Benchmarking SEQ in a Global Context

Final

The Business of Cities

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BUSAN REGION

SOUTH HOLLAND

HAMBURG REGION

FUKUOKA PREFECTURE

SOUTH EAST FLORIDA

SAN DIEGO REGION

METRO VANCOUVER

CAPE TOWN METRO

BARCELONA PROVINCE

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EXECUTIVE SUMMARY

South East Queensland (SEQ) is embarking on a historic transition towards a larger population, a more specialised and diversified economy, and participation in global flows and exchanges enabled by a new international context. In this new cycle SEQ competes and compares as much with global peers, as with other Australian regions, and Australia's long term success requires the SEQ region to become competitive at a global scale.

This report benchmarks SEQ in comparative global context for the first time, assessing the region's performance against other competitive and liveable medium-sized regions around the world with similar attributes, advantages and functions. By drawing on a unique combination of urban indices, regional datasets, intelligence and insight into regional initiatives and innovations around the world, this research places SEQ in its proper international context and provides a relevant perspective to assess its opportunities and imperatives.

The shared destiny of city and region

The wide-ranging comparative urban data and city benchmarking illustrate that the region's core city, Brisbane, is an important leader and catalyst for SEQ. Brisbane records strong global performance for a city of its size and type, and has a growing city brand, reputation, and profile. This makes Brisbane's increasing success an asset for SEQ. It also indicates that the region as a whole stands to benefit as Brisbane's accelerates on a global path. At the same time, Brisbane's ability to continue performing well and improve its position in international studies, reviews, and indexes depends fundamentally on the size and diversity of the SEQ region, and on the abilities of the city and region to build a shared model of success. SEQ provides Brisbane with additional 'borrowed scale', diversity, choice, and multiple locations in which to accommodate specialisation and sustainable growth.

South East
Queensland

Noosa
Sunshine Coast
Somerset
Moreton Bay
Toowoomba (urban extent)
Brisbane
Redland
Lockyer Valley
Logan
Ipswich
Scenic Rim
Gold Coast

The opportunities and imperatives of rapid growth

SEQ is experiencing a remarkable cycle of population growth and economic diversification that far outpaces many of its peer regions around the world. Australian metros are growing twice as fast as the OECD average, and SEQ is growing faster than the Australian average. This offers special opportunities for the SEQ region to compete at a new level. But it also creates urgent imperatives to organise, shape, resource and co-ordinate this growth effectively.

The global economy has transitioned into a new path of technology-fuelled cycle of expansion. The regions that accommodate newly internationalising tech-led sectors are gaining ground. In this context SEQ is so far a small global player when compared to the high trade regions of Rotterdam and Busan, and the high visitor and cultural economy regions of Miami and Barcelona. This size challenge currently holds back the productivity potential of the region. This partly reflects the smaller domestic market that SEQ serves in Australia, but it also underlines an opportunity to internationalise SEQ's specialised services economy further and faster. There are clear global opportunities and regional sources of demand for SEQ to serve, and these bring critical investment and coordination requirements that must be addressed.

Summary of SEQ's performance vs peers

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
No. of international students in top 1000 universities	SEQ	MVA	BAR	SHO	SDR	CTM	SEF	HAM	BUS	FKP
Projected population growth, 2017-2040	SEQ	MVA	SEF	CTM	HAM	SDR	SHO	BAR	FKP	BUS
No. of students enrolled in top 500 universities	SEQ	BAR	MVA	SHO	SDR	SEF	CTM	HAM	BUS	FKP
Number of 4*/5* hotels	BAR	SEQ	CTM	SEF	HAM	SHO	MVA	SDR	FKP	BUS
Population growth, 2000-2017	CTM	SEQ	MVA	SEF	SDR	BAR	SHO	HAM	FKP	BUS
Total green space per million inh.	HAM	SEQ	SEF	MVA	SHO	SDR	BUS	FKP	BAR	-
Low air pollution	SEF	MVA	SEQ	SDR	HAM	BAR	SHO	CTM	FKP	BUS
Length of regional rail network per 1,000 inh.	BAR	HAM	SEQ	FKP	SHO	CTM	SDR	MVA	BUS	SEF
Foreign-born population	MVA	SEF	SEQ	SDR	BAR	HAM	SHO	CTM	FKP	BUS
Rental affordability (3-bedroom apartment)	FKP	BUS	SEQ	SHO	HAM	SDR	BAR	SEF	MVA	CTM
Regional university impact and performance	SHO	MVA	SEQ	BAR	SDR	CTM	HAM	SEF	FKP	BUS
Average daily commute time (mins)	BAR	HAM	SEQ	SDR	MVA	SEF	-	-	-	-
Average daily commute length (km)	BAR	MVA	HAM	SEQ	SDR	SEF	-	-	-	-
Average wait for public transport (mins)	BAR	HAM	MVA	SEQ	SDR	SEF	-	-	-	-
Annual air passengers	SEF	SHO	BAR	SEQ	FKP	MVA	SDR	HAM	BUS	CTM
Low elderly dependency ratio	CTM	SDR	BUS	SEQ	SHO	MVA	BAR	SEF	HAM	FKP
Rental affordability (1-bedroom apartment)	FKP	BUS	HAM	SEQ	SDR	SHO	MVA	SEF	BAR	CTM
Real estate investment performance	SEF	HAM	SDR	SEQ	BAR	MVA	FKP	SHO	CTM	-
Fastest transit journey from city centre to airport	FKP	SDR	SEF	SHO	SEQ	BAR	MVA	HAM	BUS	CTM
Investment attractiveness of core metro areas	SEF	BAR	HAM	SDR	SEQ	MVA	CTM	SHO	FKP	BUS
No. of innovative tech firms	SEF	SDR	MVA	BAR	SEQ	HAM	SHO	CTM	-	-
No. of firms with high growth potential	SDR	BAR	SEF	HAM	SEQ	CTM	SHO	MVA	-	-
Cultural activities/attractions	BAR	MVA	CTM	SEF	SEQ	SDR	SHO	HAM	FKP	BUS
GDP per capita	SDR	HAM	SEF	MVA	SHO	SEQ	BAR	BUS	FKP	CTM
Labour productivity	SDR	HAM	SEF	BAR	SHO	SEQ	MVA	FKP	BUS	-
Number of meetings	BAR	SHO	CTM	HAM	MVA	SEQ	SEF	BUS	FKP	SDR
Innovation index performance (core cities)	BAR	MVA	SEF	SDR	HAM	SEQ	BUS	SHO	CTM	FKP
Maximum internet speed	SDR	HAM	SEF	SHO	BUS	SEQ	MVA	BAR	CTM	-
Housing affordability (median multiple)	SHO	FKP	BUS	SEF	HAM	SEQ	SDR	BAR	MVA	CTM
Low CO_2 emissions	BAR	BUS	FKP	CTM	HAM	SDR	SEQ	MVA	SHO	SEF
VC investment per 1,000 inh.	SDR	MVA	BAR	SEF	HAM	CTM	SEQ	SHO	FKP	BUS
Airport destination connectivity	SHO	BAR	SEF	HAM	MVA	BUS	SEQ	FKP	CTM	SDR
Average internet speed	SHO	SEF	MVA	BAR	SDR	HAM	BUS	SEQ	CTM	-
Patent applications per 1,000 inh.	SDR	MVA	HAM	BAR	SHO	BUS	SEF	SEQ	CTM	FKP
Volume of port cargo (tonnes)	BUS	SHO	MVA	HAM	FKP	CTM	BAR	SEQ	SEF	SDR
Volume of port cargo (TEUs)	BUS	SHO	HAM	MVA	SEF	BAR	FKP	SEQ	CTM	SDR
HE attainment of all 15+ residents	SDR	MVA	BAR	SHO	SEF	BUS	FKP	SEQ	HAM	CTM
Volume of airport cargo (tonnes)	SEF	SHO	MVA	FKP	SDR	BAR	BUS	HAM	SEQ	-
% change in green space, 2000-2014	BUS	HAM	SHO	FKP	SDR	SEF	BAR	MVA	SEQ	-
Export-oriented sectors share of economy	BUS	CTM	SDR	BAR	HAM	SEF	FKP	SHO	MVA	SEQ
Submarine digital broadband connectivity	SEF	BUS	SHO	CTM	FKP	BAR	SDR	HAM	MVA	SEQ
Average speed/time to 2nd, 3rd and 4th cities by rail	HAM	FKP	BAR	BUS	SHO	MVA	SDR	CTM	SEF	SEQ

*BAR = Barcelona Province; BUS = Busan Region; CTM = Cape Town Metro; FKP = Fukuoka Prefecture; HAM = Hamburg Region; MVA = Metro Vancouver; SDR = San Diego Region; SEF = South East Florida; SEQ = South East Queensland; SHO = South Holland

Infrastructure deficits

SEQ inherits a distinct spatial character, which relative to the other regions in this study, show it to be a higher sprawl, lower density, and less efficiently connected region than many of its peers. Although the region has the buiding blocks of a high-coverage rail system, it performs weakly in terms of inter-city rail connectivity, frequency and speeds, especially compared to its peers in Europe and Asia. The region also has very low digital connectivity and access to the global submarine cable networks. These deficits highlight the importance for SEQ of investing in the infrastructure and amenities that make growth good and to ensure that the region is able to adjust to the next cycle of economic opportunity.

Preparing SEQ for the new economy

Comparative analysis of the 10 regions highlights that the scale of SEQ's innovation economy is still quite modest, despite the strength and reach of the region's education institutions. It is also apparent that other regions have made an earlier and more decisive push to diversify their economies and gain a position in niche high value sectors, with their universities playing an important set of roles to 'anchor' this process.

The requirements of the new clusters of technology led firms are different from the those of the commodities, resources, and corporate sectors. Some of the activities in which SEQ wants to compete require a different kind of urban fabric: they strongly prefer proximity, density, and the amenity that comes with it. Innovation economy, urban tourism, international higher education, and hosting global events all require a greater degree of density, urban amenity, and proximity than SEQ currently possesses.

Retaining the liveability edge

SEQ is currently ahead of many of its peer regions in many measures of lifestyle, access and affordability. However, the trends in several of these measures indicate that SEQ's advantage is being eroded as the cost of living rises, commuting distances rise and access to green space declines. For SEQ to retain its position and reputation, it will be necessary to build an inclusive high value economy and shift more systematically away from sprawl, as well as to expand the 'high experience' dimension of the visitor economy. These kinds of adjustments require targeted infrastructure investment but also shared regional leadership, an engaged private sector and a willingness to experiment.

Altogether the comparative analysis suggests that for SEQ to achieve it potential as a globalising region that hosts high value-added activities, to the benefit of Queensland and Australia, it is necessary to embellish not only the established advantages of its high quality of life, visitor and lifestyle offer, but also its key role as the leading Australian entrepôt. It is also important to achieve new levels of diversified specialisation, greater investment in growth management and infrastructure, and a higher coordination equilibrium where State and Federal Governments are active partners in shaping the future of a region forged by the collaboration of 12 leading local governments.

SEQ's performance vs 10 peers in key thematic areas
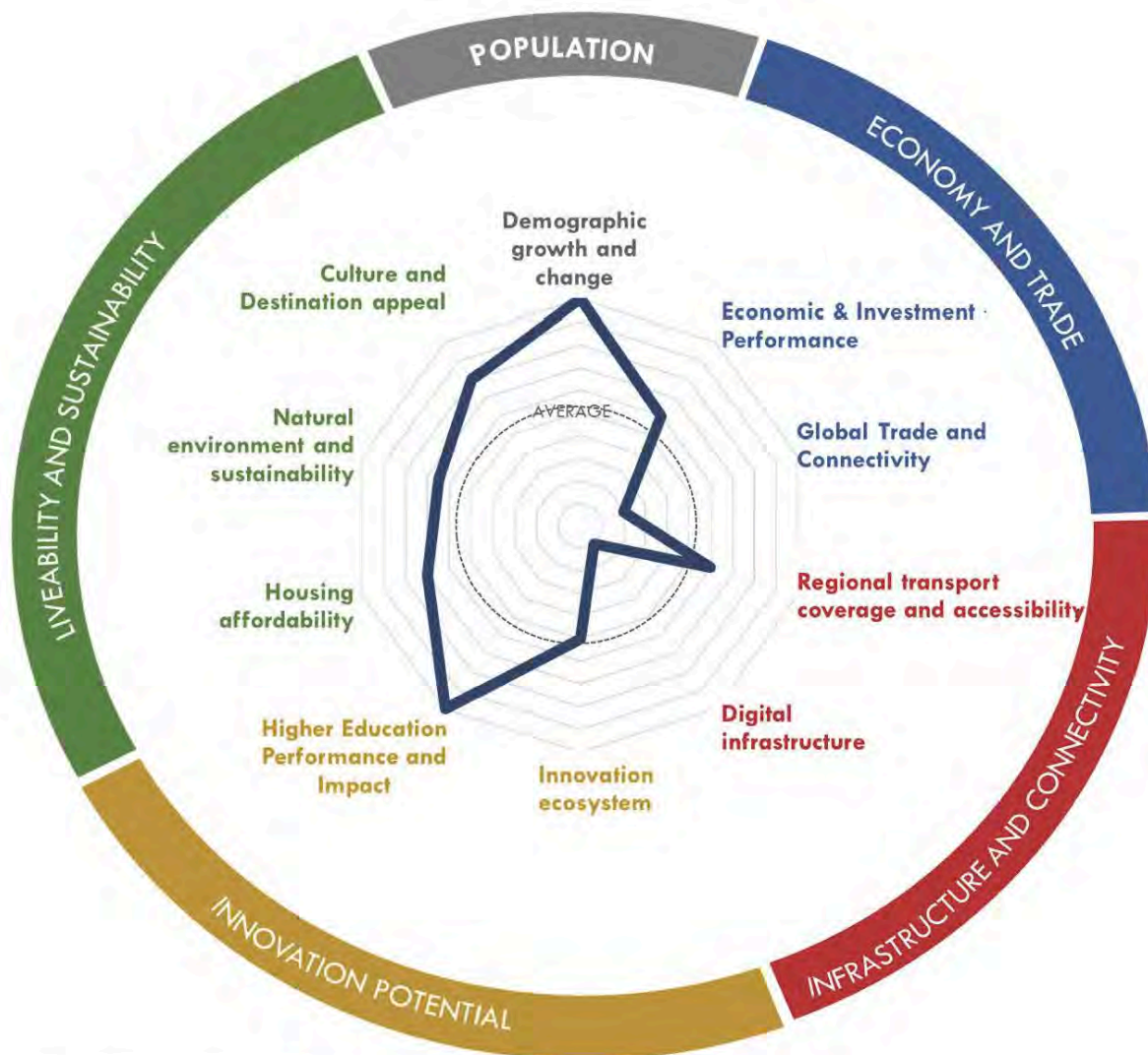
*See appendix for methodology

What are the lessons SEQ can learn from other regions?

This comparative benchmarking has also reviewed the kinds of projects, reforms, investments and joint working that SEQ's peer regions have been undertaking. On average SEQs peers are already focussed on a new agenda that offers much to SEQ and its partners in State and Federal Government. They are:

- Using their lifestyle advantages to attract international talent and entrepreneurs
- Making major investments in transport infrastructure, digital connectivity, and medium density high quality urban living in multi-centred regions.
- Focussed on the transition to a new innovation economy and it enterprise requirements.
- Investing in their citizens and the urban fabric to ensure that all communities and locations can participate in the growth and spread of prosperity.

- Doubling their collaboration efforts to ensure high trust, high coordination, and high investment governance arrangements through deals, agreements, and new shared institutions between all tiers of government.
- Telling their story to the world in ways which capture the imagination of their residents and their target audiences.
- Competing for catalytic events and opportunities that accelerate their investment and reputation.

The efforts being fast-tracked by other regions suggest a number of lessons for SEQ:

- SEQ needs to accelerate from a productive alliance between the local governments to being a longer term and permanent partnership with State and Federal Governments.
- An ambitious and far reaching City Deal that focusses on the investment and coordination required to achieve good growth and a competitive economy is essential.
- Key catalysts such as the Commonwealth Games, a potential Olympic Games bid, expanded Universities and Port/Airport facilities should be carefully managed to optimise returns.
- A new regional promotion effort should be set in train with the intention to achieve identity and recognition for SEQ as a favourable region for trade and talent. This would improve the region's data collection, monitoring and dissemination to internal and external audiences.
- There is an important role to be played by the civic institutions in SEQ, including universities, museums, research centres, heritage sites, convention centres, and others. Engaging these institutions is important to building city and regional identity, advocating for change, and anchoring new locations for development and intensification.

1. Introduction

The drivers of urbanisation and globalisation mean that city-regions are now the observed engines of national economic growth, and, at the same time, the content of city-regional economies is increasingly made up of globally contested activities. SEQ is a leading city-region in Australia and the Southern Hemisphere, and its trade and quality of life economy is increasingly global in character. Understanding the competitive outlook for SEQ is therefore important to the future of the region, and to the future of Queensland and Australia.

In 2017, SEQ's population puts it among the 150 largest urban regions in the world by population, and its economic size is just outside the top 100. It is clear that several other globalising regions now have similar attributes, advantages and functions to SEQ.

These are advanced, mid-sized, strategically located regions. They are SEQ's 'peers'. They compete with the SEQ region for international events and conventions, tourism, higher education, and in certain markets for traded goods and services.

This peer group is expanding as regions within the Asia-Pacific become increasingly competitive, and as they invest in economic diversification, infrastructure and quality of life. These regions already compete with SEQ for trade and logistics, real estate and infrastructure investment, retail, commerce, capital intensive manufacturing, and certain segments of the visitor economy. Their rapid development and growth in prosperity means that they will increasingly compete in creative industries, business services, entrepreneurship, life sciences, education & research and other high value-added functions.

In this context, this report provides a comparative and competitor analysis of SEQ that:

- Compares the SEQ region within a 'peer group' of 10 international regions with similar assets and competitiveness.
- Demonstrates the factors that make SEQ internationally competitive and which are imperative to improve and invest in.
- Identifies lessons and insights that can be learned from other city-regions.

Methodology

The development of this report has been through three principal phases:

1. Selection of peer regions
2. Data collection and comparison
3. Analysis of regional plans, projects and collaborative initiatives.

For the selection of peer regions, we filtered more than 300 regions globally according to:

- Population and economic size
- Performance in areas where SEQ has a competitive position (e.g. Quality of Life, Tourism, Trade)
- Strategic location relative to their continent or sub-region

This filter identified 15 potential regions for comparison with SEQ. Upon further investigation, a number of regions were discounted due to data challenges (Kaohsiung, Cebu City), or lack of size and context comparability (Auckland, Oslo).

For the performance dimension of this report we have drawn on four primary types of data source

- 100+ International indices and rankings that measure metropolitan and regional performance.
- Key metropolitan indicators from UN, OECD, Oxford Economics, Brookings Institution, LSE Cities, World Bank.
- National and regional statistics and census data on core factors such as: population and demographic change, government spending, density.
- Regional data from online data providers – e.g. Crunchbase, Google, Mattermark, Pitchbook, TripAdvisor.

We used these sources to analyse city-regional performance in terms of population and economic growth, investment, key sectors, innovation, education, skills and inclusion, trade and logistics platform, attractiveness to talent, tourism and destination flows, transport coverage and efficiency, other infrastructure system performance and quality of life (affordability, sustainability and resilience).

For the analysis of regional plans, projects, investments and collaboration, we combined our first-hand insight in several of the 10 regions with a review of the latest academic, policy and think tank literature in these city regions. We prioritised changes that have been agreed or implemented, over plans or deals which are in advanced negotiation but have not yet been confirmed. In cases where we required more detail on the substantive content or mechanism of a particular project, we have sought to contact a representative or expert of the region.

Every effort has been made to assess the 10 regions using comparable scales of analysis. In some cases a more accurate picture has been developed through measuring functional metropolitan regions, which extend well beyond the primary urbanised area. In a small number of areas where the assets or figures are concentrated in the main urban areas, we have deliberately compared just the core cities. These instances are highlighted and noted in the text.

SEQ's Peer Regions

This report compares SEQ against 9 other regions:

- Barcelona Province
- Busan Region
- Cape Town Metro
- Fukuoka Prefecture
- Hamburg Region
- Metro Vancouver
- San Diego Region
- South East Florida (Miami)
- South Holland (Rotterdam)

Relative Size and Scale of the 10 Regions

Hamburg Region

- Neumünster
- Lübeck
- Hamburg

SEQ

- Sunshine Coast
- Brisbane
- Toowoomba
- Gold Coast

South East Florida

- West Palm Beach
- Fort Lauderdale
- Miami

San Diego Region

- Oceanside
- Carlsbad
- San Diego

Barcelona Province

- Terrassa
- L'Hospitalet
- Barcelona

Fukuoka Prefecture

- Kitakyushu
- Fukuoka

Metro Vancouver

- Vancouver
- Burnaby
- Surrey

Cape Town Metro

- Paarl
- Cape Town
- Stellenbosch

South Holland

- The Hague
- Leiden
- Rotterdam

Busan Region

- Yangsan
- Gimhae
- Busan

These regions form a 'peer group' because they possess most or all of the following attributes:

- **Medium-sized** with a functional population of 3 to 5 million.
- **Strategic location within their continent or sub-regions.** These coastal regions act as gateways or hubs for global traffic. In terms of size they are second tier economies in their (sub-) continental 'system' of cities.
- **An advanced globalised core city.** The main city in the region typically rates among the top 100 for the presence of global firms in advanced services sectors[1]
- **Trading functions.** By measures of freight, cargo, or distribution functions, these regions are consistently ranked among the top 100 globally.[2]
- **Reputation for a high regional standard of Quality of Life and Public Services:** The cities and regions are on average rated within the Global Top 20 for Health and Education and within the Global Top 30 for Global Admiration and Trust.[3]
- **Emerging centres of Knowledge and Innovation:** All the regions possess Global Top 200 Universities and average in the Top 60 for Innovation production globally.[4]

What these 10 regions share is a dynamic core city or pair of cities surrounded by a productive and highly liveable region. In some cases, the core city and urbanised area comprises most of the spatial footprint of the region. In others, the core city is only a small part of a much larger agricultural or commodities-oriented region. And there are also examples of a more polycentric model where 2, 3, 4 or more well-connected cities comprise most of the regional economy (table 1).

Fig.1: Population size of the main city in the region relative to the whole region
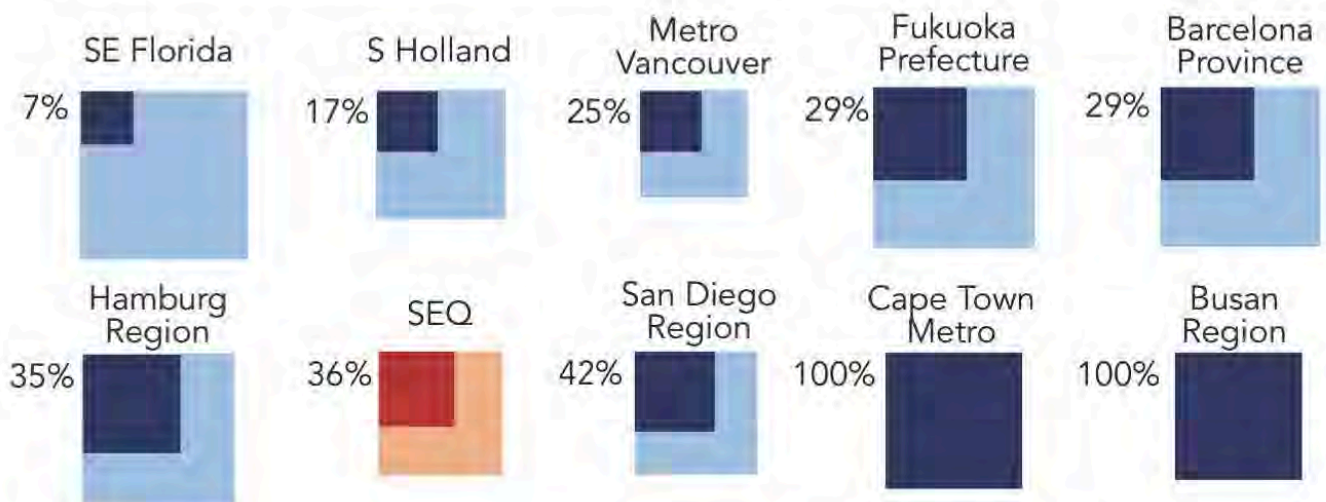
As Figure 1 shows, in most of the 10 regions the main city only comprises a minority share of the regional population. In the cases of South East Florida and South Holland, the largest city is outnumbered by the wider region by more than 3 to 1. SEQ is among the medium scenarios, with Brisbane accounting for close to a third of the regional population. In the cases of Cape Town and Busan, the core city has been amalgamated with the wider region to form a larger metropolitan municipality. These dynamics have many implications both for

the character of the regional economy, and for how these regions organise and prepare for the next cycles of spatial development.

Table 1: Regional Characteristics

	Character of city region spatial model
SEQ	Low-density region, with dynamic central city of Brisbane partnered by multiple other successful regional centres.
Barcelona Province	Dense monocentric city in a low-density province, surrounded by the rest of Catalonia region that specialises in tourism, agri-food and distribution.
Busan Region	Highly urbanised dense region oriented around Busan, complemented by large neighbouring industrial city of Ulsan 50km north.
Fukuoka Prefecture	Compact region where main city of Fukuoka is well connected to second city of Kitakyushu, 70km north-east, with low sprawl in between.
Hamburg Region	Classic monocentric city-region, with semi-autonomous core city surrounded by mainly rural region specialising in logistics and clean tech.
Metro Vancouver	Compact downtown core with high job density, well connected by transit to a small number of mid-sized regional sub-centres.
San Diego Region	Suburban coastal region that is re-urbanising and directing growth to an under-developed downtown and key districts.
South Florida (Miami)	High sprawl coastal region with 150km of unbroken urbanisation, 4 or 5 successful economic centres north of Miami.
South Holland (Rotterdam)	Compact transit-oriented medium density region, comprised of two main cities (Rotterdam and The Hague), two large university towns (Leiden and Delft) and well connected over a green belt to the wider region of Amsterdam and Utrecht.
Western Cape (Cape Town)	Polycentric mid-high sprawl region, dominated by central city of Cape Town and successful regional hubs (e.g. Paarl, Stellenbosch), social and spatial imbalances in between.

The geography and built form of the 10 regions also means that they have very varied population densities. **SEQ has the lowest regional density, at around 150/km², ** lower than all the larger regions, including both Hamburg and San Diego Regions as well as South East Florida. The more compact regions have a density 5-10 times greater than SEQ, which is partly a product of the main cities in the region being closer together, and partly because of a more proactive approach to land management and infrastructure investment, historically and currently. It is also striking that among the largest cities in each of these regions, Brisbane also has the lowest density by some distance, notwithstanding its large boundaries.

These figures indicate that SEQ has a distinctive set of imperatives around how to make its spatial development model work. This is especially pertinent given SEQ's aspirations to grow activities that rely on the interaction that density fosters - including the innovation economy, higher education, and urban experience-led tourism.

Table 2: Population density

	Core city population	Core city size (km²)	Core city population density (inh./km²)	Regional population	Regional size (km²)	Regional population density (inh./km²)
Busan Region	N/A (Core City and Region Merged)			3.5 million	770	4,600
Cape Town Metro	N/A (Core City and Region Merged)			4.0 million	2,450	1,640
South Holland	0.62 million	210	2,970	3.6 million	2,820	1,280
Fukuoka Prefecture	1.6 million	340	4,560	5.6 million	5,000	1,120
Metro Vancouver	0.63 million	120	5,490	2.5 million	2,880	850
Barcelona Province	1.6 million	100	16,000	5.5 million	7,700	720
South East Florida	0.45 million	90	4,880	6.1 million	15,900	380
San Diego Region	1.4 million	840	1,670	3.3 million	10,900	300
Hamburg Region	1.8 million	760	2,370	5.1 million	26,000	200
SEQ	1.2 million	1,300	880	3.3 million	22,400	150

In the following sections we examine SEQ's profile of growth and performance in more detail. First we examine the evidence from global indices and rankings, before we turn to a detailed review of the region's comparative performance within four overarching areas:

- Population, economic and investment trends
- Transport, logistics and infrastructure
- Talent and Innovation
- Lifestyle and public goods

2. SEQ's Comparative Performance

2.1 What do the Global Indices and Rankings Say?

The role of regional capital cities

Global indices and rankings of urban areas are almost exclusively measured at the core city scale, occasionally at the metropolitan scale, and almost never at the level of the economic region. Moreover, cities at a scale below 1 million population (e.g. Gold Coast, Sunshine Coast, Toowoomba) are almost never featured in international ranking assessments. But the success of regions is often strongly correlated with the success of their core city. Therefore, in this section we briefly showcase Brisbane's recent performance in international rankings, to provide context for the more substantive regional assessment in the rest of Section 2.

Brisbane itself is the 3rd most commonly measured city in Australia, but its own global profile in international rankings is limited relative to cities of its size in Europe and the Northern Hemisphere. Among its peers, Brisbane is the 7th most profiled city across 350 global index measures, registering slightly more appearances than San Diego, Busan and Fukuoka since the start of 2015. For comparison, it is profiled about one third as often as Miami and Vancouver, and less than one quarter as often as Barcelona.

For this study we brought together all global index and ranking measures created anywhere in the world since the start of 2015. Using an ELO algorithm to compare ranking performance with the 100 leading cities in the world (by economic globalisation), we can observe across this much larger dataset that Brisbane performs impressively, at 37th globally.

Table 3: Performance of Brisbane across 350 global index measures since January 2015 relative to its peer cities and the 100 most globalised cities (top 5 cities illustrated for comparison)

Rank	City
1	London
2=	Singapore
2=	Paris
4	New York City
5	Tokyo
20	Vancouver
24	Barcelona
30	Hamburg
37	Brisbane
38	Miami
51	Rotterdam
52	San Diego
65	Busan
78	Cape Town
91	Fukuoka

Calculating using Elo ratings algorithm. List of top 100 most globalised cities based on GaWC (2017).

This places Brisbane among a strong upper-middle performing group of cities including its peers Hamburg and Miami. Brisbane's relatively strong and improving display reflects impressive results in quality of life and economic dynamism, alongside a fairly consistent profile of scores across many types of ranking compared to other regions which are more imbalanced.

When limiting the comparative assessment just to the 10 peer regions, Brisbane is also performing well, again ranking 4th. Vancouver and Barcelona are some way ahead, which partly reflects their stronger performance in visitor economy, reputation and sustainability measures, and the fact that they are well into a second cycle of global exposure and recognition, whereas Brisbane is in a first cycle. However Brisbane is ahead of other successful cities such as San Diego, Miami and Rotterdam.

Figure 2: Comparison of the global performance of the 10 core cities of the regions studied for SEQ benchmarking, across more than 350 global index measures since January 2015 (+1 = maximum possible relative score, -1 minimum possible relative score)
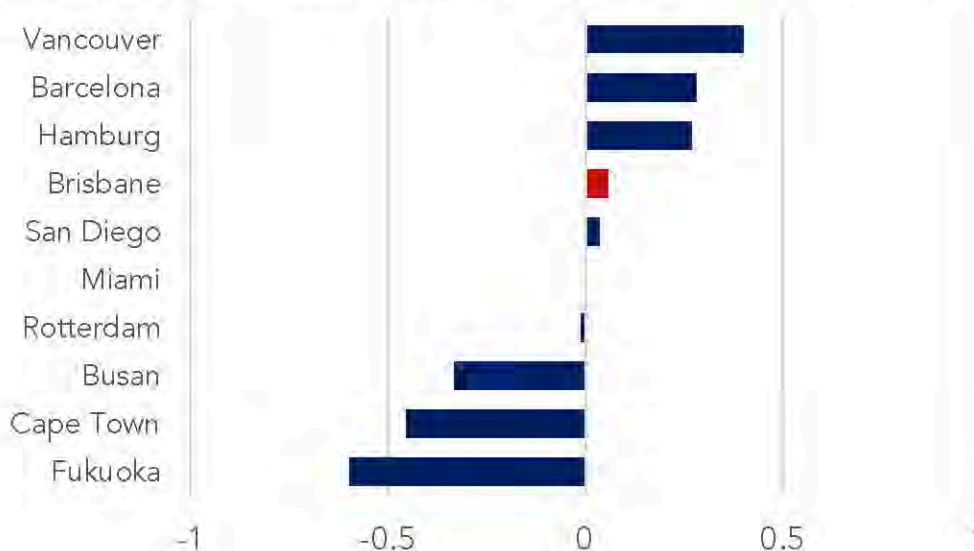
These aggregated indices scores highlight the signs of success that Brisbane has been having as a core city experiencing demand from investors, residents, students and visitors. Moreover, its ability to achieve this success and to continue performing well in international indexes depends fundamentally on the wider SEQ region and its ability to provide the scale, productive base, economic and social variety, residential options, and lifestyle opportunities. The rest of this report focuses on understanding and benchmarking the SEQ regional performance.

2.2 Population, economy and investment trends

SEQ is experiencing a cycle of population growth and diversification that is faster and more intense than most of its global peers. This brings special opportunities but also challenges to ensure that this growth is well managed.

By the standards of other high performing mid-sized regions, SEQ has already witnessed a very strong cycle of population growth since 2000 (fig. 3). Its population has grown by nearly 40% - more than any other region except for Cape Town Metro where the internal rate of population growth is much faster. Among high-income medium-sized regions, SEQ's recent rate of growth has been nearly unparalleled, and almost twice as much as that of Vancouver, which has the 3rd highest rate of growth.

Population growth so far has primarily been due to high in-migration of Australians combined with an influx of overseas residents attracted by the region's high-quality lifestyle and stable environment. This growth has seen the region actually improve its position among the 150 most populous regions in the world, whereas many high-income cities have seen their relative position slip due to faster growth in developing and emerging regions.

Fig. 3: Population growth, 2000 – 2017*
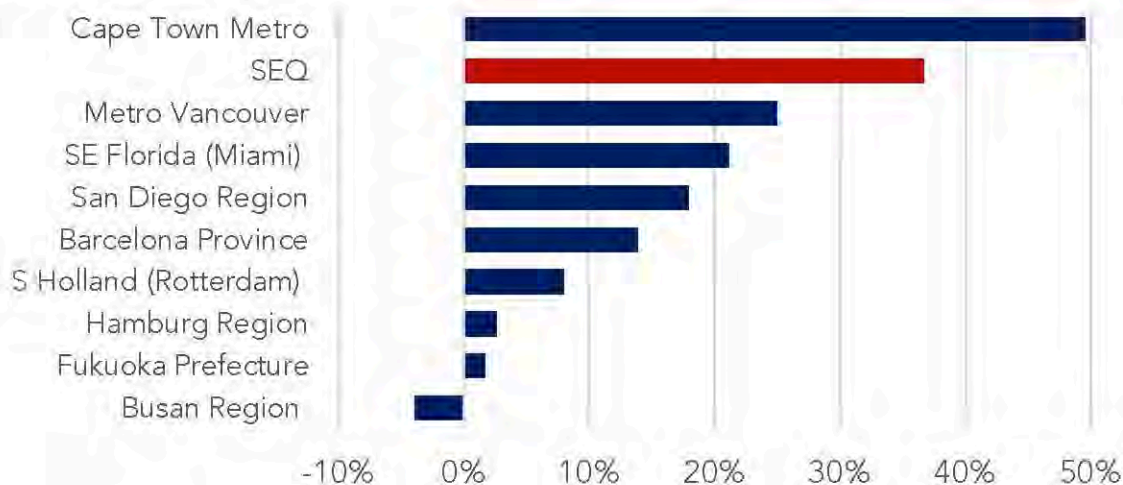
*Sources: City and National Statistics Agencies, EUROSTAT. Most recent data available used – in some cases 2016 figures are used. *Busan Region refers in this case to Busan Metropolitan City. ** Hamburg Region refers in this case to EUROSTAT's Metropolitan Region of Hamburg.*

SEQ's rate of growth is to set to continue and even to grow over the next 20 years, making it far and away the fastest growth region among its peers. While the average of the other 9 regions will see a growth of just over 10% in population by 2040, SEQ is likely to grow by more than 50%, far ahead of North American and European regions (fig. 4). This means that by 2040, SEQ is likely to still be one of the top 150 most populated regions, despite rapid growth in Asia and Africa, whereas nearly all other advanced high-quality regions will continue to fall in relative size. SEQ therefore has the potential to retain advantages of scale and profile even within a much larger global system.

SEQ has also acquired a highly diversified population over the last 30 years, and **in 2017 it is the 3rd most demographically diverse region** of the 10 regions studied in terms of foreign-born population (fig. 5). Almost a quarter of the region's population is born overseas – much

of this diversity is clustered not only in parts of South Brisbane but in districts across the region, reflecting the region's growing international appeal. As this process continues, SEQ will establish itself as one of the more diverse medium-sized regions among the world's advanced economies, bringing with it more cultural profile and reach. Other diverse regions also point the way in terms of steps taken and amenities provided to manage and optimise the internationalisation of population, and to improve social cohesion and reduce marginalisation.

Fig. 4: Projected population growth, most recent available-2040
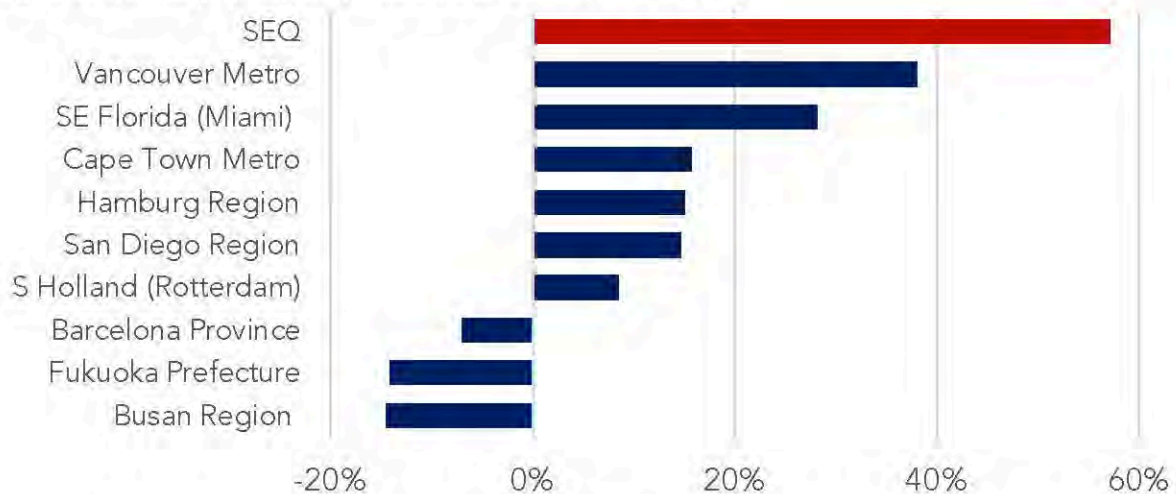
*Sources: City and National Statistics Agencies, EUROSTAT. *Busan Region refers in this case to Busan Metropolitan City.*
**Hamburg Region refers in this case to EUROSTAT's Metropolitan Region of Hamburg

Fig. 5: Foreign-born population (%)
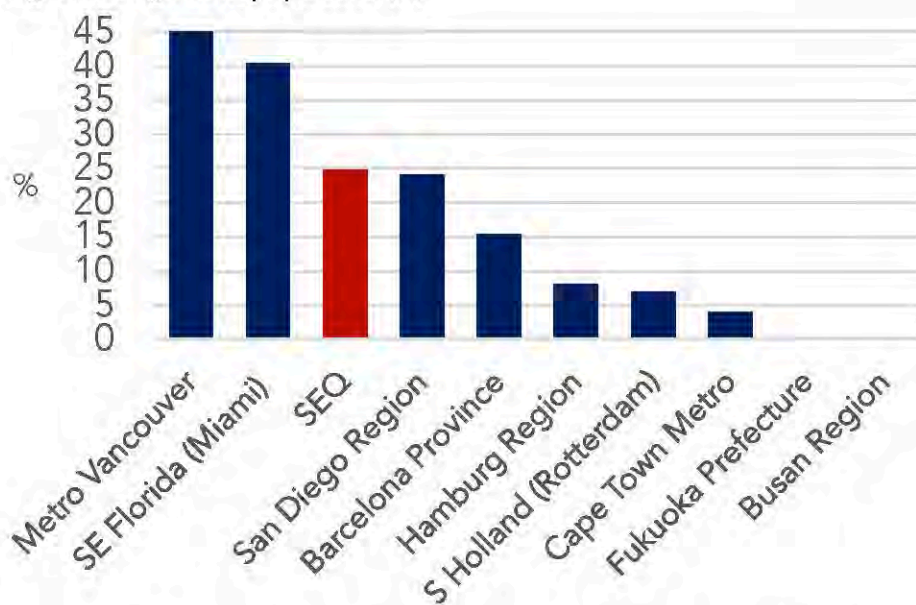
*Source: City and National Statistics Agencies (latest available figures). *Barcelona Province in this case refers to Catalonia.*
**Cape Town Metro refers in this case to Western Cape.

Looking ahead to the future demographic profile, like most regions SEQ has an ageing population and growing life expectancy but the current elderly dependency ratio is in line with the majority of regions, and is lower than many North American regions that are ageing

more rapidly (fig. 6). SEQ therefore is likely to experience fewer immediate or acute challenges around its ageing population, especially compared to the likes of Fukuoka Prefecture, Hamburg Region and South-East Florida, for whom these are now major strategic questions.

Fig. 6: Elderly dependency ratio (%)
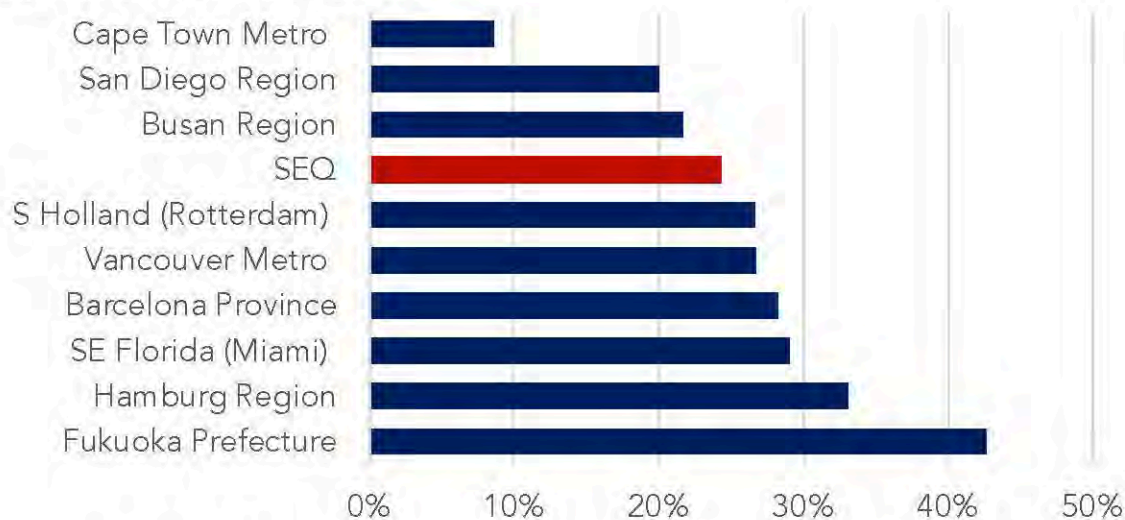
*Sources: City and National Statistics Agencies (latest available figures), OECD. *Metro Vancouver refers in this case to British Columbia. **Barcelona Province refers in this case to Catalonia.*

Comparison of economic size and performance highlights that SEQ has improved to become a mid-ranking performer among its global peers, but with some ongoing challenges to protect its future economic resilience. SEQ ranks 6th out of the 10 regions for economic size when comparing across all regions, having overtaken both Barcelona and Busan in the last decade (fig. 7). As such the region's GDP per capita no longer lags all the European and American regions, and despite a recent slowdown in growth average output continues to catch up with many of its peers around the world.

Fig. 7: GDP per capita (US$PPP)
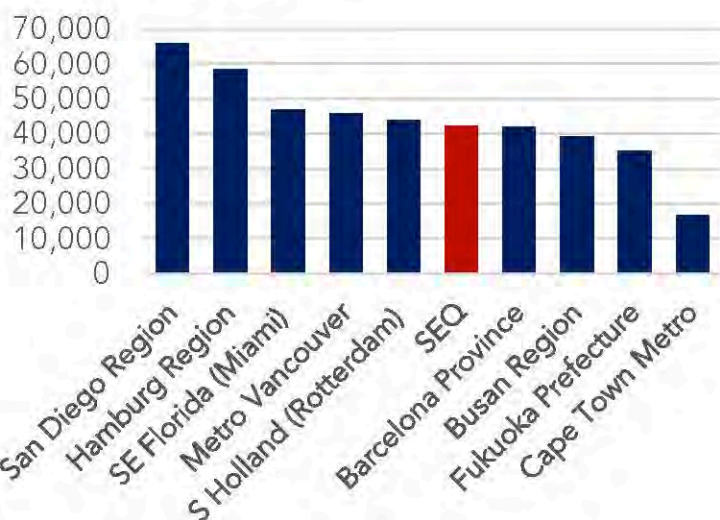
*Source: Brookings (latest available figures). *All data is at Brookings-defined metropolitan scale.*

SEQ's GDP scores are also reflected in the region's labour productivity performance. The region ranks 6th in the most recent figures but has been catching up due to a period of relative productivity growth in the last 5 years (fig. 8). However, its performance is partly held back by Australia's weak productivity performance in sectors in which SEQ is specialised, such as trade, transport and logistics.[5]

Fig. 8: Labour productivity (US$)
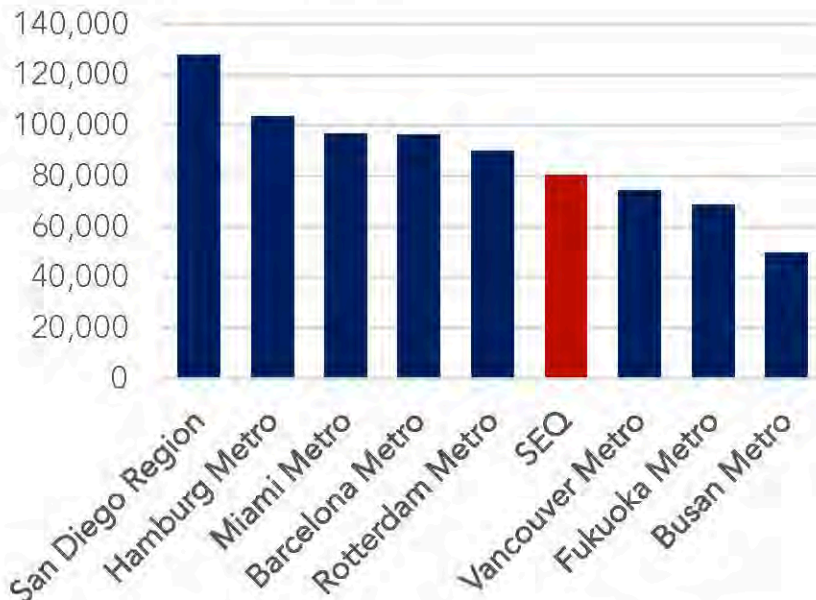
*Source: OECD (2012 figures). *All data is at OECD metropolitan area scale. **Cape Town not included.*

Economic composition and diversity

Analysis of the 10 regions' industrial structure highlights that SEQ is only a recently globalising region (fig. 9). In fact, SEQ has the lowest share of export-oriented sectors when all regions are compared, at approximately 54%. This is in line with data from the Region's own recent Economic Foundations paper which highlights that 10-15% more of Greater Brisbane's economy is composed of sectors that not internationally-facing. This is largely due to the modest size of the region's business and financial services clusters, and the relatively small trade and tourism sectors compared to its peers. SEQ's smaller overall export economy is despite the fact that the region has a larger share of commodities than the other regions, because of its productive agriculture base, and high presence of mining and petroleum-related industries.

This highlights that SEQ began actively specialising in diversified export activity more recently than some of its peers which have been successfully trading in services and goods for many decades. It also suggests SEQ has significant room to grow its export economy if it can successfully scale more of the niches in which it is already competitive. SEQ's potential for global growth means major opportunities but also critical investment and coordination requirements.

Fig. 9: Share of output by industry
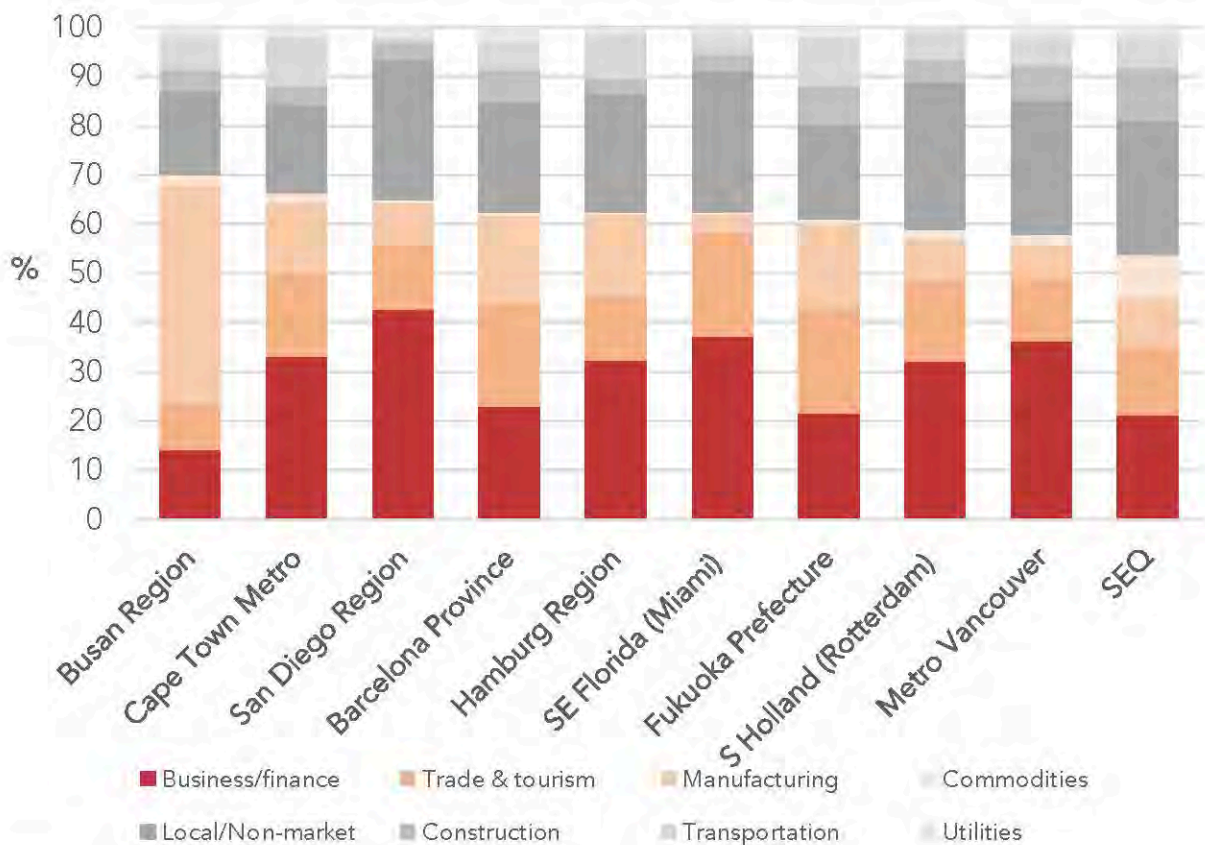
Source: Brookings Global Metro Monitor (2014 figures), based on Oxford Economics data. *Sectors shaded in red represent key export-oriented sectors. **All data is at Oxford Economics-defined metropolitan scale.

	Business /finance	Trade & tourism	Manufacturing	Commodities	Local/ Non-market	Construction	Transportation	Utilities
Busan Region	14.1%	9.5%	44.4%	2%	17%	4.3%	6.3%	2.5%
Cape Town Metro	33.1%	16.8%	14.7%	1.7%	17.9%	3.9%	9.8%	2.1%
San Diego Region	42.6%	13.4%	8.3%	0.6%	28.4%	3.6%	1.1%	1.9%
Barcelona Province	22.9%	21%	17.8%	0.7%	22.3%	6.6%	5.7%	3%
Hamburg Metro	32.3%	13.2%	16.5%	0.4%	24%	3.2%	9.2%	1.1%
SE Florida/Miami	37.3%	21%	3.6%	0.4%	28.8%	3.4%	4.2%	1.4%
Fukuoka Prefecture	21.6%	21.4%	17.1%	0.9%	19.2%	7.9%	10%	2%
S Holland	32.2%	16.3%	8.7%	1.6%	30.1%	4.4%	5.7%	1%
Metro Vancouver	36.2%	12.9%	6.8%	1.9%	27.4%	7.1%	5.4%	2.2%
SEQ	21.2%	13.8%	10.1%	8.6%	27.2%	10.7%	6.1%	2.4%

Source: Brookings Global Metro Monitor (2014 figures), based on Oxford Economics data. *Sectors shaded in red represent key export-oriented sectors. **All data is at Oxford Economics-defined metropolitan scale.

There are data comparability challenges that prevent a more precise and detailed breakdown of the 10 regions' economic sectors, and in particular the relative size of the high value

specialisations the regions possess. Nevertheless our review of regional data illustrates the diverse specialisms that many of SEQ's peers already possess (fig. 10), and the range of clusters that are now being actively targeted for growth over the next decade (table 4). Some of these are sectors that are of relevance for SEQ's own economic strategy moving forward.

Fig. 10: Stylised sector 'maps' of five of SEQ's peers, based on size of largest sectors in terms of jobs/output relative to total size of economy
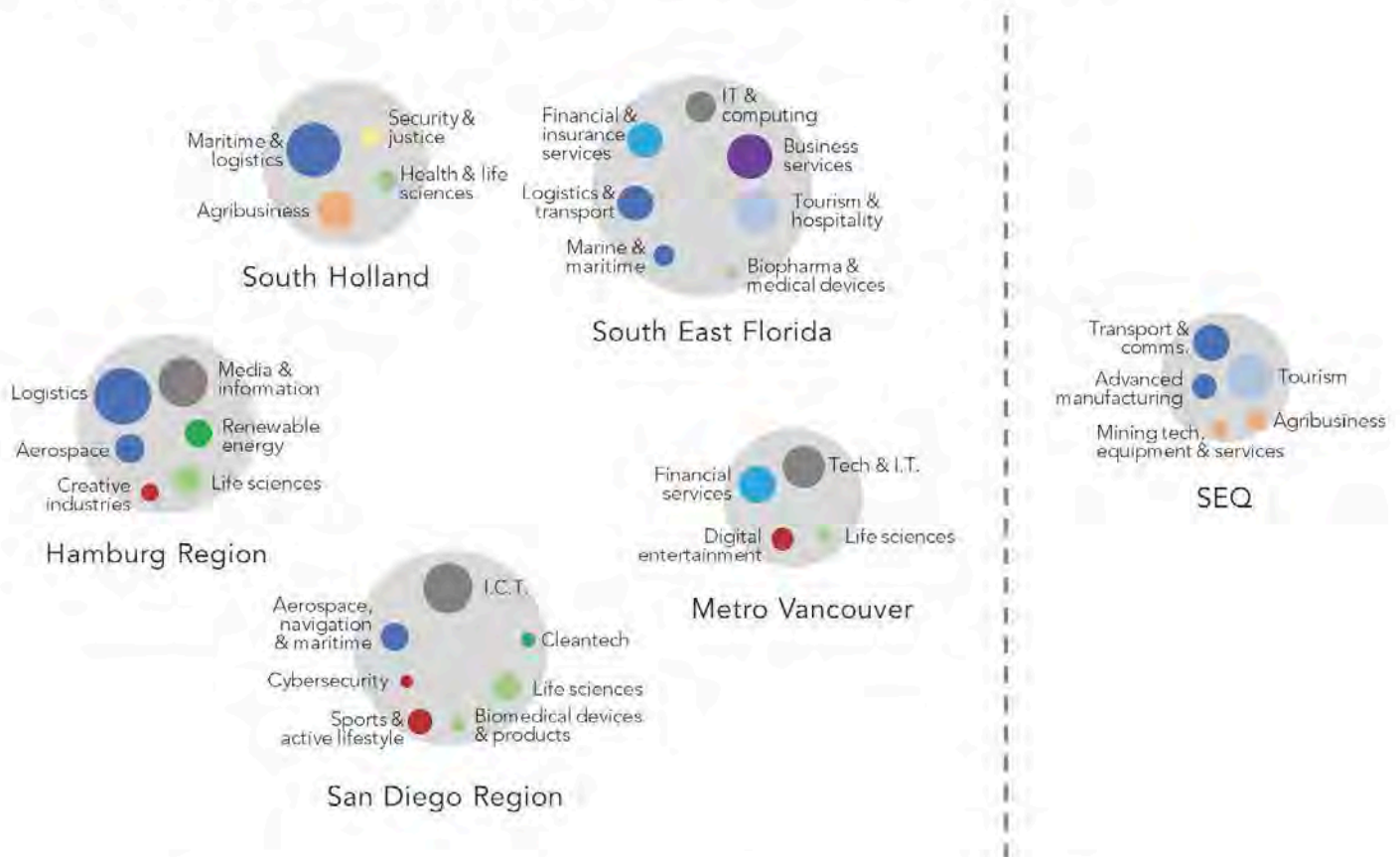
Table 4: Priority growth clusters for SEQ's peer regions

Barcelona Province	Aerospace, Creative and design, Sports and sporting tourism
Busan Region	Medical tourism, Robotics, Creative marine industries, IoT and cloudtech
Cape Town Metro	Renewable energy, IT, Financial services, Communications
Fukuoka Prefecture	Biotech and nanotech, Robotics, Hydrogen energy, Contents business
Hamburg Region	Renewable energy, Tourism, Aviation, Creative and design
Metro Vancouver	Circular economy, Cleantech, Maritime logistics
San Diego Region	Biotech, Cybersecurity, Action sports
South East Florida	Aviation, Creative and design, Finance, Life sciences and healthcare
South Holland	Circular economy, Cleantech, Sustainable food and transport

SEQ's capacity to build its trading capacity to match or surpass other peer regions around the world is partly shaped by the size of its domestic market (table 5). The region is the main gateway to Queensland (population 5 million) and if it grows its trade functions it can also be the leading gateway to the whole of the Australia market (population 25 million). However, the size of these markets is lower than all the other 9 regions in this analysis. Most of the other regions are the primary gateway to a regional market of between 6-20 million people, and also have direct access to a market of 50-200 million people or more.

The relatively small size of the domestic market is a particular challenge in manufacturing and producer sectors where companies have to go global more quickly and face the challenge and expense of competing successfully in highly competitive global markets before they have developed economies of scale. The absence or large two way flows also adds costs to trade and travel.

Table 5: Size of SEQ's national market relative to other regions

	Local market	Macro-regional market	National or continental open market
SEQ	3.4 million (SEQ)	4.9 million (Queensland)	24.5 million (Australia)
Busan Region	3.5 million (Busan Region)	13.2 million (Gyeongsang)	51.2 million (South Korea)
Cape Town Metro	4 million (Cape Town Metro)	6.5 million (Western Cape)	55.9 million (South Africa)
Fukuoka Prefecture	5.6 million (Fukuoka Prefecture)	13 million (Kyushu Island)	127 million (Japan)
South East Florida	6.1 million (SE Florida)	20.6 million (Florida)	323 million (U.S.A.)
Metro Vancouver	2.5 million (Metro Vancouver)	16 million (Cascadia – BC + OR + WA)	358 million (U.S.A. + Canada)
San Diego Region	3.3 million (San Diego County)	23.8 million (Southern California)	450 million (U.S.A. + Mexico)
Barcelona Province	5.5 million (Barcelona Province)	17 million (Euro-Mediterranean Region)	510 million (EU)
Hamburg Region	5.1 million (Hamburg Region)	82.7 million (Germany)	510 million (EU)
South Holland	3.6 million (South Holland)	30 million (Tri-state region – NED/BEL/FRA)	510 million (EU)

SEQ's credentials means it has improved as a location for national and international investment in international measures (fig. 11). This data suggests that the region's strong population profile, positive political environment, investment in skills, and public and private commitments to support industry and infrastructure all are having a positive effect on business confidence, relative to other regions globally. Meanwhile the strong cycle of real estate investment is reflected in the fact that the region's construction sector accounts for nearly 10% of economic output – the highest proportion across all regions. The region remains a leading choice for Australian and international property investors,[6] because of its relative affordability, the potential for attractive yields, and ongoing investment in infrastructure to make the city more liveable.

Fig. 11: SEQ's Real Estate Investment Performance versus peer regions
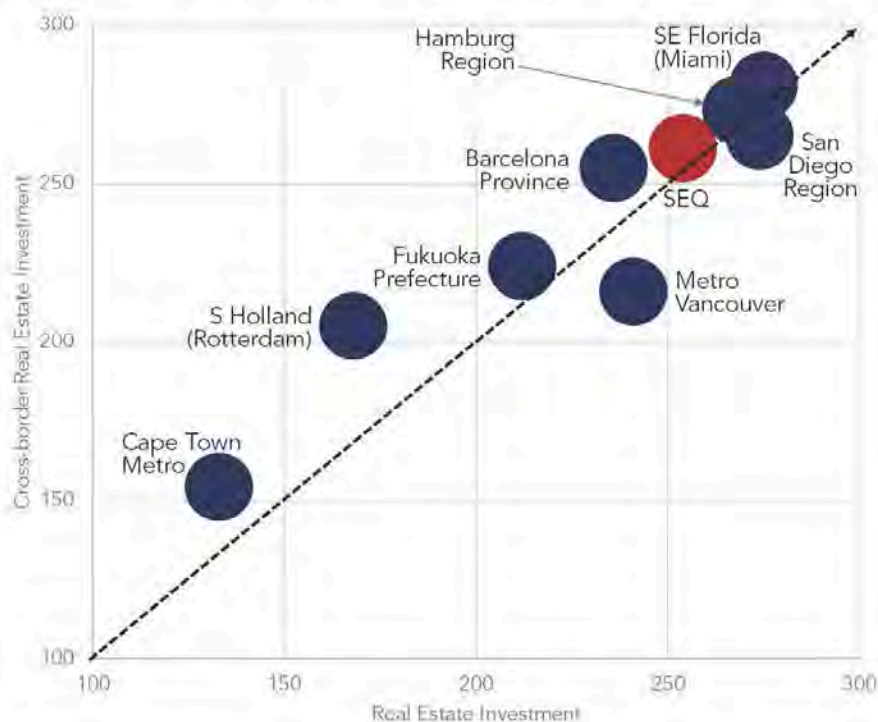
When all investment figures are assessed, SEQ ranks 5th out of the 10 regions for commercial attraction (table 6). Relative to the size of its domestic market, and to the number of potential investors, SEQ performs well: in the global rankings, it ranks only 12 places behind San Diego Region, despite the fact that San Diego has the advantage of visibility among a significantly larger pool of North American investors.

Table 6: Investment attractiveness Performance of core metropolitan areas

	JLL Commercial Attraction Index Rank, 2017
SE Florida (Miami)	36
Barcelona Province	49
Hamburg Region	55
San Diego Region	63
SEQ	75
Metro Vancouver	76
Cape Town Metro	107
S Holland (Rotterdam)	111
Fukuoka Prefecture	151
Busan Region	230

This pattern of increased investor and occupier demand looks set to continue, with the main market of Brisbane currently on track for a 16.5% growth in prime office rents by the end of 2020 – the second strongest increase across the whole of the Asia-Pacific region.[7] Although South-East Florida and Barcelona Province continue to set the benchmark for what SEQ can achieve, the region's existing performance is very sound.

SEQ performs very strongly in terms of the successful internationalisation of its higher education sector. Based on the number of international students enrolled in QS top 1000 universities, SEQ exports significantly more higher education than any of its peers – about 20% more than that of Vancouver, which ranks second, and over double that of Barcelona, which ranks third (fig. 12). SEQ attracts particularly high numbers of students from China, India, South Korea and Taiwan. The strong presence of international students in and around Brisbane is due to several interlinking factors, including its subtropical climate, its relative affordability compared to other major Australian cities, and its proximity to major tourist destinations such as the Gold Coast and Sunshine Coast.

SEQ excels because it combines the strength of its educational institutions with its reputation for lifestyle and liveability in ways that other regions do not. SEQ is also unique in that while the Brisbane region is one of the top choices for international students wanting to study in Australia, this is not the case for regions such as San Diego or South-East Florida in the U.S.A., or Hamburg in Germany. Overall international higher education has become fundamental to the region's traded services economy, and will continue to be in the years and decades to come.

Fig. 12: Exports of HE (based on number of international students enrolled in top 1000 universities)
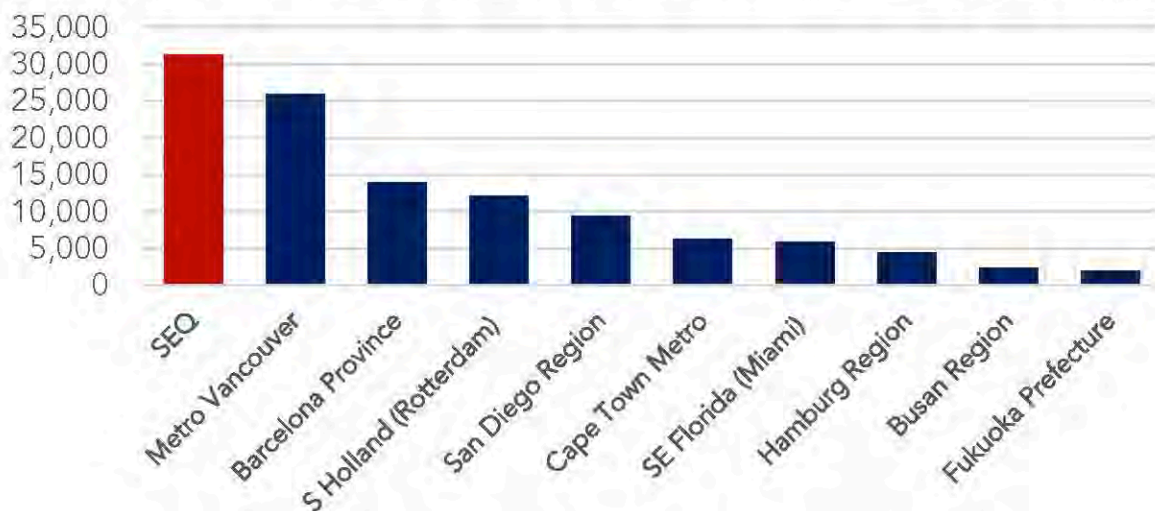
Source: QS, 2017

Section Summary

- By nearly all global standards SEQ is experiencing an intense cycle of population growth and demographic change that is transforming the region faster than other global peers.

- SEQ has enjoyed improved economic and investment performance relative to its peers in recent years, but productivity is still average and there is an important imperative to leverage its ongoing growth and success to achieve a position in higher value sectors that will be more resilient in the long term.

- The small size and relative remoteness of SEQ's domestic market means that it has a distinct economic composition relative to other regions. The region has substantial scope to grow its trade economy in the coming years that will be essential to future jobs, investment and business innovation.

- Higher education is an example of a traded services sector where SEQ has an edge on its peers: this and other advantages need to be protected and developed further.

2.2. Transport, logistics and infrastructure

SEQ's international connectivity has been improving in recent years and has become more competitive, but its internal infrastructure platform has areas of comparative weakness.

In terms of the number of air passengers, SEQ records a strong performance, ranking 4th out of the 10 regions with around 29 million passengers each year (fig. 13). Of the four regional airports, Brisbane International Airport accounts for around 23 million of these passengers, with Gold Coast Airport accounting for an additional 6 million. There is still a large relative gap between the performance of SEQ and the higher ranked regions, however: the airport giants of South East Florida, South Holland and Barcelona welcome around 175%, 124% and 62% more passengers annually than SEQ. But Gold Coast Airport is the third fastest growing airport in the country, and recently became the sixth busiest airport in Australia. If this growth continues, SEQ will continue add more air passengers in the years to come at a faster rate than other regions and may potentially catch up to the leading regions – particularly as secondary airports in several other regions are currently shrinking in terms of their passenger capacity as consolidation around one airport takes place.

Fig. 13: Annual air passengers
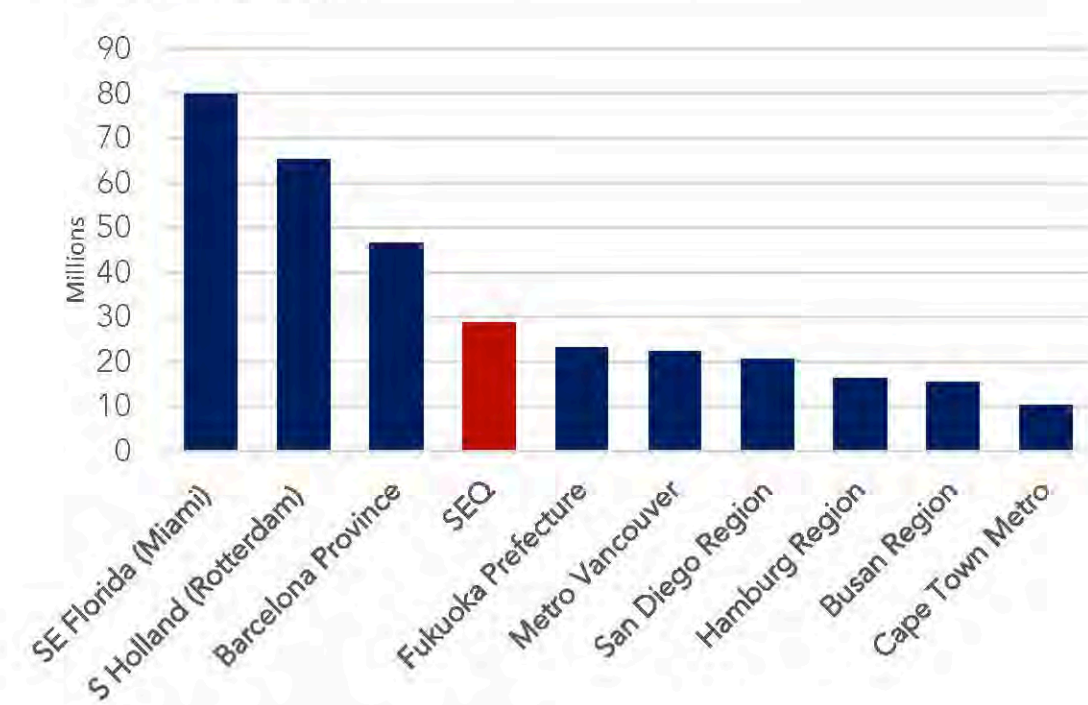
*Source: Regional and National Airport and Transport Agencies (latest available figures). *Data for South Holland includes Amsterdam Schiphol airport given proximity.*

SEQ's relative remoteness from global centres means that it continues to record a weaker performance with regard to the number of direct international flight connections, despite its success at gaining more direct flights in recent years (table 7). The region lags all European and American regions apart from San Diego for this measure. This partly reflects inherited geographic and demographic realities that are hard for the region to alter, and certainly not quickly.

Table 7: Global Connectivity Index of the region's main airports

	No. of direct international flight connections	Global rank
South Holland	242	4
Barcelona Province	159	16
SE Florida	101	44
Hamburg Region	101	44
Metro Vancouver	60	98
Busan Region	36	175
SEQ	23	238
Fukuoka Prefecture	19	315
Cape Town Metro	16	366
San Diego Region	9	525

Source: Rome2Rio, 2017

Despite SEQ's sizeable trading functions and a strong platform for growth, compared to its peers its trade throughput via its port and airport is limited. SEQ ranks 8th out of the 10 regions for port cargo, both in terms of metric tonnage and TEUs (figs. 14, 15). And in terms of airport cargo tonnage, SEQ ranks last (fig. 16). This is because the region's airports currently do not specialise in airport cargo.

Other regions have made important steps in recent years through the implementation of port initiatives aimed at increasing capacity and competitiveness. This is particularly true of the port giants of Busan, Rotterdam and, increasingly, Fukuoka. By way of illustration, Busan national government recently co-funded a $5billion expansion of the port that will involve the construction of 15 additional berths and increase capacity by 16 million TEU, while Rotterdam recently re-routed the Harbour Freight Railway to speed up port movements and increase rail's share of hinterland container traffic (see section 3).
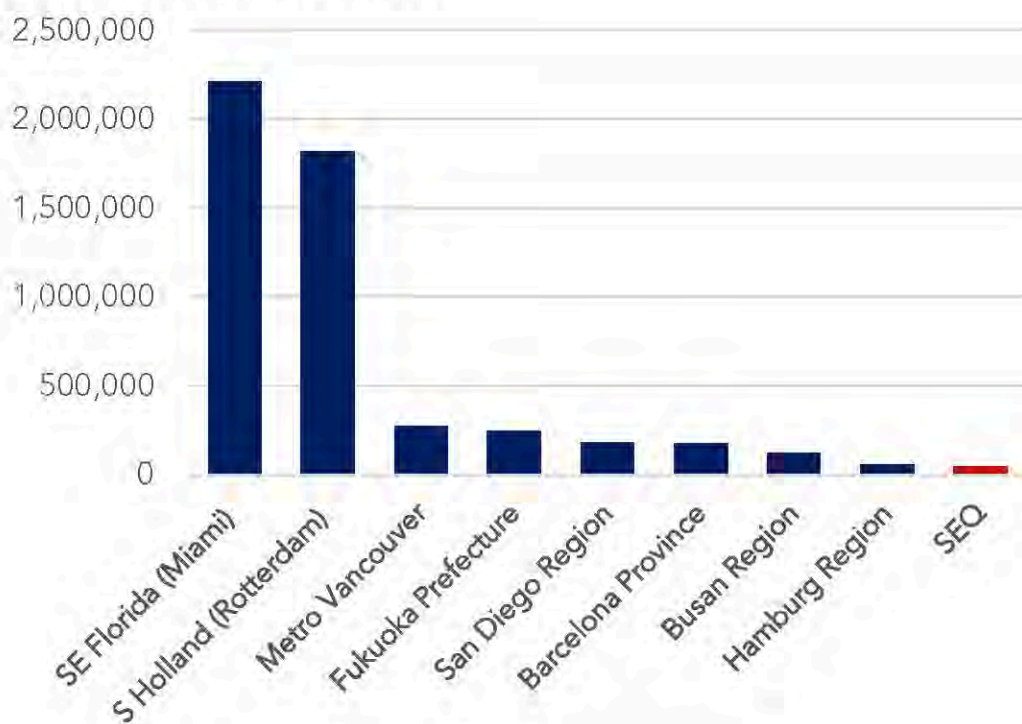
Fig. 14: Port cargo (metric tonnes)
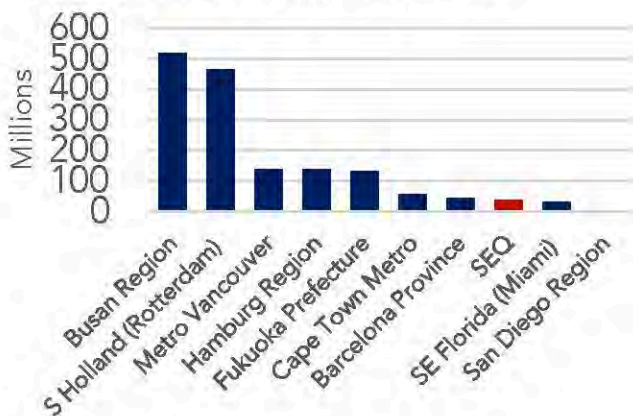
Fig. 15: Port cargo (TEUs)
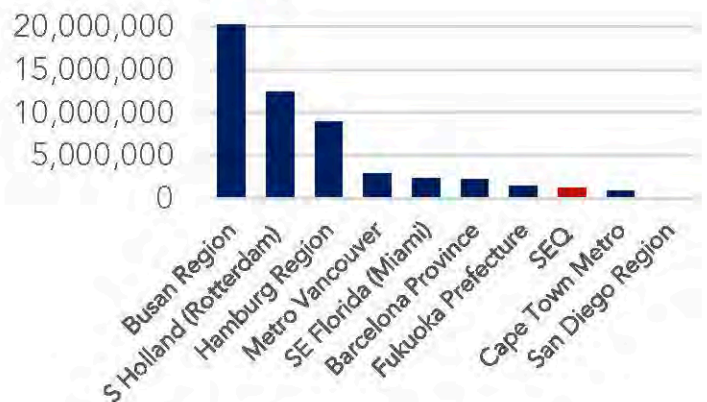
*Source: National Port Agencies (2015 figures). *TEU = Twenty-foot equivalent unit.*

## Fig. 16: Airport cargo (metric tonnes)

In terms of internal connectivity, comparative assessment highlights a reasonable coverage but limited connectivity between the main centres. SEQ ranks 3rd out of the 10 regions in terms of the volume of rail coverage, with around 0.16km of regional rail network per 1,000 inhabitants (fig. 17). Despite the linear character and coastal location of the region, SEQ now has a fairly wide-ranging semi-radial rail network that functionally links the urban core to the surrounding suburbs and regional centres somewhat more effectively than some North American regions with a similar geography, such as South-East Florida and San Diego Region.

SEQ is, however, the only region in the top 5 that does not have any high-speed rail, which has been a strategic priority particularly for the European and Asian regions in recent years. The region's coverage still has a long way to go before it can be considered on a par with the leading European regions, which have more than 50% more rail track per 1,000 inhabitants.

One connectivity advantage for SEQ is that compared to other regions, its largest city is relatively well connected to the airport, with passengers able to make the journey from Brisbane city centre in 20 minutes (fig. 18). The region is also at an advantage in that there is a direct rail link: in San Diego and Cape Town, no such link exists, and passengers instead have to rely on less reliable bus services. The Gold Coast is also set to benefit from a $600m extension to the city's light rail network, which is the precursor to an extension to the Airport, providing direct city access and allowing passengers to travel to all the way from Coolangatta to the Sunshine Coast by rail. Although other regions are also investing in improved links, the proposed investment will likely improve the region's comparative rail performance.

Fig. 17: Length of regional rail network per 1,000 inhabitants
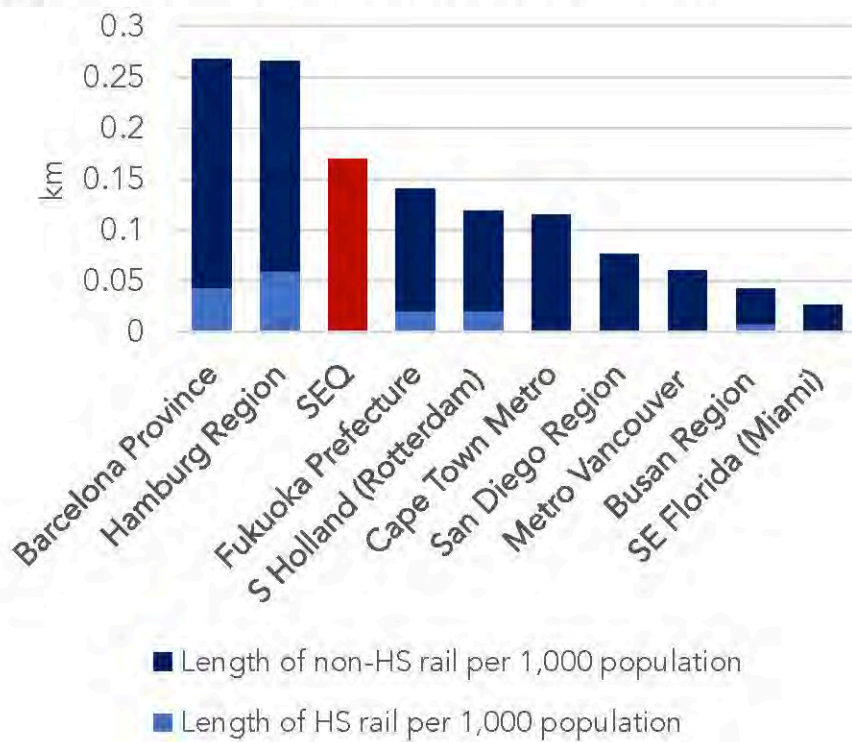
*Source: National and Regional Transport and Rail Agencies, latest available figures. *Barcelona Province in this case refers to Catalonia.*

**Fig. 18: Fastest rail journey time from city centre to airport in the largest cities of each region**
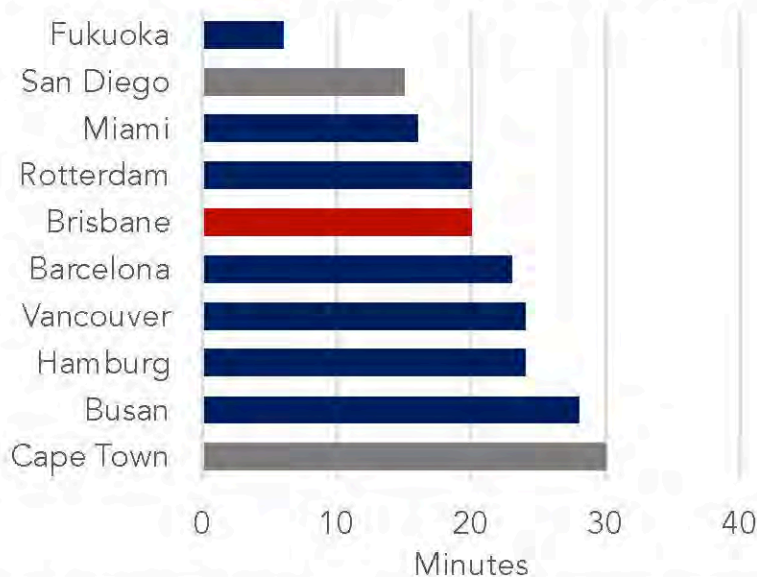
*Source: Google Maps, October 2017. *Bars shaded in grey represent cities where journeys from the city centre to the airport are made by bus/a direct rail link does not exist.*

Despite an extensive rail network, SEQ commuters suffer from the competitive disadvantage of not being able to reach the region's secondary cities particularly quickly. From Brisbane, journeys towards Gold Coast, Ipswich and Nambour take on average more than 90 minutes by rail. This long journey time is partly a function of the fact that in SEQ these cities are located further away than in other regions, which is in turn a function of the region's coastal

geography and development pattern. But the average journey speed to these cities is also slow, while waiting times at stations in the region indicate that frequency could be improved (see fig.20). This makes SEQ comparable to South East Florida and Cape Town Metro, which are also in the "low speed, long average journey time" quadrant of fig. 19. These results indicate that investing in rail infrastructure should be a strategic priority for SEQ. The regions that have achieved a high-speed system with low average journey times have also tended to experience a much higher take-up of rail by commuters, residents and visitors.

Fig. 19: Average speed and time to 2nd, 3rd and 4th cities in region
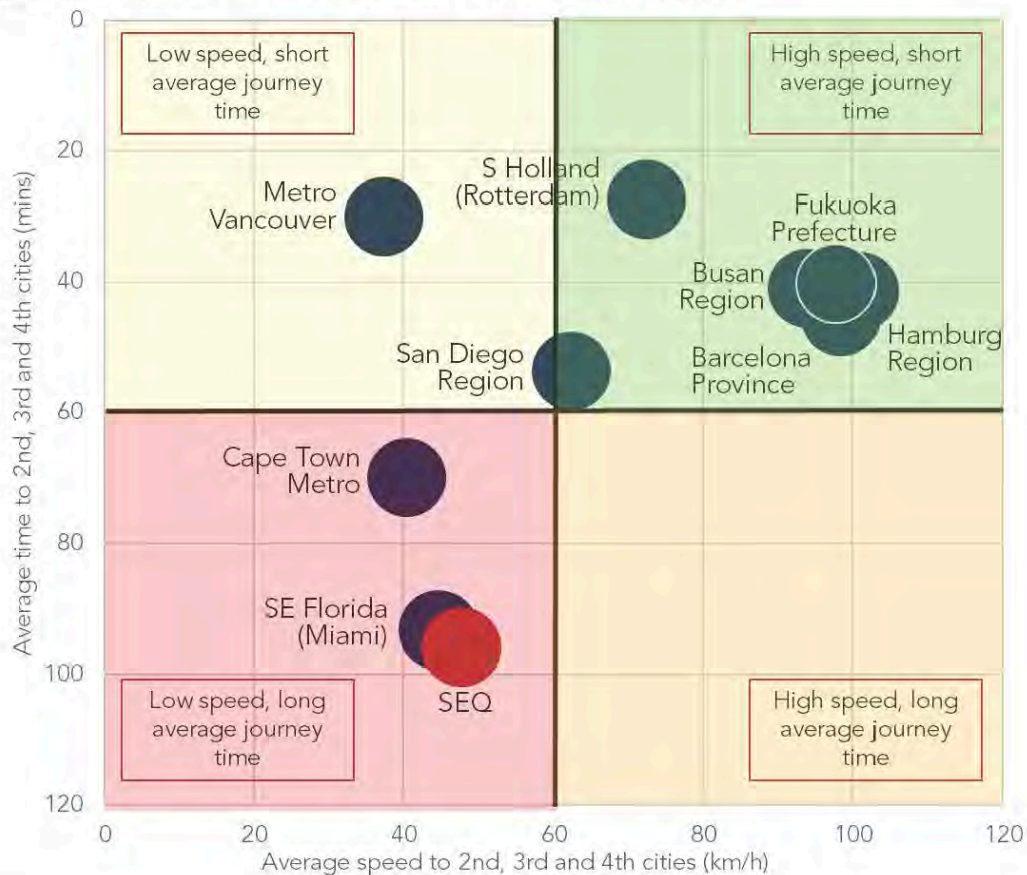
Source: *National Rail Agencies and Google Maps Travel Data, October 2017. Based on weekday rush hour figures.*

Fig. 20: Average wait time for public transport
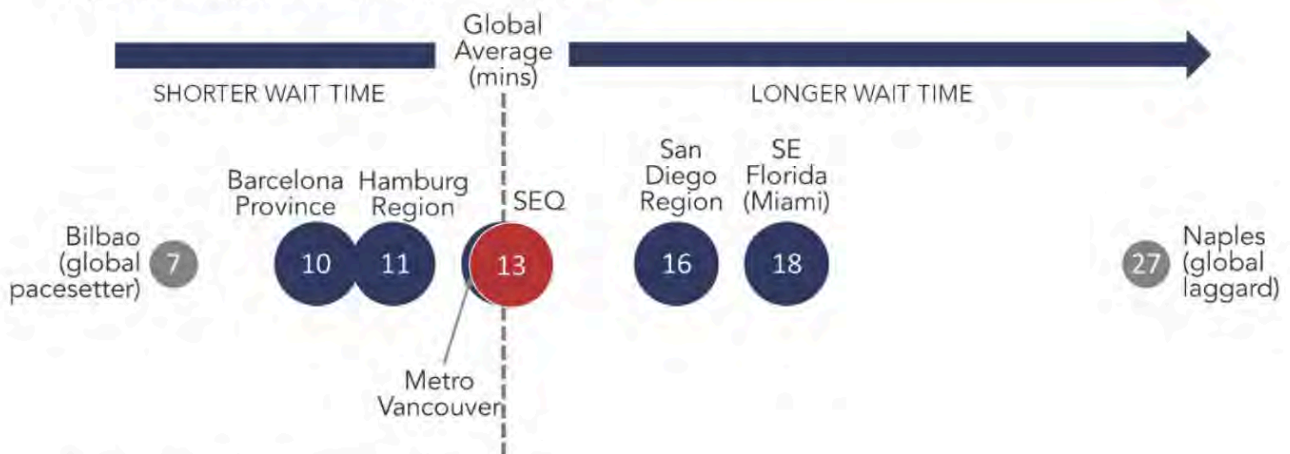
Source: *Moovit Public Transit Index, October 2017*

There are other kinds of infrastructure where SEQ also presently experiences an important deficit. In particular the region suffers from the competitive disadvantage of low average internet speeds, ranking 8th out of the 9 regions for which data was available (fig. 21). Average upload and download speeds are substantially lower than every other region except for Cape Town metro. This is one of the weakest areas of comparative performance for SEQ across this whole study. The region performs slightly better in terms of monthly maximum internet speed - SEQ ranks 6th for this measure – but this is still low compared to the leading regions of San Diego, South Holland, South-East Florida and Hamburg. It also does not compensate for the slow average most of the time.

Fig. 21: Regional internet speeds
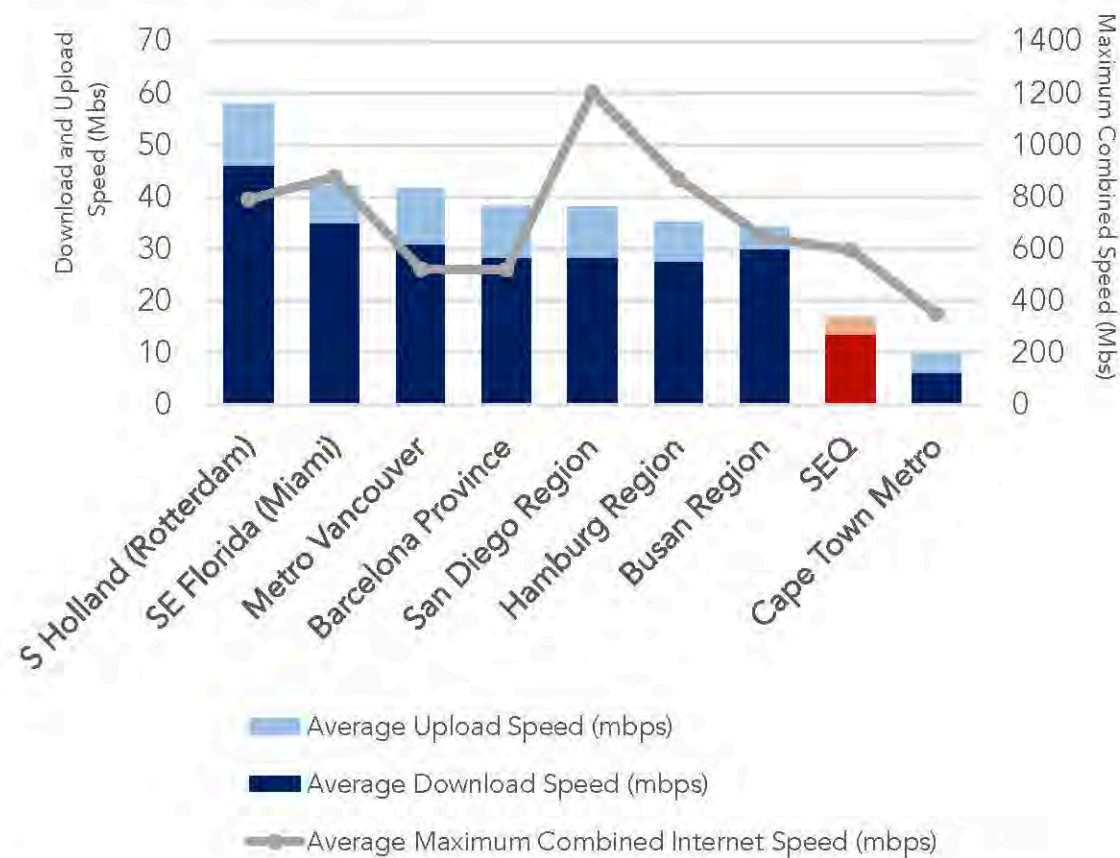
*Source: testmy.net, October 2017. *Measured manually based on taking weighted averages of key regional centres in each region - see appendix for full details of methodology. **Fukuoka not included due to limited data coverage.*

SEQ's slow internet speeds are strongly linked to its lack of access to the global submarine cable network that connect the world's internet (table 8). 7 of the 10 regions are directly plugged in to the global system, with regions such as Miami/South-East Florida, Busan Region, and South Holland all possessing more than five direct cables and multiple other cables landing within 200km. Even the two other regions that are not directly plugged in have access to more than one cable within 200km, which means that **SEQ is by far the most disadvantaged by the current arrangements**. This represents a major constraint to the region's ambitions to attract entrepreneurs, grow the digital economy and boost the competitiveness of local firms.

Table 8: Submarine digital connectivity

#		Direct submarine cable to region?	Number of cables	Number of cables added since 2012	Number of other cables within 200km	Distance from nearest cable landing point
1	SE Florida	Yes	13	3	1	0km
2	Busan Region	Yes	6	1	3	0km
3	South Holland	Yes	5	0	3	0km
4	Cape Town Metro	Yes	3	1	1	0km
5	Fukuoka Prefecture	Yes	2	1	0	0km
6	Barcelona Province	Yes	2	0	0	0km
7	San Diego Region	Yes	1	0	4	0km
8	Hamburg Region	No	0	0	5	150km
9	Metro Vancouver	No	0	0	2	190km
10	SEQ	No	0	0	0	900km

Fig. 22: Digital Submarine Sea Cables in SEQ compared to other leading peer regions

SE FLORIDA   SOUTH HOLLAND   BUSAN REGION   SEQ
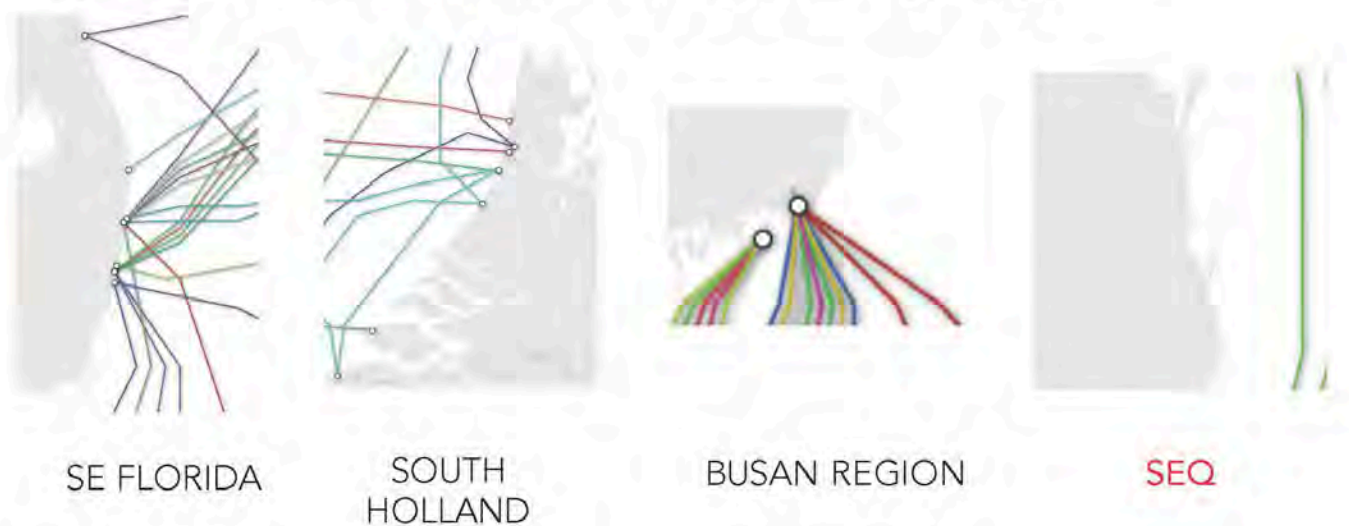
Source: Telegeography Interactive Submarine Cable Map, October 2017.

Section Summary

- SEQ has improved its international aviation traffic and connectivity, but relative to others it still has fewer direct international connections than its aspiring gateway status requires.

- Despite the last cycle of growth, port and airport cargo throughput in SEQ is limited compared to the scale found in other regions. The forthcoming spending to upgrade the Port and also to establish a cruise ship terminal are important to bridge some of the gap, but will also require stronger inland connections.

- Compared to a wide range of peer regions, SEQ's rail system provides relatively weak connectivity between its main urban centres. This contributes to a low modal share of public transport and higher than average congestion in the region.

- Low average internet speeds, caused partly by a lack of access to the global submarine broadband cable network, is a key competitive disadvantage for SEQ and its future aspirations in a variety of industries.

2.3 Universities, innovation and talent

SEQ's knowledge economy is underpinned by a strong and successful system of universities, but the scale of the region's innovation activity is still small.

SEQ's overall university system is comparable to those of other high-performing, high-impact regions such as Rotterdam, Vancouver and Barcelona (fig. 23). SEQ's universities are slightly stronger in terms of their performance than for their impact: the region boasts 5 universities in the QS top 500, and records particularly strong performances in the fields of life sciences, law and business. On average, 11.5% of the region's publications appear in the global top 10% of all publications.

Fig. 23: Regional Universities: Impact and Performance
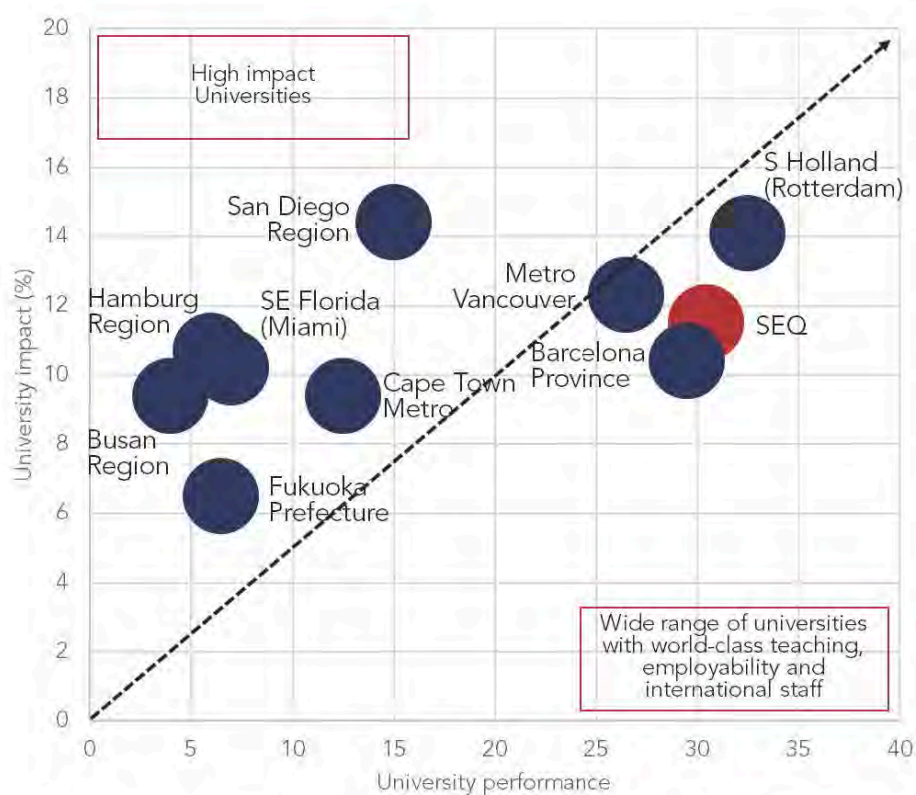
Sources: QS, Times Higher Education and CWTS Leiden University Ranking, 2017. *Performance calculated based on QS and Times Higher Education rankings. **Impact calculated based on % of publications in top 10% globally. ***See appendix for full details of methodology.

SEQ also has the highest number of students enrolled in top 500 universities across all regions (fig. 24). This reflects the domestic appeal and reputation of the region's universities combined with the strong presence of international students in the region compared to its global peers. SEQ's attraction of Asian students in particular (especially from China, India, Korea, Japan and Taiwan) provides important short and long-term multipliers. Not only does it drive family property investment in the region; the large academic and student community is also an important reason why, for example, the region is chosen to host leading Asia-Pacific conferences, such as Asia's largest computer graphics conference SIGGRAPH.

Fig. 24: Number of students enrolled in top 500 universities
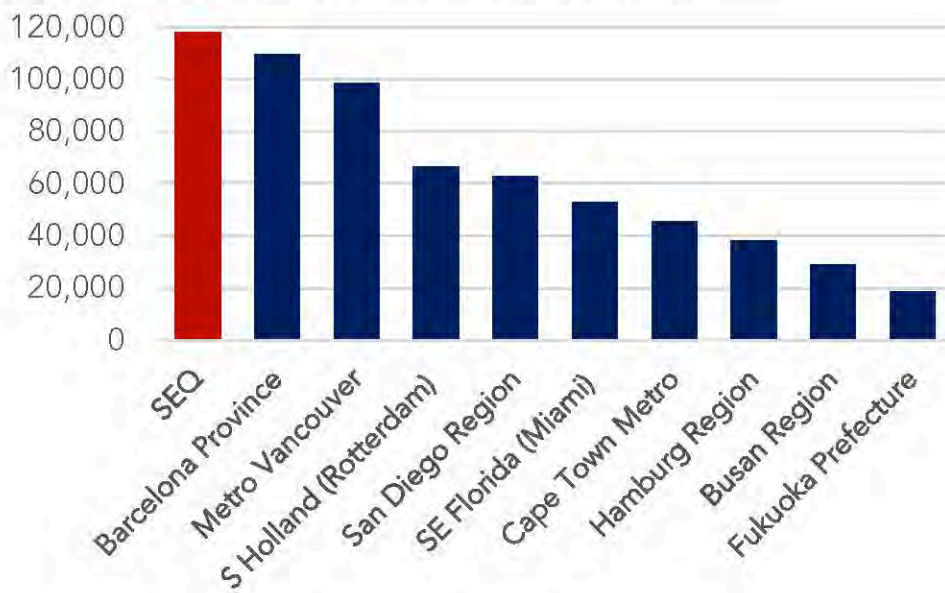
Source: QS, 2017

But despite SEQ's strong university performance and impact, SEQ ranks only 8th out of the 10 regions for higher education attainment (fig. 25). Overall SEQ has in fact improved its higher education attainment rapidly in the last 10-15 years and the gap between it and most of the rest of the high achieving global regions has narrowed. However the figures still point to the importance of pursuing efforts that will ensure that university graduates in SEQ stay in the region rather than leavingafter graduating. The figures also seem to suggest that a higher than average share of people migrating to SEQ in search of job opportunities often do not hold a degree-level qualification.

Fig. 25: Higher education attainment of all 15+ residents*
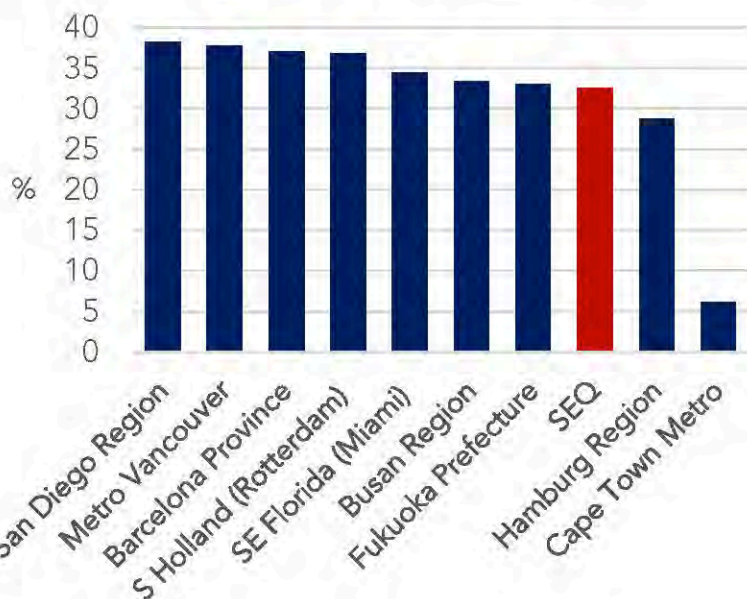
*Sources: Brookings, ABS (latest available figures). *Based on projection of SEQ's performance comparative to other Australian regions – likely margin of error = 1-2%.*

SEQ's innovation system has promise but it has substantial room to grow and the region needs to ensure that it is fostered more carefully and proactively. SEQ has experienced growth in the number of innovative firms in recent years, such that it now out-performs Rotterdam, Cape Town and Hamburg for this measure. But compared to Barcelona and the North American regions, SEQ has very few innovative firms: the difference is so stark that the regions cannot even be compared on the same set of axes (fig. 26). And despite growth, SEQ still lacks a critical mass of globally renowned innovative firms (top 10,000 firms), as evidence from global source Crunchbase indicates.

Fig. 26: Innovative firms and start-ups in region
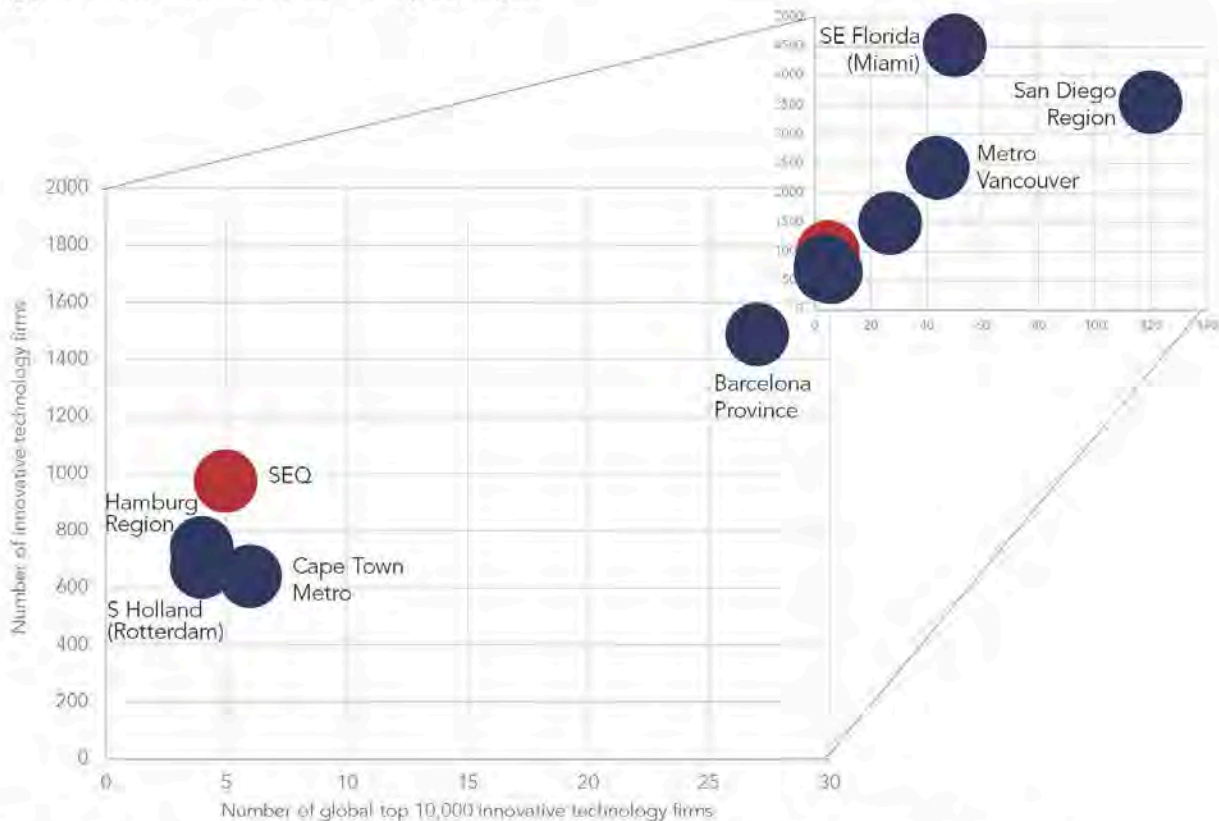
Source: Crunchbase, October 2017. *Busan and Fukuoka not included. **See appendix for methodology.

Data from Mattermark also confirms that SEQ has relatively few high-growth firms (firms with growth scores >500) (fig. 27). This is important, for it is generally these types of firms that have the potential to have a catalytic effect on the whole innovation ecosystem.

Several initiatives to support international startups and open up city and regional data for innovation have shown signs of promise so far, connecting SEQ more effectively with international networks of innovation and capital investment. The number of accelerators, innovation hubs and co-working spaces is also growing. These, and other efforts to grow the culture of innovation and appetite for risk, will need to expanded in the near future. The next stage is for SEQ to incubate more firms that achieve strong sustainable growth ('gazelles'), and that solve problems for society and achieve regional impact ('zebras'), before it can consider producing 'unicorns'. This will need to SEQ successfully retain growth firms within the region despite the appeal of other regions domestically and internationally.

Fig. 27: Firms in key innovation sectors vs. high-growth firms (core cities)
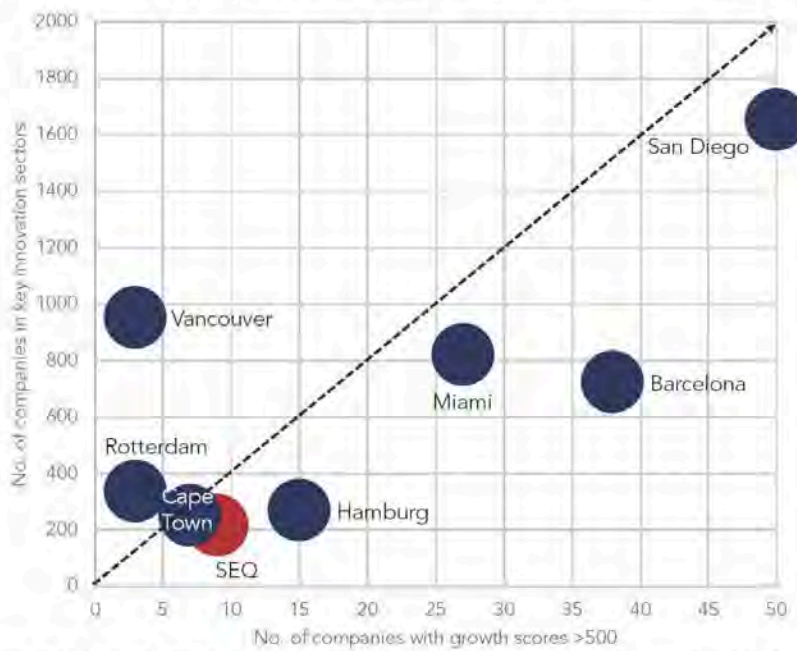
Source: Mattermark, October 2017. *Key innovation sectors = biotech, bitcoin, cleantech, drones, health IT, IoT, pharmaceuticals, robotics & software development. **Fukuoka and Busan not included.

The innovative firm data is reflected by the comparative performance of SEQ in terms of attracting venture capital investment. Over the past 3 years, the region ranks 7th of the 10 regions for per capita VC investment, and is clearly among the bottom group well behind Hamburg Region and South-East Florida, and a great distance behind San Diego Region and Metro Vancouver (fig. 28).

Fig. 28: Venture capital investment per 1,000 inhabitants, October 2014-October 2017 (USD)
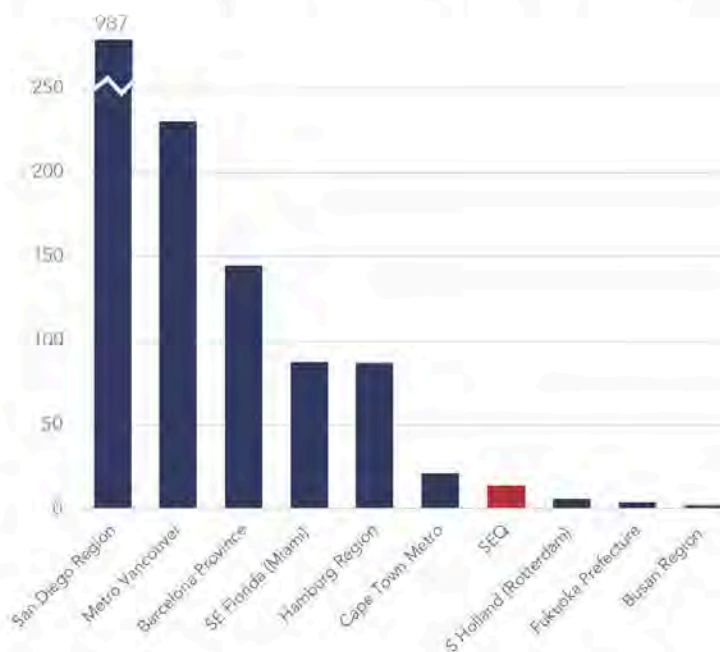
Source: Pitchbook, October 2017. *All data is at OECD-defined metropolitan scale, except for Cape Town, for which data is presented at the official metropolitan city scale.

Fig. 29: Patent applications per 1,000 inhabitants
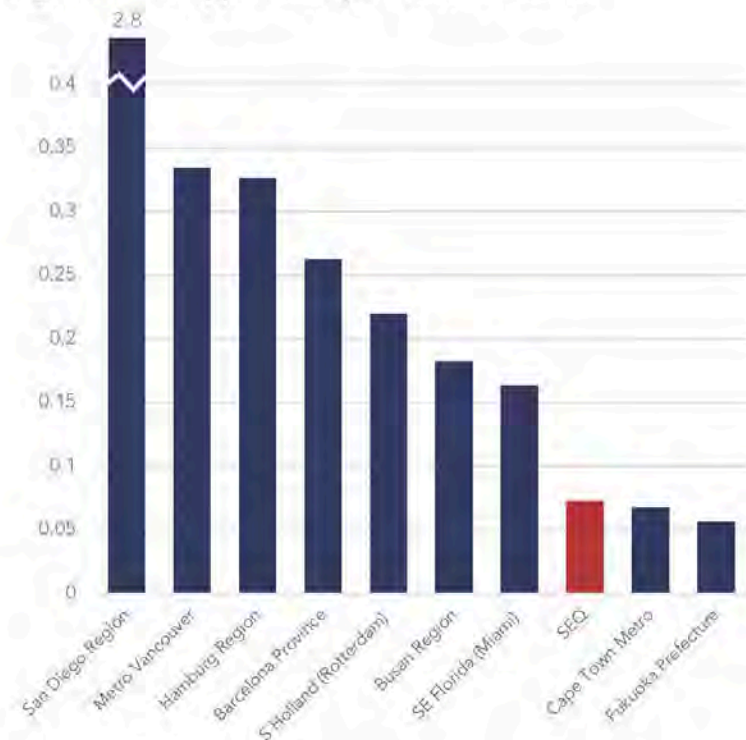
*Source: OECD REGPAT data (2015 figures). *All data is at OECD-defined metropolitan scale, except for Cape Town, for which data is presented at the official metropolitan city scale.*

These figures illustrate the fact that some regions have an economic make-up and entrepreneurial culture that currently is much more conducive to innovation than SEQ. They suggest that original and distinctive efforts will be needed to grow SEQ's innovation profile and to build the demand drivers that underpin a larger eco-system and enable a set of innovation districts or other types of location to emerge.

Table 9: Innovation Index Performance: core cities

	2thinknow Consulting Innovation Cities Index, 2017 rank
Barcelona	13
Vancouver	24
Miami	26
San Diego	36
Hamburg	40
Brisbane	59
Busan	78
Rotterdam	92
Cape Town	120
Fukuoka	156

Source: 2thinknow Consulting Innovation Cities Index, 2016-17

The current cycle of innovation has a strong urban orientation, and currently most of the comprehensive global measures of innovation still compare cities rather than regions. The data available tends to align and concur with the regional findings we have observed in this research. According to the 2016-17 2thinknow Consulting Innovation Cities Index, Brisbane has the lowest innovation ranking of all its European and American peer regions except Rotterdam (table 9). This index is strongly weighted towards commercialisation, and when combined with regional patent data (fig. 29), this result suggests that while SEQ has many of the knowledge drivers the region lacks all the necessary ingredients to commercialise innovation.

Section Summary

- SEQ benefits from a strong university system – with high-impact, high-performing universities and the highest number of students enrolled in top 500 institutions. This is a key advantage for the region's future ability to attract and retain the talent to drive its high value growth sectors. But the region's residents have relatively modest higher education attainment overall, which although just one element of the picture, represents a risk for potential youth employability, and a broad base of prosperity.

- SEQ's innovation ecosystem has grown in recent years, but compared to other regions still lacks a critical mass of firms with global reach or high growth potential. A limited number of patent applications, insufficient collaborative research, all add up to mean that SEQ does not yet attract the entrepreneurs or the venture capital at the scale required to become an leader in innovation.

- This suggests the need for organised regional efforts to leverage its knowledge anchors and ensure the value of digital disruption to SEQ's economy is captured and retained within the region. These include clear leadership to boost the profile of innovation, providing clear pathways for entrepreneurs, and the development of stronger collaborative networks among the region's business, civic and educational actors.

2.4   Liveability and Public Goods

SEQ inherits advantages in terms of relatively low exposure to pollution, and its high access to green space and outdoor amenities, while its affordability has historically been above average. However several of these advantages are being eroded and require concerted joint action.

SEQ has the 2nd highest amount of green space per capita of the 10 regions, according to the most recent OECD data. This is an important advantage that provides enviable access to a high quality natural environment.

However the region lost over 25% of its green space between 2000 and 2014 – more than any other of the regions for which data is available, not least because of ongoing sprawl between Brisbane and the Gold Coast (fig. 30). This decline is despite the combined efforts since the 2005 Regional Plan to identify an Urban Footprint as a way to control unplanned urban expansion, and reflects the challenges of accommodating high population growth. These results, taken together with the population projections up to 2040, suggest that the protection of green space should continue to be a strategic priority going forward – especially for vulnerable areas such as between Brisbane and the Sunshine Coast and Moreton Bay.

**Fig. 30: % change in green space, 2000-2014**
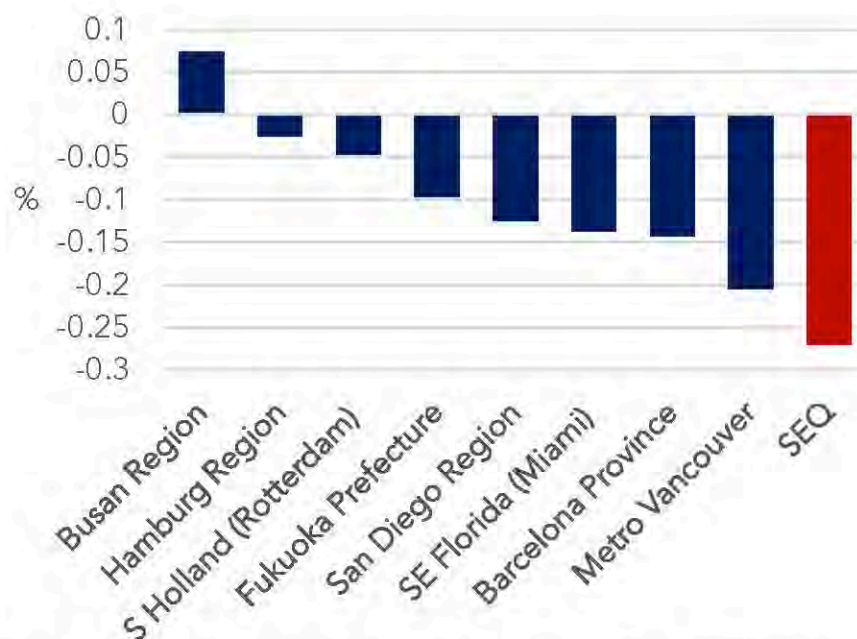
*Source: OECD. *All data is at OECD-defined metropolitan scale. **Cape Town not included.*

SEQ's green credentials are also strengthened by its low overall exposure to pollution, ranking 3rd out of the 10 regions (fig. 31). The South-East Florida and Vancouver regions perform best, ranking 1st and 2nd respectively, with SEQ behind because of its higher relative exposure to PM10. But exposure to PM 2.5 in SEQ is very low, on the par with the least polluted regions.

SEQ's low pollution levels appear to be a result of more than 20 years of city and regional efforts, including the Brisbane City Council 1996 Clean Air Strategy, the 2003 SEQ Air Emissions Inventory, and the SEQ Regional Air Quality Strategy. The city and regional council

sponsored planned burning and bushfire risk management programmes, which have significantly reduced levels of PM10 pollution, while the Port of Brisbane is committed to real-time and long-term dust monitoring. These have reduced SEQ's figures for nearly all pollutants over the last decade, and although vigilance is required to manage concerns around coal dust and other threats, currently the region's performance in this area puts it among the global leaders.[8]

Fig. 31: Exposure to pollution
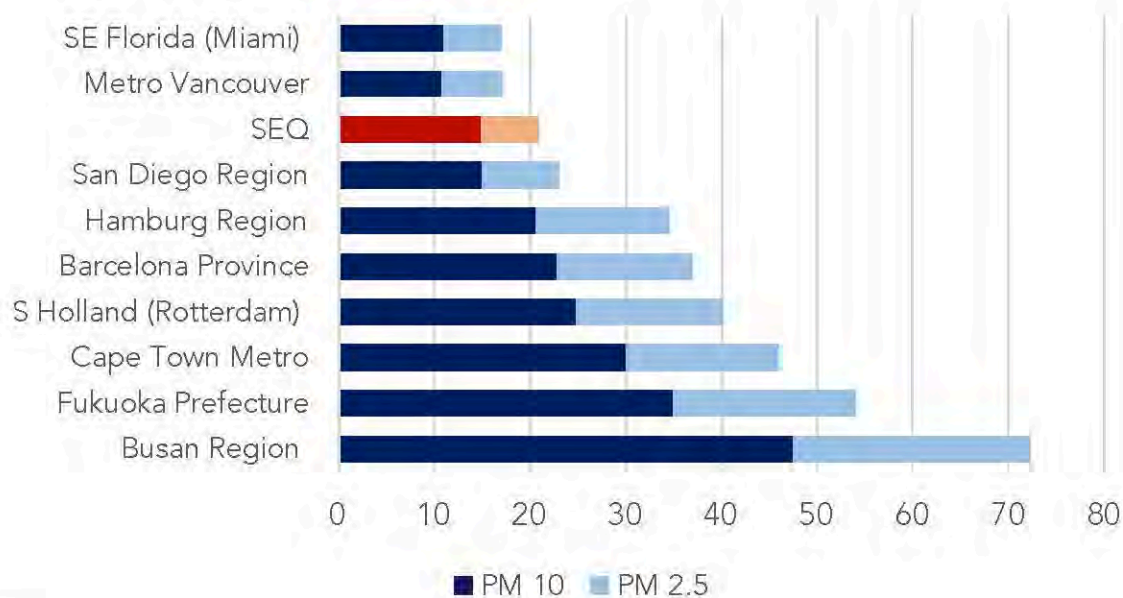
*Source: Numbeo Pollution Index, October 2017. *Scores based on weighted averages of key regional centres in each region - see appendix for full details of methodology.*

SEQ has high CO_2 emissions per capita – only the regions of Metro Vancouver, South Holland and South-East Florida have higher (fig. 32). This is partly due to the fact that many other regions have benefited from falling national CO_2 emissions in recent years, SEQ has not. SEQ's high CO_2 emissions are due to high electricity and transport energy costs as well as energy intensive agriculture and fugitive emissions from gas fields.

Fig. 32: CO2 emissions per capita, 2014

Source: 2008 OECD data (extrapolated based on national World Bank data - see appendix for full details of methodology).

SEQ benefits from a very competitive range and quality of cultural attractions which reflects its reputation and reality as a world-class outdoor destination. Overall SEQ ranks 5th in terms of the total number of cultural attractions (fig. 33). The region has a particularly high number of outdoor activities and nature and parks, but is less strong with regards to nightlife, food and drink, and concerts and shows.

Fig. 33: Cultural attractions by type
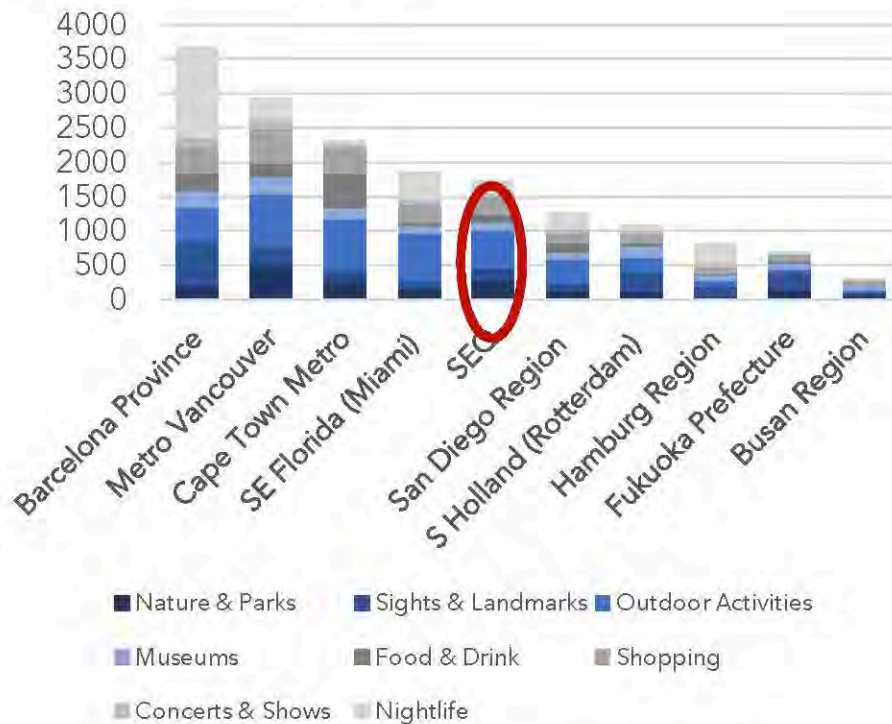
*Source: Trip Advisor, October 2017. *See appendix for methodology. **Cape Town Metro in this case refers to Western Cape.*

Table 10: Number of meetings in core cities of the 10 regions

	Number of meetings, 2016	Global rank
Barcelona Province	181	3
South Holland	79	25
Cape Town Metro	62	39
Hamburg Region	54	47
Metro Vancouver	47	55
SEQ	43	61
South East Florida	34	76
Busan Metro	31	84
Fukuoka Prefecture	23	111
San Diego Region	20	125

*Source: ICCA, 2017. *Based on combined figures for South Holland, SEQ and South Florida.*

SEQ's outdoor lifestyle provision is also effectively complemented by a popular events and meetings offer. Combined, Brisbane and the Gold Coast rank 61st globally for annual international meetings[9], a respectable score that far outweighs SEQ's overall volume of international passenger traffic (table 10). However there is clear scope for this high value visitor economy to grow further.

After a period of a lack of supply, SEQ now has a very competitive number of four- and five-star hotels, 2nd only to Barcelona for this measure (fig. 34). In recent years, the hotel construction industry has witnessed a massive boom, following concerns that the region previously suffered from a shortage of upper-class hotels. Today, there are now concerns of an over-supply – particularly of higher-end accommodation. However the figures reflect a dynamic and medium-to-high spend visitor economy in SEQ.

Fig. 34: Number of four- and five-star hotels

Housing Affordability

The affordability of housing has become one of the fundamental pillars of liveability around the world, as an ever-larger share of urban and regional populations face difficulties accessing housing close to the main centres of jobs. 9 of the 10 regions in this study have a 'median multiple' (median house price divided by median household income) in excess of the internationally recommended figure of 4.0.

In the past SEQ would have been among the more affordable regions, but today its median multiple (6.1) is now only surpassed by four of the 10 other regions (fig. 35). Its figures are now closely comparable to Miami/South East Florida and the Hamburg Region. Although SEQ is still some way more affordable than the likes of San Diego Region and Metro Vancouver (and also Greater Sydney and Greater Melbourne), the recent surge in prices will require a new toolkit to manage affordability.

Fig. 35: Estimated median multiple for purchased housing in the 10 regions, 2016/17*
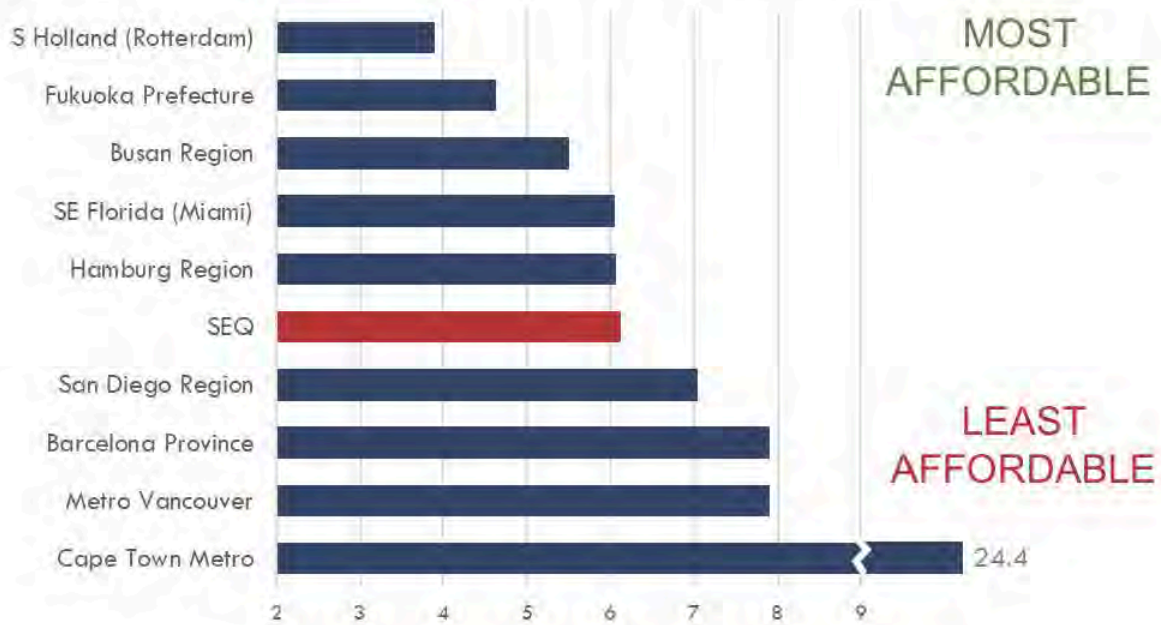
*Sources: mixture of National Statistics Agency and Census data and individually compiled/calculated data from various web sources – see appendix for details. *Based on latest available data, 2016 or Q1 or Q2 2017. **Calculated in local currencies. ***Figures for Fukuoka and Busan Regions based on average rather than median figures. ****Household income figures for Hamburg and South Holland Regions based on 2014/15 figures, updated based on national growth rates for subsequent years – as such these figures should be treated as best estimates given current data availability.*

Although the apartment rental market is comparatively small in SEQ, the region does have an advantage of relative rent affordability, ranking 4th for average 1-bedroom apartment rent and 3rd for average 3-bedroom rent. For 3-bedroom apartments, SEQ emerges as the cheapest region to rent outside of Asia, and for 1-bedroom apartments, the cheapest region outside of Asia except for Hamburg.

Fig. 36: Rent of average 1-bedroom apartment as share of average monthly income
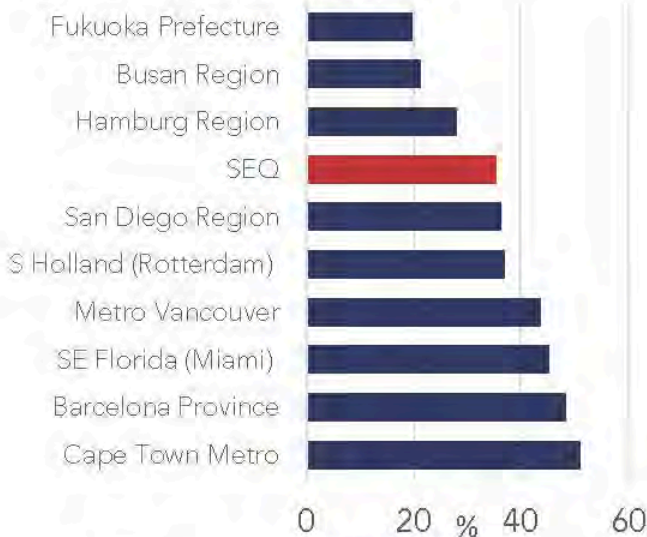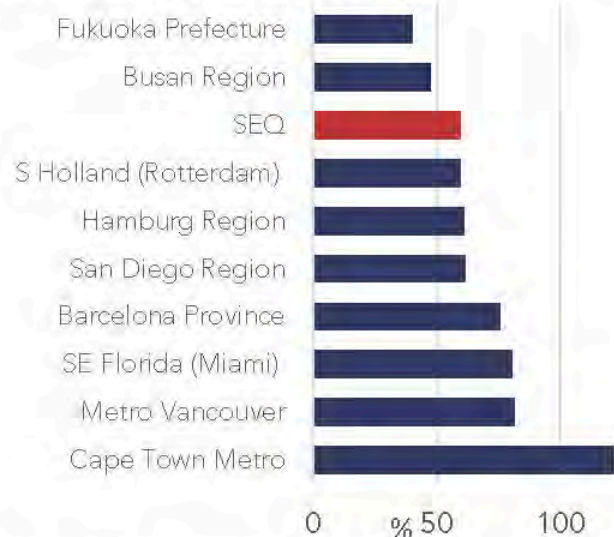

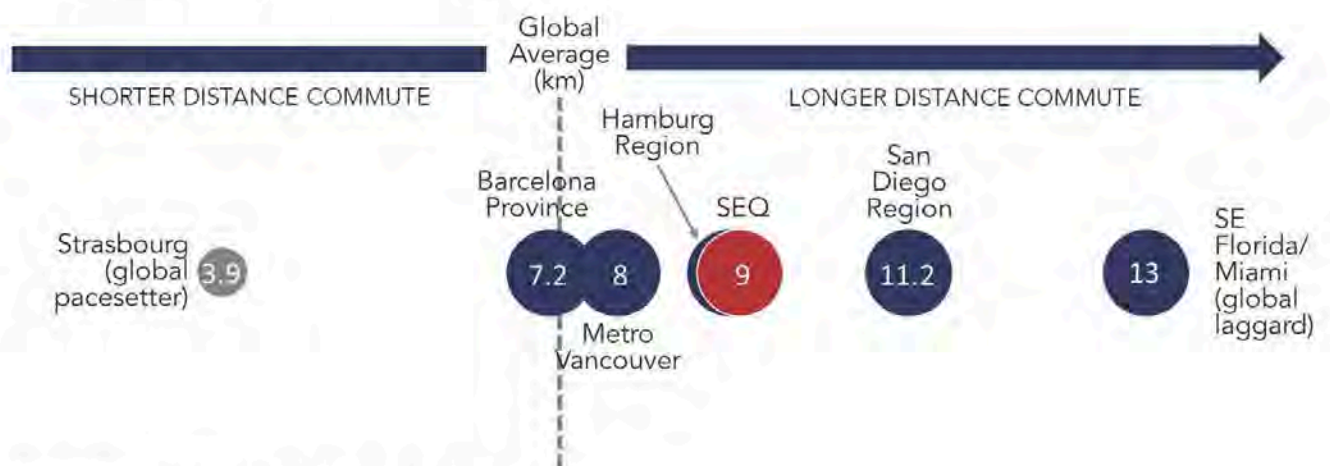## Fig. 37: Rent of average 3-bedroom apartment as share of average monthly income

*Source: Numbeo, October 2017. * Measured manually based on taking weighted averages of key regional centres in each region - see appendix for full methodology.*

In Brisbane, a rapid increase in supply of units is behind this trend – unprecedented growth in Brisbane's unit stock has seen the number triple since 2000.[10] In the Gold Coast, some of the current demand has been fuelled by tradesmen moving to the city to work in the construction industry in the run up to the 2018 Commonwealth Games.[11] But there are signs that the surge in supply of apartments in Brisbane may be slowing, and if that is the case, then rents will increase, and affordability will decline. The proposed transport projects such as Brisbane Metro and Cross River Rail are therefore an important means to extend the capacity of the housing supply, if they are accompanied by denser mixed used development with a key housing component.

SEQ's housing affordability has also to be considered in conjunction with distance from homes to jobs. Data from 2016 and 2017 (fig. 38) suggests that the average public transport commute is now over 9km in SEQ, above the global average among upper income regions (7.5km). The increased distance of commuting is one reason that average daily commutes in SEQ now comfortably exceed 60 minutes, more than 10 minutes greater than European peer regions (fig. 39). At the same time, although SEQ's modal share of public transport appears to have stabilised after declining in previous decades, its current share of around 8% of total trips and 12-13% of journeys to work is lower than the majority of its peer regions globally.[12]

While SEQ's commute times are lower than for many North American regions, there is a clear imperative to improve access to jobs and reduce commute times if SEQ is to retain its liveability advantage. Higher densities and mixed-use development in targeted locations are one way to achieve this improvement and ensure higher public transport uptake and cost recovery.

Fig. 38: Average length of commute (one way)

SHORTER DISTANCE COMMUTE   Global Average (km)   LONGER DISTANCE COMMUTE

Strasbourg (global pacesetter) 3.9

Barcelona Province 7.2

Metro Vancouver 8

Hamburg Region

SEQ 9

San Diego Region 11.2

13

SE Florida/ Miami (global laggard)

Source: Moovit Public Transit Index, October 2017

Fig. 39: Length of public transport commute (minutes)

% of people commuting by public transport for more than 2 hours per day
Average daily public transport commute (mins)
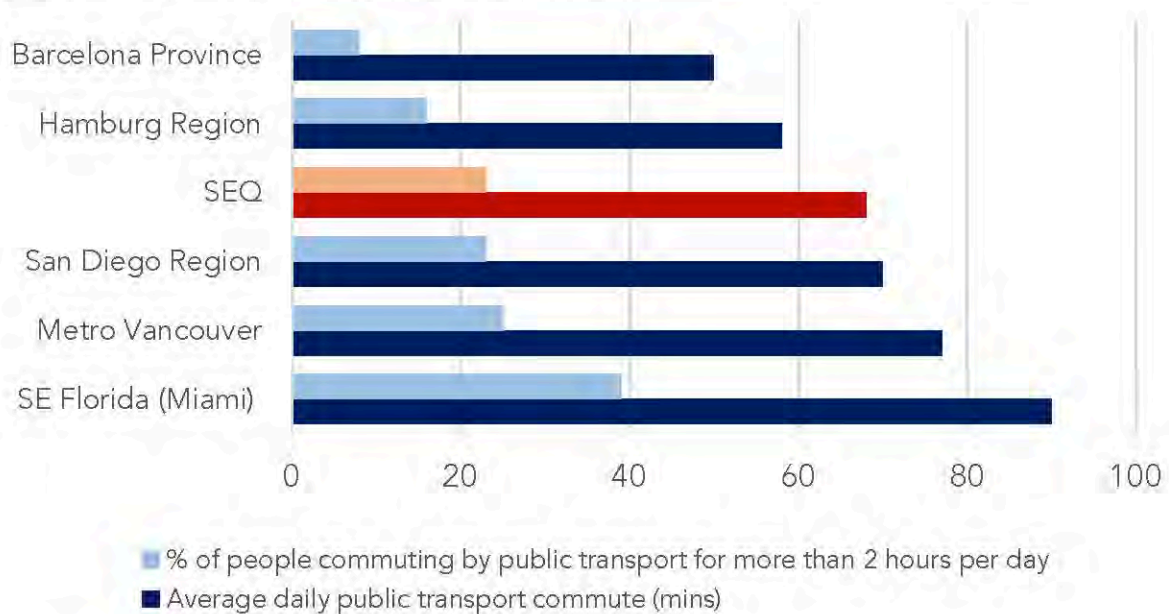
Source: Moovit Public Transit Index, October 2017

Section Summary

- SEQ's cycle of rapid growth and distributed metropolitan urbanisation appears to have slightly eroded some of the region's advantages of green space access and housing affordability. The region is still more attractive than many others in these areas but renewed efforts will be required to preserve the region's attractive model of access and inclusion.

- While other regions struggle with the severe challenges of air pollution, SEQ performs strongly in this area. There is room to improve CO_2 emissions and establish the region's smart and sustainable credentials more clearly.

- One important challenge for SEQ's quality of life model is the growing distance between jobs and work and the long commutes these involve. Responding to this challenge will require infrastructure investment and a shared commitment to a well-managed polycentric development approach.

- SEQ has a very competitive number of cultural attractions, hotels and meetings, all of which reflect the success and diversification of its visitor economy. Competition in these areas is very intense and will require ongoing innovation and development of the region's profile.

3. What are SEQ's Peer Regions Doing?

3.1 SEQ's Peers: The Big Projects

SEQ's peers are currently investing or prioritising in 6 kinds of major project that highlight their ambition to integrate their regions more effectively, grow their traded economy, and position themselves as leaders in the next generation of industries and innovations.

1. Expansion of key regional assets

Several of SEQ's peers identify the importance of re-investing in their largest physical assets in order to capture a greater share of traded growth.

- In **Busan**, the South Korean national government has co-funded a US$5bn expansion of the region's main Port. This will provide an additional 15 berths designed to increase capacity by 15.8 million TEU. The Port Authority also plans to facilitate flow of cargo between the old and new ports (located 25km apart) and to implement an inter-terminal transfer (ITT) platform to optimise how trucks and trucking companies operate between the two facilities, further reducing costs and increasing competitiveness. As a result, the port's capacity will become the 2nd largest in the world by the early 2020s.

Other regions are benefiting from higher tier of government action to improve the efficiency and management capability of its largest assets. **Fukuoka** has pressed ahead with the privatisation and expansion of its International Airport to meet growing visitor demand, with the help of national government, and this is paving the way for big growth in air routes.

2. Big ticket connective items

Many of the regions are moving forward with large road and rail projects that will dramatically improve travel times either between the main port/airport and the region, or along the main commuter axes where congestion is severe.

- In **South Holland**, the re-routing of the Harbour Freight Railway has been co-financed with higher tiers of government to speed up the movement of freight from Rotterdam port and increase rail's share of inland container traffic, which has stayed flat in recent years. The project is being co-financed with higher tiers of government - the Port Authority invests 40% and the Dutch and EU governments 60%. This is part of a wider effort to increase rail share of freight and make the system more efficient: Rotterdam Port Authority requires all new terminals opening at its Maasvlakte II site to agree to move half of their cargo via containerized rail. A Rail Incubator programme co-invests in establishing new rail connections or increasing the frequency of already-existing rail shuttles, as well as providing marketing support and finding potential partners.

Meanwhile **Metro Vancouver's** Provincial Government had recently committed to a C$3.5bn (+ C$8bn interest) investment over 50 years to develop the Massey Tunnel bridge, widely

regarded as the region's worst bottleneck. The project is currently on hold but is expected to eventually gain the political consensus required.

3. Large-scale urban redevelopment

SEQ's peers are pursuing bold urban and regional re-engineering, whether to rapidly densify the urban core of the region, or to build large 2nd centres to absorb future growth, or to reclaim unused or derelict land in strategic areas for mixed use urban demonstration projects.

- **Cape Town** is an example of a region that has begun building a new regional centre to absorb and accommodate rapid future growth. On a 31km^2 greenfield site 25km from the CBD, a new city is being constructed to accommodate 800,000 people across a range of incomes. The project will include 200,000 homes, 400 education facilities, 370 public service facilities, and 15 sports complexes. The entire $18bn project is being privately funded. Half of homes will be affordable for those in the GAP market – those earning too much to qualify for government subsidised housing, but too little to participate in the private property market. The new city development will be linked to Cape Town and Atlantis via an Integrated Rapid Transit Bus Service.

- **Fukuoka** has meanwhile embarked on the **Tenjin Big Bang** project to redevelop 30 towers within a 500m radius in a key business district by 2024. The project takes advantage of existing relaxed regulations on building height as part of Strategic Special Zone initiative, which now extends to relaxing regulations on floor area ratio. The project will increase floor space by 1.7 times and more than double the number of employees. The scheme is expected to have a total economic impact of $7bn per year, and also to raise Fukuoka's profile as a start-up friendly and business friendly region.

Other innovative projects in terms of their scale and re-use of land include **Hamburg's** $11bn HafenCity re-urbanisation of housing, which has been the largest inner city waterfront housing project in Europe, and **San Diego's** $1bn convention centre project that is being built on Port land bayfront.

4. Anchor facilities

The development, relocation or expansion of anchor institutions is increasingly being recognised by SEQ's peers as a way to shape regional development and build presence and profile in target sectors.

- **South East Florida's** $4 bn "American Dream" Mega Mall in Miami is one of the most ambitious attempts to anchor a revived retail and entertainment economy alongside the city's successful fostering of culture in the last decade. Triple Five Worldwide, who also developed the Mall of America in Minneapolis, are at the head of this 7 million sq ft project that is featuring an indoor ski slope, a water park, ice rink, hotel, theatres and other entertainment options as well as retail. The project – which may become the largest mall anywhere in the world - is a response to the lack of a major attraction

in SE Florida compared to other Florida regions, and the relative shortage of family entertainment and amusement activities. The project will receive an estimated 40 million annual visitors and create 14,500 permanent jobs.

Other interesting anchor projects are visible in regions such as Hamburg, where the $1bn world's biggest X-Ray Laser Facility is being established and is anchoring a new cluster of nanotech firms. Meanwhile in the city centre its $3.2bn philharmonic hall is a statement world-class music facility designed to build cultural profile and a larger visitor economy.

5. Inter-regional rail

Some regions are benefiting from much improved rail service connecting the cities in the region but also cities further away. In South East Florida, Brightline is a 100% private $3 bn rail service developed by All Aboard Florida. Phase 1, launching at the end of 2017, will connect Miami to West Palm Beach through an express intercity service, with an additional stop in Fort Lauderdale. Phase 2, scheduled for 2020, will extend the line to Orlando, the next big city outside the region, allowing commuters to make the 235-mile trip from Orlando airport to Downtown Miami in less than 3 hours.

6. Sustainable infrastructure

Finally, many regions are now investing in some of the next generation infrastructure that both improves their resilience to future shocks but also puts their region at the forefront of new and emerging economic sectors.

- San Diego Region's "Pure Water" scheme is a $3bn water infrastructure recycling project, financed by city government. It uses advanced water purification tech to recycle wastewater into safe, high-quality drinking water. Phase 1 is to be completed by 2021. By end date, it will produce 83 million gallons per day – 1/3 of San Diego's water supply – and reduce the amount of treated wastewater being discharged into the ocean by 50%.
- Hamburg has embarked on a highly ambitious partnership with Daimler to electrify and digitise the entire region's urban transport, bus and individual mobility systems. As part of the partnership, the central city is now setting up 1,000 publicly available charging stations for electric vehicles by 2019. It will set up 150 charging stations at Switchh points exclusively for car-sharing vehicles and will offer a significant number of parking spaces for car-sharing and electric vehicles. Daimler is investing €10 billion to expand its fleet of electric vehicles, and will electrify 400 smart vehicles in the car2go car-sharing fleet by 2019.
- Fukuoka is benefiting from a historic US$1.5bn 229MW offshore wind project. The government of Kitakyushu City, the 2nd largest city in Fukuoka Prefecture, announced

that the project was secured by Japan-based utility consortium Kyuden Mirai through local auction. The wind farm will comprise 44 turbines and span 2,700 hectares across four adjacent sites, situated off the coast of the western island of Kyushu. Construction is expected to begin following an environmental impact assessment.

3.2 SEQ's Peers: Regional Visions, Deals and Reforms

The projects highlighted in Section 3.1 reflect the fact that many of SEQ's peer regions have themselves recently entered a new period of reform and re-positioning, some of which have involved the signing or agreement of important financial or political 'deals'.

Table 11: Vision and Deals developed by SEQ's peer regions

	Core Vision about their Role in the Future World of City-Regions	Recent 'Deals', reforms or instruments
Barcelona Region	Capital of Mediterranean, Digital Powerhouse, World Leader in Tourism, Food Innovation, and Gastronomy.	Provincial govt has struck deal for 50km of metro rail expansion, Line L9, EUR 6 billion. New 50/50 co-finance of freight railway
Busan Region	NE Asia's leading Marine City, 100% renewable energy, Smart Green City	Metropolitan City Gov, 60% fiscally autonomous, leading district renewal. PPP for hydrogen fuel cell power plant. National Gov investing in idea for 600mph Seoul-Busan train, 30 minutes
Western Cape	'One of the world's greatest regions in which to live and learn, work, invest and discover… with a sense of belonging in all.'	National Gov finance for new runway and terminal at International Airport. Raise $400m through new green bond for city.
Fukuoka Prefecture	World-Class Compact City-Region for Health and Managing Aging Populations; Start up City.	National Gov designation as a Medical Special Zone for start-ups, talent visas, tax cuts. $1.5bn offshore wind project enabled by new national law to allow for 200-year use of designated water zones.
Hamburg Metro Region	Become Europe's leading showcase of low energy industrial region, high value chain position.	EU and federal package for 1.5bn Fehmarnbelt road and rail tunnel project, that will transform Hamburg region's links with Scandinavia.
Rotterdam/ South Holland	The Resilient City Region of the Future. Best in Class for the Circular Economy. 'Water City.'	Plan for EUR35bn national gov investment into whole region over 15 years, focusing on green transport and 1m 'green homes' $300m Re-Routing of Harbour Freight Railway, co-financed by Dutch Govt and EU.

San Diego Region	Capital of Science and Innovation. Vision for 100% Renewables, Bluetech/Cleantech jobs. Larger regional offer with Tijuana.	Region's governments have agreed **35 year Infrastructure Plan** to deliver $204 billion of transportation infrastructure projects by 2050. Region agreed Federal $500m **Water Infrastructure** deal to filter recycled water to produce potable drinking water.
Greater Vancouver	2040: 'A liveable region with a diverse and resilient economy', Asia-Pacific as the key opportunity. Big push towards compact TOD	C$2.2bn Provincial Govt and C$2.2bn Federal Gov match funding for 10 year expansion of metro and light rail system across region (project currently on hold). New fully integrated regional transport agency under discussion.

These regional visions, reforms and deals are indicative of the way that SEQ's peer regions are:

- Telling their story to the world in a bold way designed to capture the imagination of their residents and their target audiences. This often involves a statement about the region's role as a gateway, about its one or two most distinctive attributes, and its positive desire to align with future trends of globalisation, urbanisation and/or technology.
- Doubling their collaboration and co-ordination efforts to agree long term plans and pipelines of infrastructure, that point to a more 'managed metropolis' and provide confidence and reassurance to firms and investors to commit.
- Securing deals, agreements, and new shared institutions among multiple tiers of government that deliver items of infrastructure but also improve fiscal tools and upgrade systems and investment governance.

3.3 SEQ's peers: how they organise themselves, and the new modes of collaboration or partnership

The other 9 regions in this study all have mechanisms to organise regional growth, development and promotion. As Table 12 shows, these broadly take four forms:

I.   A strong consolidated authority at the regional scale
II. Some responsibilities assigned to a multi-purpose upper tier regional authority, while cities retain strong self-management autonomy and collaborate effectively.
III. State government has led a process to require local governments to set up regional bodies for transport and planning.
IV. Bottom up voluntary models of co-operation established by 10+ local governments, covering aspects such as international promotion, long term planning

Observations on regional joint working and collaboration from SEQ peers

"We think of ourselves locally and do everything regionally"
Carolyn Dekle, former Executive Director,
South Florida Regional Planning Council

Table 12: Metropolitan governance arrangements in SEQ's peer regions

	Name and type of government or collaboration	Size and scale	Character of collaboration	Role of higher tier of government
Strong regional/metropolitan authority				
Cape Town Metro	Consolidated metropolitan municipality since 2004	Covers 46 towns in whole metropolitan area	Comprehensive metropolitan government in charge of land-use management, water/waste, power, transport, policing, and environmental health, with a staff of 20,000+.	Western Cape provincial government issues strategic plans, but some challenges of region-province silos.
Busan Region	Consolidated metropolitan municipality, as part of recent national effort to grant 2nd tier cities metropolitan status.	Covers 15 city districts and 1 county	Partners effectively with Ulsan and Gyeongsangnam-do to form "the south east economic zone", with wider regional partners.	National government provides incremental upgrade of metro/regional powers + co-finance.
Upper tier authority sharing responsibilities with local governments				
Barcelona Province	Collaborative metropolitan authority since 2010, with 3 executive bodies, 500 staff	Covers city of Barcelona and 35 local governments	Housing, economic development, public transport, water and waste	Some frictions with Catalonia govt due to different political parties, but important funding secured.
Fukuoka Prefecture	Strong prefectural government for whole region, headed by directly elected regional governor, with strong city mayors also having tax and legislative powers. Cities and the prefecture work together.	25 cities working co-operatively with the upper tier Prefecture.	• Joint city/prefecture regional promotion, environmental management Prefecture manages the region's planning, police, schools, education, roads, hospitals.	National government provides regular finance and implementation advice to the regional government.

State government-led creation of regional bodies				
South East Florida (Miami)	Regional Planning Council and Transport Authority –agencies providing state and local policymakers with information and guidance. Governed by public/private sector board consisting of 18 voting members. 2/3 of members are county/city elected officials, rest are appointed.	Covers 3 counties and 71 local governments	• Statutory responsibilities for local comprehensive plans, long-term economic prosperity and sustainability planning, transport planning, emergency preparedness. • Promotion of cross-jurisdictional cooperation	State government of Florida created legislation to require new regional bodies to be set up
Bottom-up voluntary models				
Hamburg Metro Region	Voluntary metropolitan cooperation involving the city state of Hamburg, 17 districts across 3 states, and 2 other self-governing cities.	Covers approx. 1,000 local governments	• Bilateral funds to implement joint flagship projects. • Research and data gathering • Global promotion/ positioning • Agreeing efficient settlement and spatial land management • Raising public awareness and regional identity.	Bottom-up arrangement without federal government involvement.
Metro Vancouver	Metropolitan entity operating under provincial legislation as a regional district on behalf of 23 members (governed by Board of Directors of elected officials from each LGA)	Covers 21 local governments, one Electoral Area and one Treaty First Nation	• Long-term strategy for regional growth and land-use • Joint services and planning functions e.g. water, waste, parks, etc.	British Columbia provincial government set up the Regional District for the Vancouver model to emerge.
San Diego Region	Regional Association of Governments – a forum for regional decision making (composed of mayors, councillors and supervisors from constituent LGAs). Plus advisory reps from transport and water authorities, and professional staff of planners, engineers and specialists.	Covers 18 cities and the county level government	• Long-term strategic planning; engineering and construction of public transport;	State government of California recognises SANDAG as a regional mechanism of government, record of improved co-ordination over time.
South Holland (Rotterdam)	Rotterdam-den Haag Metropolitan Area – a voluntary cooperation signed in law between the cities of Rotterdam and The Hague and adjacent local governments. $1bn AUD budget. Relies on consensus model to implement shared policies.	Covers 23 of the 60 local governments in South Holland	• Most collaboration is around economic competitiveness • Metropolitan area has control of funding for transport • Upper tier province manages spatial planning	Provincial government of South Holland acts as a partner along with other cities – Leiden + Dordrecht. The regions submits a multi-billion programme of investment to national government.

SEQ's peers are now proactively engaging in least three kinds of partnership initiative in order to organise and plan their regions for the future more effectively.

1. Stronger State Government and Local Government partnerships based on greater trust and co-ordination.

- **Miami/South Florida** is embarking on a more comprehensive model of Regional Planning between 4 Counties, 4 planning councils, 4 transit agencies, 2 state departments and 2 Ports. The result is a 2040 Regional Transport Plan that is moving the region towards much better multimodal access to the region's train and air hubs. It is also resulting in a Regional Climate Action Compact and Plan.
- In the **Barcelona Region,** the co-operation in the new Metropolitan Authority that spans more than 30 local governments continues to grow and develop, within a framework where the Catalan provincial government provides guidelines, sets up working groups, builds observatories, and is a source of bridge finance. This has resulted in effective and well-implemented schemes in areas of transport, water, economic development since 2010.

2. Local government joint ventures

- In the **Rotterdam/South Holland Region,** 23 local governments now co-operate in areas of public transport, international promotion and business climate. A 10 year regional investment programme has been agreed from 2017-27, and there is joint investment in 2 innovation districts as well as 4 two way trains. Local governments in the less urbanised parts of the region have gradually become more persuaded of the merits of participation and of effective joint lobbying and advocacy.
- **Greater Vancouver** has seen a 2040 Regional Growth Plan adopted by 21 local governments, with a strong focus on a shared solution to housing supply. This Plan also involved the agreement of adjacent regional districts in the state of British Columbia as part of an effort to improve the coordination equilibrium.
- In the **San Diego Region.** SANDAG is the voluntary association that has matured such that the 18 cities and the County have a agreed 2050 Regional Plan, with a strategic focus on transport and land-use. The Plan involves much stronger collaboration with public agencies, neighbouring counties, infrastructure providers, and local communities to design a better transportation system. To improve the desire to collaborate, incentive funds have been set up for planning and capital projects in smart growth areas and for active transportation projects.

3. Public-Private Regional Alliance (for Innovation, Marketing, Job Creation, etc.)

- **Hamburg Region** is benefiting from a new innovation alliance involving 60 partners – 2 State Governments, big firms, universities and local governments – to shift towards 100% renewable energy by 2035. This alliance is called **'NEW 4.0'.** This represents the first time in Germany that two states have agreed a joint approach to reforming the energy market and testing/applying a new regulatory framework at a large-scale.
- **Fukuoka Region** Directive Council (FDC) is a new kind of joint metropolitan growth strategy to become Asia's business hub, involving 9 cities + 8 towns, + industry, educational institutions and citizens. It has begun with 120 members and a modest $1m annual budget, but is already gaining momentum and is set to expand.

How other regions make the most of civic leadership

The value of civic leadership and engagement is increasingly observed among the global peers of SEQ. In **San Diego**, the region's Economic Development Corporation has been able to review the region's story and strengths because engaged firms and organisations have helped to explain their own DNA in the region and advise on the messages that are required for San Diego to become more visible. 100 of these organisations have formed a **Brand Alliance**, that collectively uses business and civic resources to better tell San Diego's story to the world.

In the **Cape Town** region, civic institutions are core to a wider economic strategy. To overcome a tendency towards fragmentation in economic projects, an new **Economic Development Partnership** provides a vehicle for civic leaders to partner with public and private leaders in a much more collaborative and sustained manner. In practice, engagement of outward-facing civic bodies has helped the region to address head-on some of the specific non-collaborative institutional cultures and behaviours. The focus has been not on addressing all issues through a single partnership structure, but rather on issue-based partnerships and area-based partnerships where civic leadership contributes to a balanced approach to economic growth and inclusion.

Civic leadership is also making a big difference in shaping, managing and activating specific precincts/districts in certain regions. In Hafen City in Hamburg, 22@ in Barcelona, and in Rotterdam Innovation District, civic institutions have become important anchors to new kinds of 'traffic' in the neighbourhood, and have intervened strategically to ensure good placemaking, inclusive development and effective multi-cycle planning.

What does this mean for SEQ?

- SEQ needs to accelerate from a productive alliance between the local governments to being a longer term and permanent partnership with State and Federal Governments.
- An ambitious and far reaching City Deal that focusses on the investment and coordination required to achieve good growth and a competitive economy is essential.
- Key catalysts such as the Commonwealth Games, a potential Olympic Games bid, expanded Universities and Port/Airport facilities should be carefully managed to optimise returns.
- A new regional promotion effort should be set in train with the intention to achieve identity and recognition for SEQ as a favourable region for trade and talent. This would improve the region's data collection, monitoring and dissemination to internal and external audiences.
- There is an important role to be played by the civic institutions in SEQ, including universities, museums, research centres, heritage sites, convention centres, and others. Engaging these institutions is important to building city and regional identity, advocating for change, and anchoring new locations for development and intensification.

Notes, References and Appendix

Core data sources used for this report

- **2thinknow Consulting Innovation Cities Index** (2016-17) – for data on innovation performance of core cities
- **Brookings Global Metro Monitor** and **Brookings Redefining Global Cities**
- **City, Regional and National Level Statistics Agencies** – for data relating to population growth and projections, dependency ratios and diversity
- **Crunchbase** company search by HQ location (October 2017) – for data on number of innovative firms and number of top 10,000 innovative firms
- **Google Maps** (October 2017) – for data on train journey times
- **ICCA Statistics Report 2017** – for data on number of meetings
- **JLL Global 300 Interactive Dataset** (2017 version) – for investment performance and commercial attraction data
- **Mattermark** company search by HQ location (October 2017) – for data on firms in key innovation sectors and with high growth potential
- **Moovit Public Transit Index** (October 2017) – commute time, waiting time and trip distance – for data on average public transport commute times and distances and average wait times
- **Numbeo Cost of Living and Numbeo Pollution** (October 2017) – for data on rental affordability and pollution
- **OECD Interactive Database** and **OECD Regpat Data**
- **Pitchbook** search of all VC deals by HQ location (October 2017) – for venture capital data
- **QS World University Rankings and World University Rankings by Subject** (2017), **Times Higher Education World University Rankings** (2017) and **CWTS Leiden University Ranking** (2017) – for data on university performance and impact and numbers of students
- **Regional and National Airport, Port and Transport Agencies** – for port and airport data and data on regional rail coverage
- **Rome2Rio Global Connectivity Ranking Interactive Map** (October 2017) – for airport connectivity data
- **Telegeography Interactive Submarine Cable Map** (October 2017) – for data on digital submarine broadband connectivity
- **testmy.net** (October 2017) – for data on internet speeds
- **TripAdvisor "things to do" and "hotels"** (October 2017) – for data on cultural attractions and numbers of 4*/5* hotels
- **World Bank CO_2 emissions (metric tons per capita)**, 2008 and 2014 – for data on CO_2

Sources used for calculating median multiple housing affordability

Cape Town Metro: https://wazimap.co.za/profiles/municipality-CPT-city-of-cape-town/
Busan Region: http://www.koreatimes.co.kr/www/nation/2017/06/281_231432.html
Fukuoka Prefecture: https://resources.realestate.co.jp/news/how-affordable-buy-home-japan-prefecture-2016/

Barcelona Province, Hamburg Region, San Diego Region, South-East Florida, South Holland and Metro Vancouver: Census and national level statistics agency data

SEQ: Raw data based on data tables of 2016 SA4 level census data for Queensland. For other regions, data sources from CBS, Wazimap, Hamburg Metropolregion, www.zensus2011.de, US Census, Korea Times, realestate.co.jp, Regional average house prices and household incomes calculated by taking weighted average of all areas in SEQ based on relative population sizes.

1. Methodology for calculating spidergram data

- The 41 indicators were allocated into 10 overarching themes (see below)
- For each theme, the relative positions (1-10) of the regions were compiled and inputted into an Elo algorithm. Designed as a Chess tournament ranking system, the Elo Rating System rates cities or regions by comparing their performance in every possible permutation against a list of other

cities/regions. The Elo system is highly effective for evaluating how well a city/region performs, relative to a set of other cities/regions, when cities/regions will play different numbers of 'matches' and the outcome of any match is not deterministic.

- The 10 regions were ranked 1-10 by their algorithm score so that every region had an overall ranking for each theme (10 for 1st place, 1 for 10th place)
- Where SEQ was ranked joint with another region, a median score was awarded (e.g. 6.5 for joint 6th)

2. Methodology for obtaining testmy.net internet speed data:

In order to calculate regional average download speed, the following steps were undertaken:

1. Data for average download speed in mainregional centres in each region was obtained (see below for a list of the regional centres used for each region)
2. Regional average download speed was obtained by calculating the weighted average of download speed for each region, based on the relative population sizes of the regional centres.

In order to calculate average upload speed, average maximum download speed and average maximum upload speed, the same steps were undertaken but using data for upload speed, maximum download speed and maximum upload speed respecively.

Regional centres:

Barcelona Province: *Barcelona, Sabadell, Tarragona, Terrassa, Badalona, L'Hospitalet de LLobregat*
Busan Region: *Busan only (data not available for other regional centres)*
Cape Town Metro: *Cape Town only (data not available for other regional centres)*
Fukuoka Prefecture: *Fukuoka only (data not available for other regional centres)*
Hamburg Region: *Hamburg only (data not available for other regional centres)*
Metro Vancouver: *Vancouver, Surrey, Burnaby*
San Diego County: *San Diego, Carlsbad, Chula Vista*
SE Florida: *Miami, West Palm Beach, Fort Lauderdale*
SEQ: *Brisbane, Gold Coast, Toowoomba*
S Holland: *Rotterdam, The Hague*

3. Methodology for calculating rail speed and time to 2nd, 3rd and 4th cities:

2nd, 3rd and 4th cities (respectively):

Barcelona Province: *Sabadell, Tarragona, Girona*
Busan Region: *Ulsan, Miryang, Gyeungju*
Cape Town Metro: *Stellenbosch, Somerset West, Fish Hoek*
Fukuoka Prefecture: *Kitakyushu, Kurume, Ōmuta*
Hamburg Region: *Lübeck, Neumünster, Lüneberg*
Metro Vancouver: *Burnaby, Surrey, Richmond*
San Diego County: *Carlsbad, Oceanside, El Cajon*
SE Florida: *Fort Lauderdale, West Palm Beach, Hollywood*
SEQ: *Gold Coast, Ipswich, Nambour*
S Holland: *The Hague, Leiden, Dordrecht*

4. Methodology for amassing QS, THE and CWTS data on university impact and performance:

QS and THE data (university performance):

University performance was calculated by assigning regional universities scores based on their performance in QS and THE university rankings: (5 = top 50, 4 = top 150, 3 = top 200, 2=top 300, 1=top 400, 0.5=top 500). Additional scores (2= top 50, 1=top 150, 0.5=top 500) if also featured in QS Top 500 for individual fields.

CWTS data (university impact):

University impact was calculated by obtaining average impact score across the region's universities. Impact score in this instance measures the percentage of publications appearing in the global top 10%.

5. Methodology for Crunchbase data on innovative tech firms and top 10,000 innovative tech firms:

For regions where data was captured at the regional level (*Barcelona Province and Cape Town Metro*), data was obtained directly.

For regions where data was not captured at the regional level, data for constituent local government areas was added to data from the urban core. This gave the number of firms in the urban core and in additional large regional centres, which together accounted in most cases for the clear majority of regional firms.

Where remaining firm data in local government areas outside of main regional centres was unavailable or unreliable, proxy calculations were used. We calculated the number of firms by comparing the remaining (mostly rural) population share of the region to the population of, and numbers of firms in, the next territorial scale at which firm data is collected (e.g. Florida for SE Florida). To prevent distortions, we discounted firms in large population centres outside of the region but within the larger territory when completing this process (e.g. Jacksonville, Orlando, Tampa).

6. Methodology for obtaining Numbeo pollution exposure data:

In order to calculate regional average exposure to PM2.5, the following steps were undertaken:

1. Data for average exposure to PM2.5 in main regional centres in each region was obtained (see below for a list of the regional centres used for each region)
2. Regional average exposure was obtained by calculating the weighted average of exposure for each region, based on the relative population sizes of the regional centres.

In order to calculate regional average exposure to PM10, the same steps were undertaken but using data for exposure to PM10.

Regional centres:

Barcelona Province: Barcelona, Manresa, Tarragona
Busan Region: Busan, Ulsan
Cape Town Metro: Cape Town only (data not available for other regional centres)
Fukuoka Prefecture: Fukuoka only (data not available for other regional centres)
Hamburg Region: Hamburg, Lübeck
Metro Vancouver: Vancouver, Surrey, Richmond, Burnaby
San Diego County: San Diego only (data not available for other regional centres)
SE Florida: Miami only (data not available for other regional centres)
SEQ: Brisbane, Gold Coast
S Holland: Rotterdam, The Hague, Leiden

7. Methodology for calculating CO_2 emissions per capita:

In order to calculate CO_2 emissions per capita, the following steps were undertaken:

- Metropolitan-level 2008 data on CO_2 emissions per capita were obtained directly from OECD
- National level 2008 and 2014 data on CO_2 emissions per capita were obtained from the World Bank
- 2008-2014 percentage change in national level CO_2 emissions was used as a proxy to calculate 2014 data on CO_2 emissions per capita at the metropolitan level

8. Methodology for obtaining TripAdvisor cultural attractions and hotel data:

For regions where data was captured at the regional level (*Barcelona Province, Western Cape, South Holland*), data was obtained directly.

For regions where data was not captured at the regional level, the following steps were taken:

1. Data on numbers of attractions and hotels was obtained for main regional centres in each region (see below for a list of the regional centres used for each region)
2. Numbers of attractions and hotels across the regional centres were summed to give the total number of attractions and hotels in each region

Regional centres:

Busan Region: *Busan, Ulsan*
Fukuoka Prefecture: *Fukuoka Prefecture*
Hamburg Region: *Hamburg, Lübeck, Neumünster, Lüneberg, Cuxhaven, Pinneberg*
Metro Vancouver: *Vancouver, Surrey, Burnaby, Richmond, Langley, North Vancouver, West Vancouver, Vancouver Coast & Mountains*
San Diego County: *San Diego, Carlsbad, Oceanside, Escondido, Vista*
SE Florida: *Miami, Fort Lauderdale, West Palm Beach, Miami Beach, Pompano Beach, Boca Raton, Hollywood, Deerfield Beach, Boynton Beach, Palm Beach Gardens, North Miami Beach*
SEQ: *Brisbane Region, Sunshine Coast, Gold Coast, Toowoomba*

9. Methodology for obtaining Numbeo apartment affordability data:

In order to calculate regional average affordability of 1-bedroom apartments, the following steps were undertaken:

1. Data for average 1-bedroom rent in the centre and suburbs of main regional centres in each region was obtained (see below for a list of the regional centres used for each region)
2. For each regional centre, average overall 1-bedroom rent was obtained by calculating the arithmetic mean of that of the centre and suburbs
3. 1-bedroom rent as a percentage of monthly salary was calculated for each regional centre
4. Regional average affordability was obtained by calculating the weighted average of affordability for each region, based on the relative population sizes of the regional centres.

In order to calculate regional average affordability of 3-bedroom apartments, the same steps were undertaken but using data for 3-bedroom rents.

Regional centres:

Barcelona Province: *Barcelona, Manresa, Tarragona, Girona, Sabadell*
Busan Region: *Busan, Ulsan*
Cape Town Metro: *Cape Town, Stellenbosch, Paarl*
Fukuoka Prefecture: *Fukuoka only (data not available for other regional centres)*
Hamburg Region: *Hamburg only (data not available for other regional centres)*
Metro Vancouver: *Vancouver, Surrey, Burnaby, Richmond*
San Diego County: *San Diego, Carlsbad, Oceanside*
SE Florida: *Miami, Fort Lauderdale, West Palm Beach, Pembroke Pines, Hollywood, Boca Raton*
SEQ: *Brisbane, Gold Coast, Sunshine Coast*
S Holland: *Rotterdam, The Hague, Leiden, Dordrecht, Delft*

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