



# New home for the European Medicines Agency

**Location Comparison**

KPMG Switzerland

March 2017



# Preface

<b>Objective and Scope</b>	<ul style="list-style-type: none"><li>— The objective of the report is to provide insights on the prospective cities in Europe for the new headquarters of the European Medicines Agency, the main body responsible for scientific evaluation and supervision of medicines across Europe</li></ul>
<b>Approach and Methodology</b>	<ul style="list-style-type: none"><li>— Criteria for a new location for EMA developed by the European Federation of Pharmaceutical Industries and Associations (EFPIA) have been categorized into several parameters and sub-parameters</li><li>— Data has been sourced through primary research and through various secondary databases to identify the most suitable data points</li><li>— Cities have been ranked according to the sum of the scores for all parameters</li></ul>
<b>Sources</b>	<ul style="list-style-type: none"><li>— Primary resources include data research through KPMG and its research partners</li><li>— Secondary sources include global databases such as the World Bank, IMD World Competitiveness Report, the INSEAD-Adecco Global Talent Index, Eurostat, OECD, etc.</li></ul>
<b>Limitations</b>	<ul style="list-style-type: none"><li>— All the information from secondary sources is limited to disclosures made in the publicly available and accessible sources</li><li>— For locations/parameters for which there was no concrete information, data was extrapolated from proxies</li></ul>
<b>Mandate</b>	<ul style="list-style-type: none"><li>— KPMG Switzerland has been mandated by Novo Nordisk A/S to conduct this survey</li></ul>

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Criteria, Summary,  
Ranking,  
Key Findings,  
Methodology

# Criteria set by EFPIA



Currently based in London, the European Medicines Agency EMA with approximately 900 staff members will have to relocate to another EU Member State post-Brexit. The European Federation of Pharmaceutical Industries and Associations (EFPIA) has developed a set of criteria for selecting a new location. This report assesses 16 EU cities for their capacity to host the EMA, based on the EFPIA criteria. The EFPIA criteria have been operationalized by selecting applicable parameters and sub-parameters.

EFPIA Criteria	KPMG Parameters
The importance of the biopharmaceutical sector and in particular the number of pharmaceutical companies present in the country in question	Dynamic and Size of Life Sciences Clusters per Metro Area
The size of the medical research community; providing local availability of experts in different scientific fields	Research and Scientific Environment per Metro Area
Connectivity, transport links, hotel capacity and language; given the high international dependencies of the EMA, inter-EU connectivity is important	Connectivity – Infrastructure
The involvement of national regulatory agencies in EMA	Size of National Competent Authorities, Political Stability, Absence of Violence/Terrorism and Corruption
Supporting facilities for family members of the EMA staff: schools (e.g. European School), housing, partner/spouses employment	Quality of Life – Attractiveness for Families and Spouses - Housing for Families
Building; suitably located, proper size for hosting EMA staff	Not evaluated - based on the assumption that office space is provided by host city

The 16 potential EMA host cities selected for detailed analysis and comparison in this report are: Amsterdam, Barcelona, Berlin, Bonn, Brussels, Copenhagen, Dublin, Lisbon, Lyon, Madrid, Milan, Munich, Paris, Rome, Stockholm and Vienna.

# Summary

By comparing and ranking the 16 candidate cities based on the five parameters discussed above, six cities emerged as the most capable to host an organization of the size and significance of EMA: **Paris, Copenhagen, Stockholm, Munich, Amsterdam and Berlin** all offer good to excellent working conditions for EMA staff. In addition, they are very pleasant places in which to live, with high quality education for children, and plentiful and attractive work opportunities for spouses. Their large airports connect them effortlessly to the global business and scientific community. Besides the excellent credentials of their academic institutions, especially in regard to international connections, their sizeable Life Sciences clusters would safeguard against EMA becoming locked in an ivory tower.

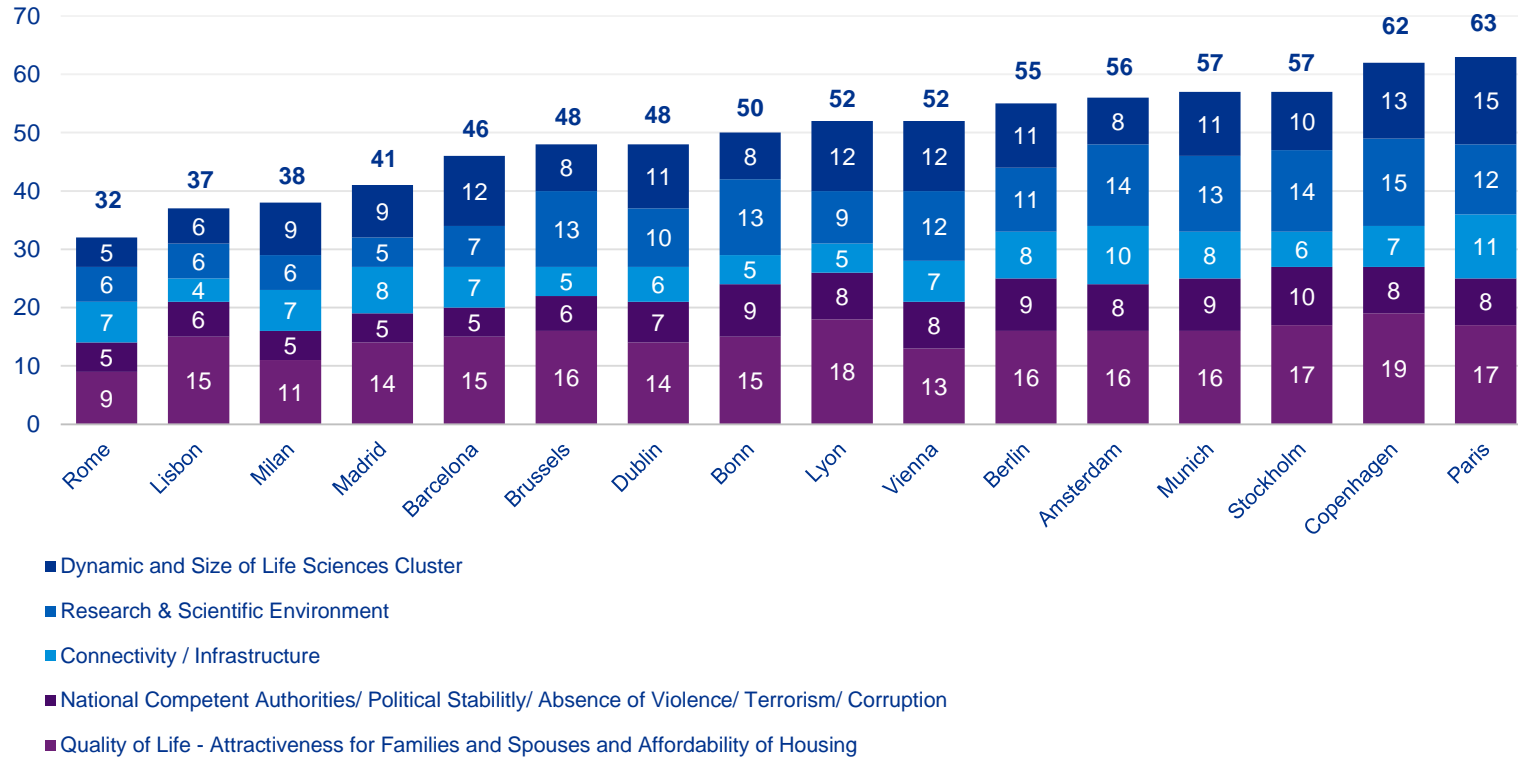
In a second batch of cities – **Vienna, Lyon, Bonn, Dublin, Brussels and Barcelona** – certain parameters, ranging from the size of the Life Sciences cluster to connectivity, were found to be less ideal for an organization such as EMA. Nonetheless, all of these locations still offer good opportunities for a successful relocation.

The third group of cities – **Madrid, Milan, Lisbon and Rome** – offer pleasant living conditions and, in the case of Madrid and Milan even a strong Life Sciences cluster. A move to one of these cities might, however, entail extra effort to ensure a smooth relocation and seamless continuation of work at the level expected of an organization such as EMA.

It should be noted that none of our findings indicate that any of the above-mentioned cities should be categorically excluded from the list of potential candidates for hosting EMA in the future.

# Ranking the cities

## Total points per city



Total points per city as sum of the points for each parameter. Each parameter consists of 3-6 sub-parameters. Max points = 80

# Key Findings for each Parameter (1/2)



The dynamic and the size of the Life Sciences industry in each metropolitan area is reflected in a strong cluster of companies operating in the biotech, pharma and medical devices industries, creating the necessary environment for an agency such as EMA to attract and retain qualified staff from across Europe. In addition to the number of Life Sciences companies per metropolitan area, the number of products in development phases is a strong indicator for a dynamic Life Sciences cluster. The ranking from leading scientific journals was also included in assessing this parameter. Paris emerged as the clear front runner for this aspect.



The smooth relocation of EMA operations to a new host city will hinge significantly on the attractiveness of the new location to EMA's existing staff, particularly its scientists, as well as the availability of local scientific staff for certain roles. As a result, the new location should already be home to an internationally connected research and scientific community in the relevant fields. Factors such as co-publications, number of top universities per metropolitan area, country ranking in the European Innovation Scoreboard and R&D expenditure were consulted to assess the scientific and research environment for each city. Copenhagen, Amsterdam and Stockholm ranked highest for this parameter.



With its heavy dependence on an international network of experts, EMA requires a highly reliable infrastructure through well-managed cities and excellent flight connections to and from the new host city. A sufficient number of hotel rooms and conference venues also needs to be available. Boasting large airports and many hotels, Paris, Amsterdam, Madrid, Berlin and Munich came out on top for this parameter.



# Key Findings for each Parameter (2/2)



EMA operates in close collaboration with NCAs. A well-managed and sizable NCA is a clear asset for any country/ city wishing to attract EMA. Moreover, given EMA's complex and sensitive mandate, a future location must also display a strong degree of political stability and prove that violence and threats through terrorism are countered with appropriate measures. Also desirable is a low level of corruption in the public administration to avoid habits from spilling over to EMA as a supra-national organization. Stockholm ranked top for this parameter.



EMA staff members' decision to relocate will be made in the context of their families. A sensitive approach is vital, and the new location must also appeal to spouses and children. Quality of life and the number of international schools are obvious factors in assessing each city. Less obvious, but equally important, are aspects such as gender equality and access to growth opportunities (i.e. professional development opportunities and access to professional social networks). Finally, from a financial point of view, the cost of renting family accommodation is a key factor. The rankings in this report focus on family-size apartments in city center areas. Rents outside of city centers might vary significantly. Copenhagen leads the field in terms of this parameter.

# Methodology

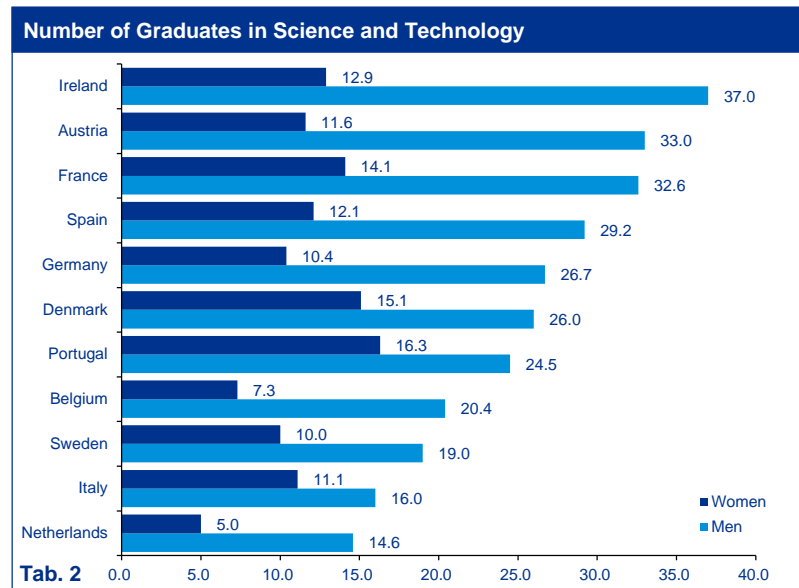
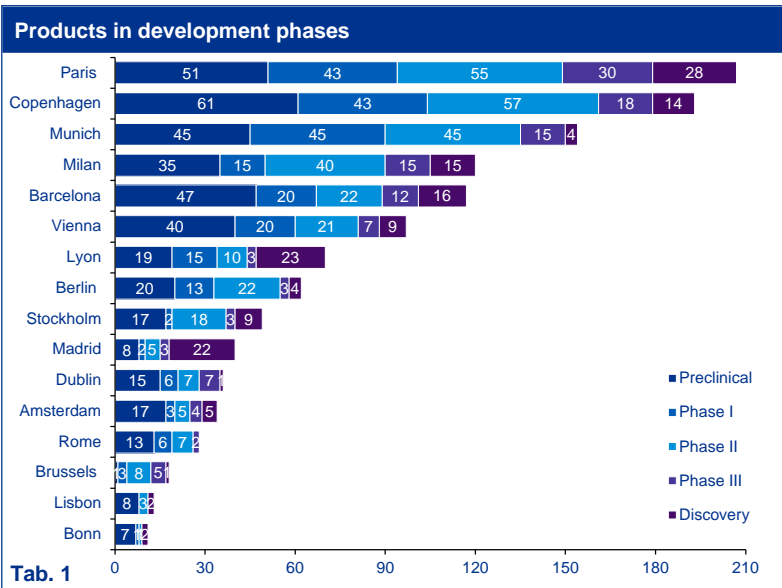
Wherever possible, data was collected at a city or metropolitan area level, otherwise at country level through primary and secondary research. All data is from the year 2016, unless otherwise stated directly in the table.

Locations were ranked according to the total score for each parameter which were developed based on the criteria suggested by EFPIA. Each parameter has been divided into sub-parameters, with a minimum score of 1 and a maximum score of 4 points. Maximum total points (sum of total points per parameters) is 80. Cities were ranked according to their total score.



# Parameter Details

# Dynamic and Size of Life Sciences Clusters



**Total number of Life Sciences companies**

Location	Milan	Barcelona	Berlin	Paris	Copenhagen	Munich	Stockholm	Lyon	Vienna	Madrid	Dublin	Brussels	Amsterdam	Rome	Bonn	Lisbon
Total	371	218	187	152	140	116	109	95	93	72	71	53	51	43	30	7

**Tab. 3**

**Regional Biotech Cluster Scorecard**

Country	Denmark	Sweden	Germany	Netherlands	Ireland	France	Austria	Belgium	Spain	Portugal	Italy
Ranking	3	9	12	14	16	17	18	20	29	31	38

**Tab. 4**

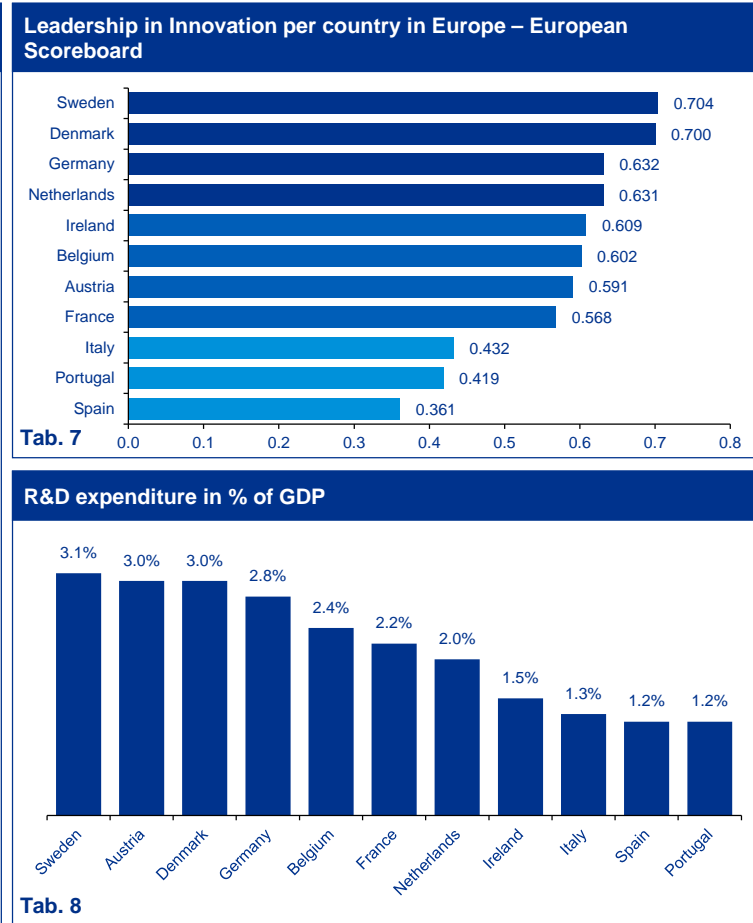
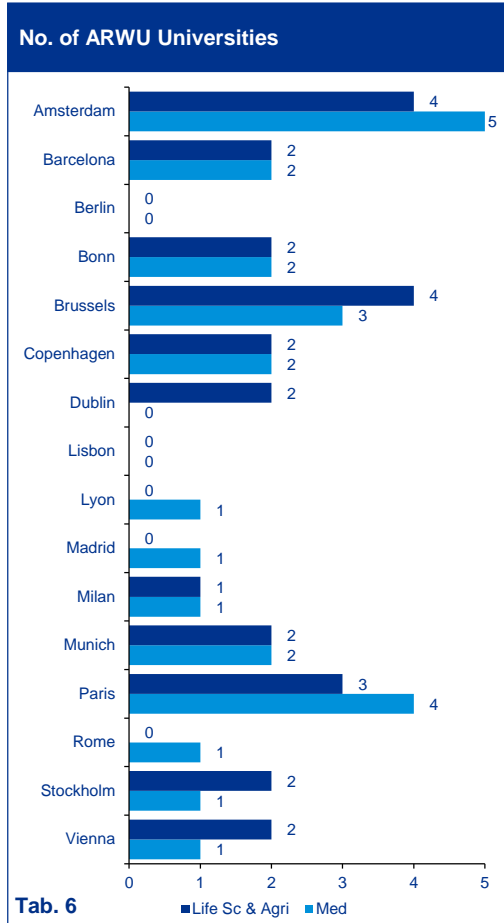
The number of Life Sciences companies in each metropolitan area only provides a first assessment of a Life Sciences cluster. A detailed analysis of the number of products currently in development delivers a more detailed indicator. The regional Biotech cluster scorecard by Scientific American Worldview complements the picture regarding dynamism and potential of a regional Life Sciences cluster. The number of graduates from science universities per thousand people gives an idea of the pool of potential candidates for positions in R&D.

# Research and Scientific Environment

**Scientific co-publications per mill. Inhabitants**

Country	Publications
Denmark	2067
Sweden	1774
Netherlands	1450
Belgium	1352
Austria	1226
Ireland	1080
Portugal	795
Germany	729
France	651
Spain	645
Italy	552

**Tab. 5**



The numbers of co-publications are an important proxy for the degree of connectivity of a research and scientific community. The European Innovation Scoreboard analyses the potential of a country to generate economic growth through innovation. The Shanghai University rankings (Academic Ranking of World Universities) provides global comparison of the quality of universities in certain science areas. R&D expenditure describe how much private and public funding a country is investing into creating an innovative economic environment.

# Connectivity - Infrastructure

## Management of Cities (how a city supports business development)

Country	Denmark	Netherlands	Sweden	Germany	Austria	France	Ireland	Spain	Portugal	Belgium	Italy
Ranking	5	7	11	13	13	24	28	29	33	35	47

Tab. 9

## Number of Hotels

Location	Number of 3,4,5 Star Hotels
Paris	499
Rome	307
Berlin	167
Barcelona	158
Madrid	158
Milan	142
Vienna	102
Munich	87
Dublin	83
Amsterdam	79
Lisbon	79
Brussels	72
Stockholm	65
Lyon	52
Copenhagen	28
Bonn	16

Tab. 10

## Number of European capitals and global hubs connected by direct flights per week

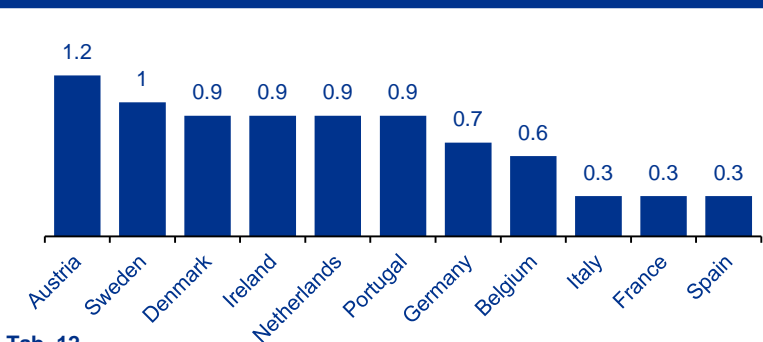
Location	Number of Flights
Paris	>2500
Amsterdam	>2500
Madrid	>2000
Munich	>2000
Milan	>2000
Vienna	>1500
Copenhagen	>1500
Barcelona	>1500
Dublin	>1500
Berlin	>1500
Brussels	>1500
Rome	>1500
Stockholm	>1500
Lisbon	>500
Bonn	>500
Lyon	>500

Tab. 11

Flight connections to and from a city to European capitals as well as to other Life Sciences hubs are measured on a weekly basis. Efficient management of cities is relevant for successful development of business. Numbers of hotels might vary significantly between the cities, mainly due to the different size of the metropolitan areas. They indicate the capacity to host larger groups of visitors and conferences.

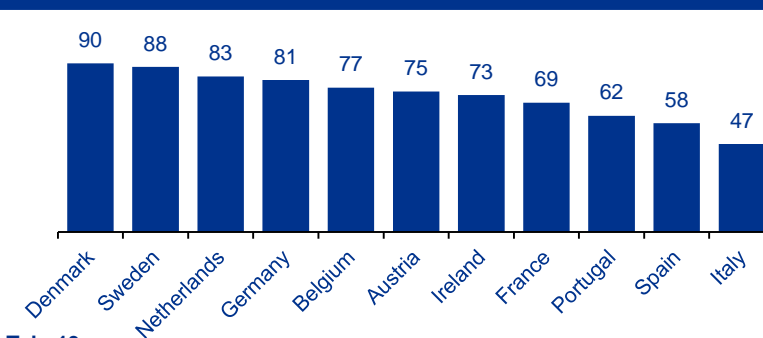
# National Competent Authorities – Political Stability/Terrorism/Corruption

**Political Stability and Absence of Violence/Terrorism (2015)**



**Tab. 12**

**Corruption Perception Index (2015)**



**Tab. 13**

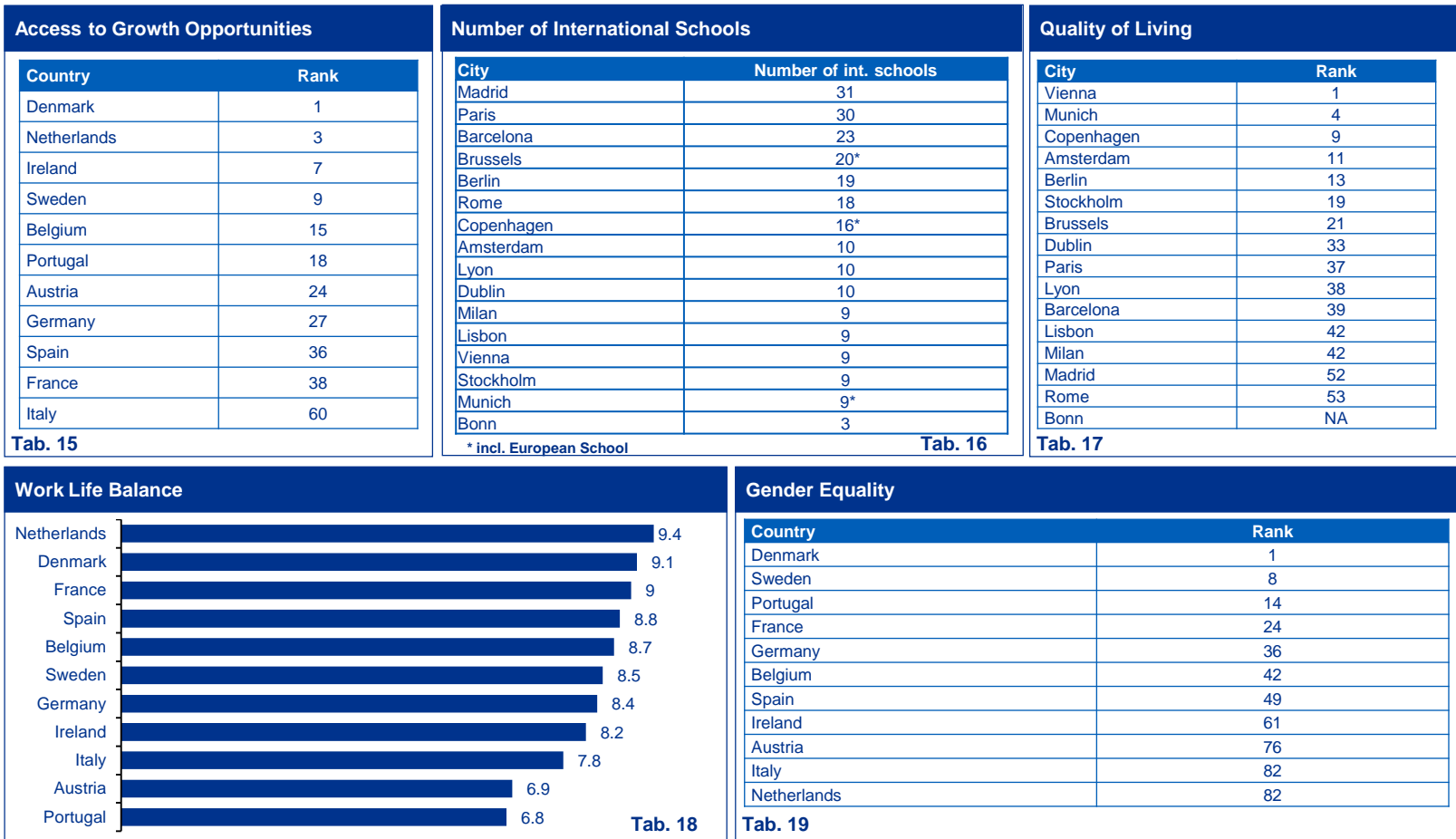
**National Competent Authorities**

Country	Number of Employees per country
Germany	1,000
France	1,000
Sweden	750
Italy	600
Spain	480
Denmark	400
Belgium	390
Portugal	330
Ireland	300
Netherland	300
Austria	280

**Tab. 14**

EMA operates in close collaboration with National Competent Authorities. Well-managed and sizable national authorities are clearly an asset for a country/city wishing to attract EMA. Political stability and proof that violence and threats through terrorism are countered with appropriate measures are important factors to attract expatriates. A low level of corruption in the public administration is clearly an advantage.

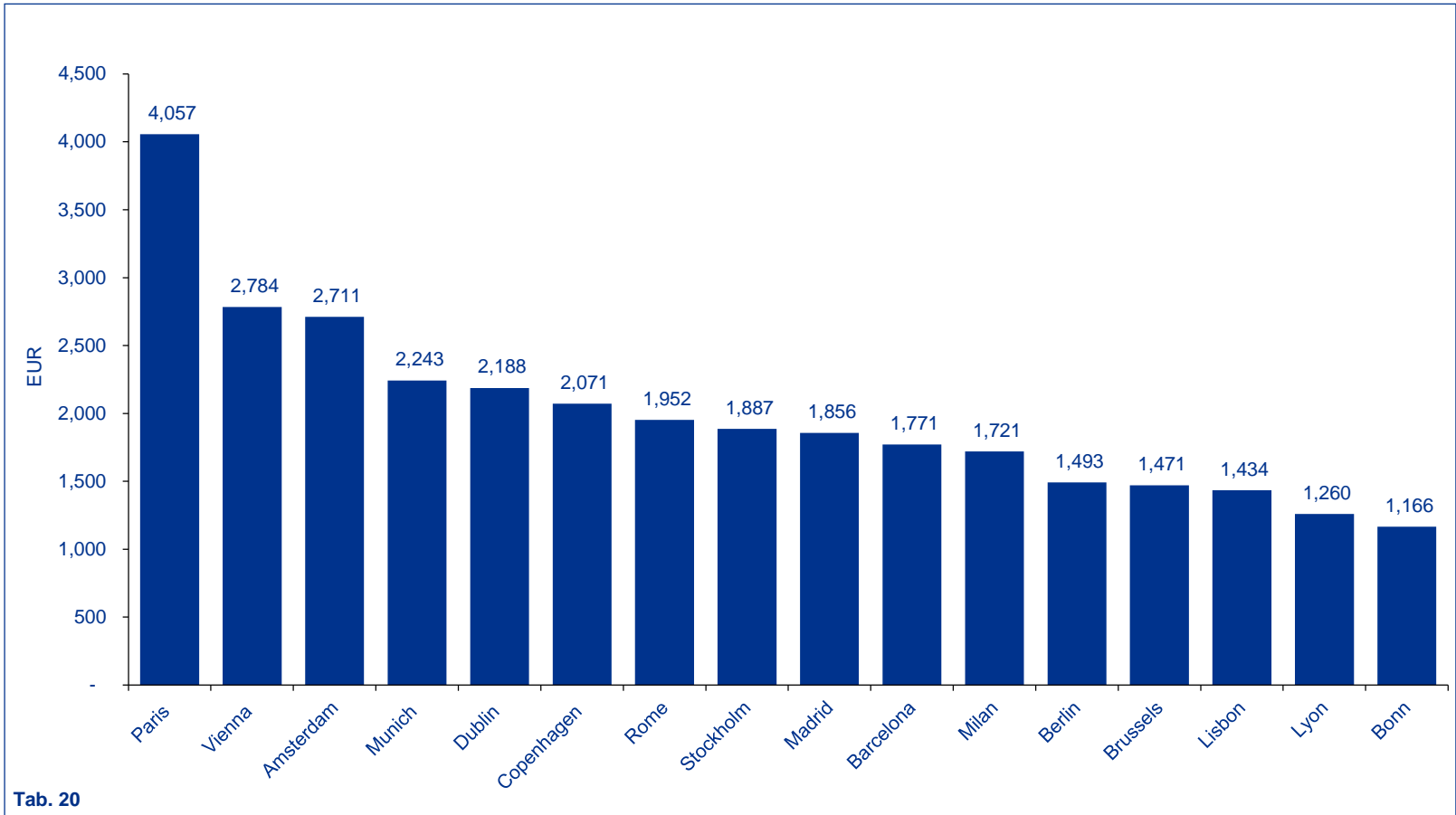
# Quality of Life- Attractiveness for Families & Spouses



Quality of Life ranks a variety of factors relevant for relocating professionals and their families. Gender Equality ranks differences in salaries between women and men and Growth Opportunities assesses the possibility for personal and professional development. These are factors particularly relevant to spouses of employees who are transferred to a new location. Work Life Balance and the number of international schools are factors particularly important to families with children.



# Housing



Tab. 20

Monthly rents are calculated for family-size apartments in the city center area (120 sqm). Rents outside of the city centers might vary significantly.



# Appendix / Sources



# Amsterdam

# Amsterdam (1/3)

Parameter	Sub-parameter
 <p><b>Amsterdam, Netherlands</b></p> <ul style="list-style-type: none"> <li>— City population: 850,000</li> <li>— Population of the Metropolitan Area: 2.4 million</li> <li>— Country population: 17.1 million</li> <li>— Unemployment rate: 5.3% percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— The Netherlands is considered to be an ‘Innovation Leader’ in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 2 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.1 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 1,450</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Amsterdam Metro Area has 5 universities for Medicine in the top 200 universities according to the Shanghai Index (VU University Amsterdam, University of Amsterdam, Leiden University, Erasmus University in Rotterdam and Utrecht University)</li> <li>— 4 of its Life Sciences universities are in the top 200 universities according to the Shanghai Index (VU University Amsterdam, University of Amsterdam, Utrecht University and University of Wageningen)</li> <li>— 2 universities have academic hospitals in Amsterdam</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— The Netherlands has 19.6 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— The Netherlands ranks 14th out of 54 countries in the Scientific American Worldview Scoreboard</li> </ul> <p><b>Life Sciences Industry in the Amsterdam Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 34 products</li> <li>— Investment into private and public companies in 2016: US\$450.7 million.</li> <li>— Examples: uniQure N.V., Norgine B.V., Royal Wessanen NV</li> </ul>

# Amsterdam (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Amsterdam Metro Area (Contd.)</b></p> <ul style="list-style-type: none"> <li>— There are 51 Life Sciences companies in Amsterdam (42 biotech, 8 medical technology and 1 in pharmaceuticals)</li> <li>— Amsterdam BioMed is a cluster management organization for the Life Science cluster</li> <li>— The city acts as global headquarter for 9 Life Science companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Medicines Evaluation Board Agency (MEB Agency) is part of the Ministry of Health, Welfare and Sport (VWS) and employs 300 employees</li> </ul> <p><b>EMA Partner Associations headquartered in Netherlands</b></p> <ul style="list-style-type: none"> <li>— European Association of Urology (EAU)</li> <li>— European College of Neuropsychopharmacology (ECNP)</li> <li>— The European Forum for Primary Care (EFPC)</li> <li>— European Hematology Association (EHA)</li> <li>— European Specialist Nurses Organisations (ESNO)</li> <li>— The European Working Group on Gaucher Disease (EWGGD)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— The Netherlands scores 83 out of 100 in the Transparency Global Anti-corruption Index and ranks 8th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/ Terrorism</b></p> <ul style="list-style-type: none"> <li>— The Netherlands scores 0.9 in the Political Stability and Absence of Terrorism report by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Amsterdam has approximately 2,360 return flights per week connecting European capitals and 434 return flights per week connecting global hubs.</li> <li>— Of the 39 locations (including European capitals and global hubs), Amsterdam is connected to 8 European capitals and 2 global hubs where flights arrive early and leave late, which means visitors could fly in for meetings and leave that same day.</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 20 minutes by train from the city center to Amsterdam's airport Schiphol. There is a major passenger railway station in the airport and various taxi and bus services are available.</li> </ul>

# Amsterdam (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Management of Cities</b> — The Netherlands is ranked 7th out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Amsterdam has 10 5-star, 41 4-star, 28 3-star hotels and 62 special event venues
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Amsterdam is ranked 11 <sup>th</sup> out of 230 cities on the Mercer Quality of Living Index
	<b>Work/Life Balance</b> — The Netherlands scores the highest (9.4 out of 10) on the OECD work-life balance index
	<b>Number of International schools: 10</b>
	<b>Gender Equality</b> — The Netherlands ranks 82 <sup>nd</sup> out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — The Netherlands ranks 3 <sup>rd</sup> out of 109 countries based on the use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 2,711



# Barcelona

# Barcelona (1/3)

	Parameter	Sub-parameter
 <p><b>Barcelona, Spain</b></p> <ul style="list-style-type: none"> <li>— City population: 1.6 million</li> <li>— Population of the metropolitan area: 5.4 million</li> <li>— Country population: 46 million</li> <li>— Unemployment Rate: 18.9 percent</li> </ul>	<p><b>Research environment</b></p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Spain is marked as 'Moderate Innovator' in the European Innovation Scoreboard</li> <li>— Total R&amp;D expenditure amounted to 1.2 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 0.6 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 645</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Barcelona Metro Area has two universities for medicine and Life Sciences (Universtitat de Barcelona and Autonomous University of Barcelona) in the top 200 universities according to the Shanghai Index</li> <li>— Other prominent universities include International University of Catalonia, the Open University of Catalonia and the Ramon Llull University</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p>	<p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Spain has 41.3 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 29th out of 54 countries in the Scientific American Worldview Scoreboard rankings</li> </ul> <p><b>Life Sciences Industry in the Barcelona Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 117</li> <li>— Investment into private and public companies: US\$299.4 million in 2016</li> <li>— Examples: Grupo Ferrer International, Almirall, S.A., Aelix Therapeutics</li> </ul>



# Barcelona (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Barcelona Metro Area (Contd.)</b></p> <ul style="list-style-type: none"> <li>— Biocat promotes Life Science sector in Catalonia</li> <li>— There are 218 Life Science companies in Barcelona (146 biotech, 40 medical technology and 32 pharmaceutical companies)</li> <li>— The city also acts as the global headquarter to 34 and the regional headquarter to 14 Life Sciences companies</li> </ul>
<b>Competent Authorities and other EMA Partners, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Spanish Agency of Medicinal Products and Medical Devices (AEMPS) is a national regulator collaborating with EMA. It is responsible for the quality, safety, efficiency and correct information of medicines and health products. The AEMPS has 480 employees</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Spain scores 58 out of 100 in the Transparency Global Anti-corruption Index and is ranked 41st out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/ Terrorism</b></p> <ul style="list-style-type: none"> <li>— Spain scores 0.3 in the Political Stability and Absence of Terrorism report by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Barcelona has approximately 1,610 return flights per week connecting European capitals and 190 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Barcelona is connected to 6 European capitals and 2 global hubs with flights that arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— The airport is connected with Maçanet-Massanes station with trains departing every 30 minutes. Underground metro service to the city is also available from the airport. Reus Airport, Girona–Costa Brava and Aerobus provide bus services to the airport</li> <li>— It takes approximately 30 minutes by train from the city center to Barcelona–El Prat Airport</li> <li>— Girona-Costa Brava Airport, Reus Airport, Lleida-Alguaire Airport are also within a 100-km radius from Barcelona</li> </ul> <p><b>Management of Cities</b></p> <ul style="list-style-type: none"> <li>— Spain is ranked 29th out of 61 countries in the IMD report</li> </ul>

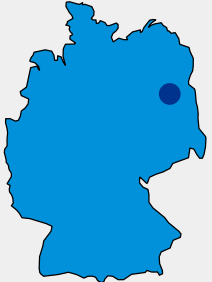
# Barcelona (3/3)

Parameter	Sub-parameter
<b>Connectivity-Infrastructure</b>	<p><b>Hotels and conference centers</b></p> <ul style="list-style-type: none"> <li>— Barcelona has 13 5-star, 47 4-star, 98 3-star hotels and 51 special event venues</li> </ul>
<b>Quality of Life; Families and Spouses</b>	<p><b>Quality of Living</b></p> <ul style="list-style-type: none"> <li>— Barcelona is ranked 39th out of 230 cities on the Mercer Quality of Living Index</li> </ul> <p><b>Work/Life Balance</b></p> <ul style="list-style-type: none"> <li>— Spain scores 8.8 out of 10 on the OECD work-life balance index</li> </ul> <p><b>Number of International schools: 23</b></p> <p><b>Gender Equality</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 49th out of 109 countries for gender pay gap</li> </ul> <p><b>Access to growth opportunities</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 36th out of 109 countries based on the use of professional and social networks</li> </ul>
<b>Housing</b>	<p><b>Housing rents</b></p> <ul style="list-style-type: none"> <li>— The average monthly rent for a 120-sqm apartment is EUR 1,770</li> </ul>



Berlin

# Berlin (1/3)

Parameter	Sub-parameter
 <p><b>Berlin, Germany</b></p> <ul style="list-style-type: none"> <li>— City population: 3.67 million</li> <li>— Population of the metropolitan area: 6 million</li> <li>— Country population: 82 million</li> <li>— Unemployment Rate: 3.8 percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Germany is marked as 'Innovation Leader' in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 2.8 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.9 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 729</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Some of the prominent universities in Berlin include Freie Universität Berlin, Technische Freie Universität Berlin and the Humboldt Universität zu Berlin, but non of them are in the Shanghai Top 200 Index</li> <li>— Berlin Brandenburg region has 9 technological parks and 50 institutes of higher education with Life Sciences as a focus</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Germany has 37.1 science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Germany ranks 12th out of 54 countries in the Scientific American Worldview Scoreboard</li> </ul> <p><b>Life Sciences Industry in the Berlin Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 62 products</li> <li>— Investment into private and public companies: US\$266.1 million in 2016</li> <li>— Examples: NOXXON Pharma AG, MagForce AG, Epigenomics AG</li> </ul>

# Berlin (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Berlin Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— Many Life Sciences industry organizations, such as research-based pharmaceutical companies, industry associations of biotech firms and German medical technology associations, are based in the region</li> <li>— There are 187 Life Sciences companies in Berlin (148 biotech, 30 medical technology and 9 pharmaceutical companies)</li> <li>— The city is also home to 16 global headquarters and 3 regional headquarters</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Federal Institute for Drugs and Medical Devices (Bundesinstitut für Arzneimittel und Medizinprodukte, BfArM) is an independent federal higher authority attached to the Federal Ministry of Health. The BfArM is located in Bonn and employs approximately 1,000 employees</li> </ul> <p><b>EMA Partner Associations with headquarters in Germany</b></p> <ul style="list-style-type: none"> <li>— European Association for the Study of Diabetes (EASD)</li> <li>— The European Society of Oncology Pharmacy (ESOP)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Germany scores 81 out of 100 in the Transparency Global Anti-corruption Index and is ranked 10th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— Germany scores 0.7 in the Political Stability and Absence of Terrorism report by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Berlin has approximately 1,560 return flights per week connecting European capitals and 280 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Berlin is connected to 8 European capitals and 3 global hubs with flights which arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 30 minutes by road from the city center to Berlin Tegel Airport. There are no trains available, only buses and taxis.</li> <li>— Schönefeld Airport (SXF) also serves Berlin. It is just Southeast of Berlin</li> <li>— The new Berlin Brandenburg Airport (BER), currently under construction, will replace Tegel as Berlin's only commercial airport</li> </ul>

# Berlin (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Management of Cities</b> — Germany ranks 13th out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Berlin has 13 5-star, 63 4-star, 91 3-star hotels and 70 special event venues, which includes conference centers
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Berlin ranks 13th out of 230 cities on the Mercer Quality of Living Index
	<b>Work/Life Balance</b> — Germany scores 8.4 out of 10 on the OECD work-life balance index
	<b>Number of International schools: 19</b>
	<b>Gender Equality</b> — Germany ranks 36th out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Germany ranks 27th out of 109 countries based on the use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 1,493

Note: \*Figures are estimated

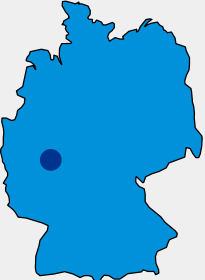


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Bonn

# Bonn (1/3)

Parameter	Sub-parameter
 <p><b>Bonn, Germany</b></p> <ul style="list-style-type: none"> <li>— City population: 318,809</li> <li>— Population of the metropolitan area: 3.1 million</li> <li>— Country population: 82 million</li> <li>— Unemployment Rate: 3.8 percent</li> </ul>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Germany is marked as ‘Innovation Leader’ in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 2.8 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.9 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 729</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— The Cologne/Bonn Metro Area has 2 universities for Medicine in the top 200 universities according to the Shanghai Index (University of Bonn and University of Duesseldorf) and 2 for Life Science and Agriculture (University of Bonn and RWTH Aachen University)</li> <li>— Cologne/Bonn has 2 universities for medicine and 6 universities for Life Sciences in the top 100 universities according to the Shanghai Index (University of Bonn and RWTH Aachen University )</li> <li>— Other prominent universities include Rheinische Friedrich-Wilhelms Universität Bonn and the Universität zu Köln</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Germany has 37.1 science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Germany ranks 12th out of 54 countries in the Scientific American Worldview Overall Scoreboard</li> </ul> <p><b>Life Sciences Industry in the Bonn Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 11</li> <li>— Investment into private and public companies: US\$94.8 million in 2016</li> </ul>



# Bonn (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences Cluster</b>	<p><b>Life Sciences Industry in the Bonn Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— Examples: MCM Klosterfrau Vertriebsgesellschaft, Rigontec GmbH, Neuway Pharma GmbH</li> <li>— There are 30 Life Sciences companies present in Bonn (23 biotech companies, 5 medical technology and 2 pharmaceutical companies)</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Federal Institute for Drugs and Medical Devices (Bundesinstitut für Arzneimittel und Medizinprodukte, BfArM) is an independent federal higher authority attached to the Federal Ministry of Health. The BfArM is located in Bonn and employs approximately 1,000 employees</li> </ul> <p><b>EMA Partner Associations with headquarters in Germany</b></p> <ul style="list-style-type: none"> <li>— European Association for the Study of Diabetes (EASD)</li> <li>— The European Society of Oncology Pharmacy (ESOP)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Germany scores 81 out of 100 in the Transparency Global Anti-corruption Index and is ranked 10th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— Germany scores 0.7 in the Political Stability and Absence of Terrorism report by World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Bonn has approximately 475 return flights per week connecting European capitals and 70 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Bonn is connected to 3 European capitals and 1 global hub with flights which arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— Bonn shares its airport with Cologne. It takes approximately 20 minutes by road from the city center to Cologne-Bonn airport. Cologne-Bonn airport has a 4 track railway station which connects the airport to other parts of the region</li> </ul> <p><b>Management of Cities</b></p> <ul style="list-style-type: none"> <li>— Germany ranks 13th out of 61 countries in the IMD report</li> </ul>

# Bonn (3/3)

Parameter	Sub-parameter
<b>Connectivity-Infrastructure</b>	<b>Hotels and conference centers</b> — Bonn has 1 5-star, 5 4-star, 10 3-star hotels and 8 special event venues, which includes conference centers
<b>Quality of Life; Families and Spouses</b>	<b>Quality of Living</b> — N/A  <b>Work/Life Balance</b> — Germany scores 8.4 out of 10 on the OECD work-life balance index  <b>Number of International schools: 3</b>  <b>Gender Equality</b> — Germany ranks 36th out of 109 countries for gender pay gap  <b>Access to growth opportunities</b> — Germany ranks 27th out of 109 countries based on the use of professional and social networks
<b>Housing</b>	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 1,166

\*Note: Rent and Vacancy rate is taken for Cologne due to unavailability of data for Bonn




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# Brussels

# Brussels (1/3)

Parameter	Sub-parameter
 <p><b>Brussels, Belgium</b></p> <ul style="list-style-type: none"> <li>— City population: 1.17 million</li> <li>— Population of the metropolitan area: 1.8 million</li> <li>— Country population: 11.3 million</li> <li>— Unemployment Rate: 7.7 percent</li> </ul>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Belgium is considered to be a 'Strong Innovator' in the Innovation Index</li> <li>— Total R&amp;D expenditure amounted to 2.4 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.8 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 1,352</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Brussels Metro Area has 3 universities for Medicine and Pharmacy; KU Leuven, Ghent University and the Catholic University of Louvain are in the Top 200 universities of the Shanghai Index</li> <li>— Brussels Metro Area has 4 universities for Life Sciences in the top 200 universities according to the Shanghai Index including Ghent University, KU Leuven, Catholic University of Louvain and Vrije Universiteit Brussel (VUB)</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Belgium has 27.7 science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Belgium is ranked 20th out of 54 countries in the Scientific American Worldview Overall rankings</li> </ul> <p><b>Life Sciences Industry in the Brussels Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 18 products</li> <li>— Investment into private and public companies: US\$37.3 million in 2016</li> <li>— Examples: UCB S.A, Asit Biotech SA, Confo Therapeutics</li> </ul>

# Brussels (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Brussels Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— There are 53 Life Science companies in Brussels (26 biotech, 13 medical technology and 14 pharmaceuticals)</li> <li>— There are 4 Life Science research campuses in Brussels</li> <li>— The city is also the global headquarter of 6 Life Sciences companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— Federal Agency for Medicines and Health Products (famhp), affiliated to the Ministry of Social Affairs and Public Health, is the competent authority responsible for the quality, safety and efficacy of medicines and health products. It has around 390 employees</li> </ul> <p><b>EMA Partner Associations with headquarters in Belgium</b></p> <ul style="list-style-type: none"> <li>— European AIDS Clinical Society (EACS)</li> <li>— European Association of Hospital Pharmacists (EAHP)</li> <li>— European Federation of Internal Medicine (EFIM)</li> <li>— European Respiratory Society (ERS)</li> <li>— European Society of Cardiology (ESC)</li> <li>— Health Care Without Harm Europe</li> <li>— Pharmaceutical Group of the European Union (PGEU)</li> <li>— Standing Committee of European Doctors (CPME)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Belgium scores 77 out of 100 in the Transparency Global Anti-corruption Index and is ranked 15th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/ Terrorism</b></p> <ul style="list-style-type: none"> <li>— Belgium scores 0.6 in the Political Stability and Absence of Terrorism report by World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Brussels has approximately 1,540 return flights per week connecting European capitals and 140 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Brussels is connected to 8 European capital and 2 global hub with flights which arrive early and leave late</li> </ul>

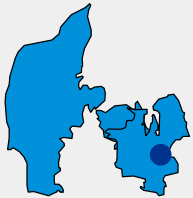
# Brussels (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Transfer Time Airport to City</b> — It takes approximately 20 minutes by train from city center to Brussels Airport — Brussels South Charleroi Airport is situated 30 miles from Brussels and also serves the city
	<b>Management of Cities</b> — Belgium ranks 35th out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Brussels has 6 5-star, 32 4-star, 34 3-star hotels and 56 special event venues
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Brussels ranked 21st out of 230 cities in the Mercer Quality of Living Index
	<b>Work/Life Balance</b> — Belgium scores 8.7 out of 10 on the OECD work-life balance index
	<b>Number of International schools: 20</b>
	<b>Gender Equality</b> — Belgium ranks 42nd out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Belgium ranks 15th out of 109 countries based on the use of professional networks
Housing	<b>Housing rents</b> The average monthly rent for a 120-sqm apartment is EUR 1,471



# Copenhagen

# Copenhagen (1/3)

	Parameter	Sub-parameter
 <p><b>Copenhagen, Denmark</b></p> <ul style="list-style-type: none"> <li>City population: 601,500</li> <li>Population of the metro area: 2 million</li> <li>Country population: 5.7 million</li> <li>Unemployment Rate: 4.2 percent</li> </ul>	<p><b>Research environment</b></p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>Denmark is considered to be an 'Innovation Leader' in the European Innovation Scoreboard. Its performance and has continuously improved in recent years</li> <li>Total R&amp;D expenditure amounted to 3 percent of the GDP</li> <li>R&amp;D expenditure in the business sector stood at 1.95 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>International scientific co-publications per million population: 2,067</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>Copenhagen has 2 universities for Medicine (University of Copenhagen and University of Southern Denmark) and 2 universities for Life Sciences (University of Copenhagen and Technical University of Denmark) in the top 200 universities according to the Shanghai Index</li> <li>Other prominent universities include the Roskilde University in the greater Copenhagen area</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p>	<p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>Denmark has 41.1 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>Denmark ranks 3rd out of 54 countries in the Scientific American Worldview Overall rankings for the dynamic of its Biotech Cluster</li> </ul> <p><b>Life Sciences Industry in the Copenhagen metro area</b></p> <ul style="list-style-type: none"> <li>Pipeline: 193 products</li> <li>Investment into private and public companies: US\$810.5 million in 2016</li> <li>Examples: Novo Nordisk A/S, Genmab A/S, ALK-Abelló A/S</li> <li>There are 140 Life Sciences companies present in Copenhagen (98 biotech companies, 35 medical technology companies and 7 pharmacy companies)</li> <li>The city is also the global headquarters of 24 Life Sciences companies and regional headquarter of 5 companies in Life Sciences</li> </ul>



# Copenhagen (2/3)

Parameter	Sub-parameter
Size of National Competent Authorities, Political Stability, Corruption	<b>National Competent Authorities</b> <ul style="list-style-type: none"> <li>— The Danish Medicines Agency authorizes and inspects pharmaceutical companies and licenses medicinal products for the Danish market, monitors adverse reactions from medicinal products and authorizes clinical trials, monitors medical devices available in Denmark and supervises adverse incidents involving medical devices</li> <li>— Around 400 employees work for the Danish Medicines Agency</li> </ul>
	<b>Corruption Perception Index</b> <ul style="list-style-type: none"> <li>— Denmark scores 90 out of 100 in the Transparency Global Anti-corruption Index and is ranked 1st out of 167 countries</li> </ul>
	<b>Political Stability and Absence of Violence/ Terrorism</b> <ul style="list-style-type: none"> <li>— Denmark scores 0.9 in the Political Stability and Absence of Terrorism report by World Bank</li> </ul>
Connectivity-Infrastructure	<b>Flight Connections</b> <ul style="list-style-type: none"> <li>— Copenhagen has approximately 1,450 return flights per week connecting European capitals and 160 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Copenhagen is connected to 7 European capitals with flights which arrive early and leave late</li> </ul>
	<b>Transfer Time Airport to City</b> <ul style="list-style-type: none"> <li>— The airport has a railway station connecting it to the city center and also to the other cities. A separate metro service has train services every four to six minutes. Bus services are also available at the airport. Transfer time from the airport to the city is around 13 minutes.</li> </ul>
	<b>Management of Cities</b> <ul style="list-style-type: none"> <li>— Denmark ranks 5th out of 61 countries in the IMD report</li> </ul>
	<b>Hotels and conference centers</b> <ul style="list-style-type: none"> <li>— Copenhagen has 5 5-star, 6 4-star, 17 3-star hotels and 16 special event venues</li> </ul>

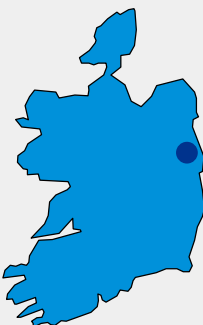
# Copenhagen (3/3)

Parameter	Sub-parameter
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Copenhagen is ranked 9th out of 230 cities in the Mercer Quality of Living Index
	<b>Work/Life balance</b> — Denmark scores 9.1 out of 10 on OECD work-life balance index
	<b>Number of International schools:</b> 16
	<b>Gender Equality</b> — Denmark ranks 1st out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Denmark ranks 1st out of 109 countries based on use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 2,071



# Dublin

# Dublin (1/3)

Parameter	Sub-parameter
 <p><b>Dublin, Ireland</b></p> <ul style="list-style-type: none"> <li>— City population: 553,000</li> <li>— Population of the metropolitan area: 1.9 million</li> <li>— Country population: 4.75 million</li> <li>— Unemployment Rate: 7.2 percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Ireland is considered to be a 'Strong Innovator' in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 1.5 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.09 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 1,080</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Dublin has 2 universities for Life Sciences in the top 200 universities according to the Shanghai Index (Trinity College Dublin and University College Dublin)</li> <li>— Other prominent universities include Dublin City University and the Dublin Institute of Technology</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Ireland has 49.9 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Ireland ranks 16th out of 54 countries in the Scientific American Worldview Overall Scoreboard</li> </ul> <p><b>Life Sciences Industry in the Dublin Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 36 products</li> <li>— Investment into private and public companies: US\$5.8 billion in 2016</li> <li>— Examples: Allergan plc, Shire plc</li> </ul>

# Dublin (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Dublin Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— There are 71 Life Sciences companies in Dublin (48 are biotech, 10 medical technology and 13 pharmaceutical companies)</li> <li>— The city is also the global headquarter of 26 and regional headquarter of 2 Life Sciences companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Health Products Regulatory Authority (HPRA) employs over 300 people. These include both technical (qualifications in medicine, pharmacy, veterinary medicine, biology, immunology, chemistry, engineering) and non-technical (qualifications in law, information technology, accountancy, business, human resources and training)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Ireland scores 73 out of 100 in the Transparency Global Anti-corruption Index and is ranked 19th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/ Terrorism</b></p> <ul style="list-style-type: none"> <li>— Ireland scores 0.9 in the Political Stability and Absence of Terrorism report by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Dublin has approximately 1,425 return flights per week connecting European capitals and 120 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Dublin is connected to one European capital and one global hub with flights which arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 35 to 40 minutes by road from city center to Dublin airport. Around 700 buses run from city to airport every day</li> </ul> <p><b>Management of Cities</b></p> <p>Ireland ranks 28th out of 61 countries in the IMD report</p> <p><b>Hotels and conference centers</b></p> <ul style="list-style-type: none"> <li>— Dublin has 10 5-star, 33 4-star, 40 3-star hotels and 29 special event venues</li> </ul>

# Dublin (3/3)

Parameter	Sub-parameter
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Dublin ranks 33rd out of 230 cities in the Mercer Quality of Living Index
	<b>Work/Life Balance</b> — Ireland scores 8.2 out of 10 on OECD work-life balance index
	<b>Number of International schools: 10</b>
	<b>Gender Equality</b> — Ireland ranks 61th out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Ireland ranks 7th out of 109 countries based on the use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 2,188



Lisbon

# Lisbon (1/3)

	Parameter	Sub-parameter
 <p><b>Lisbon, Portugal</b></p> <ul style="list-style-type: none"> <li>— City population: 545,000</li> <li>— Population of the metropolitan area: 2.8 million</li> <li>— Country population: 10.5 million</li> <li>— Unemployment Rate: 10.8 percent</li> </ul>	<p><b>Research environment</b></p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Portugal is considered to be a 'moderate innovator' in the Innovation Index</li> <li>— Total R&amp;D expenditure amounted to 1.2 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 0.6 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 795</li> </ul> <p><b>Research facilities/ Infrastructure:</b></p> <ul style="list-style-type: none"> <li>— Some of the prominent universities in Lisbon include the University of Lisbon, The New University of Lisbon, Universidade Autonomà de Lisboa. These offer science studies but none of them is in the Shanghai Top 200 Index</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p>	<p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Portugal has 40.8 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Portugal ranks 31st out of 54 countries in the Scientific American Worldview Overall Scoreboard</li> </ul> <p><b>Life Sciences Industry in the Lisbon Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 13</li> <li>— Investment into private and public companies: NA</li> <li>— Examples: Biosurfit SA, TechnoPhage, S.A., Thelial Technologies S.A</li> <li>— The city is home to 7 Life Sciences companies (6 biotech and 1 medical technology company)</li> </ul>



# Lisbon (2/3)

Parameter	Sub-parameter
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<b>National Competent Authorities</b> — Infarmed is a government agency accountable to the Health Ministry of Portugal and employs 330 staff members with more than half having educational background in Pharmaceuticals and/or Medical Science
	<b>Corruption Perception Index</b> — Portugal scores 62 out of 100 in the Transparency Global Anti-corruption Index and is ranked 29th out of 167 countries
	<b>Political Stability and Absence of Violence/ Terrorism</b> — Portugal scores 0.9 in the Political Stability and Absence of Terrorism report by the World Bank
<b>Connectivity-Infrastructure</b>	<b>Flight Connections</b> — Lisbon has approximately 1,090 return flights per week connecting European capitals and 130 return flights per week connecting global hubs — Of the 39 locations (including European capitals and global hubs), Lisbon is connected to 7 European capital and 2 global hub with flights which arrive early and leave late
	<b>Transfer Time Airport to City</b> — It takes approximately 15 to 20 minutes by metro from city center to Lisbon Humberto Delgado Airport — Cascais Aerodrome, 20 km West of the city center, in Cascais, offers commercial domestic flights — Lisbon airport has an underground metro line which connects it to the city center. Bus services are also available outside the airport.
	<b>Management of Cities</b> — Portugal ranks 33rd out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Lisbon has 20 5-star, 21 4-star, 38 3-star hotels and 7 special event venues

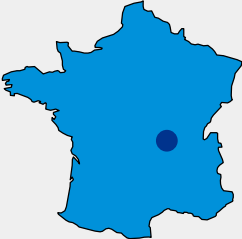
# Lisbon (3/3)

Parameter	Sub-parameter
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Lisbon ranks 42nd out of 230 cities in the Mercer Quality of Living Index
	<b>Work/Life Balance</b> — Portugal scores 6.8 out of 10 on OECD work-life balance index
	<b>Number of International schools: 9</b>
	<b>Gender Equality</b> — Portugal ranks 14th out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Portugal ranks 18th out of 109 countries based on the use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 1,434



Lyon

# Lyon (1/3)

	Parameter	Sub-parameter
 <p>Lyon, France</p> <ul style="list-style-type: none"> <li>— City population: 506,500</li> <li>— Population of the metropolitan area: 2.2 million</li> <li>— Country population: 67 million</li> <li>— Unemployment Rate: 10 percent</li> </ul>	<p><b>Research environment</b></p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— France is considered to be a 'Strong Innovator' in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 2.2 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.45 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 651</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Lyon has 1 university for medicine (Claude Bernard University) and none for Life Sciences in the top 200 universities according to the Shanghai Index</li> <li>— Other universities in Lyon include University of Lyon and the Ecole Normale Supérieure de Lyon</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p>	<p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— France has 46.7 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— France ranks 17th out of 54 countries in the Scientific American Worldview Overall Scoreboard</li> </ul>

# Lyon (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Lyon Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 70 products</li> <li>— Investment in private and public companies: US\$545.9 million in 2016</li> <li>— Examples: Flamel Technologies SA, BIOMÉRIEUX SA, Poxel SA</li> <li>— There are 95 Life Science companies in Lyon Metro Area (67 biotech, 18 medical technology and 10 pharmaceutical companies) international and</li> <li>— Lyon is also the global headquarters of 16 regional headquarters to 2 Life Sciences companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The National Agency for the Safety of Medicines and Health Products (ANSM) was created to strengthen the safety of medicines and health products. It employs about 1,000 staff</li> </ul> <p><b>EMA Partner Associations with headquarters in France</b></p> <ul style="list-style-type: none"> <li>— European Society of Cardiology (ESC)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— France scores 69 out of 100 in the corruption perception index and ranks 23rd out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— France scores 0.3 in the Political Stability and Absence of Terrorism index by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Lyon has approximately 480 return flights per week connecting European capitals and 80 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Lyon is connected to 8 European capitals and one global hub with flights which arrive early and leave late</li> </ul>


# Lyon (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Transfer Time from Airport to City</b> — It takes approximately 30 to 35 minutes by train from Lyon Part-Dieu to Lyon–Saint-Exupéry Airport. The Rhônexpress tramway connects airport to TGV railway station
	<b>Management of Cities</b> — France is ranked the 24th out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Lyon has 3 5-star, 9 4-star, 40 3-star hotels and 15 special event venues
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Lyon ranks 38th out of 230 cities across the world in the Mercer Quality of Living Index
	<b>Work/Life Balance</b> — Work life balance score for France is 9.0 out of 10 on the OECD work-life balance index — France ranks the highest out of 38 countries in terms of time devoted to leisure and personal care
	<b>Number of International schools: 10</b>
	<b>Gender Equality</b> — France ranks 24th out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — France ranks 38th out of 109 countries based on the use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 1,260



# Madrid

# Madrid (1/3)

Parameter	Sub-parameter
 <p><b>Madrid, Spain</b></p> <ul style="list-style-type: none"> <li>— City population: 3.2 million</li> <li>— Population of the metropolitan area: 6.5 million</li> <li>— Country population: 46 million</li> <li>— Unemployment Rate: 18.9 percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Spain is considered to be a 'Moderate Innovator' in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 1.2 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 0.6 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 645</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Madrid Metro Area has 1 university for medicine in the top 100 universities according to the Shanghai Index (Complutense University of Madrid)</li> <li>— Other prominent universities in Madrid include Autonomous University of Madrid, National University of Distance Education, Technical University of Madrid, CEU San Pablo University, European University of Madrid and the Universidad Francisco de Vitoria.</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Spain has 41.3 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 29th out of 54 countries in Scientific American Worldview Overall Scoreboard</li> </ul>



# Madrid (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Madrid Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 40</li> <li>— Investment into private and public companies: US\$271.1 million</li> <li>— Examples: Laboratorios Farmacéuticos Rovi S.A., Viviva Biotech, Medlumics S.L,</li> <li>— There are 72 companies present (55 biotech, 2 medical technology and 15 pharmaceutical companies)</li> <li>— The city is also the global headquarter of 9 and the regional headquarters to 2 Life Sciences companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Spanish Agency of Medicinal Products and Medical Devices (AEMPS) is the national regulator collaborating with EMA. It is responsible for the quality, safety, efficacy and correct information of medicines and health products. The AEMPS has 480 employees</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Spain scores 58 out of 100 in the Transparency Global Anti-corruption Index and is ranked 41st out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/ Terrorism</b></p> <ul style="list-style-type: none"> <li>— Spain scores 0.3 in the Political Stability and Absence of Terrorism report by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections:</b></p> <ul style="list-style-type: none"> <li>— Madrid has approximately 1,940 return flights per week connecting European capitals and 301 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Madrid is connected to 3 European capitals with flights which arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 20 minutes by train from city center to Adolfo Suárez Madrid-Barajas Airport. The Madrid Metro Line connects the airport with the city centre station. EMT runs regular public bus services between the airport and Madrid.</li> </ul> <p><b>Management of Cities</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 29th out of 61 countries in the IMD report</li> </ul>


# Madrid (3/3)

Parameter	Sub-parameter
<b>Connectivity-Infrastructure</b>	<p><b>Hotels and conference centers</b></p> <ul style="list-style-type: none"> <li>— Madrid has 17 5-star, 32 4-star, 109 3-star hotels and 43 special event venues</li> </ul>
<b>Quality of Life; Families and Spouses</b>	<p><b>Quality of Living:</b></p> <ul style="list-style-type: none"> <li>— Madrid ranks 52nd of 230 cities in the Mercer Quality of Living Index</li> </ul> <p><b>Work Life Balance</b></p> <ul style="list-style-type: none"> <li>— Spain scores 8.8 out of 10 on the OECD work-life balance index</li> </ul> <p><b>Number of International schools: 31</b></p> <p><b>Gender Equality</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 49th out of 109 countries for gender pay gap</li> </ul> <p><b>Access to growth opportunities</b></p> <ul style="list-style-type: none"> <li>— Spain ranks 36th out of 109 countries based on the use of professional and social networks</li> </ul>
<b>Housing</b>	<p><b>Housing rents</b></p> <ul style="list-style-type: none"> <li>— The average monthly rent for a 120-sqm apartment is EUR 1,856</li> </ul>



Milan

# Milan (1/3)

Parameter	Sub-parameter
 <p><b>Milan, Italy</b></p> <ul style="list-style-type: none"> <li>— City population: 1.35 million</li> <li>— Population of the metropolitan area: 5.3 million</li> <li>— Country population: 60 million</li> <li>— Unemployment Rate: 11.9 percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Italy is considered as a 'Moderate Innovator' in the European Innovation Scoreboard</li> <li>— Total R&amp;D expenditure amounted to 1.3 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 0.7 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 552</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Milan Metro Area has 1 university for Medicine and for Life Sciences in the top 200 universities according to the Shanghai Index (University of Milan)</li> <li>— Other universities include Università degli studi di Milano, Politecnico Milano and the Università Cattolica del Sacro Cuore</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Italy ranks 38 out of 54 countries in the Scientific American Worldview Overall Scoreboard</li> </ul> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Italy has 27.1 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Life Sciences Industry in the Milan Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 120</li> <li>— Investment into private and public companies: US\$271.2 million in 2016</li> <li>— Examples: Dompé S.p.A., Newron Pharmaceuticals S.p.A. Recordati S.p.A</li> <li>— There are 371 Life Science companies in Milan (260 are biotech, 67 medical technology and 44 pharmaceutical companies)</li> </ul>

# Milan (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Milan Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— Milan is the global headquarter of 58 and the regional headquarter of 11 Life Sciences companies</li> <li>— Lombardy Cluster (Capital: Milan) has 33 R&amp;D centers, 34 percent of Italian biotech companies and over 90 red biotech companies</li> <li>— 30 percent of R&amp;D expenditure of Italy is concentrated in the Lombardy region</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Italian Medicines Agency (AIFA) is the national authority responsible for drugs regulation in Italy. It is a public body operating autonomously, under the direction of the Ministry of Health and under the vigilance of the Ministry of Health and the Ministry of Economy. The agency employs approximately 600 staff</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Italy has a score of 47 out of 100 in the Transparency Global Anti-corruption Index and is ranked 60th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/ Terrorism</b></p> <ul style="list-style-type: none"> <li>— Italy scores 0.3 in the Political Stability and Absence of Terrorism report by the World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Milan has approximately 1950 return flights per week connecting European capitals and 250 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Milan is connected to 14 European capitals and 6 global hubs with flights which arrive early and leave late</li> </ul> <p><b>Transfer Time from Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 45 to 55 minutes by train from Milan Central station to Milan–Malpensa Airport</li> <li>— Linate airport is used for domestic and short-haul international flights</li> <li>— Airport of Orio al Serio serves the low-cost airlines of Milan</li> </ul>

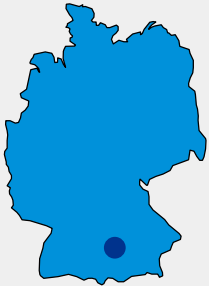
# Milan (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Management of Cities</b> Italy ranks 47th out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Milan has 15 5-star, 43 4-star, 84 3-star hotels and 54 special event venues
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Milan ranks 42nd out of 230 cities across the world in the Mercer Quality of Living Index
	<b>Work Life Balance</b> — Italy scores 7.8 out of 10 on the OECD work-life balance index
	<b>Number of International schools: 9</b>
	<b>Gender Equality</b> — Italy ranks 82nd out of 109 countries in gender pay gap
	<b>Access to growth opportunities</b> — Italy ranks 60th out of 109 based on use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly rent for a 120-sqm apartment is EUR 1,721



Munich

# Munich (1/3)

Parameter	Sub-parameter
 <p><b>Munich, Germany</b></p> <ul style="list-style-type: none"> <li>— City population: 1.45 million</li> <li>— Population of the metropolitan area: 2.6 million</li> <li>— Country population: 82 million</li> <li>— Unemployment Rate: 3.8 percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Germany is considered to be an ‘Innovation Leader’ in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 2.8 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.9 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 729</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Munich Metro Area has 2 universities for Medicine and Life Sciences in the top 200 universities according to the Shanghai Index: Technical University Munich and the University of Munich</li> <li>— Other prominent universities in Munich Metro Area include the Ludwig Maximilian University, Technische Universität München and the University of Ingolstadt</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Germany has 37.1 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Germany ranks 12<sup>th</sup> out of 54 countries in the Scientific American Worldview Overall rankings</li> </ul> <p><b>Life Sciences Industry in the Munich Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 154 products</li> <li>— Investment into private and public companies: US\$782.1 million in 2016</li> <li>— Examples: 4SC AG, WILEX AG, MorphoSys AG</li> </ul>



# Munich (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Munich Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— There are 116 Life Sciences companies in Munich (101 biotech, 10 medical technology and 5 pharmaceutical companies are based in Munich)</li> <li>— Region gets business management support from BioM, a not-for-profit organization set up by Bavarian government</li> <li>— The city is the global headquarters to 12 and regional headquarters to 1 Life Sciences company</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Federal Institute for Drugs and Medical Devices (Bundesinstitut für Arzneimittel und Medizinprodukte, BfArM) is an independent federal higher authority within the portfolio of the Federal Ministry of Health. The BfArM is located in Bonn and employs approximately 1000 employees</li> </ul> <p><b>EMA Partner Associations with headquarters in Germany</b></p> <ul style="list-style-type: none"> <li>— European Association for the Study of Diabetes (EASD)</li> <li>— The European Society of Oncology Pharmacy (ESOP)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Germany scores 81 out of 100 in the Transparency Global Anti-corruption Index and is ranked 10th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— Germany scores 0.7 in the Political Stability and Absence of Terrorism report by World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Munich has approximately 1,710 return flights per week connecting European capitals and 450 return flights per week connecting global hubs</li> <li>— Of the 39 locations including European capitals and global hubs, Munich is connected to 11 European capital and 6 global hub through flights which arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 45 to 50 minutes by train from city center to Munich airport. Airport is served by two railway stations. Buses are also available for city center and nearby cities</li> </ul>

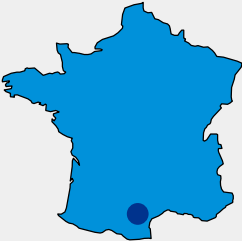
# Munich (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Management of Cities</b> — Germany is ranked at 13th in the IMD report
	<b>Hotels and conference centers</b> — Munich has 5 5-star, 37 4-star, 45 3-star hotels and 49 special event venues
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Munich ranks 4th out of 230 cities in the Mercer Quality of Living Index
	<b>Work life balance</b> — Germany scores 8.4 out of 10 on the OECD work-life balance index
	<b>Number of International schools: 9</b>
	<b>Gender Equality</b> — Germany ranks 36th out of 109 countries and has a score of 54.6 out of 100 for gender pay gap
	<b>Access to growth opportunities</b> — Germany ranks 27th out of 109 countries based on use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly cost for a 120-sqm apartment is EUR 2,243



Paris

# Paris (1/3)

	Parameter	Sub-parameter
 <p><b>Paris, France</b></p> <ul style="list-style-type: none"> <li>— City population: 2.2 million</li> <li>— Population of the metropolitan area: 12.4 million</li> <li>— Country population: 66 million</li> <li>— Unemployment Rate: 10.4 percent</li> </ul>	<p><b>Research environment</b></p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— France is considered to be a 'Strong Innovator' in the European Innovation Scoreboard.</li> <li>— Total R&amp;D expenditure amounted to 2.2 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 1.45 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 651</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— There are approximately 300 public research institutions, 20 Grandes Écoles (higher education institutes) and 3 Life Science universities</li> <li>— Paris Metro Area has 4 universities for Medicine (Pierre and Marie Curie University, University of Paris Sud, University of Paris - Descartes and University Paris Diderot and 3 in Life Sciences (Pierre and Marie Curie University, Paris University Descartes and University of Paris-Sud ) in the top 200 universities according to the Shanghai Index</li> <li>— Other prominent universities in Paris include Paris-Sorbonne University, University Paris-Descartes, Dauphine University Paris, University Paris Diderot, Pierre and Marie Curie University, Ecole Normale Supérieur, Université Paris Saclay/Paris</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p>	<p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— France has 46.7 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— France ranks 17th among 54 countries in the Scientific American Worldview Overall Scoreboard</li> </ul>

# Paris (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Paris Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 207 products</li> <li>— Investment into private and public companies: US\$1.7 billion in 2016</li> <li>— Examples: Sanofi, PIERRE FABRE, Collectis</li> <li>— There are 152 Life Sciences companies in France (102 biotech, 28 medical technology and 22 pharmaceutical companies)</li> <li>— The city is also the global headquarters to 31 and the regional headquarters to 4 Life Sciences companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The National Agency for the Safety of Medicines and Health Products (ANSM) was created to strengthen the safety of medicines and health products. It employs about 1,000 staff</li> </ul> <p><b>EMA Partner Associations with headquarters in France</b></p> <ul style="list-style-type: none"> <li>— European Society of Cardiology (ESC)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— France scores 69 out of 100 in the corruption perception index and ranks 23rd out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— France scores 0.3 on the World Bank's Political Stability and Absence of Violence/Terrorism index</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Paris has approximately 2,680 return flights per week connecting European capitals and 660 return flights per week connecting global hubs</li> <li>— Of the 39 locations (including European capitals and global hubs), Paris is connected to 19 European capitals and 8 global hubs with flights, which arrive early and leave late</li> </ul> <p><b>Transfer Time from Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 50 minutes by train from central Paris to Paris Charles de Gaulle Airport. Many non-stop bus services are also available <ul style="list-style-type: none"> <li>– Paris-Orly and Beauvais-Tillé airport also serve Paris</li> </ul> </li> </ul> <p><b>Management of Cities</b></p> <ul style="list-style-type: none"> <li>— France ranks 24th out of 61 countries in the IMD report</li> </ul>


# Paris (3/3)

Parameter	Sub-parameter
<b>Connectivity-Infrastructure</b>	<p><b>Hotels and conference centers</b></p> <ul style="list-style-type: none"> <li>— Paris has 40 5-star, 133 4-star, 326 3-star hotels and 129 special event venues</li> </ul>
<b>Quality of Life; Families and Spouses</b>	<p><b>Quality of Living</b></p> <ul style="list-style-type: none"> <li>— Paris ranks 37th out of 230 cities across the world in the Mercer Quality of Living Index</li> </ul> <p><b>Work Life Balance</b></p> <ul style="list-style-type: none"> <li>— France scores 9.0 out of 10 on the OECD work-life balance index</li> </ul> <p><b>Number of International schools: 30</b></p> <p><b>Gender Equality</b></p> <ul style="list-style-type: none"> <li>— France ranks 24th out of 109 for gender pay gap</li> </ul> <p><b>Access to growth opportunities</b></p> <ul style="list-style-type: none"> <li>— France ranks 38th out of 109 countries based on use of professional and social networks</li> </ul>
<b>Housing</b>	<p><b>Housing rents</b></p> <ul style="list-style-type: none"> <li>— The average monthly cost for a 120-sqm apartment is EUR 4,057</li> </ul>



# Rome

# Rome (1/3)

	Parameter	Sub-parameter
 <p><b>Rome, Italy</b></p>	<p><b>Research environment</b></p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Italy is considered to be a 'Moderate Innovator' in the European Innovation Scoreboard</li> <li>— Total R&amp;D expenditure amounted to 1.3 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 0.7 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 552</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Rome has 1 university for medicine in the top 200 universities according to the Shanghai Index (Sapienza University of Rome)</li> <li>— Other prominent universities include the John Cabot University Guarini Campus,, Università degli Studi di Roma 'Tor Vergata' and Università degli Studi Roma Tre</li> </ul>
<ul style="list-style-type: none"> <li>— City population: 2.6 million</li> <li>— Population of the metropolitan area: 4.3 million</li> <li>— Country population: 60 million</li> <li>— Unemployment Rate: 11.9 percent</li> </ul>	<p><b>Dynamic and Size of Life Sciences cluster</b></p>	<p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Italy has 27.1 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Italy ranks 38th among 54 countries in the Scientific American Worldview Overall rankings</li> </ul> <p><b>Life Sciences Industry in the Rome Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 28 products</li> <li>— Investment into Private and Public companies: NA</li> <li>— Examples: Angelini S.p.A., SIGMA-TAU S.p.A., Biochem S.r.l.</li> <li>— There are 43 Life Sciences companies in Rome (26 biotech, 3 medical technology and 14 pharmaceutical companies)</li> <li>— Rome is also the global headquarters to 9 and the regional headquarters to 2 Life Sciences companies</li> </ul>



# Rome (2/3)

Parameter	Sub-parameter
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<b>National Competent Authorities</b> — The Italian Medicines Agency (AIFA) is the national authority responsible for drugs regulation in Italy. It is a public body operating autonomously under the direction of the Ministry of Health and is under the supervision of the Ministry of Health and the Ministry of Economy. The agency employs approximately 600 staff
	<b>Corruption Perception Index</b> — Italy scores 47 out of 100 in the corruption perception index and ranks 60th out of 167 countries
	<b>Political Stability and Absence of Violence/ Terrorism</b> — Italy scores 0.3 in the Political Stability and Absence of Terrorism report by World Bank
<b>Connectivity-Infrastructure</b>	<b>Flight Connections</b> — Rome has approx. 1,680 return flights per week connecting European capitals and 320 return flights per week connecting global hubs — Of the 39 locations including European capitals and global hubs, Rome is connected to 14 European capitals and 7 global hubs through flights which arrive early and leave late
	<b>Transfer Time from Airport to City</b> — It takes approximately 30 minutes by train from Roma Termini to Fiumicino – Leonardo da Vinci International Airport — For Buses and Taxis, a six lane motorway is linked to the airport
	<b>Management of Cities</b> — Italy ranks 47th out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Rome 19 5-star, 64 4-star, 224 3-star hotels and 59 special event venues

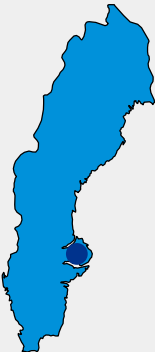
# Rome (3/3)

Parameter	Sub-parameter
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Rome is ranked 53rd out of 230 cities across the world in the Mercer Quality of Living Index
	<b>Work Life Balance</b> — Work life balance score for Italy is 7.8 out of 10 the OECD work-life balance index
	<b>Number of International schools: 18</b>
	<b>Gender Equality</b> — Italy ranks 82nd out of 109 for gender pay gap
	<b>Access to growth opportunities</b> — Italy is ranked 60th out of 109 countries based on use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly cost for a 120-sqm apartment is EUR 1,952



# Stockholm

# Stockholm (1/3)

Parameter	Sub-parameter
 <p><b>Stockholm, Sweden</b></p> <ul style="list-style-type: none"> <li>— City population: 790,000</li> <li>— Population of the metropolitan area: 2.3 million</li> <li>— Country population: 9.7 million</li> <li>— Unemployment Rate: 7.4 percent</li> </ul>	<p><b>Research environment</b></p> <p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Sweden is considered an 'Innovation Leader' in the European Innovation Scoreboard</li> <li>— Total R&amp;D expenditure amounted to 3.1 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 2.1 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 1,774</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Stockholm/Uppsala region is the largest Life Sciences cluster in Sweden</li> <li>— Stockholm has 1 university for Medicine (Karolinska Institute) and 2 universities for Life Sciences (Karolinska Institute, Stockholm University) in the top 200 universities according to the Shanghai Index</li> </ul>
	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Sweden has 29 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Sweden ranks 9th out of 54 countries in the Scientific American Worldview Overall rankings</li> </ul>

Note: \*Figures are estimated



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# Stockholm (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Stockholm Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 49 products</li> <li>— Investment into Private and Public companies: US\$ 929.1 million in 2016</li> <li>— Examples: Swedish Orphan Biovitrum AB (public), Medivir AB (public), Elekta AB, (public), Medtech</li> <li>— There are 109 Life Sciences companies in Stockholm (55 biotech, 27 medical technology and 27 pharmaceutical companies)</li> <li>— According to a study, Stockholm has 51 percent of all Life Science companies based in Sweden</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Medical Products Agency is a government body under the aegis of the Ministry of Health and Social Affairs. Its operations are largely financed through fees. Around 750 people work at the agency; most are pharmacists and doctors</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Sweden scores 88 out of 100 in the corruption perception index and ranks 4th out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— Sweden has a score of 1.0 in the Political Stability and Absence of Terrorism report by World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Stockholm has approximately 1,610 return flights per week connecting European capitals and 90 return flights per week connecting global hubs</li> <li>— Of the 39 locations including European capitals and global hubs, Stockholm is connected to 15 European capitals and 1 global hubs through flights which arrive early and leave late</li> </ul> <p><b>Transfer Time from Airport to City</b></p> <ul style="list-style-type: none"> <li>— It takes approximately 20 to 25 minutes by train from Stockholm Central Station to Stockholm Arlanda Airport <ul style="list-style-type: none"> <li>– Stockholm-Bromma Airport located 5 miles away from the city center also serves Stockholm</li> <li>– Stockholm-Skavsta Airport and Stockholm-Västerås Airport are located within 100 miles from city and offer international flights</li> <li>– Arlanda Express train and Stockholm commuter rail connects the airport to the city, as do buses and fixed-price taxis.</li> </ul> </li> </ul>

Note: \*Figures are estimated



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# Stockholm (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Management of Cities</b> — Sweden ranks 11th in the IMD report
	<b>Hotels and conference centers</b> — Stockholm has 5 5-star, 12 4-star, 48 3-star hotels and 57 special event venues
Quality of life	<b>Quality of Living</b> — Stockholm ranks 19th out of 230 cities in the Mercer Quality of Living Index
	<b>Work Life Balance</b> — Sweden scores 8.5 out of 10 on the OECD work-life balance index
	<b>Number of International schools: 9</b>
	<b>Gender Equality</b> — Sweden ranks 8th out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Sweden is ranked 9th out of 109 countries based on use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly cost for a 120-sqm apartment is EUR 1,887



Vienna

# Vienna (1/3)

Parameter	Sub-parameter
 <p>Vienna, Austria</p>	<p><b>R&amp;D expenditure in the public sector</b></p> <ul style="list-style-type: none"> <li>— Austria considered to be a ‘Strong Innovator’ in the European Innovation Scoreboard. The Innovation ranking declined compared to the previous years</li> <li>— Total R&amp;D expenditure comprised 3 percent of GDP</li> <li>— R&amp;D expenditure in the business sector stood at 2.1 percent of GDP</li> </ul> <p><b>Scientific Publications</b></p> <ul style="list-style-type: none"> <li>— International scientific co-publications per million population: 1,226</li> </ul> <p><b>Research facilities/ Infrastructure</b></p> <ul style="list-style-type: none"> <li>— Vienna Metro Area has 5 universities offering research facilities in Life Sciences namely University of Natural Resources and Life Sciences, Medical University of Vienna, University of Veterinary Medicine, University of Vienna, and Vienna University of Technology</li> <li>— Vienna has 2 universities in the top 200 universities for Medicine and Life Sciences according to the Shanghai Index: the Medical University of Vienna and University of Vienna</li> </ul>
<ul style="list-style-type: none"> <li>— City population: 1.7 million</li> <li>— Population of the metropolitan area: 2.6 million</li> <li>— Country population: 8.6 million</li> <li>— Unemployment Rate: 10.6 percent</li> </ul>	<p><b>Dynamic and Size of Life Sciences cluster</b></p> <p><b>Science and Technology graduates</b></p> <ul style="list-style-type: none"> <li>— Austria has 44.6 Science and technology graduates per 1,000 population (tertiary graduates in science and technology per 1,000 persons aged 20–29 years)</li> </ul> <p><b>Regional Biotech Rankings</b></p> <ul style="list-style-type: none"> <li>— Austria ranks 18<sup>th</sup> out of 54 countries in the Scientific American Worldview Scorecard</li> </ul> <p><b>Life Sciences Industry in the Vienna Metro Area</b></p> <ul style="list-style-type: none"> <li>— Pipeline: 97 products</li> <li>— Investment into Private and Public companies: US\$227.1 million in 2016</li> <li>— Examples: Marinomed Biotechnologie GmbH, Hookipa Biotech AG, Biomay AG</li> </ul>



# Vienna (2/3)

Parameter	Sub-parameter
<b>Dynamic and Size of Life Sciences cluster</b>	<p><b>Life Sciences Industry in the Vienna Metro Area (contd.)</b></p> <ul style="list-style-type: none"> <li>— There are 93 Life Sciences companies in Vienna (70 biotech, 9 medical technology and 14 pharmaceutical companies)</li> <li>— Additionally, Vienna is the global headquarters of 9 and regional headquarters of 3 Life Sciences companies</li> </ul>
<b>Size of National Competent Authorities, Political Stability, Corruption</b>	<p><b>National Competent Authorities</b></p> <ul style="list-style-type: none"> <li>— The Federal Office for Safety in Health Care - BASG and the Austrian Medicines and Medical Devices Agency - AGES MEA are responsible for a variety of tasks, such as issuing marketing authorization for medicinal products (human and veterinary), assessing the efficacy and safety of medicinal products and medical devices, market surveillance and the inspection of manufacturers. Together, the two agencies have 280 employees</li> </ul> <p><b>EMA Partner Associations with headquarters in Austria</b></p> <ul style="list-style-type: none"> <li>— European Academy of Neurology (EAN)</li> <li>— European Society of Radiology (ESR)</li> <li>— European Union Geriatric Medicine Society (EUGMS)</li> <li>— United European Gastroenterology (UEG)</li> </ul> <p><b>Corruption Perception Index</b></p> <ul style="list-style-type: none"> <li>— Austria scores 75 out of 100 in the Transparency Global Anti-corruption Index and is placed in the 17th position out of 167 countries</li> </ul> <p><b>Political Stability and Absence of Violence/Terrorism</b></p> <ul style="list-style-type: none"> <li>— Austria scores 1.2 in the Political Stability and Absence of Terrorism report by World Bank</li> </ul>
<b>Connectivity-Infrastructure</b>	<p><b>Flight Connections</b></p> <ul style="list-style-type: none"> <li>— Vienna has approximately 1,280 return flights per week connecting European capitals and 270 return flights per week connecting global hubs</li> <li>— Of the 39 locations including European capitals and global hubs, Vienna is connected to 9 European capitals and 3 global hubs with flights that arrive early and leave late</li> </ul> <p><b>Transfer Time Airport to City</b></p> <ul style="list-style-type: none"> <li>— The Vienna S-Bahn and city airport train connects airport to the city center. It takes around 20 minutes by train from city center to Vienna International airport</li> </ul>

# Vienna (3/3)

Parameter	Sub-parameter
Connectivity-Infrastructure	<b>Management of Cities</b> — Austria ranks 13 <sup>th</sup> out of 61 countries in the IMD report
	<b>Hotels and conference centers</b> — Vienna has 13 5-star, 43 4-star, 46 3-star hotels and 55 special event venues
Quality of Life; Families and Spouses	<b>Quality of Living</b> — Vienna is ranked 1st out of 230 cities across the world in the Mercer Quality of Living Index
	<b>Work Life Balance</b> — Austria scores 6.9 out of 10 on the OECD work-life balance index
	<b>Number of International Schools: 9</b>
	<b>Gender Equality</b> — Austria ranks 76th out of 109 countries for gender pay gap
	<b>Access to growth opportunities</b> — Austria ranks 24th out of 109 countries based on use of professional and social networks
Housing	<b>Housing rents</b> — The average monthly cost for a 120-sqm apartment is EUR 2,784



# Sources

# Sources (1/2)

Chart No.	Parameters	Comments	Source / Link
1.	<b>Products in development phase</b>	Includes all products in pre-clinical, discovery and clinical development phase for each metro area. Pipeline analysis is a good proxy to assess the strength of a Life Sciences cluster	<a href="#">Biotech Gate / KPMG</a> (2016, per metro area)
2.	<b>Number of Graduates in Science and Technology</b>	Graduates from science and technology fields of education per 1,000 persons aged 20 to 29. Provides information on availability of qualified staff	<a href="#">Eurostat</a> (2016, per country)
3.	<b>Total number of Life Sciences companies / Financing / Activities / No. HQs</b>	Pharma, Biotech and Medical Devices company per metro area. An indicator of the strength of a Life Sciences Cluster. Data on Financing Rounds provides for an indirect indicator on the strength of a cluster. Number of HQs provide insight into the internationality of a location	<a href="#">Biotech Gate / KPMG</a> (2016, per metro area)
4.	<b>Regional Biotech Cluster Scorecard</b>	The Scientific American Worldview Scorecard assesses the dynamic and potential of the Life Sciences Industry per country. This Scorecard evaluates 54 countries on their innovation potential in biotechnology. The analysis includes seven categories: Productivity, Intellectual Property (IP) Protection, Intensity, Enterprise Support, Education/Workforce, Foundations, and Policy & Stability	<a href="#">Scientific American Worldview</a> (2016, per country)
5.	<b>Scientific Co-Publications</b>	International scientific co-publications are an important proxy for the quality of scientific research as collaboration increases scientific productivity. Calculated per million population	<a href="#">European Innovation Scoreboard</a> (2016, per country)
6.	<b>Number of ARWU Universities</b>	Shanghai Ranking Consultancy is a globally recognized organization dedicated to the research on higher education. It is the publisher of the Academic Ranking of World Universities. This study focuses on Medicine / Pharma Universities and Life Sciences and Agricultural Universities	<a href="#">Academic Ranking of World Universities</a> (2016, per metro area)
7.	<b>Leadership in Innovation per country in Europe</b>	The European Innovation Scoreboard ranks the capacity of countries to facilitate and drive economic growth through Innovation drivers such Research and Sciences, Private and Public Investments	<a href="#">European Innovation Scoreboard</a> (2016, per country)
8.	<b>R&amp;D expenditure in % of GDP R&amp;D expenditure in the business sector in % of GDP</b>	Despite a rather broad indicator, R&D in % of GDP provides for a solid basis to assess a country's capacity to foster innovation. R&D expenditure in the business sector in % of GDP provides more accurate information on the non-academic part of the R+D investments	<a href="#">Eurostat</a> (2016, per country) <a href="#">European Innovation Scoreboard</a> (2016, per country)
9.	<b>Management of Cities</b>	The efficient management of cities is an important factor to assess the business-friendliness of a city. Data derives from the Business Executives Opinion Survey which is conducted by IMD. Business executives in top or middle management are asked to assess the situation in their own country. They can be locals or expatriates, having worked in the country for at least one year. The exact wording of the question is "Management of cities does not support/supports business development "	<a href="#">IMD World Competitiveness Yearbook</a> (2016, per country)
10.	<b>Number of Hotels</b>	Number of hotels and special venues for hosting larger conferences	<a href="#">Cvent</a> (2016, per city)
11.	<b>Number of European Capitals and Global Hubs connected by direct flights per week</b>	Relevant factor to assess connectivity and accessibility of a metro area	KPMG (2016, metro area)

# Sources (2/2)

Chart No.	Parameters	Comments	Source / Link
11a	<b>European Capitals/Economic Hubs</b>	The following European capitals/economic hubs have been identified: London, Stockholm, Madrid, Ljubljana, Bucharest, Bratislava, Warsaw, Lisbon, Malta, Amsterdam, Vilnius, Luxembourg, Milan, Rome, Riga, Dublin, Budapest, Berlin, Munich, Athens, Helsinki, Paris, Lyon, Copenhagen, Tallinn, Cyprus, Prague, Sofia, Zagreb, Vienna, Brussels, Barcelona	KPMG (2016)
11b	<b>Global Hubs</b>	Following Global hubs have been included: Boston, San Francisco, Singapore, Sao Paulo, Shanghai, Mumbai, Zurich, Sydney, Dubai, Tel Aviv, Moscow	KPMG (2016)
12.	<b>Political Stability and Absence of Violence/Terrorism</b>	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. Relevant factor for international organizations	<a href="#">The World Bank</a> (2015, per country)
13.	<b>Corruption Perception Index</b>	Scores countries around the world on how corrupt their public sectors are seen to be	<a href="#">Transparency International</a> (2015, per country)
14.	<b>National Competent Authorities</b>	National competent authorities are assessed according to the number of employees. Indicator for potential to collaborate/support EMA	KPMG (2016, per country)
15.	<b>Access to Growth Opportunities</b>	This factor describes how, through the help of social and professional networks and through empowerment, individuals can grow professionally. This sub-parameter consists of the following factors: <b>Use of virtual social networks:</b> Average answer to the question: In your country, how widely are virtual social networks used? <b>Use of virtual professional networks:</b> LinkedIn users per 1,000 labor force <b>Delegation of authority:</b> Average answer to the question: In your country, how do you assess the willingness to delegate authority to subordinates?	<a href="#">INSEAD Global Talent Competitiveness Index</a> (2016, per country)
16.	<b>Number of International Schools</b>	Includes an indicative list of number of international schools in each city	KPMG (2016, per city)
17.	<b>Quality of Living</b>	Living conditions are analyzed according to 10 categories: Political and social environment, Economic environment, Socio-cultural environment, Medical and health considerations, Schools and education, Public services and transportation, Recreation (restaurants, theaters, cinemas, sports and leisure), Consumer goods, Housing, Natural environment	<a href="#">Mercer Quality of Living Rankings</a> (2016, per metro area)
18.	<b>Work Life Balance</b>	Measures how an economy/government manages the balance between work and daily living. Indicator for family friendliness	<a href="#">OECD Better Life Index</a> (2016, per country)
19.	<b>Gender Equality</b>	Gender equality refers to female-to-male earnings ratio. Often a relevant factor for spouse relocation	<a href="#">INSEAD Global Talent Competitiveness Index</a> (2016, per country)
20.	<b>Housing Rents</b>	Ranking of the average monthly rent for local standard apartment of 120-sqm in the city center	KPMG (2016, per city)



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# Contacts

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