Invest Puerto Rico

Findings Report

17th October 2019

Contents

Executive Summary

Invest Puerto Rico (IPR) are targeting 4 industry sectors for attraction activities: Knowledge Services, Software Development, Logistics, and Manufacturing. OCO Global have been contracted to consider two questions, based on a combination of detailed quantitative and qualitative analyses:

Within Europe and Asia, what countries, and locations within countries should IPR target, and in which of these sectors?

Country	Opportunity Level	Description
UK	High	Particularly strong in services (Software & IT and Knowledge Services, largely in London)
Germany	High	Particularly strong in Manufacturing, although the opportunity is spread across the country
France	Medium / Low	A choice between here and Spain. Focused on specific Manufacturing and in Knowledge Services
Spain	Medium / Low	A choice between here and France. Largely Knowledge Services, some Manufacturing
Japan	Medium	High tech Manufacturing and related services
India	Low	Software & IT and some Knowledge Services

* Opportunity level for all other countries will be lower than for those shown

Following from this, which of these sectors (and subsectors) does Puerto Rico have the greatest potential to attract investment in?

Sector	Opportunity Level	Description
Software & IT	High	By far the largest in terms of project numbers, although individual project job creation will often be low. PR has a reasonable relative value proposition
Manufacturing	Medium	Medium opportunity, but individual subsectors have correspondingly lower levels of opportunity. A strong value proposition in places, meaning targeting 1-2 specific subsectors (e.g. Medical Devices, Electronics) is advised
Knowledge Services	High	Strong opportunity, with PR's value proposition varying by subsector - Finance & Insurance appears to be strongest
Logistics	Medium	Medium level of opportunity, but the value proposition could be strengthened

Introduction

- Invest Puerto Rico (IPR) has developed a promotional strategy that identifies four targeted industry sectors for attraction activities: Knowledge Services, Software & IT, Logistics, and Manufacturing.
- IPR would like to concentrate global attraction efforts in Europe and Asia with a focus on 1 or 2 countries in each market. OCO Global have therefore been contracted to consider two questions:
    1. What countries, and locations within countries should IPR target, and in which of these sectors?
    2. Following from this, which of these sectors (and subsectors) does Puerto Rico have the greatest potential to attract investment in?
- By answering these two questions, we provide a starting point to IPR's overall international strategy. Our analysis also answers the following key questions:
    - What is the trend of firms from this region moving to the US, Puerto Rico, and Caribbean Region?
    - What sorts of firms would be the most likely to move to PR from these regions? (profile, jobs, wages, etc)
    - Which markets would PR be competing with to gain this investment?
    - What is the low hanging fruit for attraction of firms from these regions to PR?
    - What are the most significant hurdles to attracting firms from this region to PR?
    - Is this a region where PR can make significant gains in attracting firms in the near-term (18 months - 2 years)? Why or why not?

Methodology

Identification of Priority Target Markets

1. High level filter
2. Demand Side Model based on 8 data metrics
3. Qualitative and further quantitative analysis
4. Final countries and regions

- From all, to c. 20 European countries
- From all, to c. 10 Asian countries

- Filter to 2-5 countries by sector in each region

- Final filter of countries by sector and subsectors

DEMAND SIDE DATA MODEL

SECONDARY FILTERING

Analysis of High Potential Sectors

1. Total projects and jobs
2. Existing Invest PR value proposition research
3. Additional OCO research on location factors

DEMAND SIDE

SUPPLY SIDE

Methodology

Identification of Priority Target Markets

Our approach has involved two stages of analysis:

- Development of a **demand-side data model** to shortlist high potential countries, embedded here

- **Secondary filtering** of countries to specific locations, together with qualitative validation

Demand Side Data Model

- **Step 1**: The first step in the process was to reduce the potential number of countries to a more manageable list. The 'high level filter' tab shows the number of greenfield FDI projects that companies from these countries from 2014-18 globally, based on fDi Markets data. Based on this, we immediately filter to 20 European and 15 Asian countries for further analysis.

- **Step 2**: The model gives weightings to a range of 8 metrics that define the potential for individual countries to be key investors to Puerto Rico, as shown in the table:

Metric	Source	Weightings
No. FDI Projects 2014-18	fDi Markets	25%
No. Estimated FDI Jobs 2014-18	fDi Markets	15%
Estimated FDI Capex Value 2014-18	fDi Markets	15%
PR Market Share of FDI Projects	fDi Markets	5%
PR Market Share of FDI Jobs	fDi Markets	5%
PR Market Share of FDI Capex	fDi Markets	5%
Employment Share	Bureau of Economic Analysis	10%
% Growth in FDI Projects 2014-18	fDi Markets	20%
Total		**100%**

- **Step 3**: for each of these metrics, data is collected for all the countries for relevant activities in each of the four sectors (e.g. not all types of manufacturing), as sources of investment to the USA, and to Latin America & the Caribbean (Latac). Both are selected as it is arguable as to which region Puerto Rico is competing with to win investment.

Methodology

- **Step 4**: We then convert this raw data to a score for each data point, between 1 and 5. Hence a score closer to 5 reflects higher potential based on that metric. For example, in the Software sector for European countries investing in the USA, we have:

Country	No. FDI Projects 2014-18	Score
Germany	119	4.4
United Kingdom	303	5.0
France	124	4.5
Switzerland	28	2.0

- **Step 5**: With every metric scored and weighted, we are able to provide an overall weighted score per country, in terms of its investment potential to the USA and to Latac.

Secondary Filtering

For each sector, the demand side model allows us to define the top 3 to 4 countries by sector in each region that provide high potential. A final list of 1-2 is then achieved by carrying out

- **Qualitative research** on each of the countries for those sectors, based on available reports.
- Further **quantitative analysis** of the subsectors within the sectors where the potential lies, again using fDi Markets.

For the final countries then selected, we also define, based on fDi Markets data, the **regions / cities** that represent the highest potential.

Methodology

Analysis of High Potential Sectors

Sectors and subsectors for targeting by IPR are those that combine the highest level of opportunity (the demand side) with the strongest value proposition (the supply side).

Demand Side Analysis

This simply draws on the data described in the previous slides. Hence based on total projects and jobs created from Europe and from Asia, we can give ratings of High, Medium and Low for the overall scale of opportunity.

Supply Side Analysis

The supply side is based two elements:

- A review of **existing Invest PR and PRIDCO content** that defines characteristics of each of the sectors and subsectors
- Additional **OCO research on location factors** that are important in a company's investment location decision (note: with more time, a more thorough benchmark analysis would be recommended)

By combining the two, we created a table for each sector and subsector, that considers Puerto Rico's relative strengths, across the range of the key factors:

- Skills
- Incentives
- Existing Cluster / Industry
- Research / Universities
- Business Environment
- Labor Cost (Relative to USA)
- Infrastructure / Real Estate Costs
- Anything else

Reviewing this in turn, we can again gibe ratings of High, Medium, and Low for the subsector's strength of value proposition.

By putting demand and supply together, we can then draw conclusions on which (sub)sectors are most appropriate for targeting by Invest PR.

Methodology

Defining Sectors

Based on initial consultations, our understating of the relevant target sectors and subsectors for Invest PR are:

- Knowledge Services (Finance & Insurance, Business Support Services, Consulting & Technical Services)
- Software & IT
- Logistics
- Manufacturing (Medical Devices, Pharma & Biotech, Aerospace, Ocean Sciences, Electronics)

Important

- Our analysis therefore only considers these areas. Hence in Manufacturing, **data only covers the manufacturing activity**, it does not include R&D, sales etc, even if they are related to the above sectors. Clearly the scale of opportunity would be higher should these activities be included.

- Ocean Sciences in itself is highly specific data trends on data show there are very FDI projects here, and in reality this would mean **targeting a handful of specialist companies, irrespective of source locations**. The data in this report uses a broader definition of Environmental Technology, that covers wider aspects such related to renewable energy etc.

- Within Knowledge Services, our interpretation is that **Business Support Services will typically be lower value** (e.g. contact centres, shared services, and other back office). **Consulting and Technical Services will be higher value** (e.g. accountancy firms, legal firms, management consulting, engineering consulting etc)

IDENTIFICATION OF PRIORITY TARGET MARKETS

Demand Side Model Outputs

Where to Access the Opportunity

High Level Filter

The tables show an initial filter based on the source of all greenfield FDI globally. This shortened the lists from 46 to 20 European countries, and from 38 to 15 Asian countries.

INCLUDED

EXCLUDED

European Countries	Global FDI Projects 2014-18
Germany	7,613
United Kingdom	7,017
France	5,344
Switzerland	3,558
Spain	2,923
Italy	2,420
Netherlands	2,342
Sweden	2,009
Denmark	1,269
Austria	877
Belgium	850
Ireland	848
Finland	694
Norway	616
Turkey	608
Luxembourg	580
Russia	571
Poland	340
Portugal	301
Czech Republic	228
Cyprus	154
Greece	144

INCLUDED

EXCLUDED

Asian Countries	Global FDI Projects 2014-18
Japan	4,945
China	3,471
India	1,614
South Korea	1,350
Australia	1,303
Singapore	1,106
Hong Kong	975
Taiwan	731
Thailand	410
Malaysia	350
New Zealand	216
Vietnam	125
Philippines	114
Indonesia	100
Sri Lanka	44
Pakistan	41
Azerbaijan	33

Where to Access the Opportunity

Demand Side Model Outputs - Investment from Europe

The tables show investment from European countries to the USA and to Latac, based on the 8 weighted metrics described in the methodology. Across all the sectors, Germany, the UK and France are consistently highest, but Spain becomes more prominent in the Latac context. To give some context, for Software & IT, the UK was a source for 303 projects to the USA from 2014-18, while Switzerland (4th in the table below) created just 28.

To USA	Software & IT	Logistics	Manufacturing	Knowledge Services
Germany	3.8	4.3	3.9	2.9
United Kingdom	4.1	3.4	4.0	4.1
France	3.6	2.3	3.0	3.5
Switzerland	2.4	1.7	2.9	2.6
Spain	2.1	1.6	2.5	2.8
Italy	2.0	1.2	2.1	1.4
Netherlands	2.5	2.4	2.6	2.3
Sweden	1.8	1.2	1.7	1.7
Denmark	1.9	2.3	2.8	2.2
Austria	1.8	1.5	2.4	1.3
Belgium	2.1	2.1	1.7	1.9
Ireland	3.0	1.2	2.2	2.1
Finland	1.6	1.2	1.3	1.4
Norway	1.9	1.9	1.8	1.4
Turkey	1.3	2.0	1.0	1.8
Luxembourg	1.4	1.2	1.2	1.9
Russia	1.6	2.0	1.3	1.4
Poland	1.4	1.2	1.8	1.4
Portugal	1.3	1.2	1.2	1.4
Czech Republic	1.4	1.2	1.3	1.5

To LATAC	Software & IT	Logistics	Manufacturing	Knowledge Services
Germany	3.7	4.0	3.9	2.8
United Kingdom	4.0	2.8	2.6	3.4
France	2.3	1.7	3.5	2.7
Switzerland	2.3	2.8	2.7	2.2
Spain	4.5	3.3	3.0	3.9
Italy	2.0	1.7	2.2	1.7
Netherlands	2.0	2.6	2.4	1.8
Sweden	1.4	1.2	1.9	2.0
Denmark	1.4	2.3	2.0	1.3
Austria	1.3	1.2	1.8	1.2
Belgium	1.4	1.7	1.9	1.6
Ireland	2.7	1.5	2.3	2.0
Finland	1.4	1.2	1.8	1.2
Norway	1.3	1.9	1.6	1.4
Turkey	1.2	1.2	1.4	1.2
Luxembourg	1.4	1.4	1.7	1.4
Russia	2.4	1.2	2.4	1.2
Poland	1.8	1.2	1.6	1.2
Portugal	1.7	1.4	1.5	1.2
Czech Republic	1.3	1.2	1.2	1.3

Where to Access the Opportunity

Demand Side Model Outputs - Investment from Asia

The tables show investment from Asian countries to the USA and to Latac, based on the 8 weighted metrics described in the methodology. Here , India is particularly relevant for Software & IT, while Japan and China are prominent across most sectors. South Korea and to a lesser extent Taiwan, are important for Manufacturing. Hence the trend is less uniform here than it is for European countries. Again to give context, India was as source for 94 projects in Software & IT to the USA from 2014-18, so the scale is significantly smaller than in Europe. This applies across all the sectors.

To USA	Software & IT	Logistics	Manufacturing	Knowledge Services
Japan	3.1	3.8	3.4	3.5
China	3.0	2.6	3.5	3.2
India	3.9	1.2	2.2	3.5
South Korea	1.8	2.0	3.0	1.6
Australia	3.1	2.0	2.0	2.9
Singapore	2.1	1.4	1.7	2.0
Hong Kong	1.7	1.9	1.7	2.1
Taiwan	1.4	2.0	2.7	1.8
Thailand	1.3	1.2	1.2	1.3
Malaysia	1.3	1.2	1.2	1.5
New Zealand	2.0	2.3	1.6	1.4
Vietnam	1.3	1.2	1.2	1.4
Philippines	1.2	1.2	1.6	1.9
Indonesia	1.2	1.2	1.3	1.2
Sri Lanka	1.6	1.2	1.2	1.2

To LATAC	Software & IT	Logistics	Manufacturing	Knowledge Services
Japan	2.2	3.4	3.2	3.3
China	2.7	2.5	3.8	2.9
India	4.1	1.2	1.9	2.6
South Korea	1.9	1.5	2.8	2.4
Australia	1.6	1.2	1.8	2.3
Singapore	1.4	1.5	2.0	1.6
Hong Kong	1.2	1.5	1.8	1.7
Taiwan	1.2	1.9	2.1	1.2
Thailand	1.2	1.2	1.2	1.2
Malaysia	1.4	1.2	1.2	1.2
New Zealand	1.2	1.2	1.6	1.2
Vietnam	1.2	1.2	1.2	1.2
Philippines	1.2	2.4	1.2	1.8
Indonesia	1.4	1.2	1.2	1.2
Sri Lanka	1.2	1.2	1.2	1.2

Where to Access the Opportunity

Demand Side Model Outputs - Country Shortlisting

Based on the previous two tables, the countries in the table are shortlisted for further investigation. This includes:

- The qualitative analysis of these countries and the relevant sectors.
- Quantitative analysis on subsectors (for Manufacturing and Knowledge Services).
- Quantitative analysis of regions / cities within the final selected countries.

	Software & IT	**Logistics**	**Manufacturing**	**Knowledge Services**
EUROPE	Germany	Germany	Germany	UK
	UK	UK	UK	France
	France	Netherlands	France	Germany
	Ireland	Spain	Switzerland	Spain
	Spain		Spain	
ASIA	India	Japan	Japan	Japan
	China	China	China	China
	Japan		South Korea	India
			Taiwan	

IDENTIFICATION OF PRIORITY TARGET MARKETS

Qualitative and Further Quantitative Analysis

Where to Access the Opportunity

Further Quantitative Analysis – No. Projects by Sectors / Subsectors

The opportunity ratings provided here range from zero to 3 'ticks'. They are not intended to be exact calculations, but give an approximation on the scale of opportunity, as shown in the available data.

	SOFTWARE & IT		
Country	To the USA	To Latac	Opportunity Rating
Germany	119	36	✓✓
United Kingdom	303	35	✓✓✓
France	124	17	✓✓
Ireland	60	7	✓
Spain	26	77	✓✓
India	94	14	✓✓
China	46	9	✓
Japan	44	4	✓

	LOGISTICS		
Country	To the USA	To Latac	Opportunity Rating
Germany	81	43	✓✓✓
United Kingdom	45	16	✓✓
Netherlands	11	9	✓
Spain	4	25	✓
Japan	14	24	✓✓
China	5	5	✓

Where to Access the Opportunity

Further Quantitative Analysis – No. Projects by Sectors / Subsectors

	MANUFACTURING: MEDICAL DEVICES		
Country	**To the USA**	**To Latac**	**Opportunity Rating**
Germany	23	13	✓✓
United Kingdom	13	2	✓
France	7	1	✓
Switzerland	7	1	✓
Spain	3	2	✓
Japan	11	3	✓
China	8	0	✓
South Korea	0	0	N/A
Taiwan	1	0	N/A

	MANUFACTURING: PHARMA & BIOTECH		
Country	**To the USA**	**To Latac**	**Opportunity Rating**
Germany	36	14	✓✓
United Kingdom	66	0	✓✓✓
France	31	0	✓
Switzerland	23	10	✓✓
Spain	9	4	✓
Japan	28	0	✓
China	32	0	✓
South Korea	0	0	N/A
Taiwan	0	0	N/A

Where to Access the Opportunity

Further Quantitative Analysis – No. Projects by Sectors / Subsectors

	MANUFACTURING: AEROSPACE		
Country	To the USA	To Latac	Opportunity Rating
Germany	12	3	✓
United Kingdom	23	3	✓✓
France	20	11	✓✓
Switzerland	1	0	N/A
Spain	0	1	N/A
Japan	5	1	✓
China	7	0	✓
South Korea	1	0	N/A
Taiwan	0	0	N/A

	MANUFACTURING: ELECTRONICS		
Country	To the USA	To Latac	Opportunity Rating
Germany	65	35	✓✓✓
United Kingdom	25	4	✓✓
France	18	12	✓✓
Switzerland	17	7	✓
Spain	8	29	✓✓
Japan	41	18	✓✓
China	41	27	✓✓✓
South Korea	25	16	✓✓
Taiwan	12	8	✓

Where to Access the Opportunity

Further Quantitative Analysis – No. Projects by Sectors / Subsectors

	MANUFACTURING: OCEAN SCIENCES*		
To the USA	To the USA	To Latac	Opportunity Rating
Germany	37	26	✓✓
United Kingdom	24	15	✓✓
France	24	31	✓✓
Switzerland	1	2	N/A
Spain	19	95	✓✓✓
Japan	8	4	✓
China	22	23	✓✓
South Korea	3	4	N/A
Taiwan	0	4	N/A

	KNOWLEDGE SERVICES: FINANCE & INSURANCE		
Country	To the USA	To Latac	Opportunity Rating
United Kingdom	98	31	✓✓✓
France	30	8	✓✓
Germany	15	7	✓
Spain	28	79	✓✓✓
Japan	25	9	✓
China	18	7	✓
India	4	2	N/A

* This data is based on the broader Environmental Technology cluster, If restricted to Ocean Sciences / Marine only, project numbers are negligible

Where to Access the Opportunity

Further Quantitative Analysis – No. Projects by Sectors / Subsectors

	KNOWLEDGE SERVICES: CONSULTING & TECHNICAL SERVICES		
Country	**To the USA**	**To Latac**	**Opportunity Rating**
United Kingdom	373	56	✓✓✓
France	52	15	✓✓
Germany	32	7	✓
Spain	27	66	✓✓
Japan	20	8	✓
China	15	4	✓
India	0	0	N/A

	KNOWLEDGE SERVICES: BUSINESS SUPPORT SERVICES		
Country	**To the USA**	**To Latac**	**Opportunity Rating**
United Kingdom	15	1	✓
France	27	7	✓
Germany	7	0	N/A
Spain	1	43	✓✓
Japan	4	2	N/A
China	4	0	N/A
India	25	6	✓

Where to Access the Opportunity

Qualitative Analysis: Software & IT

The opportunity ratings provided here range from zero to 3 'ticks'. They are not intended to be exact calculations, but give an approximation on the scale of opportunity, as shown in the available information.

Countries	Comments	Rating
Germany	- Germany is home to the single largest software market in Europe - accounting for around a quarter of the European market by value - The market is best characterized by the large number of dynamic and highly specialized SMEs. Companies in the Mittelstand dominate Germany's economic and industrial landscape; creating a diversified SME environment of highly specialized hidden champions with a global market footprint.	✓✓✓
UK	- The UK has 30 significant technology clusters. It is 4th most innovative place in the world in the Global Innovation Index 2018 - There was £184bn digital technology turnover in 2018 - 26 of the 69 European Unicorns are in the UK, with a cumulative value of $64bn	✓✓✓
France	- The French information technology market is one of the most dynamic in Europe with a favorable research and development framework and leading infrastructure. - France is number 1 in the Deloitte Technology Fast 500 EMEA ranking	✓✓
Ireland	- Technology employs over 37,000 people in Ireland and generates €35 billion in exports annually. - 9 out of the top 10 US Technology Companies have operations in Ireland and it renowned as being a Tech Hub in Europe - As well as being a magnet for inward FDI, the indigenous software and digital technology sector is Ireland's fastest-growing export sectors	✓✓
Spain	- With a turnover of €51.7 billion, the ICT sector in Spain is the fifth largest in the European Union. The autonomous community of Madrid accounts for 46% of the Spanish ICT market.	✓✓
Japan	- Japan is home to huge multinational ICT conglomerates. These include Sony, Panasonic, Fujitsu, NEC and Toshiba among many other globally acclaimed brands. - Firstly, the country ranks 3rd as the biggest market with average revenue per user in Asia. Based on the forecast, the country has a projected 160 million number of mobile phone subscribers which will be even more by the year 2019. Secondly, Japan has a relatively high ARPU and Data share of ARPU compared to countries like Germany and United Kingdom.	✓✓✓
China	- China is home to giant tech firms like Tencent and Alibaba, but has relatively few mid-sized companies in the range of $50-$400bn. In 2018 alone about 100 tech start-ups became "unicorns" worth more than $1bn - Ecommerce and mobile payment industry in China is bigger than the US and the government has set a goal of becoming dominant in artificial intelligence by 2030.	✓✓
India	- India's IT industry grew to US$ 181 billion in 2018-19 and the computer software and hardware sector in India attracted cumulative Foreign Direct Investment (FDI) inflows worth US$ 37.23 billion between April 2000 and March 2019 - As well as receiving FDI in the IT industry there are c.200 Indian IT firms present in around 80 countries around the world and the industry is expected to grow to US$ 350 billion by 2025	✓✓

Where to Access the Opportunity

Qualitative Analysis: Manufacturing - Medical Devices, Pharmaceuticals, Biotechnology

Countries	Comments	Rating
Germany	- The German pharmaceutical market is the largest in Europe and the fourth largest in the world. The annual sales of medicinal products total more than EUR 41.5 (2017) and this figure continues to experience sustained growth (+5% in 2017 vs. previous year). - Germany is one of Europe's leading pharmaceutical research and production hubs and only trails the United States in global biopharmaceutical production. - German companies invest EUR 6.2 billion (2016) annually in research and development.	✓✓✓
UK	- The number of active UK biotechnology businesses in the field of research and experimental development has soared by 65% in just over three years. - London, Oxford and Cambridge have strengthened their position as the UK's 'Golden Triangle' of biotech in just over three years, now accounting for over a third (34%) of UK biotech companies, compared to 27% at the start of 2016.	✓✓
France	- France ranks consistently among the top 3 globally in fields such as medicine, medical devices and pharmaceuticals and are 1st in the pack in Europe for animal health and vaccinations. - 2nd highest European country in Pharmaceutical market value.	✓✓✓
Switzerland	- 34.3% of EU pharmaceutical imports come from Switzerland, 13.4% go to Switzerland. - Contributes to 30% of the country's exports. - 41 life science companies had their international headquarters in Switzerland.	✓✓✓
Spain	- Spanish pharma market set to hit $25 billion by 2021. - The introduction of tax incentives for R&D spending by the Spanish government has eased austerity impact, and led the industry to invest $1.2 billion in R&D.	✓✓

Where to Access the Opportunity

Qualitative Analysis: Manufacturing - Medical Devices, Pharmaceuticals, Biotechnology

Countries	Comments	Rating
Japan	- Japanese pharma market to rise to $72 billion by 2021. - Japanese medical device industry set to reach $74.7 billion by 2025. - Rapidly aging population and universal health insurance coverage are driving the market.	✓✓✓
China	- World's fastest growing biopharmaceutical markets. - Last year, Chinese biotechs made 164 cross-border licensing deals, more than double five years ago, accounting for $13.8 billion.	✓✓
South Korea	- Government to invest $2.6 billion in the biotech sector this year, up 2.9 percent from last year. - Medical devices market estimated to reach $5.8 billion in 2019.	✓
Taiwan	- Taiwanese biotech firms, though small, are highly innovative and are actively collaborating with foreign firms for advanced clinical trials and drug development. - By using AI in the healthcare sector, Taiwan's medical devices industry is preparing for global opportunities along with the US and European companies.	✓

Where to Access the Opportunity

Qualitative Analysis: Manufacturing - Aerospace

Countries	Comments	Rating
Germany	- Since the mid-90's, industry revenues have more than quadrupled – to over EUR 37 billion in 2016. - Employing a workforce of over 108 thousand (of which more than 50 percent are engineers or highly qualified professionals), the aerospace sector spent around 11 percent of 2016 turnover (EUR 4 billion) on R&D – making it one of the country's most innovative industries.	✓✓
UK	- Government and industry have committed to spend £3.9bn on aerospace R&D to 2026. - 3000 aerospace companies in the UK, generating £35bn in GDP, £30bn of which exported.	✓✓✓
France	- French aerospace industry ranked second in the world. - Recorded industry revenues of $69bn with strong performances from industrial export giants Airbus, Safran, Dassault and Thales.	✓✓✓
Switzerland	- Swiss aerospace industry consists of 500 companies. - 6% of GDP and 150,000 jobs in Switzerland.	✓✓
Spain	- Ranked 5th in Europe and 8th in the world. - Activity concentrated in Madrid. - Workforce has increased by 65 percent since 2000.	✓✓
Japan	- Japanese manufacturers supply about 35% of the content for the Boeing 787 and 21% for the Boeing 777.	✓✓
China	- Predicted to become world's largest passenger aviation market by 2024, but its aircraft are still sourced abroad. - 'Made in China 2025' initiative may speed up China's adolescent aerospace industry.	✓
South Korea	- Total U.S. aerospace exports to Korea exceeded $3.34 billion in 2018. - 71% of Korea's aircraft, parts and component imports were from the U.S. in 2018.	✓
Taiwan	- Government supplying comprehensive support measures for the industry. - Strongest growth expected from Asia-Pacific, Taiwan keen to capitalise.	✓

Where to Access the Opportunity

Qualitative Analysis: Manufacturing - Electronics

Countries	Comments	Rating
Germany	- German electronics industry is set to increase by 1 percent, exceeding 200bn euros in 2019. - Already successful cooperation between China and Germany on many future subjects such as artificial intelligence could be further strengthened.	✓✓
UK	- Industry employs more than 1.5 million people. - Outsourcing looks set to remain a firm trend for 2019. - Operations shifting away from China and Far East in favour of Central and Eastern Europe.	✓✓
France	- Third largest producer behind Germany and UK, and largest in military and communications equipment. - Output posted four years of consecutive growth to 23.45bn euro in 2019 and predicted to continue growing.	✓
Switzerland	- Mechanical and electrical engineering industries represent 7% of Switzerland's GDP.	✓
Spain	- Revenue in the Consumer Electronics segment amounts to US$4,407m in 2019. - Revenue is expected to show an annual growth rate (CAGR 2019-2023) of 11.0%, resulting in a market volume of US$6,693m by 2023.	✓
Japan	- Third largest electronics industry in the world. - Home to three of top ten semiconductor companies, Sony, Toshiba and Renesas.	✓✓✓
China	- In 2017, China electronic manufacturing services market reached around $300bn. - Growth of market of 10% and supposed to break $500bn in 2023.	✓✓✓
South Korea	- Of the total electronic industry, consumer electronics has around 67.3% market share. - Ranked 3rd in terms of production and 5th largest market by consumption.	✓✓
Taiwan	- Viewed as the alternative to China. - Top export is electronic equipment (43.% of total exports).	✓✓

Where to Access the Opportunity

Qualitative Analysis: Manufacturing – Ocean Sciences

Countries	Comments	Rating
Germany	- Worldwide leader in environmental technologies relating to climate change, recycling, waste management and water treatment. - Environmentally friendly products to account for 19% of German GDP by 2025. - Global market share of 14% for green tech products.	✓✓✓
UK	- The United Kingdom is very active in the promotion of eco-innovation, the circular economy and new business models with environmental benefits.	✓
France	- The specific focus of the French expertise is on waste and water management. France is Europe's leading force in generating energy from recycling waste. - Global market leaders in the field of water and waste management, such as Suez, Veolia and Saur are based in Alsace.	✓✓✓
Switzerland	- Switzerland are leaders in developing cutting-edge environmental technologies in numerous areas of prevention and remediation, including: • Water Treatment • Air Pollution Control • Instrumentation and Control Systems • Waste Treatment and Recycling • Power Generation and Recovery.	✓✓
Spain	- As domestic opportunities have diminished, Spanish engineering and construction firms are now going abroad to work in foreign environmental and pollution control projects. - Areas of opportunity could include: advanced technology for treating certain components of end-of-life; plastics treatment; hazardous waste treatment; soil remediation; water and wastewater treatment, among others.	✓
Japan	- Japan's environment ministry has set aside about $18.6 million (¥2 billion) in its fiscal 2019 budget for a public-private consortium that will develop proposals and bid on waste management deals in Southeast Asian nations. - The worldwide market for trash-incinerating power plants that reduce pollution will be worth $80 billion by 2022, according to some financial analysts' estimates. Japan, which has cultivated just this rubbish acumen, is hoping to cash in on the refuse boom.	✓
China	- Largest and fastest emerging market for environmental technologies. - Valued at $77.2bn in 2019.	✓✓✓
South Korea	- Korea's environmental industry has grown annually by 15% each year to 2014, where it reached 92bn EUR. - South Korea now recycles 95% of its food waste – using automated bins with scales. - Global leader in cutting waste.	✓✓✓
Taiwan	- Went from 'garbage island' to one of the cleanest places in the world.	✓

Where to Access the Opportunity

Qualitative Analysis: Knowledge Services – Consulting & Technical Services

Countries	Comments	Rating
Germany	- The management consulting sector of Germany has grown by more than 7% for the five consecutive years - Home-grown firms are flourishing with Germany's ten largest home-grown players combined are outgrowing the market. Roland Berger, Simon Kucher & Partners and Detecon are the largest German origin players - In total, Germany is home to 19,250 consulting companies, with 87% of those total firms generating annual sales of less than €1 million.	✓✓✓
UK	- The sector employs around 3.3m people across the UK and is a major contributor of UK employment growth with 12 out of the 50 fastest growing occupations falling within the business services sector.	✓✓✓
France	- With record growth of more than 12% in 2018, the French strategy and management consulting market has broken the €7.3 billion mark. The sector has grown for six consecutive years, and now employs some 42,000 staff, of which over 38,000 are consultants - The largest industrial grouping of consulting remains in financial services, at 30% of the market. - One trend that seems to be buoying the industry is that French consulting firms are internationalising. Last year, 26% of all revenues came from foreign operations, compared with around 20% a decade ago.	✓✓
Spain	- Having declined by 3% between 2011 and 2012, the consulting sector of Spain has since recovered thanks partially to firms finally making a concerted effort to expand their footprint to other Spanish speaking markets, exporting particularly prolifically to Latin America in particular - In 2017, growth in the Spanish consulting market was primarily driven forward by financial services which, along with retail, was one of the only sectors to experience double-digit growth	✓
Japan	- The service sector accounts for approximately 70% of Japan's gross domestic product (GDP) and approximately 75% of employment, so developments in this sector have a large impact on Japan's economy as a whole.	✓
China	- China’s ever-growing service industry has become the dominant driving force for national economic development, according to data by the National Bureau of Statistics - China’s foreign trade in services will maintain fast growth and enjoy rising global competitiveness in the coming years. The Belt and Road Initiative will allow growth in China’s emerging services, especially knowledge-intensive areas in such fields as finance, technology, patents and standardisation	✓
India	- The ongoing strength of the Indian economy, combined with an improved business environment and high levels of disruption, contributed to a growth rate of 18.2% in the India consulting market in 2018. - Local firms provide assistance to MNCs in India while large international advisories help Indian firms integrate with the international market. - Tata Consultancy Services employ over 400,000 people and Cognizant announced in October 2019 they have surpassed 200,000 employees	✓

Where to Access the Opportunity

Qualitative Analysis: Knowledge Services – Business Support Services

Countries	Comments	Rating
Germany	- The business services market in Germany is the second largest in EMA and growing at over 2%. The call center market alone is EUR 21BN. There are 7000 contact centers employing over 500,000 people. Ranked 1st in the EU for attractiveness (EY European Attractiveness Survey 2019). Business services accounted for 17% of total FDI projects in Germany between 2010-2018.	✓✓✓
UK	- The business services market in the UK has grown to account for 9.3 per cent of GVA IN 2016. It employs around 3.3 million people across the UK, accounting for 10% of the workforce in the Northern Powerhouse and 10.5 per cent in Scotland, for example. 12 out of the 50 fastest growing occupations falling within the business services sector.	✓✓✓
France	- Beyond Financial Services, France is not seen as a hub for the Knowledge Services Industry	✓
Spain	- There were over 320,000 business services companies in Spain in 2018, with Madrid accounting for 76,880 of them. Over 50% of these in Madrid had over 100 employees. - The contact center sector in Spain experienced 3.14% growth, with turnover in 2017 of €1,606 million. The main industry requiring these is telecommunications, with increasing weight in the banking and financial services industries.	✓✓
Japan	- The business services market is strong and internationalised with most leading UK/international firms represented in Tokyo.	✓
China	- In 2018, imports and exports of knowledge-intensive service rose 20.7 percent, accounting for 32.4 percent of total service trade and up 2.5 percent from 2017. - The call centre market size in China is predicted to rise 29% between 2017 and 2020.	✓✓
India	- India's IT & business services market to reach $14.3 billion by 2020, however majority is from IT, the most important business service in the country. - The Indian call centre industry contributes 5.4% of the country's GDP, due to the cheap labour and general competency in English.	✓✓

Where to Access the Opportunity

Qualitative Analysis: Knowledge Services – Finance & Insurance

Countries	Comments	Rating
Germany	- The financial services and insurance sector employs a workforce of around 1.2 million people in Germany - Frankfurt is one of the most important financial centers in the world, and Munich as an important insurance and reinsurance locations. Both cities, together with Berlin and Cologne, are also designated digital hubs for FinTech and InsurTech companies respectively. - A large number of German banks, including some of the partially state-owned regional banks, similarly maintain subsidiaries, branches and/or representative offices in the United States.	✓✓✓
UK	- In 2018, the financial services sector contributed £132 billion to the UK economy, 6.9% of total economic output. The sector was largest in London, where 49% of the sector's output was generated. - In Q1 2019, there were 1.1 million jobs in the financial and insurance sector in the UK, 3.1% of all jobs. - The insurance industry of the United Kingdom is the largest in Europe and the fourth largest in the world.	✓✓✓
France	- France hosts the euro zone's highest concentration of asset management companies with more than 600 specialist companies established in Paris, and the world's 20 biggest asset managers include four French companies. Funds under management in France total €3.6 trillion - 5 French banks are in the EU Top 10 and it is the second insurance market in the EU	✓✓✓
Spain	- The banking industry in Spain expanded significantly during the country's 15 years of rapid economic growth prior to 2008 - The Spanish government used the bailout in 2012 to close and recapitalize banks as well as shift bad assets into a bank specifically created to manage them. As a result, Spain's banking sector consolidated significantly; most of Spain's regional savings banks have closed or merged - However, Banco Santander, is a Spanish multinational commercial bank and financial services company is the 16th-largest banking institution in the world.	✓
Japan	- In 2017, outward foreign direct investments in Japan's finance and insurance industry amounted to approximately 35.9 billion U.S. dollars.	✓✓
China	- In July 2019, the Office of Financial Stability and Development Committee published the Relevant Measures for Further Opening Up the Financial Sector. It is part of a broader scheme to open up the financial sector, and comes after the relaxation of restrictions on foreign investment in the financial sector announced in 2018 - China has also become the center of global fintech innovation and adoption. Ecommerce and payments, P2P lending and online insurance are key subsectors	✓✓
India	- India has a diversified financial sector undergoing rapid expansion - In 2018, the Financial Inclusion Lab selected 11 fintech innovators with an investment of US$ 9.5 million - The insurance industry has also been expanding at a fast pace. The total first year premium of life insurance companies reached US$ 30.72 billion during FY19.	✓

Where to Access the Opportunity

Qualitative Analysis: Logistics

Countries	Comments	Rating
Germany	- Germany is at the heart of Europe and is the continent's most important logistics hub, offering world-class infrastructure and cutting-edge logistics services. - Germany is a global leader in logistics innovation, technology and services with over 3 million industry employees in ca. 60,000 companies - It is home to global logistics leaders, such as Deutsche Post World Net, DHL, DB Schenker and Dachser.	✓✓✓
UK	- The logistics industry is worth over USD118.3 billion to the UK economy - Three quarters of logistics companies are confident their businesses will grow over the next three years according to a report from the Freight Transport Association (FTA) in partnership with Santander - Brexit is one of a number of issues that is causing significant challenges for UK Logistics companies	✓✓
Netherlands	- The Netherlands provides 3.7% of world trade and is a key logistics hub for the through-transportation of goods across Europe - The Port of Rotterdam is Europe's largest port and fourth-largest worldwide, and Amsterdam Airport Schiphol is a major European air-freight and passenger hub - According to the World Economic Forum, the quality of the Dutch infrastructure is among the best in the world, reflecting excellent facilities for maritime, air, road and railroad transport, ranked 1st, 4th, 2th and 7th, respectively in 2015.	✓✓✓
Spain	- The logistics and transport industry represents 8% of Spain’s GDP, with estimated turnover will be about 11 billion euros and employing about 800,000 people in 2018 - SIL Barcelona is the Leading Logistics, Transport, Intralogistics and Supply Chain Fair in Southern Europe and held annually in Barcelona - Madrid is the 5th most-desired logistics location in Europe	✓✓
Japan	- The freight & logistics sector is a 25 trillion yen industry in 2017 (approximately 5% of the GDP), employing around 2.13 million people in the country - About 99.6% of Japan's exports and imports are by maritime transport and only 0.4% is by Air transport. The Port of Tokyo is one of the major ports in Japan and a strategic gateway to the world. - There is a need for the automation of logistics activities in Japan, because of the low loading efficiency (about 44%)	✓✓
China	- Investment in infrastructure and the improvement of the regulatory environment by the Chinese State Council has supported the rapid growth of the logistics services industry in China. - However, the development of the logistics services industry in China continues to lag behind many other developed countries as there are limited numbers of highly trained professionals available in the industry.	✓

IDENTIFICATION OF PRIORITY TARGET MARKETS

Final Countries and Regions

Final Countries and Regions

Ratings & Targeting Tables

Software & IT

The opportunity ratings provided here range from zero to 3 'ticks', combing qualitative and quantitative. They are not intended to be exact calculations, but give an approximation based on both scales of opportunity, whether Puerto Rico should pursue as a target.

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓✓	✓✓✓	YES
UK	✓✓✓	✓✓✓	YES
France	✓✓	✓✓	NO
Ireland	✓	✓✓	NO
Spain	✓✓	✓✓	NO
Japan	✓	✓✓✓	YES
China	✓	✓✓	NO
India	✓✓	✓✓	YES

Manufacturing – Medical Devices

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓✓	✓✓✓	YES
UK	✓	✓✓	NO
France	✓	✓✓✓	NO
Switzerland	✓	✓✓✓	NO
Spain	✓	✓✓	NO
Japan	✓	✓✓✓	YES
China	✓	✓✓	NO
South Korea	N/A	✓	NO
Taiwan	N/A	✓	NO

Final Countries and Regions

Ratings & Targeting Tables

Manufacturing – Pharmaceuticals & Biotechnology

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓✓	✓✓✓	YES
UK	✓✓✓	✓✓	YES
France	✓	✓✓✓	NO
Switzerland	✓✓	✓✓✓	YES
Spain	✓	✓✓	NO
Japan	✓	✓✓✓	YES
China	✓	✓✓	NO
South Korea	N/A	✓	NO
Taiwan	N/A	✓	NO

Manufacturing – Electronics

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓✓✓	✓✓	YES
UK	✓✓	✓✓	YES
France	✓✓	✓	NO
Switzerland	✓	✓	NO
Spain	✓✓	✓	NO
Japan	✓✓	✓✓✓	YES
China	✓✓✓	✓✓✓	YES
South Korea	✓✓	✓✓	YES
Taiwan	✓	✓✓	NO

Final Countries and Regions

Ratings & Targeting Tables

Manufacturing – Aerospace

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓	✓✓	NO
UK	✓✓	✓✓✓	YES
France	✓✓	✓✓✓	YES
Switzerland	N/A	✓✓	NO
Spain	N/A	✓✓	NO
Japan	✓	✓✓	NO
China	✓	✓	NO
South Korea	N/A	✓	NO
Taiwan	N/A	✓	NO

Manufacturing – Ocean Sciences*

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓✓	✓✓✓	YES
UK	✓✓	✓	NO
France	✓✓	✓✓✓	YES
Switzerland	N/A	✓✓	NO
Spain	✓✓✓	✓	YES
Japan	✓	✓	NO
China	✓✓	✓✓✓	YES
South Korea	N/A	✓✓✓	NO
Taiwan	N/A	✓	NO

* This is based on the broader Environmental Technology cluster, If restricted to Ocean Sciences / Marine only, project numbers are negligible

Final Countries and Regions

Ratings & Targeting Tables

Knowledge Services – Finance & Insurance

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓	✓✓✓	NO
UK	✓✓✓	✓✓✓	YES
France	✓✓	✓✓✓	YES
Spain	✓✓✓	✓	YES
Japan	✓	✓✓	NO
China	✓	✓✓	NO
India	N/A	✓	NO

Knowledge Services – Business Support Services

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	N/A	✓✓✓	NO
UK	✓	✓✓✓	YES
France	✓	✓	NO
Spain	✓✓	✓✓	YES
Japan	N/A	✓	NO
China	N/A	✓✓	NO
India	✓	✓✓	YES

Final Countries and Regions

Ratings & Targeting Tables

Knowledge Services – Consulting & Technical Services

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓	✓✓✓	NO
UK	✓✓✓	✓✓✓	YES
France	✓✓	✓✓	YES
Spain	✓✓	✓	NO
Japan	✓	✓	NO
China	✓	✓	NO
India	N/A	✓	NO

Logistics

Countries	Quantitative Rating	Qualitative Rating	Target?
Germany	✓✓✓	✓✓✓	YES
UK	✓✓	✓✓	YES
Netherlands	✓	✓✓✓	NO
Spain	✓	✓✓	NO
Japan	✓✓	✓✓	YES
China	✓	✓	NO

Final Countries and Regions

Final Targeting Table

The table below presents a final table of target countries for each sector / subsector. Germany in the UK are most prominent, with the former more focused on manufacturing, and the latter more on services. Asian countries are less prominent, which demonstrates that the relative scale of opportunity is heavily skewed towards Europe.

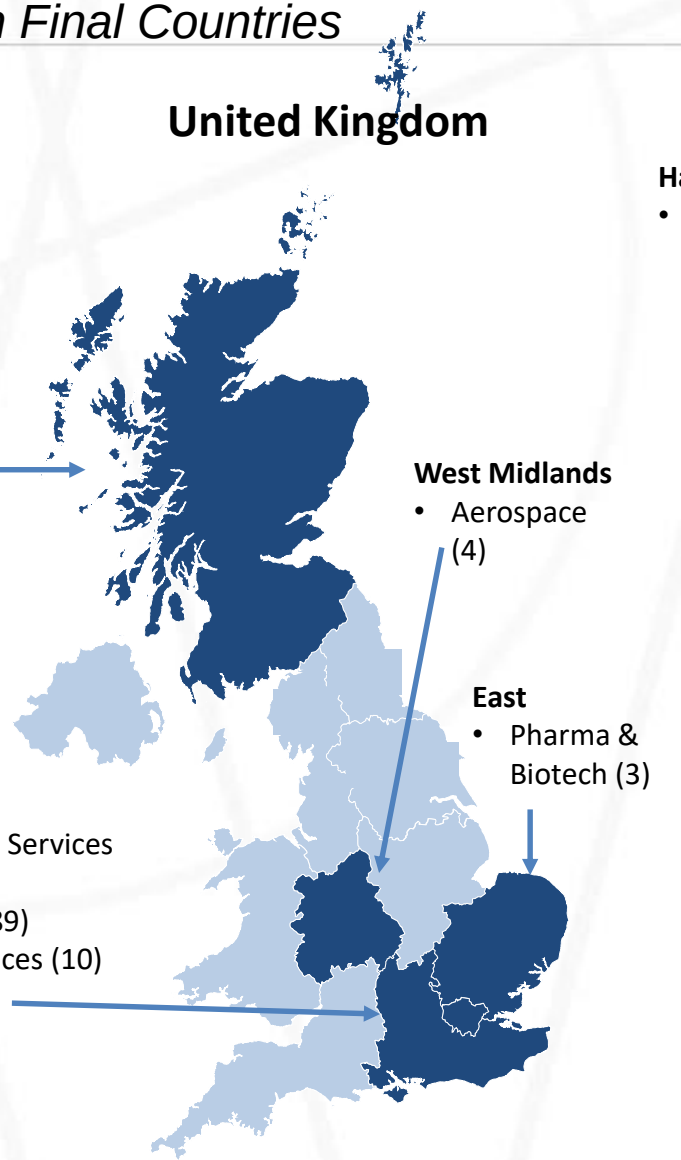
Software & IT	Manufacturing					Knowledge Services			Logistics
	Medical Devices	Pharmaceuticals & Biotechnology	Electronics	Aerospace	Ocean Sciences*	Consulting & Technical Services	Finance & Insurance	Business Support Services	
Germany	Germany	Germany	Germany	UK	Germany	UK	UK	UK	Germany
UK	Japan	UK	UK	France	France	France	France	Spain	UK
Japan		Switzerland	Japan		Spain		Spain	India	Japan
India		Japan	China		China				
			South Korea						

* This is based on the broader Environmental Technology cluster, If restricted to Ocean Sciences / Marine only, project numbers are negligible

Final Countries and Regions

Regions in Final Countries

United Kingdom



Scotland
- Consulting & Technical Services (17 projects)
- Finance & Insurance (12)

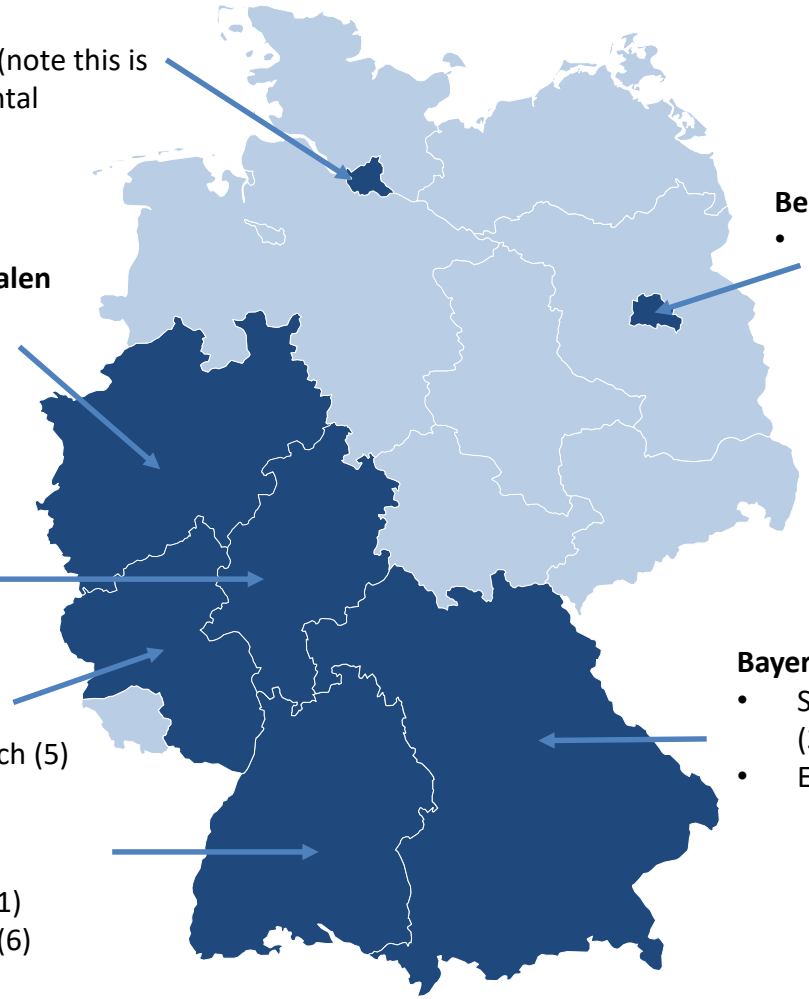
West Midlands
- Aerospace (4)

East
- Pharma & Biotech (3)

South East
- Software & IT (234)
- Pharma & Biotech (8)
- Aerospace (5)
- Consulting & Technical Services (240)
- Finance & Insurance (89)
- Business Support Services (10)
- Logistics (35)

Various regions
- Electronics

Germany



Hamburg
- Ocean Sciences (4) (note this is general Environmental Technology)

Berlin
- Software & IT (31)

Nordrhein-Westfalen
- Logistics (84)

Hessen
- Medical Devices (8)
- Pharma & Biotech (8)

Rheinland-Pfalz
- Pharma & Biotech (5)

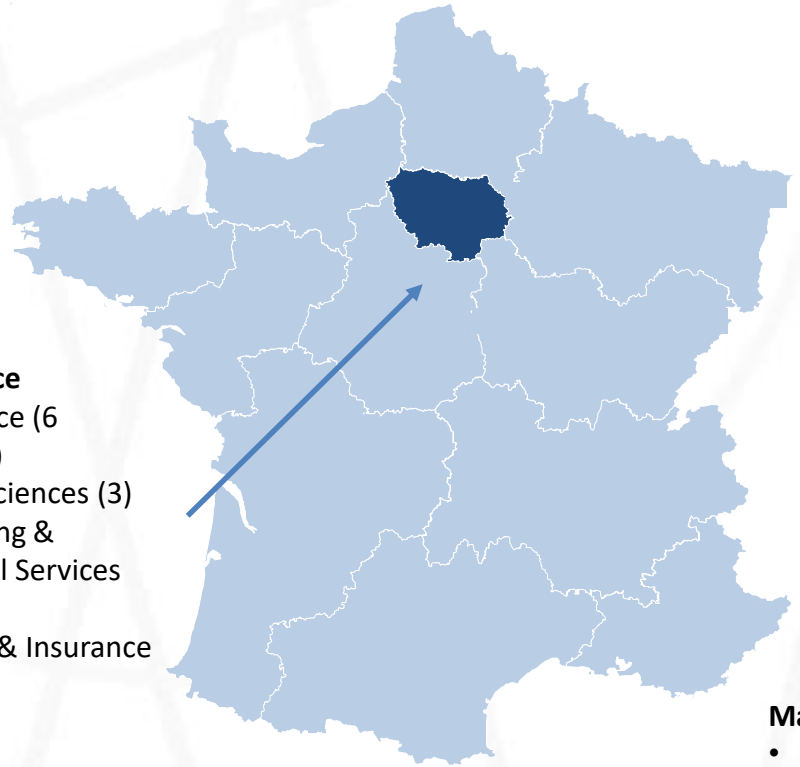
Bayern
- Software & IT (39)
- Electronics (6)

Baden-Württemberg
- Software & IT (41)
- Medical Devices(6)

Final Countries and Regions

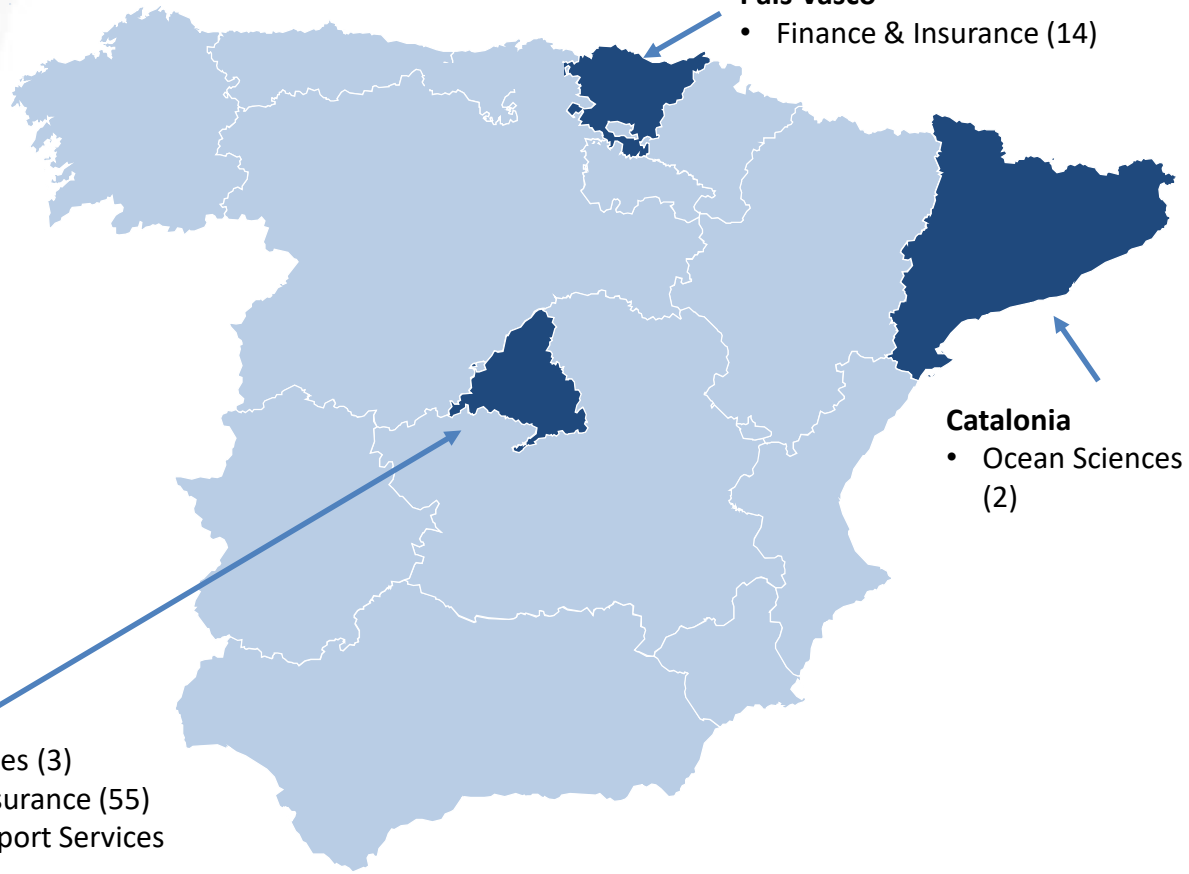
Regions in Final Countries

France



Ile de France
- Aerospace (6 projects)
- Ocean Sciences (3)
- Consulting & Technical Services (56)
- Finance & Insurance (37)

Spain



Pais Vasco
- Finance & Insurance (14)

Catalonia
- Ocean Sciences (2)

Madrid
- Ocean Sciences (3)
- Finance & Insurance (55)
- Business Support Services (31)

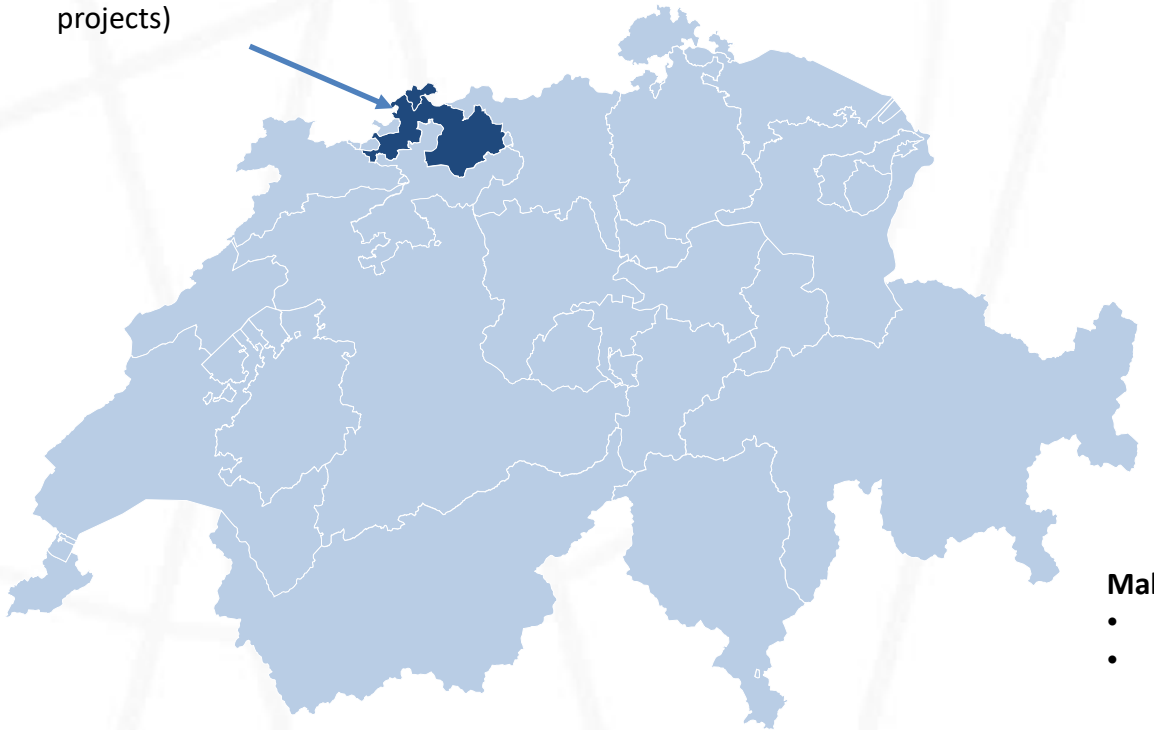
Final Countries and Regions

Regions in Final Countries

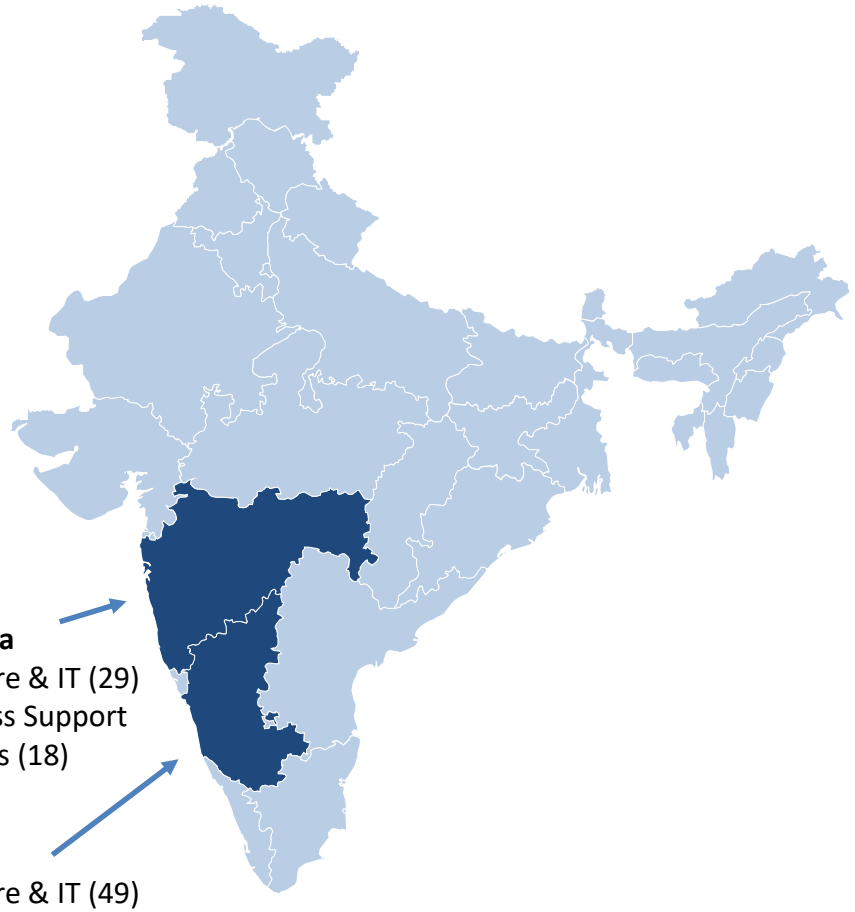
Switzerland

Basel

- Pharma & Biotech (9 projects)



India



Maharashtra

- Software & IT (29)
- Business Support Services (18)

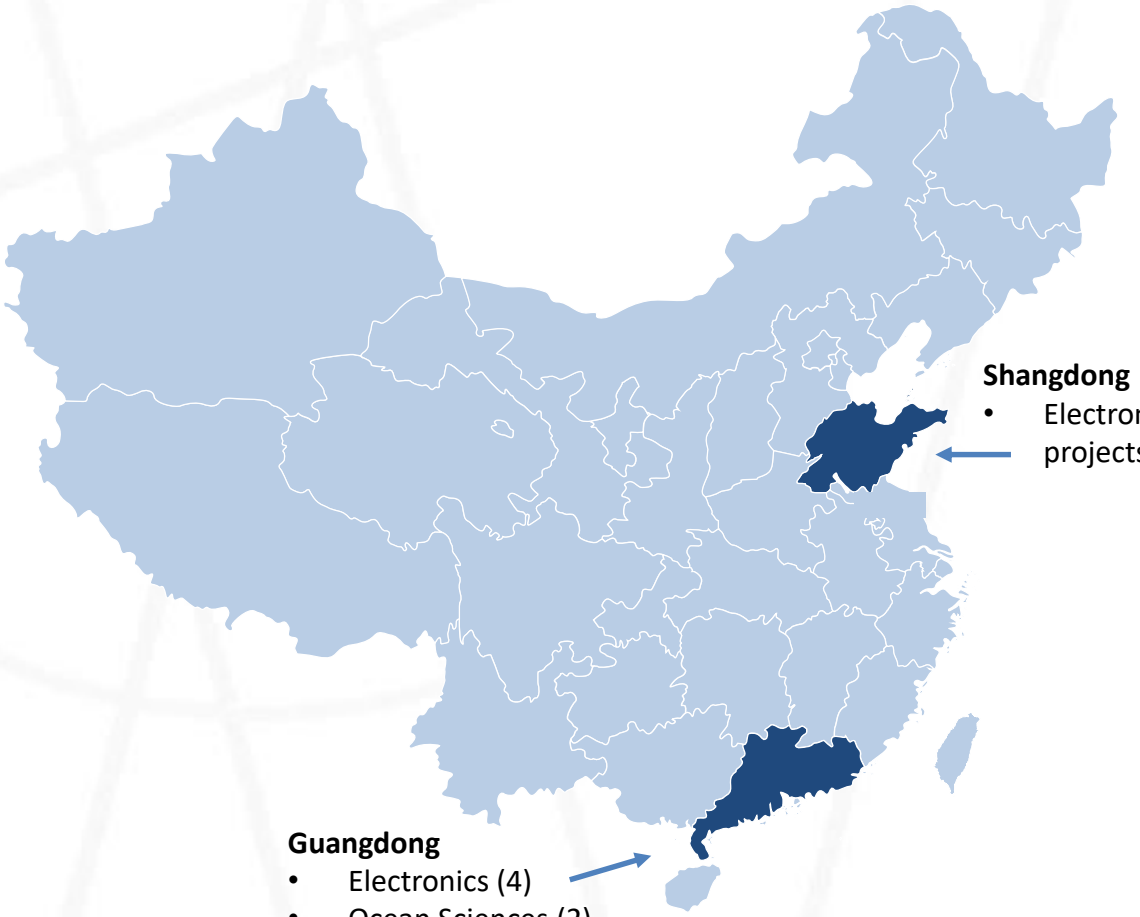
Karnataka

- Software & IT (49)

Final Countries and Regions

Regions in Final Countries

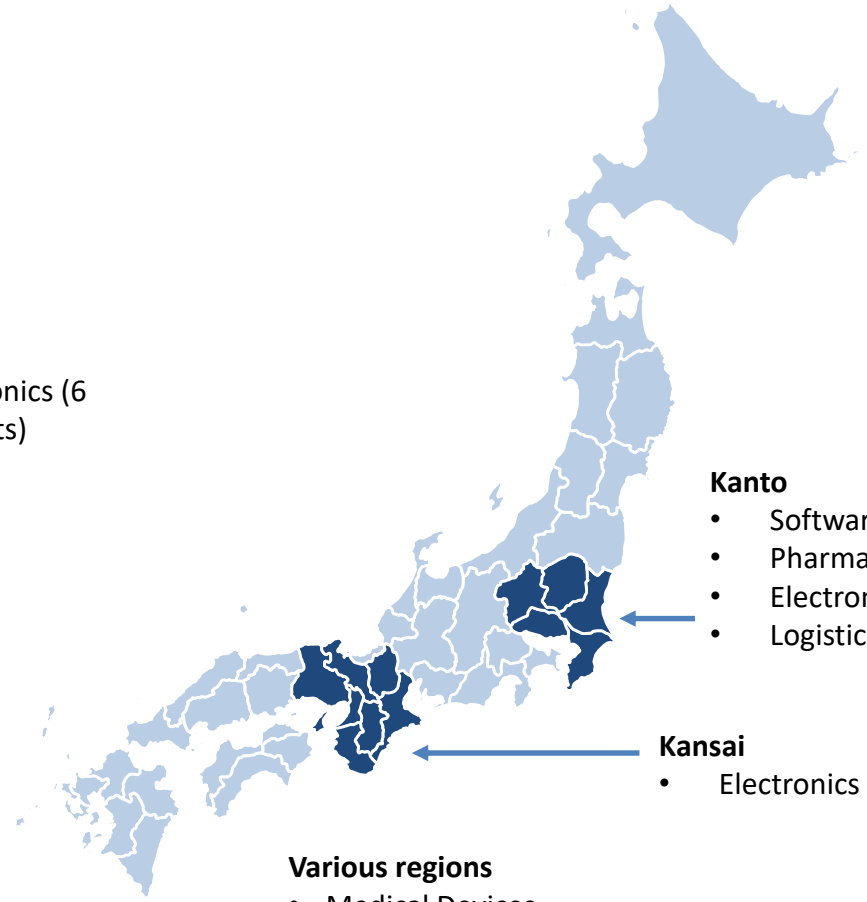
China



Shangdong
- Electronics (6 projects)

Guangdong
- Electronics (4)
- Ocean Sciences (2)

Japan



Kanto
- Software & IT (46)
- Pharma & Biotech (11)
- Electronics (14)
- Logistics (30)

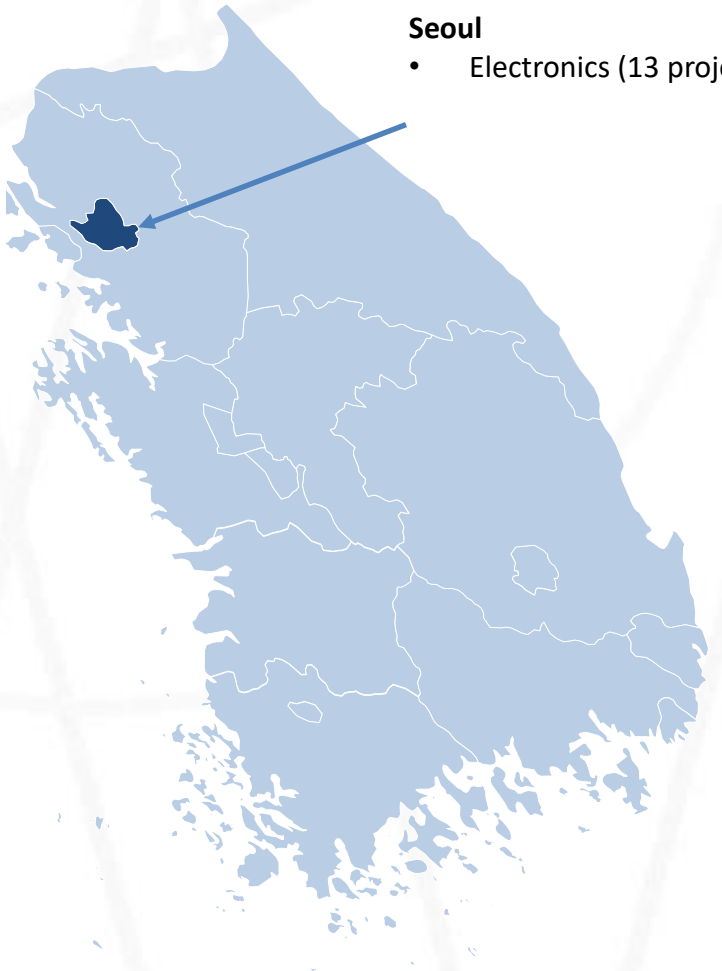
Kansai
- Electronics (5)

Various regions
- Medical Devices

Final Countries and Regions

Regions in Final Countries

South Korea



Seoul

- Electronics (13 projects)

ANALYSIS OF HIGH POTENTIAL SECTORS

Demand Side Model Outputs

Analysis of High Potential Sectors

Demand Side Analysis - Europe

The table shows the relative scale of opportunity between the different sectors and subsectors. Hence Software & IT is high as it creates by far the most projects and jobs.

The manufacturing subsectors are low, because each of them alone creates a relatively much lower number of projects and jobs, compared to that of Software. However, if these subsectors are combined, together as Manufacturing the relative opportunity is medium. It should also be remembered that for the manufacturing sector analysed here, only manufacturing itself is considered, not projects in other related activities such as R&D, sales etc.

From EUROPE to USA & LATAC	Software & IT	Manufacturing						Knowledge Services				Logistics
		Medical Devices	Pharmaceuticals & Biotechnology	Electronics	Aerospace	Ocean Sciences*	TOTAL	Consulting & Technical Services	Finance & Insurance	Business Support Services	TOTAL	
Total Projects	1,113	37	78	63	28	49	255	710	342	102	1,154	330
Total Jobs	79,819	5,271	11,724	9,503	3,357	6,369	36,224	22,221	26,372	33,715	82,308	33,943
Rating	HIGH	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM

* This data is based on the broader Environmental Technology cluster, If restricted to Ocean Sciences / Marine only, project numbers are negligible

Analysis of High Potential Sectors

Demand Side Analysis - Asia

The table shows same data for Asia. Here, it is again compared relevant opportunities of the sectors and subsectors against each other, within the region.

Hence it should be noted that overall, **the scale of opportunity in Asia is typically far lower than that of Europe** (e.g. 1,113 Software projects from Europe compared to 382 from Asia). The trend in Electronics is a notable exception to this.

From ASIA to USA & LATAC	Software & IT	Manufacturing						Knowledge Services				Logistics
		Medical Devices	Pharmaceuticals & Biotechnology	Electronics	Aerospace	Ocean Sciences*	TOTAL	Consulting & Technical Services	Finance & Insurance	Business Support Services	TOTAL	
Total Projects	382	4	41	62	8	20	135	109	91	47	247	73
Total Jobs	43,615	305	5,807	18,997	941	3,430	29,480	4,151	4,092	8,258	16,501	15,155
Rating	HIGH	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM

* This data is based on the broader Environmental Technology cluster, If restricted to Ocean Sciences / Marine only, project numbers are negligible

ANALYSIS OF HIGH POTENTIAL SECTORS

Supply Side Qualitative Analysis

Analysis of High Potential Sectors

Supply Side: Manufacturing – Medical Devices

The table outlines the relative strength of the Puerto Rico value proposition in this subsector, based on Invest PR data and our own research. However, it is **highly recommended that further research takes place on the supply for all sectors**, so that the island's value proposition can be better understood and articulated to target investors than the information below allows for.

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
60% of employees in the life sciences have at least a bachelor's degree Bi-lingual (English & Spanish)	Fixed 1% corporate income tax rate on products manufactured in PR by using novel pioneer technologies Research tax credits up to 50% are available for R&D projects including clinical trials	Cluster of established companies in south and east of the island Leading med device companies already in PR (Medtronic, CR Bard, Baxter, Stryker, St. Jude, Abbott, Cardinal Health PR has 49 FDA-approved pharmaceutical plants Medical Equipment Repairers LQ = 0.95 Medical Appliance Technicians LQ = 1.66	UofPR Mayaguez – medically focused campus out of the UofPR system	15 of the top-20 manufacturers of Class 3 medical devices manufactured in PR Medtronic is the 2nd largest life science employer in PR, with over 1,000 employees and are looking to expand. They created 350 new jobs after the hurricane Amgen is the largest pharma company in PR	Medical Equipment Repairers avg. wage - $13.27 vs. US - $25.34 Medical appliance technician avg. wage - $13.03 vs. US - $20.28 PR offers the lowest labor costs of any region under U.S. jurisdiction, with hourly earnings in manufacturing averaging 66% of the US avg. in 2012	Over 1500 properties strategically distribute-d over the island ranging from 2000-1000 sq. ft.	**HIGH**

Analysis of High Potential Sectors

Supply Side: Manufacturing – Pharma & Biotechnology

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
60% of employees in the life sciences have at least a bachelor's degree	Grants for R&D projects of strategic importance as determined by the PRIDCO board of directors Fixed 1% corporate income tax rate on products manufactured in PR by using novel pioneer technologies Every job created received up to $2,500 in tax exemptions Research tax credits up to 50% are available for R&D projects including clinical trials	Cluster of life sciences companies on east coast of island Amgen, Eli Lilly, Abbott, and BD Bioscience have invested more than $65.9 million in 4 plants since 2005 PR has the world's largest modular biotech plant for producing recombinant human insulin Growing center for agbio, Pioneer Hi-Bred, BASF Agrochemical, Bayer-Cropsciences, Syngenta Seeds and Rice Tec are seed companies that have set up in PR Life Scientists LQ = 1.16	The Biotech Development Training Center at the Mayaguez campus of UofPR is a PPP with customized training programs for students and employees with degrees in science and engineering and pharma professionals who want to transition into life sciences UofPR Mayaguez campus offered a 5-year bachelors degree in industrial biotech for the last 12 years UofPR Medical Sciences and Ponce School of Med offer PhD programs in biomedical sciences Puerto Rico Science,Technology, and Research Trust (PRSCT) is part of Science City, a new development for innovation and science	PR has 49 FDA-approved pharmaceutical plants across the island Amgen has over 2,000 direct employees making it the largest pharma operation in PR 90% of all Amgen goods come through PR Companies located in Science City can pay their lead scientist up to $250,000 a year tax free to the employees.	Life Scientists avg. wage - $24.39 vs. US - $42.86 Salaries are about 30-40% lower than in the US, including highly qualified people	Electricity Prices – Industrial, PR 21.26 cents/kWh vs. US 6.91 cents/kWh	**HIGH**

Analysis of High Potential Sectors

Supply Side: Manufacturing – Aerospace

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Any Other (based on Invest PR content)	Value Proposition Rating
Bi-lingual workforce Expertise in process development, automation, quality control/assurance, warehousing 1,100 engineers graduate from University Puerto Rico	PRIDCO's Quality Control Center provides industries with technical support to meet and exceed global quality standards in ISO 9001:2008/ AS 9100 Act 73 – expected to bolster the manufacturing sector	MRO opportunities: Roosevelt Roads, PR's former Navy base provides suitable runway and facilities for airplane maintenance, repair and overhaul, training, and other services Strong pipeline of aerospace companies in PR (Lockheed Martin, Pratt & Whitney, Honeywell Aerospace, Hamilton Sundstrand, and AXON Group) Industrial engineers LQ = 1.91 Aircraft Mechanics and Service Technicians LQ = 0.64	PR has top 2 of 35 largest engineering programs in the nation at the polytechnic University of PR and the UofPR Mayaguez campus Florida Turbine and ESSIG Research both have major operations on the island UofPR Physics & Astronomy subject is world ranked	ITAR compliant – as a U.S jurisdiction, PR complies with this regulation that states that defense and military-related technologies may only be accessed by U.S. citizens Honeywell runs a new $35 million electromagnetic -compatibility lab in PR	Industrial Engineers avg. wage - $35.25 vs. US - $44.05 Aircraft Mechanics and Service Technicians avg. wage - $18.05 vs US $31.36	Electricity Prices – Industrial, PR 21.26 cents/kWh vs. US 6.91 cents/kWh Over 1500 properties strategically distributed over the island ranging from 2000-1000 sq. ft.	Overseas sourcing suitability: PR meets all the criteria from the defense segment of the aerospace market for US made products	**MEDIUM**

Analysis of High Potential Sectors

Supply Side: Manufacturing – Electronics

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
Bilingual workforce (Spanish and English)	No Federal Tax; 4% corp. tax; Act 73 – expected to bolster the manufacturing sector	A group of Fortune 500 such as HP, Micron Technology, Microsoft and GE have identified PR as a place to establish their subsidiaries Industry groups with presence in PR include navigational, measuring, electro-medical and control instruments, semiconductor and other electronic component, computer and peripheral equipment, communications equipment, pre-recorded compact disc, tape and record production Electrical and Electronics Engineering Technicians LQ= 1.80 Electrical, Electronic, and Electromechanical Assemblers LQ =0.61	The Polytechnic University of PR and the UofPR Bayamon and Mayaguez campus provide education related to Computer Engineering and Electronics Engineering Technology	Microsoft produces all their CDs in PR, and manufacture their DVD optical media and manage digital distribution, product releases, and security. They also operate a sales, marketing, and service subsidiary in Guaynabo GE has 7 plants on the island	Electrical and Electronics Engineering Technicians avg. wage - $20.16 vs US - $31.27 Electrical, Electronic, and Electromechanical Assemblers avg. wage - $10.45 vs US - $17.25	Electricity Prices – Industrial, PR 21.26 cents/kWh vs. US 6.91 cents/kWh Over 1500 properties strategically distribute-d over the island ranging from 2000-1000 sq. ft.	**MEDIUM-HIGH**

Analysis of High Potential Sectors

Supply Side: Manufacturing – Ocean Economy

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Any Other (based on Invest PR content)	Value Proposition Rating
Bi-lingual workforce	No Federal Tax; 4% corp. tax $15MM fund to continue the stabilization or increase income related to tourism and attract companies to establish or relocate in Puerto Rico	National statistics indicate PR has approx. 123 marine transportation establishments supporting 3,400 employees with $103MM in wages PR Port Authority has 100 employees which manage 9 of the islands 14 major sea ports	UofPR has important roles in Marine Research, Education, and conservation through their Sea Grant Program & the Department of Marine Sciences Atlantic Caribbean Center for Marine Innovation and Research (ACCMIR)	Commercial Fishermen Catch Wholesale Value $6.9MM 7% of all employment in PR is in the Ocean Economy	PR Ocean economy total wages $922MM annually	Puerto Rico has approx. 700 miles of shoreline All Fiber Communications is through underwater infrastructure around PR mainly in SJ 20 sites for underwater fishery infrastructure 50 sites for near shore/shore fishery infrastructure 30+ FADs	PR has a Low pollution score Ranked top 25% out of all 221 EEZ's for Ocean Health Index PR Coral Reef is valued at $1.9B – though, 80% badly damaged 42 fishing associations Most recent data: 3.7 million tourists visited PR while spending more than $3.3B 98% of all imports to PR arrive via ship	MEDIUM

Note: Sector consists of Living Resources Sector (3% of sector employment: 4,093); Marine Construction Sector (2% of sector employment: 4,023); Marine Transportation Sector (8% of sector employment: 11,961); Offshore Mineral Resources Sector; Ship and Boat Building Sector; Tourism & Recreational Sector (87% of sector employment: 135,578)

Analysis of High Potential Sectors

Supply Side: Software & IT

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Any Other (based on Invest PR content)	Value Proposition Rating
Bi-lingual workforce Expertise in process development, automation, quality control/assurance, warehousing	No Federal Tax; 4% corp. tax; 50% tax credit for R&D	Cluster of IT companies on west coast of island, few on the east coast Microsoft first est. presence in PR in 1990 – PR is Microsoft's principal manufacturing center for all Office and Vista products intended for the US market. Computer programmers LQ = 1.15 Software developers, applications LQ = 0.07 Software developers, systems software LQ = 0.34	More than 20,000 STEM degrees ISSA (Information Systems Security Association) provides educational forms and opportunities that enhance knowledge, skills, and professional growth	Nearly two dozen internet service providers on the island keep costs competitive PR has Undersea Fiber Optic Cable for worldwide internet access PR IT Cluster is an alliance of industry, government and academia to position PR as a global leader in IT	Computer programmer avg. wage - $22.25 vs. US - $43.07 Software developers, applications avg. wage – $25.36 vs. US - $51.96	US territory; In the Caribbean; direct flights to hubs in Mainland US; Equidistant to North America & South America Direct flight from San Juan to JFK, NY is 4 hours	Currency is USD; US legal protection; US Trade Agreements; Salary is up to 50% lower than the US average PR internet speed 12366.58/ US internet speed 18747.58 KBps Manufacturing Pmi – 42.20	MEDIUM

Analysis of High Potential Sectors

Supply Side: Knowledge Services – Consulting & Technical Services

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
Bilingual English & Spanish	No Federal Tax; 4% corp. tax Act 20 set a fixed income tax rate of 4% for commercial manufacturers	No major consulting company clusters in PR Business Operations Specialists LQ = 1.12 Management Analysts LQ = 0.37	UofPR Aguadilla campus has 47% business / marketing majors UofPR Humacao campus has 40% business / marketing majors, 18% biology	Nearly two dozen internet service providers on the island keep costs competitive PR has Undersea Fiber Optic Cable for worldwide internet access	Business Operations Specialists avg. wage - $19.64 vs US $35.52 Management Analysts avg. wage - $29.47 vs US $45.38	US territory; In the Caribbean; direct flights to hubs in Mainland US; Equidistant to North America & South America Availability of over 1 million sq. ft. facilities at a rental cost of $3 to $8 per sq. ft. per year	**MEDIUM-LOW**

Analysis of High Potential Sectors

Supply Side: Knowledge Services – Business Support Services

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
Bilingual English & Spanish	No Federal Tax; 4% corp. tax Act 20 was created to connect the global economy and esablish. an ever-growing array of service industries to est. PR as an international service hub	Market Research and Marketing Specialists LQ = 0.39 Telephone Operators LQ = 3.32 Receptionists and Information Clerks LQ = 0.48 Diverse set of companies working across knowledge services (consulting, banks etc.)	UofPR Aguadilla campus has 47% business/marketing majors UofPR Humacao campus has 40% business/marketing majors, 18% biology	PRSCT provides mentorship to tech startups from all over the world for 6 months by providing stipends with infrastructure and business support. Program attracts venture capitalists Nearly two dozen internet service providers on the island keep costs competitive PR has Undersea Fiber Optic Cable for worldwide internet access	Market Research and Marketing Specialists avg. wage - $16.38 vs US - $34.11 Telephone Operators avg. wage - $9.93 vs US - $18.93 Receptionists and Information Clerks avg. wage - $9.26 vs US - $14.59	Class A San Juan office space $19.93 sq. ft.	MEDIUM

Analysis of High Potential Sectors

Supply Side: Knowledge Services – Finance & Insurance

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
Bilingual English & Spanish	No Federal Tax; 4% corp. tax Act 20 was created to connect the global economy and est. an ever-growing array of service industries to establish PR as an international service hub	Financial Specialist LQ = 0.83 Insurance appraisers LQ = 3.56 Insurance Underwriters LQ = 1.70 Insurance Sales Agents LQ = 1.03	UofPR Aguadilla campus has 47% business/marketing majors	Nearly two dozen internet service providers on the island keep costs competitive PR has Undersea Fiber Optic Cable for worldwide internet access	Financial Specialist avg. wage - $17.92 vs US $37.30 Insurance Appraisers avg. wage - $17.68 vs US $31.50 Insurance Underwriters avg. wage - $19.46 vs US $36.96 Insurance Sales Agents avg. wage - $16.45 vs US $32.64	Availability of over 1 million sq. ft. facilities at a rental cost of $3 to $8 per sq. ft. per year	**MEDIUM-HIGH**

Analysis of High Potential Sectors

Supply Side: Logistics

Skills	Incentives	Existing Cluster / Industry	Research / Universities	Business Environment	Labor Cost (Relative to USA)	Infrastructure / Real Estate Costs	Value Proposition Rating
Bi-lingual workforce	PRIDCO offers a 20% reimbursement of the transportation costs of each container shipped from PR to any port around the world, up to $2,000 per shipment	Cluster of established companies including UPS Freight, W. W. Grainger, and Seabury Maritime. Industrial engineering LQ = 1.91 Cargo and Freight Agents LQ = 0.68 Shipping, Receiving, and Traffic Clerks LQ = 0.67	The Polytechnic University of PR and the UofPR Bayamon and Mayaguez campus provide education related to Computer Engineering and Electronics Engineering Technology	SJU handles 5000 cargo flights per month	Industrial Engineers avg. wage - $35.25 vs. US - $44.05 Cargo and Freight Agents avg. wage - $11.17 vs US - $22.15	PR has 9 maritime ports. The main seaports are in San Juan and Ponce. There are industrial shipping seaports in Guanica, Guayama, Guyanilla, and Yabucoa. Port of the Americas in Ponce = transshipment seaport for value-added cargo Port of San Juan is ranked 9th in container movement in the US with 40 shipping lines and service to 80 domestic and int'l ports Three 2 mile+ airport runways with two 90% underutilized in air traffic Large underutilized docking and liquid storage facility with 5M gallon capacity in Guayanilla PR's logistics roundtable is considering various options for further upgrades	**MEDIUM-LOW**

ANALYSIS OF HIGH POTENTIAL SECTORS

Demand / Supply Matrices

Analysis of High Potential Sectors

Demand / Supply Matrices

Targeting Europe

DEMAND – The Opportunity

SUPPLY – Strength of Value Proposition

	HIGH	MEDIUM	LOW
HIGH			• Medical Devices • Pharma & Biotech
MEDIUM-HIGH		• Finance & Insurance	• Electronics
MEDIUM	• Software & IT	• Business Support Services	• Ocean Sciences • Aerospace
MEDIUM-LOW	• Consulting & Technical Services	• Logistics	
LOW			

(Sub)sectors to the top have the most relative strength in Puerto Rico

(Sub)sectors to the left have the greatest scale of opportunity (i.e. there's more FDI out there to compete for)

The table shows the interaction of demand and supply across the (sub)sectors, based on the analysis of the previous slides. The highest potential sectors for Puerto Rico are those towards the top left of the matrix. The manufacturing subsectors all have a relatively low opportunity on their own (because this is compared to Software), but combining them represents a medium scale opportunity.

Analysis of High Potential Sectors

Demand / Supply Matrices

Targeting Asia

DEMAND – The Opportunity

SUPPLY – Strength of Value Proposition

	HIGH	MEDIUM	LOW
HIGH			• Medical Devices • Pharma & Biotech
MEDIUM-HIGH		• Electronics • Finance & Insurance	
MEDIUM	• Software & IT	• Business Support Services	• Ocean Sciences • Aerospace
MEDIUM-LOW		• Consulting & Technical Services • Logistics	
LOW			

(Sub)sectors to the top have the most relative strength in Puerto Rico

(Sub)sectors to the left have the greatest scale of opportunity (i.e. there's more FDI out there to compete for)

Again, the manufacturing subsectors mainly have a relatively low opportunity on their own (because this is relative to Software), but combining them represents a medium scale opportunity.

CONCLUSIONS & RECOMMENDATIONS

Conclusions & Recommendations

Key Countries for Targeting

The analysis has shown 9 countries relevant for targeting, 5 in Europe and 4 in Asia. However, the location of opportunity varies significantly be sector and subsector, and there would be a strong case for dropping at least 2-3 of these for proactive efforts, given Invest PR's scarce resource. The countries with the largest potential are:

- **UK** (focused on service sectors)
- **Germany** (focused on manufacturing)
- **France or Spain** (the choice of these really rests on the extent to which targeting a Spanish-speaking country is seen as a priority)
- **Japan** (various sectors).

With the exception of Germany where the opportunity is spread, the largest city region tends to be the key source within a country, i.e. London in UK, Madrid in Spain, Paris in France, and Tokyo in Japan.

We should also be clear that for greenfield FDI, **the scale of opportunity is significantly higher from Europe than from Asia**.

Scale of Sector Opportunities

While the country analysis considers where to target the opportunity by sector and subsector, it is important to consider how the nature of the opportunity varies. This is based on the size of the pool of projects that Puerto Rico is competing in, together with the strength of the island's value proposition. We find:

- **Software & IT** is by far the largest opportunity, and the island has a relatively competitive value proposition
- **Logistics** offers a medium opportunity, but the value proposition has some weaknesses
- **Manufacturing** as a sector combined has medium opportunity, with some subsectors offering strengths. However the scale of opportunity for individual subsectors is far lower than of Software. Hence it is recommended that Invest PR select just 1 or 2 subsectors for practice targeting
- **Knowledge Services** has a fairly similar trend to that of Manufacturing, although the scale of opportunity tends to be higher

However it should be remembered that Software projects will often be quite small in terms of job creation compared to manufacturing, so the view of manufacturing as having lower potential should be tempered, e.g. 1 manufacturing project might be worth 3 software projects in some cases

Conclusions & Recommendations

Specific Thoughts on Invest PR Questions

- What is the trend of firms from this region moving to the US, Puerto Rico, and Caribbean Region?

The nature of investment globally is changing, with fewer projects globally available, creating smaller numbers of jobs per project, with an ever-increasing set of competing locations. Moreover, the polices of the current US Administration have had a direct downward effect on inbound FDI to the US, while global FDI into Latac has long been stagnant. Hence this project comes at a difficult time for locations such as Puerto Rico, making it all the mote important that a focused and well thought out FDI strategy for the island is vital for success to be realised.

- What sorts of firms would be the most likely to move to PR from these regions? (profile, revs, jobs, wages, etc)

The Software & IT sector offers the largest volume of footloose FDI projects, and companies can more quickly make invest decisions in this sector than in manufacturing activities. Normally, job creation will be higher in individual manufacturing projects, which is why it makes sense to have a balanced approach across sector opportunities.

- Which markets would PR be competing with to gain this investment?

It is difficult from available data to be certain about this, therefore company interviews would help provide further insight. However, OCO's assumptions is that the larger Spanish speaking countries in the region (Mexico, Dominican Republic, Costa Rica etc) would be key, followed by some of southern US states (Florida, Louisiana, Alabama etc).

- What is the low hanging fruit for attraction of firms from these regions to PR?

This will have to be in proactive targeting the major opportunities where the island has a stronger value proposition. Hence Software & IT in the UK, some of the manufacturing sectors in Germany etc. The key is to target a relatively small number of opportunities with significant time, rather than spreading more thinly across a broad range of opportunities.

Conclusions & Recommendations

- What are the most significant hurdles to attracting firms from this region to PR?

The key challenge is further developing Invest PR's value proposition. Currently, there is no real marketing collateral available for specific sectors and subsectors, thus the opportunity for investors is not well articulated. This material is important for any location, but is particularly important in PR's case, given the current perception of the island as relates to the Hurricane and the island's economic fundamentals.

- Is this a region where PR can make significant gains in attracting firms in the near-term (18 mos. - 2 years)? Why or why not?

Targeting investors does take time, particularly in locations that are relatively distant, which applies to Europe and Asia. The time for investment is shorter in service-based sectors as less capital investment as less infrastructure are required. However, Invest PR's most likely route to success may lie with targeting expansion investments in its compactor locations. For example, targeting German companies with an existing presence in the US or Spanish-speaking Caribbean countries.

APPENDIX

Data Sources

Data Sources

QUANTITATIVE DATA

- fDi Markets database, and the Bureau of Economic Analysis

QUALITATIVE DATA ON COUNTRY OPPORTUNITIES

Pharma & Biotech / Medical Devices

- Biotechnology Clusters in Germany: https://www.gtai.de/GTAI/Navigation/EN/Invest/Service/Publications/industry-specific-information,t=biotechnology-clusters-in-germany,did=373428.html
- Downing LLP report: http://www.pharmatimes.com/news/biotech_growth_in_uk_booms_65_since_2016_1282233
- BIOTECH CLUSTER IN SWITZERLAND: https://www.s-ge.com/en/publication/fact-sheet/biotechnology
- Global Data Report: http://www.pharmtech.com/spanish-pharma-market-set-hit-25-billion-2021-says-globaldata-0
- Global Data Report: https://www.globaldata.com/japanese-pharmaceutical-market-rise-slightly-72-billion-2021-says-globaldata/
- Global Data Report: https://www.globaldata.com/store/report/gdhc0077chr--countryfocus-healthcare-regulatory-and-reimbursement-landscape-japan/
- 2019 Biotechnology Promotion Plan: http://www.businesskorea.co.kr/news/articleView.html?idxno=29244 https://cen.acs.org/pharmaceuticals/Taiwans-biotech-industry-stands-crossroads/96/i24

Aerospace

- Germany Trade & Invest, The Aerospace industry in Germany, Issue 2017/2018: https://www.aeromontreal.ca/aerospace-industry-germany.html
- Teal/Aerodynamic Survey: https://www.businessfrance.fr/discover-france-news-the-french-aerospace-industry-ranked-second-in-the-world
- US International Trade Administration https://www.export.gov/article?id=Switzerland-Aerospace-and-Defense
- US International Trade Administration https://www.export.gov/article?id=Spain-Aerospace-and-Defense
- Japan Aerospace 2021: https://www.kallman.com/shows/japan-aerospace-2021

Data Sources

- The International Air Transport Association (IATA) https://www.chinausfocus.com/finance-economy/the-future-of-chinas-aerospace-industry / https://www.iata.org/pressroom/pr/Pages/2017-10-24-01.aspx
- Committee for Aviation and Space Industry Development (CASID), Taiwan https://topics.amcham.com.tw/2015/12/taiwans-aviation-industry-readying-for-takeoff/

Electronics

- German Electrical and Electronic Manufacturers' Association (ZVEI) http://www.xinhuanet.com/english/2019-01/23/c_137766236.htm
- Reed Electronics Research report https://blog.jjsmanufacturing.com/8-predictions-for-uk-electronics-manufacturing-2019-2022
- Electronics Industry in France https://www.electronics.ca/store/electronics-industry-in-france.html
- SwissMEM report https://www.swissmem.ch/en/issues/the-swiss-mem-industries.html
- The Electronics Industry in Japan and EU - An Assessment of the Common Challenges and Collaboration Potential https://www.researchgate.net/publication/330204053_The_Electronics_Industry_in_Japan_and_EU_-_An_Assessment_of_the_Common_Challenges_and_Collaboration_Potential
- Asian Review: https://asia.nikkei.com/Asia300/Taiwan-s-electronics-makers-face-triple-threat
- http://www.businesskorea.co.kr/news/articleView.html?idxno=29244; https://www.ft.com/content/869a918c-9185-11e9-aea1-2b1d33ac3271

Ocean Sciences

- Germany Works: https://germanyworks.com/en/branch/environmental-technologies/
- Eco-innovation in United Kingdom https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/field/field-country-files/uk_eio_country_profile_2016-2017.pdf
- Source: Pôle Fibres Énergivie http://www.investin.alsace/key-industries/cleantech/
- Environmental technologies in Switzerland: https://www.ub.unibas.ch/digi/a125/sachdok/2010/BAU_1_005200966.pdf
- Prepared by U.S. Embassies abroad. https://www.export.gov/article?id=Spain-green-technology

Data Sources

Software & IT

- www.gtai.de/GTAI/Navigation/EN/Invest/Industries/Information-technologies/software.html
- https://www.businessfrance.fr/investir-en-France-secteurs-d-investissement
- https://www.great.gov.uk/international/content/industries/technology/

Logistics

- www.gtai.de/GTAI/Navigation/EN/Invest/Industries/logistics.html
- https://www.hollandtradeandinvest.com/key-sectors/logistics
- https://www.mordorintelligence.com/industry-reports/japan-freight-logistics-market-study
- http://www.chinagoabroad.com/en/article/28072

Knowledge Services: Consulting & Technical Services

- https://www2.deloitte.com/uk/en/pages/business-and-professional-services/articles/business-services-outlook.html
- https://www.consultancy.eu/
- https://www.telegraph.co.uk/peoples-daily-online/business/china-service-industry/
- https://reports.sourceglobalresearch.com/report/4115/the-india-consulting-market-in-2018

Knowledge Services: Finance & Insurance

- https://www.gtai.de/GTAI/Navigation/EN/Invest/Industries/Financial-sector/financial-services.html
- https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06193
- https://www.export.gov/article?id=Spain-banking-systems
- http://global.chinadaily.com.cn/a/201905/23/WS5ce60fa8a3104842260bd5d0.html

Data Sources

Knowledge Services: Business Support Services

- Germany Trade & Invest, Economic Overview of Germany https://www.gtai.de/GTAI/Content/EN/Invest/_SharedDocs/Downloads/GTAI/Brochures/Germany/economic-overview-germany-market-productivity-innovation-en.pdf?v=10
- Business Services Outlook 2018 https://www2.deloitte.com/uk/en/pages/business-and-professional-services/articles/business-services-outlook.html
- Madrid Investment Attraction https://madridinvestmentattraction.com/sectores-est/business-services/
- Export to Japan https://exporttojapan.co.uk/sector/financial-and-business-services/
- China's service sector new economic growth engine http://global.chinadaily.com.cn/a/201905/23/WS5ce60fa8a3104842260bd5d0.html
- Call centers market size in China 2017 to 2022 https://www.statista.com/statistics/898963/china-call-centers-market-size/
- India Call Center Market Analysis, Future Challenges & Business Opportunities by 2025 https://www.reuters.com/brandfeatures/venture-capital/article?id=77244
- India IT & business services market to reach $14.3 billion by 2020: IDC https://m.economictimes.com/tech/ites/india-it-business-services-market-to-reach-14-3-bn-by-2020-idc/articleshow/69221249.cms

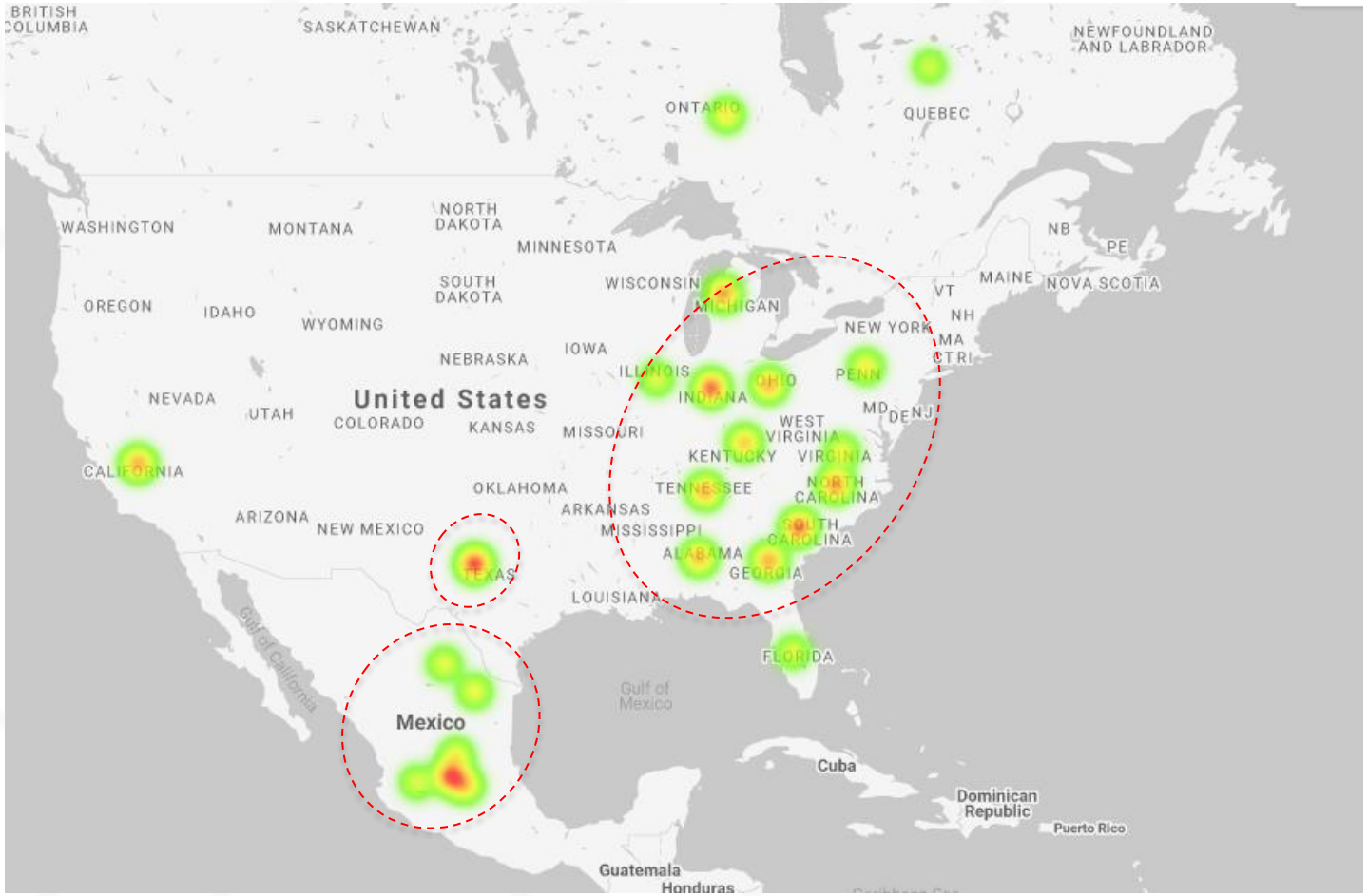
QUALITATIVE DATA ON PR VALUE PROPOSITION

- Bureau of Economic Analysis (clusters and labor costs)
- Cushman & Wakefield San Juan office report
- QS Universities
- Invest PR reports

APPENDIX

Who is Puerto Rico competing with in manufacturing & logistics?

Who is Puerto Rico competing with in manufacturing & logistics?



Sao Paulo – 95 projects

The heatmap shows the states that have attracted more than 30 manufacturing or logistics projects from the target European and Asian in the last 5 years.

This shows:

- The **South East US coast and Midwest** are highly prominent, particularly Indiana, the Carolinas, Michigan and Georgia (all with more than 80 projects)
- 6 **Mexican states** feature, with Guanajuato top on 101 projects (joint 2nd)
- The highest state overall is actually **Texas** with 111 projects
- Only one region in South America features, **Sao Paulo**, and is 5th overall
- No Caribbean locations feature in the map

APPENDIX

Linking Software to Life Sciences

Linking Software to Life Sciences

- The slides in this report have cited significant opportunities in the Software sector, while the scale of opportunity in Life Sciences is relatively lower.

- However, there are a major proportion of software investments that are linked to life sciences. In the table here, although ICT-focused projects of course dominate, there are 48 projects are focused on life sciences. Hence this demonstrates the opportunity for Puerto Rico in software, directly relates to the island's life sciences strengths.

Example Project
May 2018 - UK-based AstraZeneca, is expanding operations at its global technology centre in Zapopan, Mexico. The company plans to invest 33m pesos in the facility and will create 90 new high-level jobs.

Example Project
Germany-based BrainLab, a provider of surgical software, has expanded and opened a new office in Westchester, Illinois, US. The office will span 1940 sq m, and will operate as the company's North American headquarters.

FDI Projects in the Software & IT sector from Europe and Asia to Norther and Latin America 2014-18

Industry Cluster	Projects
ICT & Electronics	643
Creative Industries	295
Financial Services	147
Professional Services	72
Life Sciences	**48**
Transport Equipment	35
Industrial	31
Tourism	30
Transportation, Warehousing & Storage	28
Energy	12
Food, Beverages & Tobacco	10

OCO