architecture and Spatial Design; Financial Services - London Office: promote LMU in the London region through commercial and community partnerships

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
				Study a module as part of your Continuing Professional Development	
London South Bank University (LSBU)	Careers and Student Employment Unit (CaSEU) Staff = 9 Research & Business Development Office (RBDO) Staff = 18 staff	***Careers and Student Employment Unit (CaSEU):*** - Careers Interiews - Quick Queries - Careers Events - Facilities - CaSEU Notice Boards	***Careers and Student Employment Unit (CaSEU):*** - Fill your vacancies with London South Bank students and graduates through JobShop. - Employer Presentations / Milkround. - Graduate Recruitment programmes. - Employer Visits / Career Adviser links - Mentoring/Job Shadowing - Placement Opportunities: Shell STEP Work Experience Scheme; Project Work; One Year Placement - Disability Focus	***Research & Business Development Office (RBDO):*** - Training Courses for Business: IT Training Courses Seminars on local economy and regeneration issues Short courses for the Food manufacturing industry Courses for Sports Coaches Evening Language courses Other Programmes and one-day events - Building Services Engineering - LLU+ (London Language and Literacy Unit) - Tailor-made programmes	***Research & Business Development Office (RBDO):*** - Research and Consultancy - Knowledge Transfer Schemes - LSBU Spin-Outs: NuKo70 (engineering); BIOX Systems (engineering); SOLION (engineering); Exoscience (health sector)
Middlesex University	Careers Advisory Service Staff = Middlesex University Business Solutions Staff =	***Careers Advisory Service:*** - explore career options - develop graduate skills - Personal Development Profiles - market post graduate qualifications to employers - work experience / voluntary work - preparing job applications - job interview, test and assessment centres - Careers Mentoring, Work Shadowing, and Occupational Networking Schemes	***Careers Advisory Service:*** - Job vacancies - Careers rooms - Careers and Employer Fair - promoting organisation ***Student work placements:*** - Internship placements - Voluntary community service learning placements: - Four-year sandwich degrees feature a twelve month work placement period - Professional support	***Training for businesses:*** - Help, advice and contacts - National Centre for Work Based Learning Partnerships Design - Courses: Financial Management; Economics; International Finance; Law; Human Resource Management; Tourism Management; Marketing; Information Technology; Microelectronics; Communication Systems; Energy Management;	***MU Ventures***:: - Licensing intellectual property rights (IPR) to industry - Creating spinout companies based upon the institution's tangible/intangible assets - Engendering enterprise and employability amongst the graduate population - Facilitating and encouraging in-house enterprise - Supporting staff and students in roles such as seconded employees, consultants,

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
				Advanced Manufacturing; Pollution Control; Environmental Management; Business and Environment; Work Based Learning; Chinese Management; Franchising; Research Methods in Business	trainers, facilitators, experts and speakers - Providing contract research Providing data and managed data - Providing physical resources
School of Oriental and African Studies (SOAS)	Careers Service Staff = 3 External Relations Department Staff =	***Careers Service:*** - Brief Discussions with a Careers Adviser - In-Depth Career Discussion with a Careers Adviser - Aptitude Tests - Careers & Employer Information - Postgraduate Studies - Vacancy Information - CV Editing and Printing - Interview Preparation	***Careers Service:*** - Advertising OnLine: JobShop; JobOnline - Faxing, emailing or posting a vacancy advertisement to the Careers Service	***Executive Training Programme (ETP)*** - prepared almost 1,000 European managers to develop their linguistic, cultural and management skills necessary to operate effectively in the Japanese market	***Knowledge Transfer: SOAS Expertise and Services:*** - Rescource Guide - The Regional Centres - Library and Information Services - SOAS Museums and Galleries - SOAS Language Centre - SOAS CeFiMS - SOAS Interface - SOAS Consultancy
Queen Mary, University of London (QMUL)	Careers Service: Staff = Queen Mary Innovation and Enterprise Staff = 6	***Careers Service:*** - One-to-one careers advice - Information in the Careers Service - Careers talks, seminars and other events - Vacancy information - Aptitude tests - Employer presentations and workshops - Information and recruitment fairs - Courses	***Careers Service:*** - Advertise jobs online - Email jobs & events to students & graduates - Vacancy files & Notice-boards - Careers fairs & forums - Presentations, workshops & skills sessions	***Entrepreneurial training and development:*** - Simfonec - London Centre for Arts and Cultural Enterprise (LCACE)	***Queen Mary Innovation and Enterprise:*** - identifying and managing all intellectual property (IP) generated from research at the College - commercialising new technologies Business Development Managers - Research and consultancy - Technology Transfer ***Business Development Facilities:*** - Whitechapel Innovation Centre (incubator space)

University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
					- arts quarter development: 40-seater Hitchcock cinema; film production studio; performance space ; Linguistic Laboratory - Laboratory space
Roehampton University	Employment & Careers Staff = 8 Academic Enterprise Office at Roehampton Staff = 5	***Employment & Careers:*** - Careers Presentations - Quick Query Sessions, CV Checks, Application Forms & - Personal Statement Checks - Confidential Guidance - Interviews - Telephone Interviews - Recruitment Information - Career Information Library - Psychometric Tests - Video Viewing - Student Employment Service - Computer and Internet Access	***Employment & Careers:*** - Part time vacancies - Full time vacancies - Work experience placements - Voluntary work - Live briefs - Mentoring Projects - University consultancy ***Academic Enterprise Office at Roehampton:*** - Student Employment Service - Hub for Employment Advice in Roehampton (HEART)	***Professional development courses:*** - education and teaching - Lets Engage (open courses, sport assessment, organisational consultancy) ***Business Training:*** - Academic Enterprise - Postgraduate: Diplomas and Masters - Languages	***Academic Enterprise Office at Roehampton:*** - Wandsworth Incubator Units - Knowledge Transfer Partnerships
Thames Valley University (TVU)	Careers and Employment service Staff = 8	***Careers and Employment service:*** - Occupational information - Researching employers - Applying for jobs - Work placements - Labour market information - CRAC Insight + - Psychometric Tests - Self-Employment	***Employing students:*** - Apprenticeships: Hairdressing, Food Preparation and Cooking, ITQ - Employment: temporary or permanent - Work Placement courses: Business Studies; Human Resource Management; Marketing; Accountancy and Finance; Information Systems; Travel and Tourism; Hospitality Management.	***Training:*** - business management - marketing - law - hospitality - catering - healthcare - IT - health and safety - Berkshire Basics for Business - Free2Learn (NVQ2) - Heathrow training centre	***Working with TVU:*** - WestFocus: work with local businesses and community groups to make a positive impact on the regional economy - Knowledge Transfer Partnerships - Research and Development

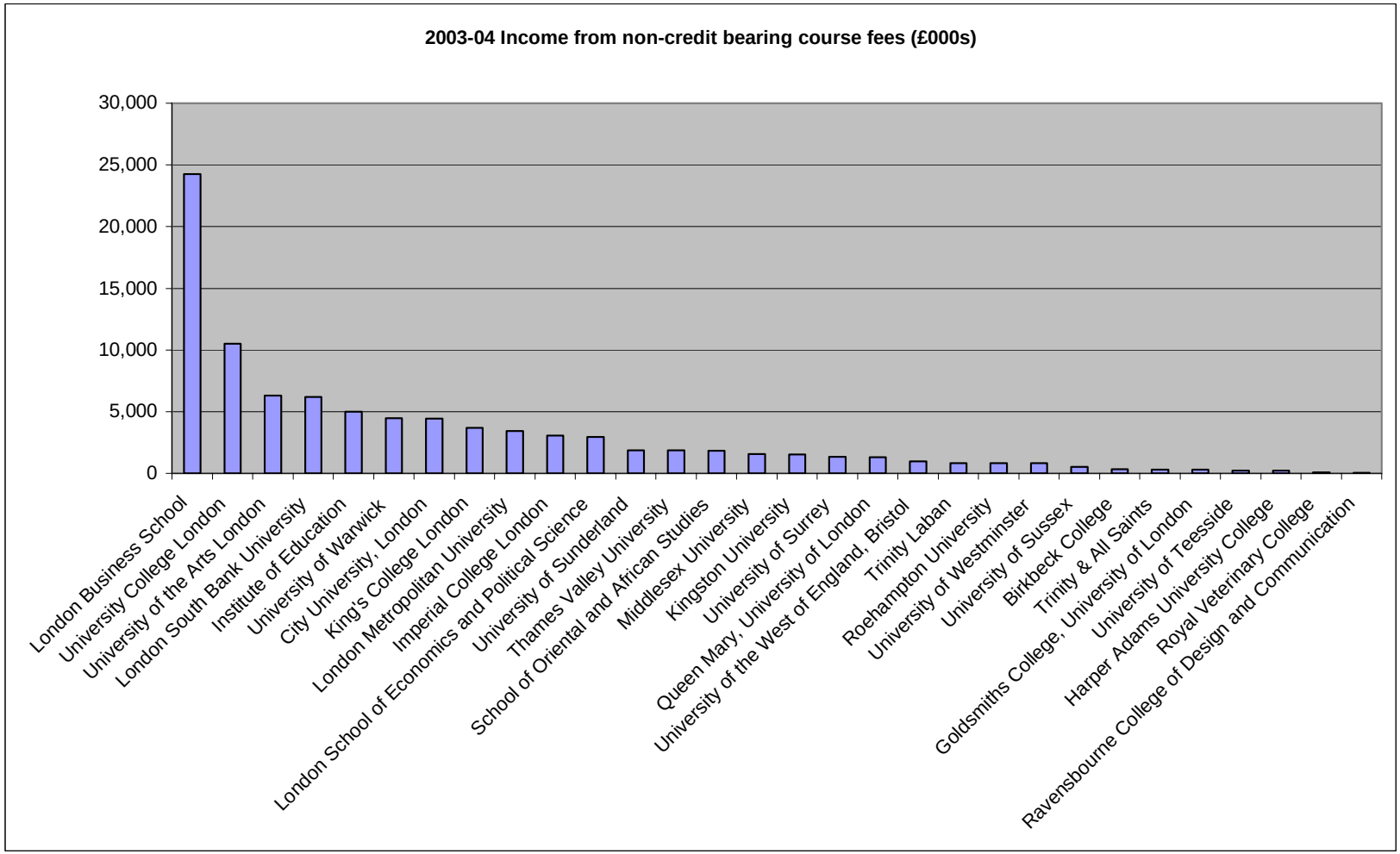
University	Business Liaison Office	Careers Guidance / Student Services	Work Placements / Employer Services	Professional Development / Lifelong Learning	Enterprise start-up / incubation space
University College London (UCL)	UCL Careers Service	***UCL Careers Service:*** - CV - application form - preparing for a job interview - preparing for an assessment centre - internship - Skills development - sign up for an event - Advice from former UCL students - Information on working in the UK	***UCL Careers Service:*** - Advertising Vacancies - LINX Alumni Database - Direct Mailings - Meeting Academics & the - UCL Community - Departmental Events - Skills4Work - Employer Presentations - Sponsorship Opportunities - Finance & Management Fair - Visiting & Meeting Employers - Focus on Management Course - Volunteering Fair - Internships/Placements Fair - IT, Science & Engineering Fair - Law Fair	CPD courses by Department Residential Summer School - Conservation And Extinction, Past, Present And Future	***UCL Business:*** - Contract Research Office (CRO) - UCL Consultants Ltd - UCL BioMedica Plc - UCL Ventures Physical Sciences - UCL Business Development - Technology Transfer: IP; spin-outs; consultancy
University of Westminster	Careers and Student Employment (Case) Staff = 18	***Careers and Student Employment (Case):*** - Diversity: targeted help for students - Jobs and Work Placements - Volunteering CVs and Applications - Psychometric Tests - Interviews - Assessment Centre - FuSION website has been designed to provide you with confidence-building, self-marketing and job-seeking	***Careers and Student Employment (Case):*** - Promote company to students - CaSE Online Vacancy Advertising system	***CPD short courses:*** - Architecture and the Built Environment - Harrow Business School - Biosciences - School of Law - Computing - School of Media, Arts and Design - School of Social Sciences, Languages and Humanities - School of Integrated Health - Westminster Business School	***Business:*** - Knowledge transfer networks - Westminster Applied Research and Consultancy (WestmARC) - Westminster Business Consultants (student-run)

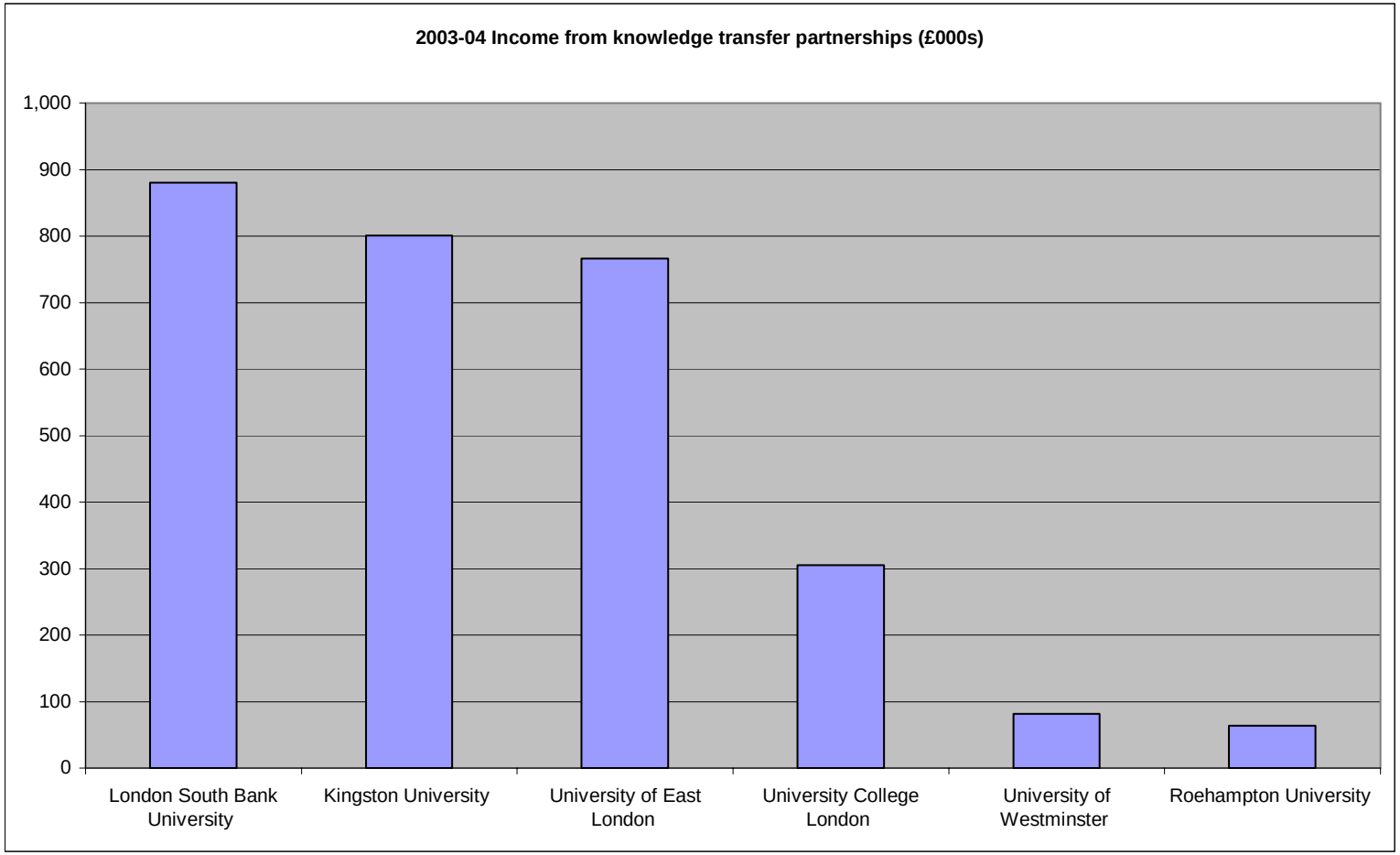
Annex 7: Knowledge Transfer Partnerships in London

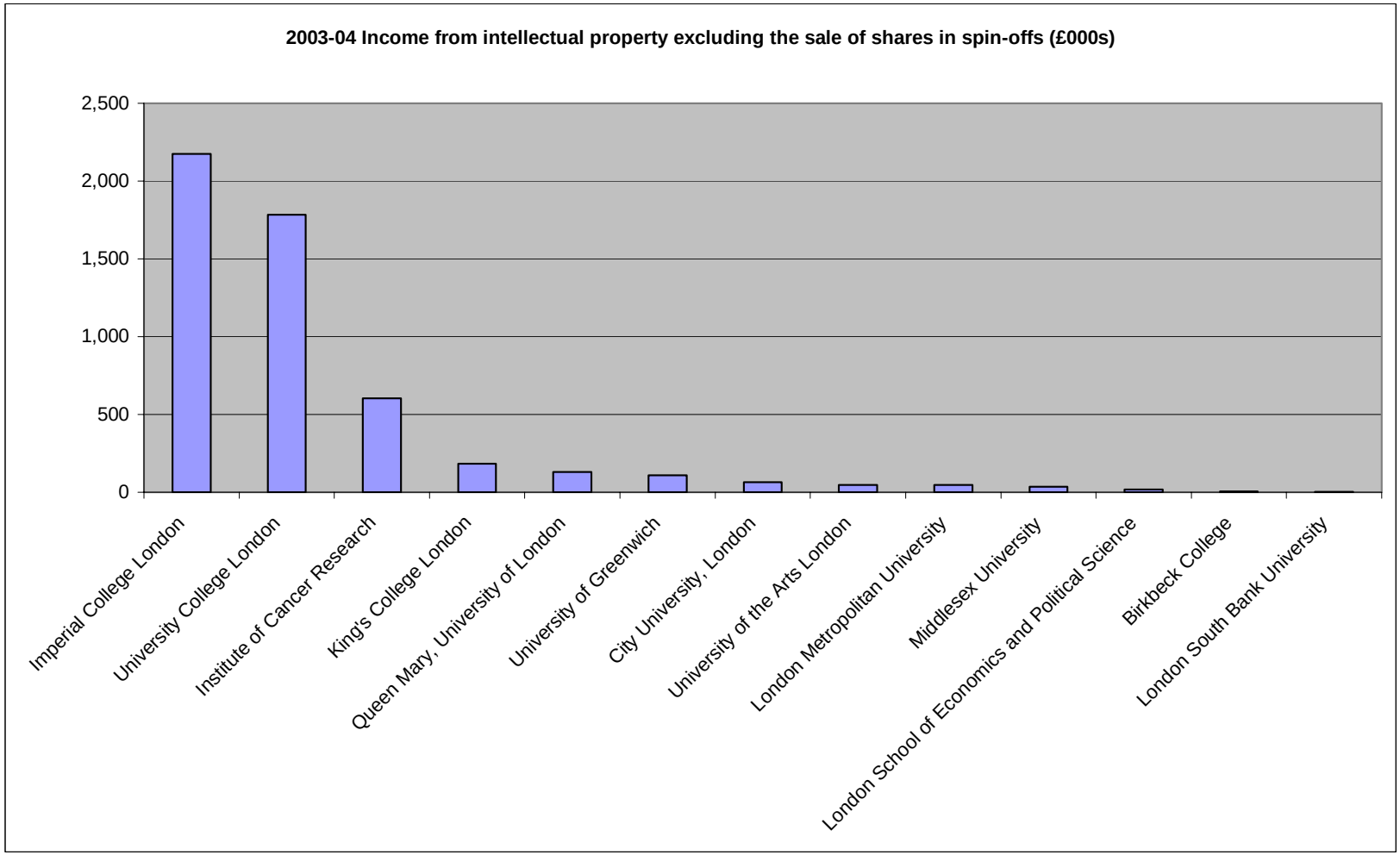
University	Knowledge Transfer Partnerships (sector)
University of East London (UEL)	Rawell Environmental Limited (manufacturing), World Infocomms Limited (business services)
Goldsmiths College	@UK Plc (business services)
University of Greenwich	Cutty Sark Trust (other services), GlaxoSmithKline Services Unlimited (pharmaceuticals), Firemaster Extinguisher Limited (manufacturing), Aviary Limited (business services), Paperflow plc (business services)
Imperial College of Science, Technology & Medicine	Amadeus Capital Partners Limited (financial services)
Kings College London	Lein Applied Diagnostics Limited (health), Breast Cancer Care (health)
Kingston University	Jeremy Gardner Associates Limited (business services), Clinical Trials Laboratory Services Limited (health), London Fan Company Limited (manufacturing), Universal Marking Systems Limited (education), Server World Limited (business services), Workspace Group Plc (business services)
University of the Arts, London (UAL)	Octopus Publishing Group Limited (business services), Crenshaw Limited (manufacturing), Inca Digital Printers Limited (manufacturing)
London Metropolitan University (LMU)	FR Benson & Partners Limited (manufacturing), LShift Limited (business services), Polybags Limited (manufacturing), Rankhour Limited (retail), Essex Disabled People's Association Limited (other services), underscore Limited (business services), GPN UK Limited (business services), Alroc Limited (manufacturing)
London South Bank University (LSBU)	Big Thoughts Limited (manufacturing), Wright Machinery Limited (manufacturing), Energy & Power Consultants Limited (business services), Foley Cooke Associates (business services), Service Works Limited (business services), Acturis Limited (business services), Bighams Limited (manufacturing), GMJ Design Limited (business services), Energy Conservation and Solar Centre (business services), Target Plastics Limited (manufacturing), Blues Clothing Limited (manufacturing), Fulcrum First Limited (business services), Metafour International Limited (business services), Cableduct Limited (manufacturing), Eurotalk Limited (business services), Sustainable Energy Action Limited (business services), Pride Oils Plc (manufacturing), Overseas Development Institute (other services), La Fornaia Limited (manufacturing), Wave Technology Limited (business services), Raj Foods Limited (manufacturing), Hughes Electronics Limited (manufacturing)
Middlesex University	Sleek International Limited (business services)
Queen Mary, University of London (QMUL)	e2v technologies (uk) Limited (manufacturing), Richmond Pharmacology Limited (business services)
Roehampton University	Craftwork Industries Limited (recycling)
University College London	Camden Primary Care Trust (health), Environmental Resources Management Limited (business services), Think London (business

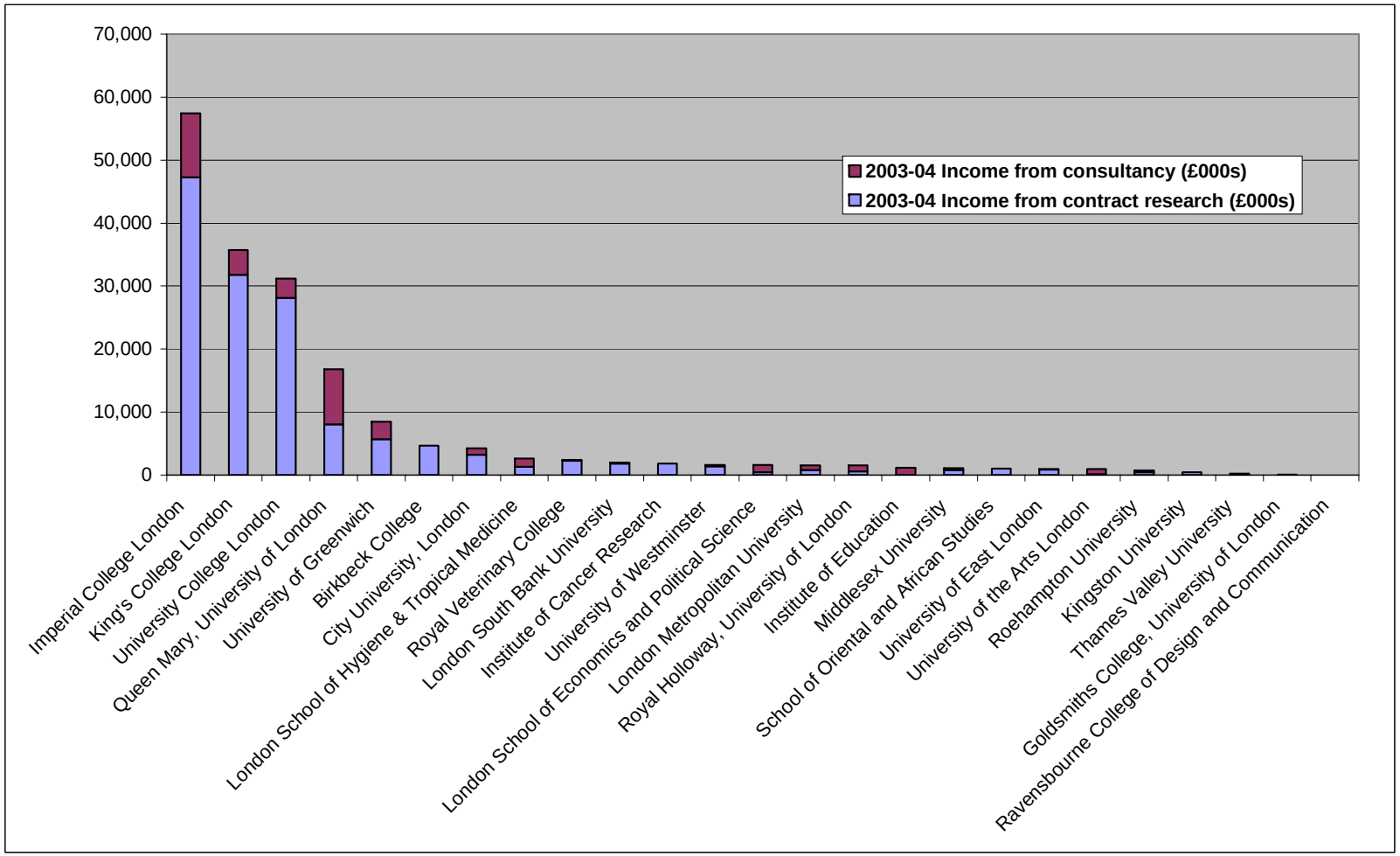
University	Knowledge Transfer Partnerships (sector)
(UCL)	services), Southwark Primary Care Trust (health), Spirogen Limited (pharmaceutical), PIramed Limited (business services), AMA Alexi Marmot Associates Limited (business services), Philips Electronics UK Limited (manufacturing), Just IT Training Limited (business services), Vero International Software UK Limited (business services), SpacelabUK Limited (business services), Silcock Dawson & Partners Limited (business services), Constructing Excellence Limited (business services)
University of Westminster	Rawlinson Kelly Whittlestone Limited (business services), Kay Media Limited (business services), Dendrite Clinical Systems Limited (health), International Institute For Strategic Studies (Iiss) Limited (other services)

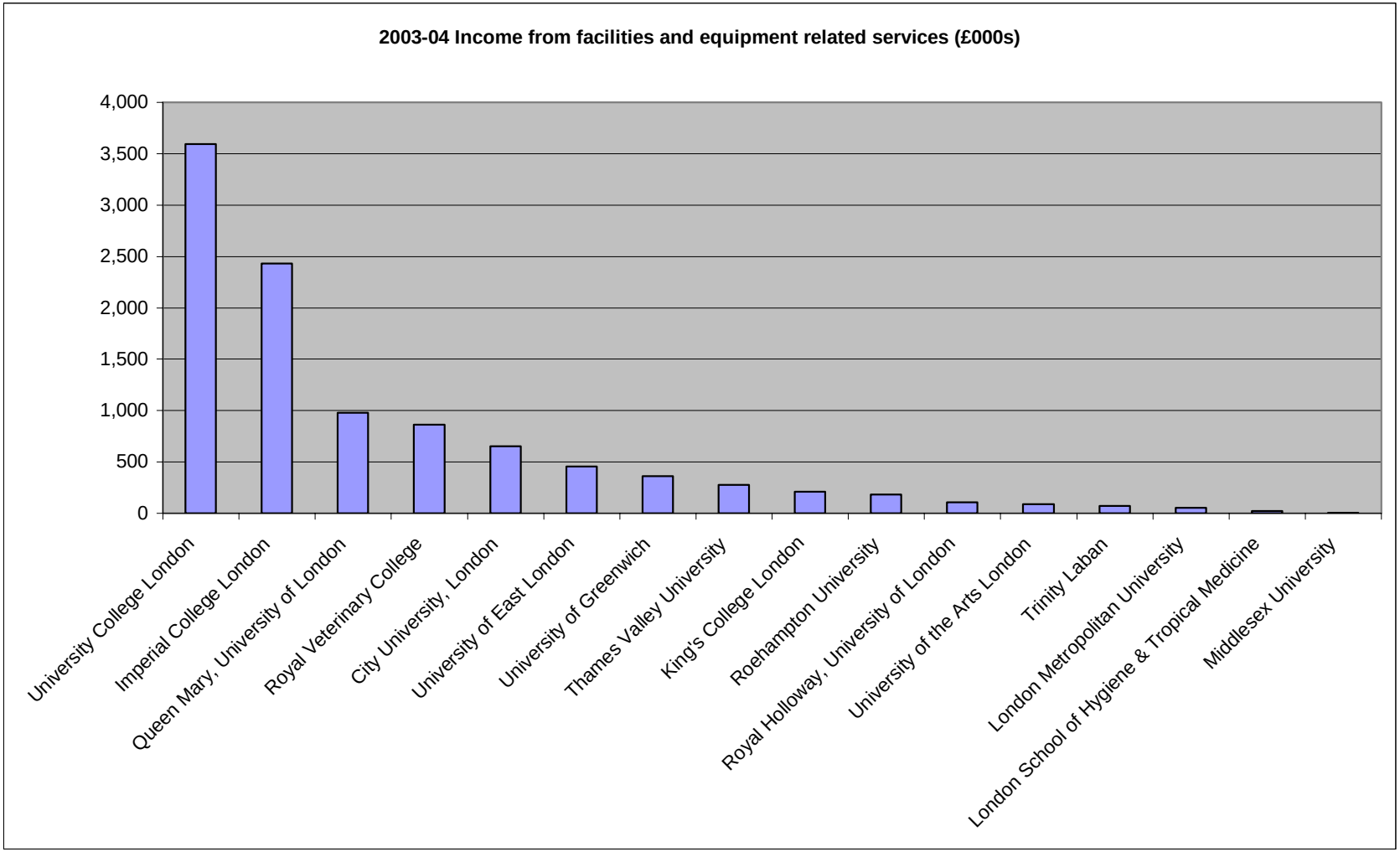
Annex 8: Third Stream Income at London Universities, 2002-03

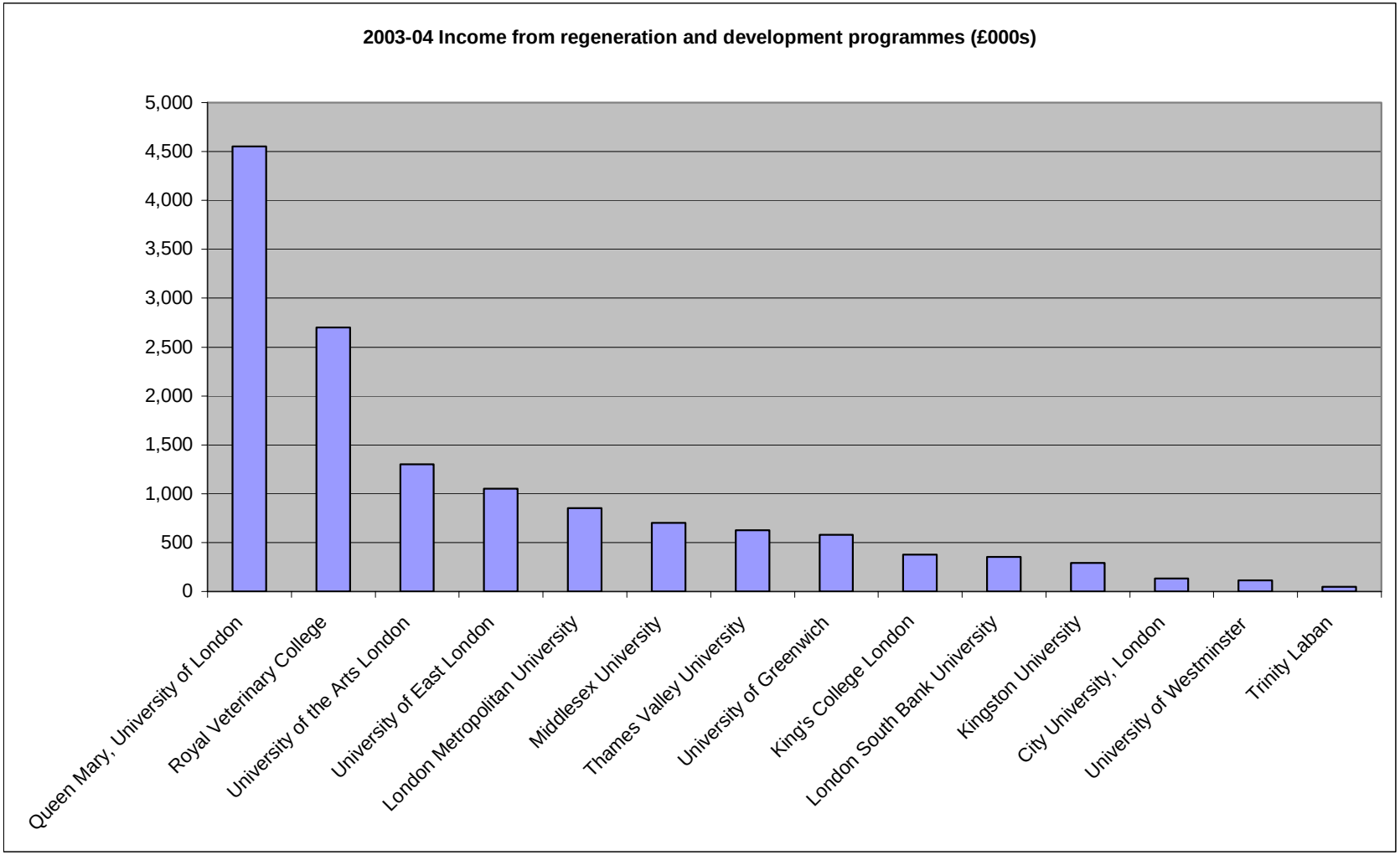


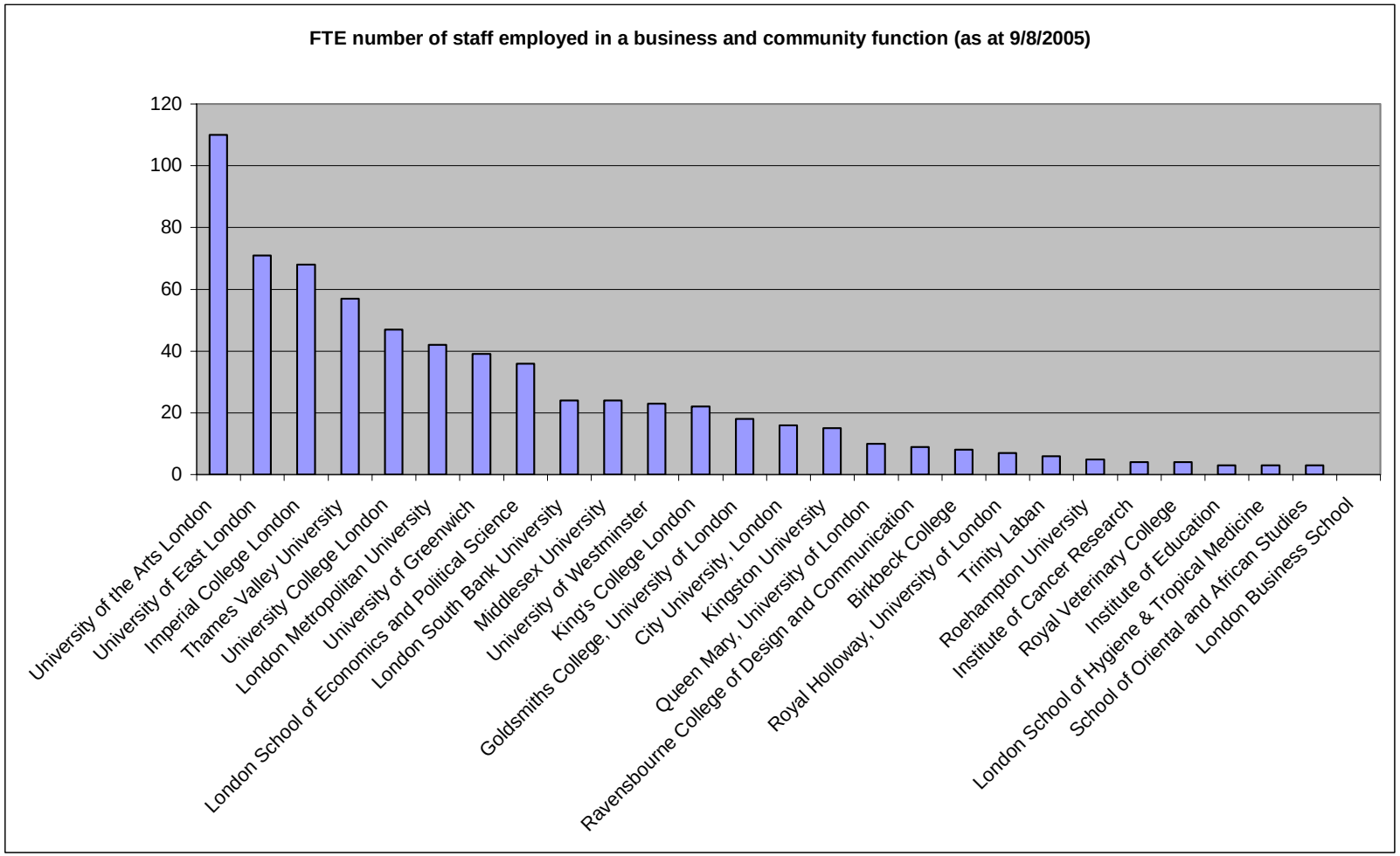

2003-04 Income from knowledge transfer partnerships (£000s)
1,000
900
800
700
600
500
400
300
200
100
0
London South Bank University
Kingston University
University of East London
University College London
University of Westminster
Roehampton University

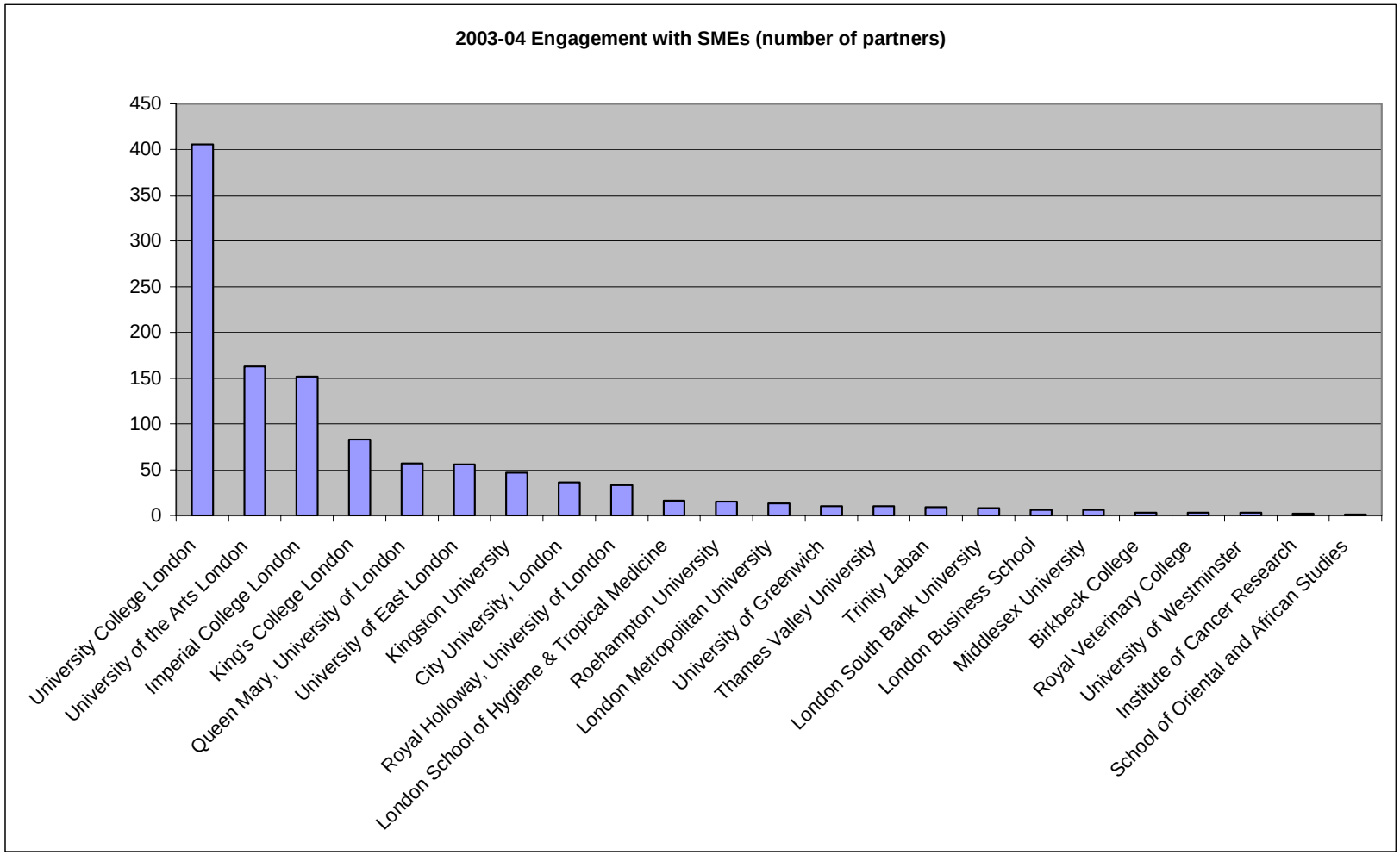

2003-04 Income from intellectual property excluding the sale of shares in spin-offs (£000s)
2,500
2,000
1,500
1,000
500
0
Imperial College London
University College London
Institute of Cancer Research
King's College London
Queen Mary, University of London
University of Greenwich
City University, London
University of the Arts London
London Metropolitan University
Middlesex University
London School of Economics and Political Science
Birkbeck College
London South Bank University

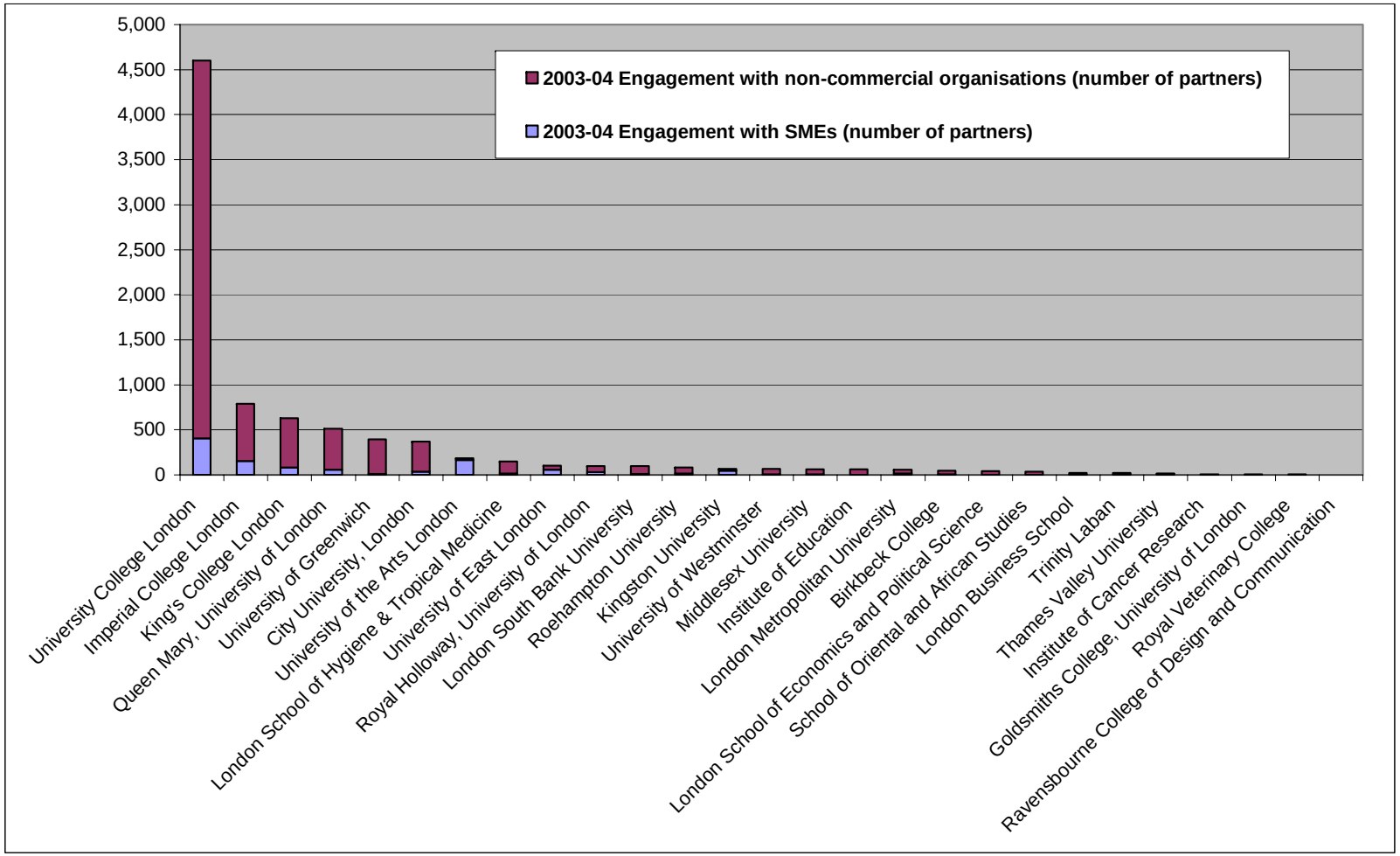

70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
2003-04 Income from consultancy (£000s)
2003-04 Income from contract research (£000s)
Imperial College London
King's College London
University College London
Queen Mary, University of London
University of Greenwich
Birkbeck College
City University, London
London School of Hygiene & Tropical Medicine
Royal Veterinary College
London South Bank University
Institute of Cancer Research
University of Westminster
London School of Economics and Political Science
London Metropolitan University
Royal Holloway, University of London
Institute of Education
Middlesex University
School of Oriental and African Studies
University of East London
University of the Arts London
Roehampton University
Kingston University
Thames Valley University
Goldsmiths College, University of London
Ravensbourne College of Design and Communication


2003-04 Income from facilities and equipment related services (£000s)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
University College London
Imperial College London
Queen Mary, University of London
Royal Veterinary College
City University, London
University of East London
University of Greenwich
Thames Valley University
King's College London
Roehampton University
Royal Holloway, University of London
University of the Arts London
Trinity Laban
London Metropolitan University
London School of Hygiene & Tropical Medicine
Middlesex University


2003-04 Income from regeneration and development programmes (£000s)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Queen Mary, University of London
Royal Veterinary College
University of the Arts London
University of East London
London Metropolitan University
Middlesex University
Thames Valley University
University of Greenwich
King's College London
London South Bank University
Kingston University
City University, London
University of Westminster
Trinity Laban


FTE number of staff employed in a business and community function (as at 9/8/2005)
120
100
80
60
40
20
0
University of the Arts London
University of East London
Imperial College London
Thames Valley University
University College London
London Metropolitan University
University of Greenwich
London School of Economics and Political Science
London South Bank University
Middlesex University
University of Westminster
King's College London
Goldsmiths College, University of London
City University, London
Kingston University
Queen Mary, University of London
Ravensbourne College of Design and Communication
Birkbeck College
Royal Holloway, University of London
Trinity Laban
Roehampton University
Institute of Cancer Research
Royal Veterinary College
Institute of Education
London School of Hygiene & Tropical Medicine
School of Oriental and African Studies
London Business School


2003-04 Engagement with SMEs (number of partners)
450
400
350
300
250
200
150
100
50
0
University College London
University of the Arts London
Imperial College London
King's College London
Queen Mary, University of London
University of East London
Kingston University
City University, London
Royal Holloway, University of London
London School of Hygiene & Tropical Medicine
Roehampton University
London Metropolitan University
University of Greenwich
Thames Valley University
Trinity Laban
London South Bank University
London Business School
Middlesex University
Birkbeck College
Royal Veterinary College
University of Westminster
Institute of Cancer Research
School of Oriental and African Studies



Source: HEFCE website