

The Global Green Finance Index 15



April 2025



Sustainable Futures





Beginning in March 2018, as part of its Long Finance initiative, Z/Yen published the first five editions of the Global Green Finance Index with the generous support of the MAVA Foundation, and more recently with support from Abu Dhabi Global Market. Z/Yen continues this work and is pleased to present the fourteenth edition of the Global Green Finance Index (GGFI 15).

[Z/Yen](#) helps organisations make better choices - our clients consider us a commercial think-tank that spots, solves, and acts. Our name combines Zen and Yen - 'a philosophical desire to succeed' - in a ratio, recognising that all decisions are trade-offs. One of Z/Yen's specialisms is the development and publication of research combining factor analysis and professional assessments.

[Long Finance](#) is a Z/Yen initiative designed to address the question "***When would we know our financial system is working?***" This question underlies Long Finance's goal to improve society's understanding and use of finance over the long-term. In contrast to the short-termism that defines today's economic views the Long Finance time-frame is roughly 100 years.

The authors of this report, Mike Wardle, Simon Mills, and Professor Michael Mainelli, would like to thank Bikash Kharel, Sasha Davis, and the rest of the Z/Yen team for their contributions with research, modelling, and ideas.



Foreword

It gives me great pleasure to introduce this new edition of the Global Green Finance Index, an essential barometer of the world's progress towards green and responsible finance.

At Casablanca Finance City (CFC), we are firmly committed to accelerating the transition to a low-carbon and climate-resilient economy in Morocco and beyond. As a leading African financial centre, we recognize the urgency of mobilising capital, technical expertise, and human talent toward the most transformative and sustainable projects. Our strategic location at the crossroads of continents makes CFC an ideal platform to catalyse cross-border investment in climate-positive initiatives.

Despite current headwinds, I strongly believe sustainability to be a foundational pillar for long-term economic resilience, social well-being, and planetary preservation for the generations to come.

Over the past decade, CFC has actively promoted ESG principles among its community of investors, financial institutions, and corporates. Our efforts included raising awareness, contributing to the capacity building effort, advocating for sustainability disclosure, or promoting innovation across several verticals from capital markets to investment funds and FinTechs.

Looking ahead, we are proud to be spearheading the development of a regional voluntary carbon market initiative. This ambitious project will serve as a much-needed platform for businesses and governments alike to trade carbon credits transparently and efficiently, while supporting nature-based solutions and emissions reduction across the continent. We see this as a vital mechanism to both channel green investment and contribute to the global effort against climate change.

Africa has a crucial role to play in the global sustainability agenda, and financial centres must lead by example. Through collaboration, innovation, and purpose-driven leadership, we can unlock the full potential of green finance to drive inclusive and sustainable growth.

I commend Z/Yen for their valuable work, and I trust the report will provide you with significant and actionable insights.

Said IBRAHIMI
CEO
Casablanca Finance City Authority



Summary

Overview

This is the fifteenth edition of the Global Green Finance Index (GGFI 15). The GGFI is a factor assessment index, based on a range of instrumental factors - quantitative measures - and a worldwide survey of finance professionals' assessments on the quality and depth of green finance offerings in financial centres. GGFI 15 features 95 financial centres.

There has been a continuing drop in confidence in the development of green finance in financial centres. In the last edition of the index, the average rating was down 1.96%, whereas in this edition the average rating is down 5.91% compared with GGFI 14, with all centres dropping in the ratings. This may reflect changes in the outlook for the economy generally and the change in government direction in the US.

We continue to see strong performance from Western European centres, which reflects their history of developing green finance products and expertise. US centres perform less well in GGFI 15, reflecting uncertainty over the future policy direction in the US. Canadian centres perform well. The general commitment of a city or jurisdiction to sustainability is a strong influence on the depth and quality of green finance in a financial centre.

Among those responding to the GGFI survey, Green Loans, Renewable Energy Investment, and Social and Impact Investment are rated as the areas of green finance with most impact, while ESG Analytics, Renewable Energy Investment, and Sustainable Infrastructure are seen as the areas of most interest.

Policy and Regulatory Frameworks, Public Awareness, and Renewables are listed by respondents as the major drivers of green finance. These underline the importance of regulatory frameworks and demand in green finance.

In the supplement to this edition of the GGFI, we provide an update on the development of sovereign sustainability-linked bonds (SSLBs) and their potential to provide support in emerging economies in particular. We also review recent changes in the frameworks governing their issuance provided by international, national, and regional authorities.

Index Results

- London retained its first position in the index, while Zurich, Singapore, and Geneva retained second, third, and fourth positions.
- Oslo and Toronto entered the top 10 in this edition of the index, replacing New York and Los Angeles.
- Western European centres take seven of the top 10 places, with Canadian centres taking two. Singapore is the only Asia/Pacific centre in this leading group. No US centres feature in the top 10.
- The margins separating centres at the top of the index are small. Among the top 10 centres the spread of ratings is only 13 points out of 1,000.
- Fifteen centres rose 10 or more places in the rankings. Six centres fell 10 or more places.

Western Europe

- Seven Western European centres feature in the top 10 in GGFI 15 and a further six centres feature in the top 20.
- Brussels, Vienna, Malta, and Liechtenstein rose 10 or more rank places.
- The average rating among Western European centres fell 5.7%.

North America

- Montreal, Toronto, and Vancouver lead in the region, while New York and Los Angeles fell to 16th and 14th place respectively.
- Vancouver, Minneapolis/St Paul, Calgary, and Miami rose 10 or more places.
- The average rating for centres in North America fell 6.05%.

Asia/Pacific

- Singapore maintained its third position overall and leads the Asia/Pacific region, ahead of Busan, Seoul, and Sydney.
- The majority of centres in the region fell in the rankings, with only Busan, Shanghai, Melbourne, Qingdao, Osaka, and Bangkok improving their rank.
- The average decrease in the ratings in Asia/Pacific was 6.52%.

Middle East & Africa

- Dubai led in the Middle East & Africa, rising one place to 34th position. Tel Aviv rose seven rank places to regional second place followed by Abu Dhabi and Casablanca. Casablanca continues as the leading GGFI centre in Africa.
- Most centres in the region rose in the rankings, with Mauritius, Bahrain, and Nairobi gaining more than 10 places.
- The average rating in the region fell 5.41%, the smallest reduction among the regions.

Latin America & The Caribbean

- Sao Paulo and Santiago continued to lead the Latin America & The Caribbean region with Rio de Janeiro overtaking Mexico City to take third position.
- All centres in the region either maintained or improved their rank position.
- The average rating in the region fell by 5.55%.

Eastern Europe & Central Asia

- Kaunas took the leading position in Eastern Europe & Central Asia, with Prague overtaking Astana to take second position.
- Kaunas, Prague, and Warsaw rose 10 or more places in the ranking.
- The average rating in the region fell 5.64%.

GGFI 15

GGFI 15 was compiled using 124 instrumental factors. These quantitative measures are provided by third parties including the World Bank, the OECD, and the United Nations. Details can be found in Appendix 5.

The instrumental factors were combined with 4,024 financial centre assessments provided by respondents to the [GGFI online questionnaire](#). A breakdown of the 582 respondents is shown in Appendix 3. Further details of the methodology behind GGFI 15 are in Appendix 4.

The 95 centres listed in GGFI 15 are those which received a minimum of 25 assessments from survey respondents located outside of those centres. Assessments of respondents' home centres were excluded from the data, in order to avoid home centre bias.

GGFI 15 Ranks And Ratings

Table 1 | GGFI 15 Ranks And Ratings

Centre	GGFI 15		GGFI 14		Change In	
	Rank	Rating	Rank	Rating	Rank	Rating
London	1	598	1	634	0	▼36
Zurich	2	597	2	633	0	▼36
Singapore	3	592	3	630	0	▼38
Geneva	4	591	4	628	0	▼37
Copenhagen	5	590	9	622	▲4	▼32
Oslo	6	589	11	620	▲5	▼31
Stockholm	7	588	6	625	▼1	▼37
Montreal	8	587	10	621	▲2	▼34
Luxembourg	9	586	8	623	▼1	▼37
Toronto	10	585	16	615	▲6	▼30
Paris	11	584	18	613	▲7	▼29
Vancouver	12	583	22	609	▲10	▼26
Lugano	13	582	13	618	0	▼36
Los Angeles	14	581	7	624	▼7	▼43
Amsterdam	15	580	23	608	▲8	▼28
New York	16	579	5	626	▼11	▼47
Brussels	17	578	27	604	▲10	▼26
Edinburgh	18	577	19	612	▲1	▼35
Washington DC	19	576	12	619	▼7	▼43
Madrid	20	575	28	603	▲8	▼28
Minneapolis / St Paul	21	574	31	599	▲10	▼25
Frankfurt	22	573	20	611	▼2	▼38
San Diego	23	572	14	617	▼9	▼45
Busan	24	571	30	600	▲6	▼29
Munich	25	570	26	605	▲1	▼35
Seoul	26	569	21	610	▼5	▼41
Hamburg	27	568	25	606	▼2	▼38
Calgary	28	567	49	581	▲21	▼14
Chicago	29	566	15	616	▼14	▼50
Sydney	30	565	29	602	▼1	▼37
Shanghai	31	564	34	596	▲3	▼32
San Francisco	32	563	17	614	▼15	▼51
Shenzhen	33	562	24	607	▼9	▼45
Dubai	34	561	35	595	▲1	▼34
Melbourne	35	560	37	593	▲2	▼33
Qingdao	36	559	40	590	▲4	▼31
Atlanta	37	558	41	589	▲4	▼31
Vienna	38	557	52	578	▲14	▼21
Glasgow	39	556	36	594	▼3	▼38
Beijing	40	555	33	597	▼7	▼42
Boston	41	554	32	598	▼9	▼44
Hong Kong	42	553	38	592	▼4	▼39
Tel Aviv	43	552	50	580	▲7	▼28
Rome	44	551	43	587	▼1	▼36
Kaunas	45	550	58	572	▲13	▼22
Lisbon	46	549	48	582	▲2	▼33
Osaka	47	548	51	579	▲4	▼31

Table 1 (continued) | GGFI 15 Ranks And Ratings

Centre	GGFI 15		GGFI 14		Change In	
	Rank	Rating	Rank	Rating	Rank	Rating
Abu Dhabi	48	547	39	591	▼9	▼44
Berlin	49	546	44	586	▼5	▼40
Casablanca	50	545	47	583	▼3	▼38
Milan	51	544	46	584	▼5	▼40
Tokyo	52	543	42	588	▼10	▼45
Dublin	53	542	56	574	▲3	▼32
Sao Paulo	54	541	59	571	▲5	▼30
Santiago	55	540	64	566	▲9	▼26
Prague	56	539	66	564	▲10	▼25
Miami	57	538	67	563	▲10	▼25
Guangzhou	58	537	54	576	▼4	▼39
Philadelphia	59	536	53	577	▼6	▼41
Malta	60	535	73	557	▲13	▼22
Isle of Man	61	534	57	573	▼4	▼39
Jersey	62	533	60	570	▼2	▼37
Astana	63	532	62	568	▼1	▼36
Mauritius	64	531	74	556	▲10	▼25
Sofia	65	530	69	561	▲4	▼31
Warsaw	66	529	83	547	▲17	▼18
Guernsey	67	528	61	569	▼6	▼41
Riga	68	527	76	554	▲8	▼27
Rio de Janeiro	69	526	79	551	▲10	▼25
Mexico City	70	525	71	559	▲1	▼34
Liechtenstein	71	524	86	544	▲15	▼20
Doha	72	523	75	555	▲3	▼32
Bahrain	73	522	90	540	▲17	▼18
Jakarta	74	521	63	567	▼11	▼46
Kigali	75	520	80	550	▲5	▼30
New Delhi	76	519	68	562	▼8	▼43
Johannesburg	77	518	70	560	▼7	▼42
Bangkok	78	517	82	548	▲4	▼31
Bermuda	79	516	84	546	▲5	▼30
Kuala Lumpur	80	515	78	552	▼2	▼37
Cape Town	81	514	85	545	▲4	▼31
Moscow	82	513	87	543	▲5	▼30
Riyadh	83	512	88	542	▲5	▼30
Nairobi	84	511	95	530	▲11	▼19
Istanbul	85	510	77	553	▼8	▼43
Monaco	86	509	72	558	▼14	▼49
Manila	87	508	81	549	▼6	▼41
St Petersburg	88	507	New	New	New	New
Bahamas	89	506	89	541	0	▼35
Cyprus	90	505	92	538	▲2	▼33
Almaty	91	504	94	536	▲3	▼32
Lagos	92	503	97	524	▲5	▼21
Cayman Islands	93	501	93	537	0	▼36
British Virgin Islands	94	499	96	527	▲2	▼28
Mumbai	95	497	91	539	▼4	▼42

GGFI Dimensions

The GGFI ascertains the green finance performance of international financial centres by asking practitioners to rate them on two dimensions:

- The depth to which green finance has penetrated the business of the financial centre, i.e. the prevalence of green financial services and products within the financial centre in question.
- The quality of the green finance products and services on offer.

The purpose of tracking both aspects is to enable respondents to rate a financial centre independently from its market volumes. For example, if a centre adopts weak green labelling standards in a bid to boost volumes, this may show up in the GGFI as a lower quality rating.

The additional data generated through this approach increases granularity. This allows the identification of trends and can assist policy makers to track the impacts of their decisions.

The detailed ratings of the dimensions for the top 15 centres are shown in table 2. Additional details are in Appendix 1.

Table 2 | Top 15 Centres - Rating Details For Depth And Quality Dimensions

GGFI 15 Rank	Centre	GGFI Dimensions			
		Green Finance Depth		Green Finance Quality	
		Rank	Rating	Rank	Rating
1	London	2	292	2	306
2	Zurich	7	289	1	308
3	Singapore	7	289	3	303
4	Geneva	2	292	6	299
5	Copenhagen	5	290	5	300
6	Oslo	1	295	14	294
7	Stockholm	11	287	4	301
8	Montreal	2	292	11	295
9	Luxembourg	11	287	6	299
10	Toronto	11	287	9	298
11	Paris	14	285	6	299
12	Vancouver	7	289	14	294
13	Lugano	14	285	10	297
14	Los Angeles	5	290	21	291
15	Amsterdam	14	285	11	295

Chart 1 shows the relationship between ratings of the depth and quality dimensions in the index and the generally close correlation between the assessments of each factor by respondents. Centres close to the trend line are balanced for depth and quality, centres further away have either a better rating for depth, or for quality. The relative score of Munich, Philadelphia, and Bangkok for green finance quality are high compared with their scores in depth. On the other side of the line, Oslo, Beijing, and Astana have high relative scores for depth.

Chart 1 | Relationship Between Ratings Of Depth And Quality

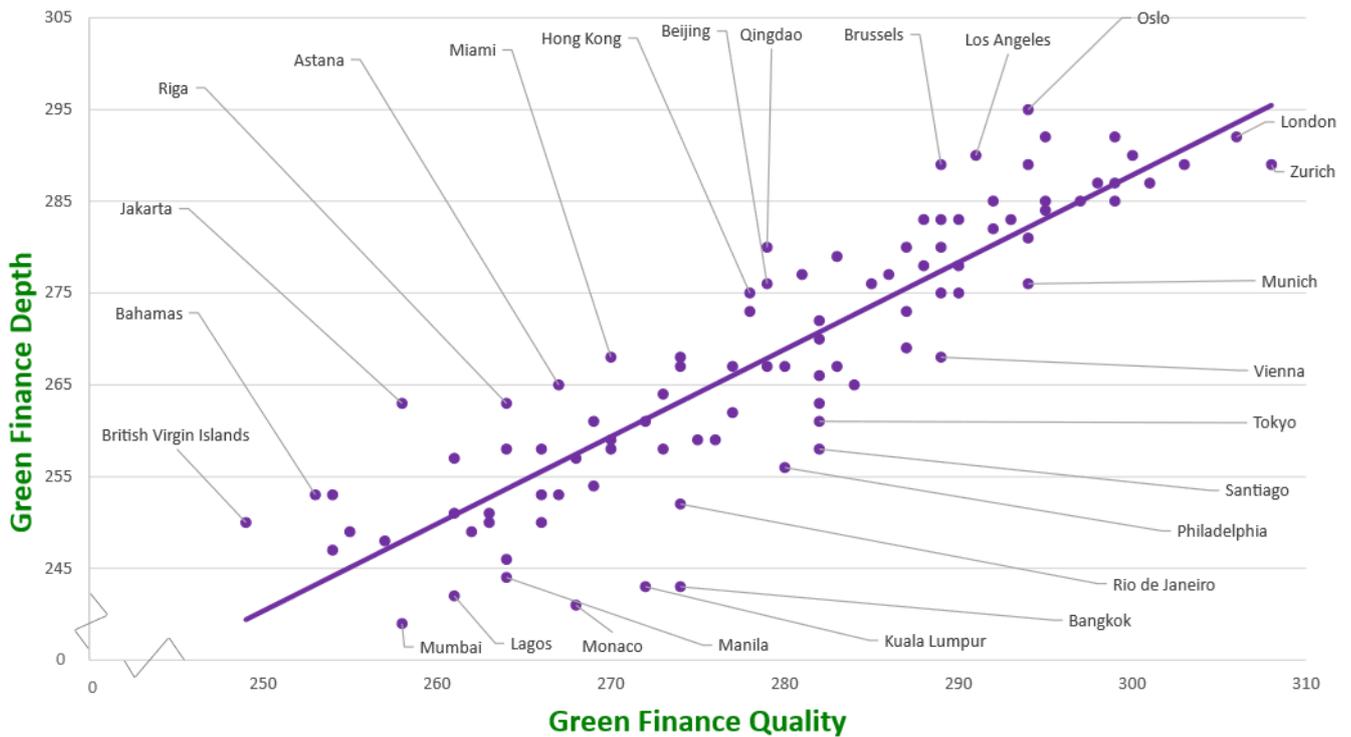
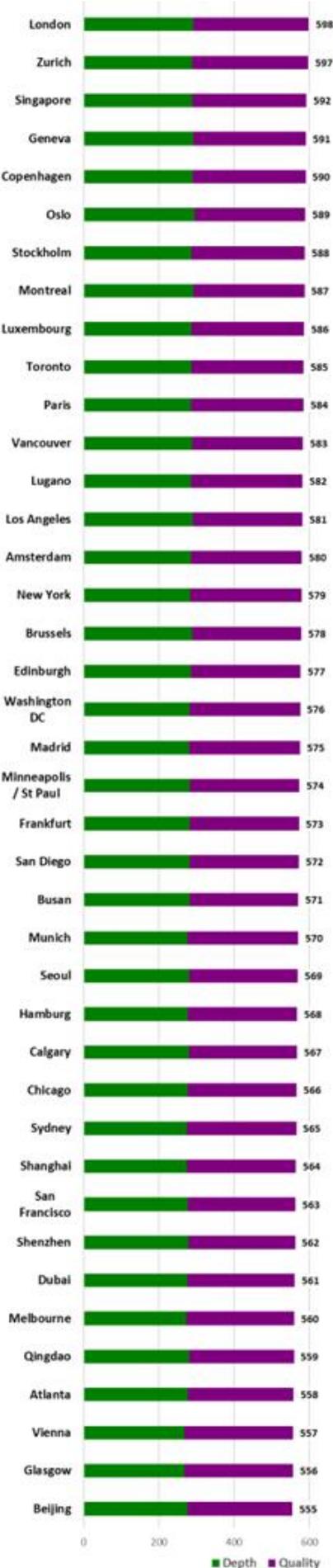


Chart 2 shows the contribution of each of the dimensions to the overall rating for the top 40 centres in the GGFI. London came first for green finance quality but equal third for green finance depth. Successful financial centres focused on green finance have both good quality products and services in their green markets, and depth of investment.

“Regulation will not help until there is a global shift to common reporting standards - in the last 10 years carbon loading in particular has shifted to jurisdictions that just do not care.”

CEO, PROFESSIONAL SERVICES FIRM, HONG KONG

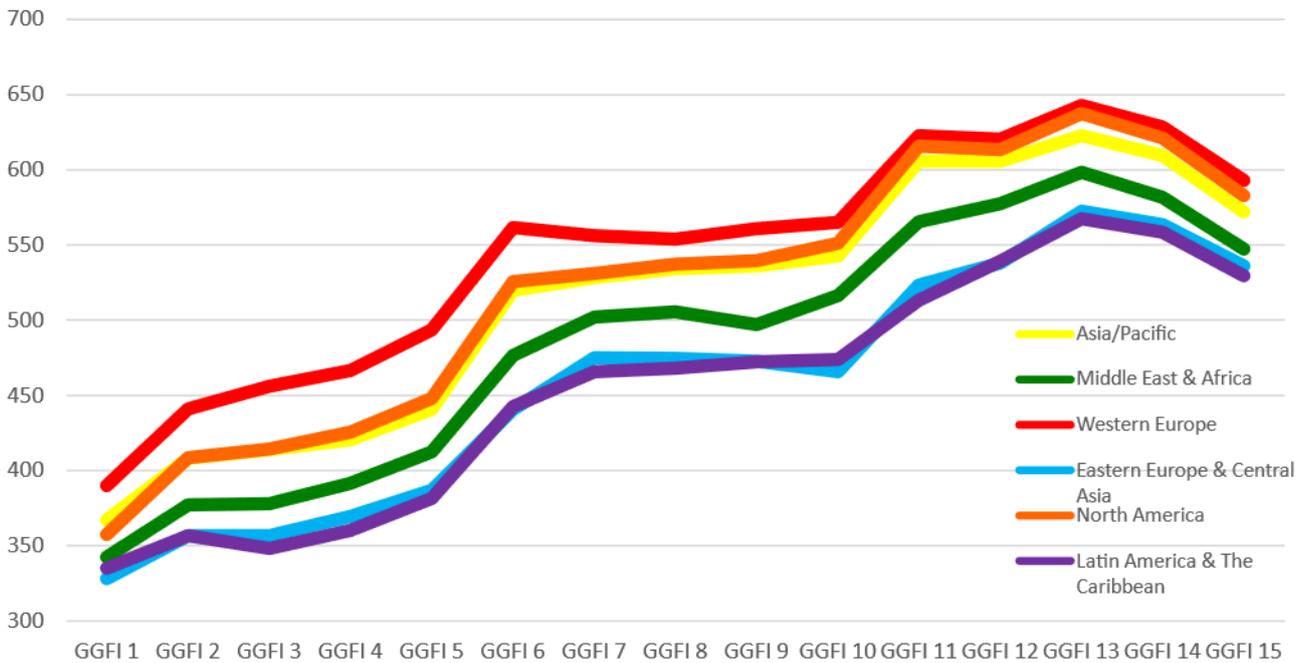
Chart 2 | The Contribution Of The Dimensions To The Overall Rating - GGFI 15 Top 40 Centres



Regional Performance

The average rating of the top five centres in all regions fell, with Western Europe just ahead of North America on this measure. The leading Asia/Pacific centres follow, and the leading centres in the Middle East & Africa dropped back a little compared with other regions.

Chart 3 | Average Ratings Of The Top Five Centres In Each Region



“Financial centres with progressive policies and regulations that support green finance, such as green taxonomies, mandatory climate risk disclosures, and incentives for sustainable investment are better positioned to develop and expand their green finance markets. For instance, the European Union’s Sustainable Finance Disclosure Regulation (SFDR) has played a significant role in mainstreaming green finance.”

HEAD OF COMMUNICATIONS, BANK, MAURITIUS

Examination of the quality and depth dimensions demonstrates that on both measures, the average rating for the top five centres in all regions fell. In the depth scores, the leading centres in the Middle East & Africa lost ground against the leading Eastern European & Central Asia centres. In the quality measure, the leading centres in North America fell back and those in Eastern Europe & Central Asia narrowly overtook those in Latin America & The Caribbean.

Chart 4 | Average Ratings For Depth Of The Top Five Centres In Each Region

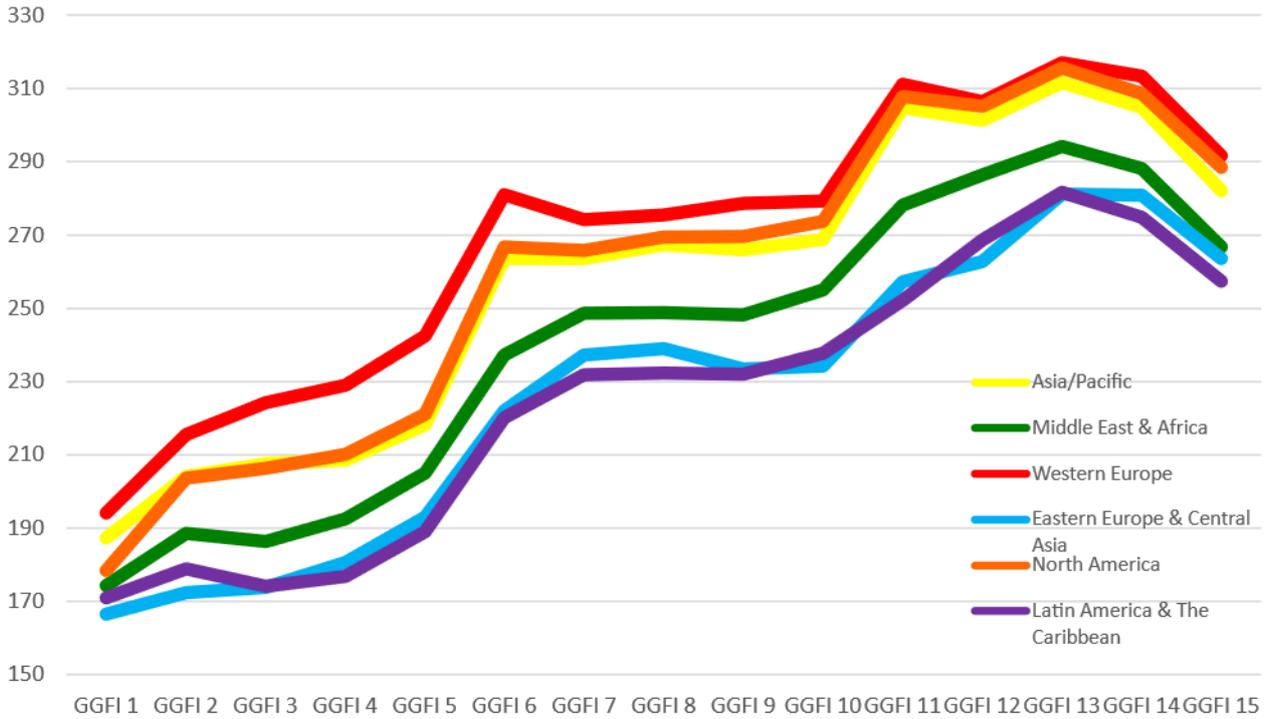
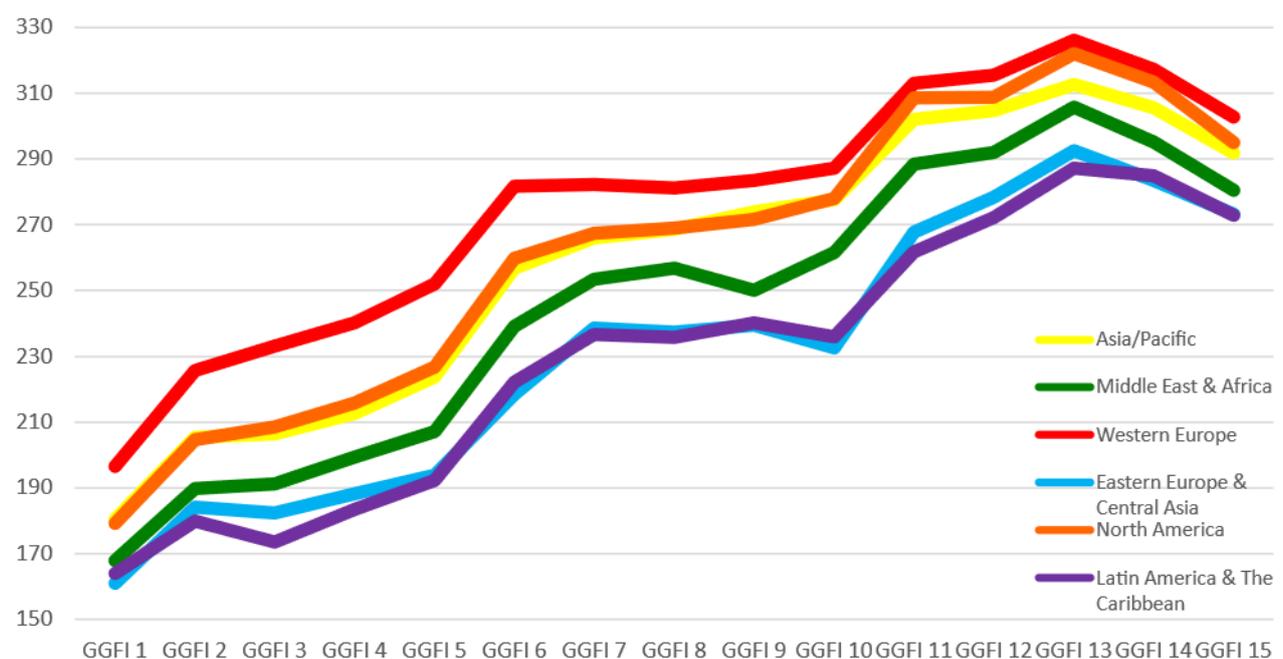


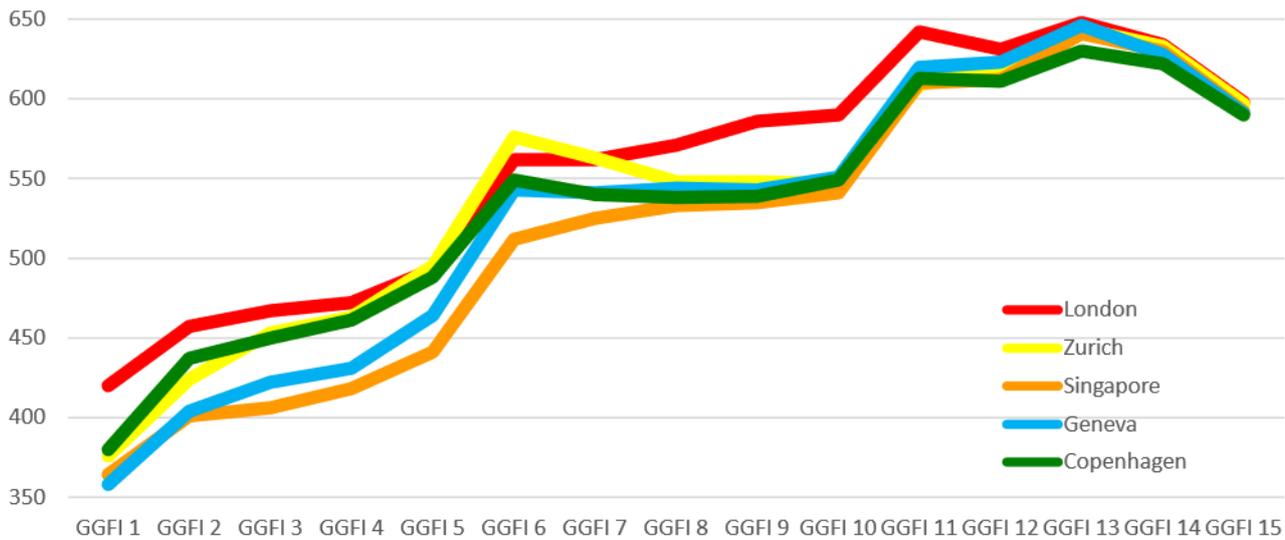
Chart 5 | Average Ratings For Quality Of The Top Five Centres In Each Region



Top Five Centres

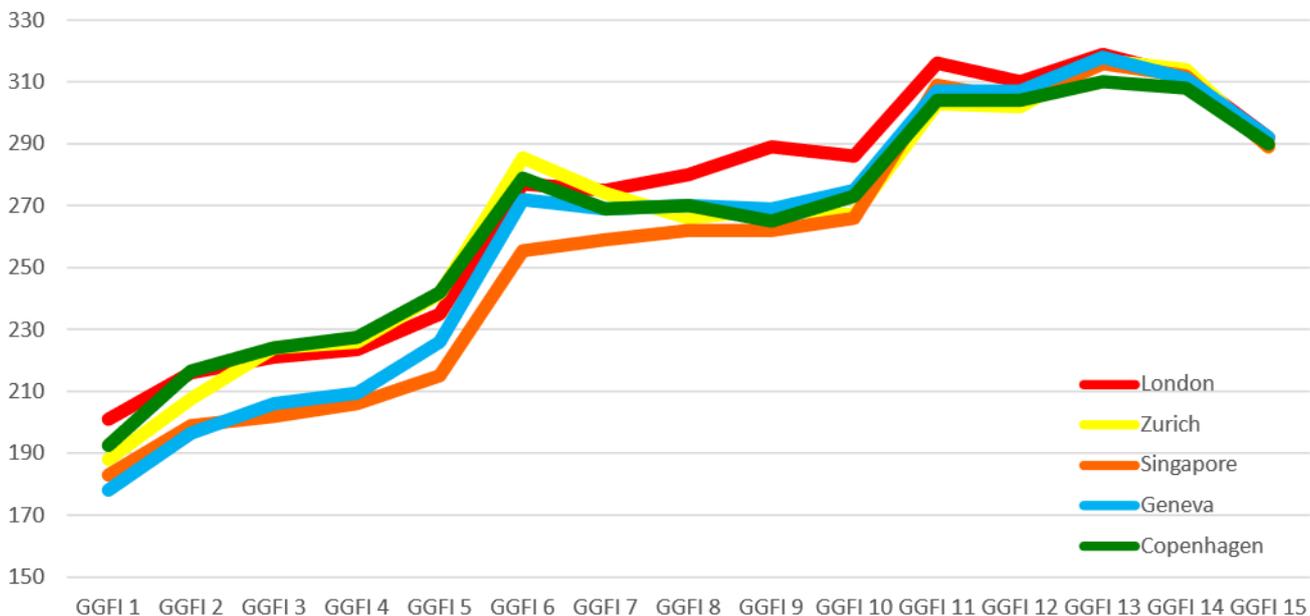
Competition at the top of the index continued to be fierce. Only eight points separate London in first position from Copenhagen in fifth.

Chart 6 | The Top Five Centres Over Time



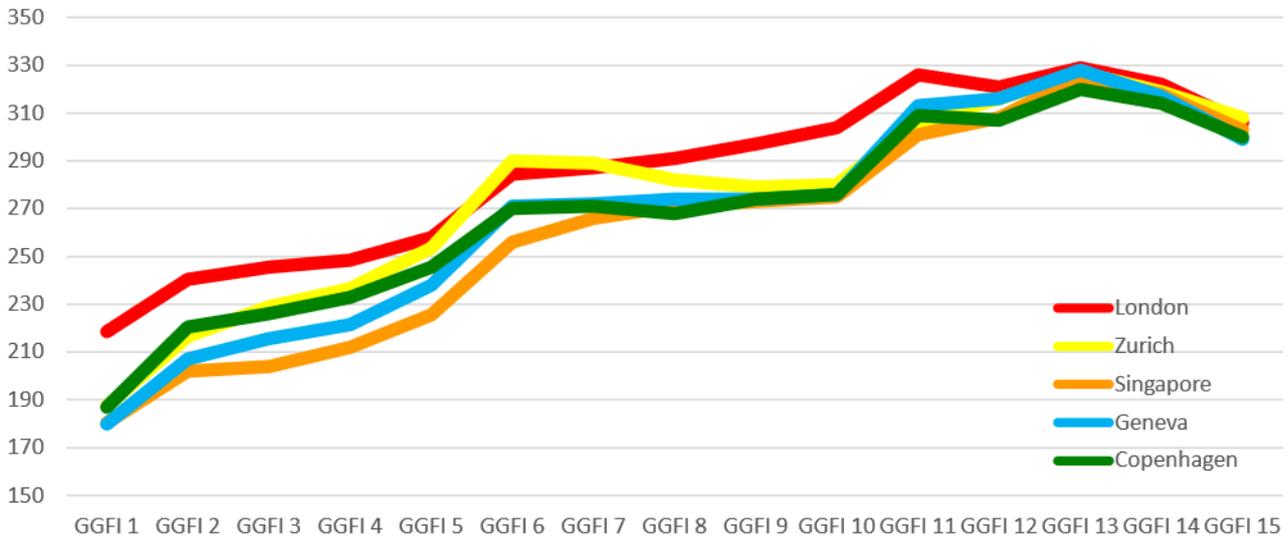
When the depth dimension is examined, Geneva matches London, and Copenhagen takes third position. The leading centres are closely matched with only three rating points separating them on the depth rating.

Chart 7 | Ratings For The Depth Dimension In The Top Five Centres Over Time



On the quality measure, Zurich takes the top position followed by London and Singapore. Nine points separate the top five centres on this measure.

Chart 8 | Ratings For The Quality Dimension In The Top Five Centres Over Time



“Developing expertise in green finance requires specialised knowledge. Training programmes, workshops, and certification can enhance professionals’ skills in areas like sustainable investment analysis, ESG integration, and green project financing. Financial centres also benefit from partnerships with universities and research institutions. These collaborations foster research, innovation, and talent development.”

COMPLIANCE ANALYST, PROFESSIONAL SERVICES FIRM, MAURITIUS

Leading Financial Centres

It is notable that some leading financial centres perform less well than expected in the GGFI, considering their performance in the [Global Financial Centres Index](#) (GFCI), which has been measuring financial centre competitiveness since 2007.

We can compare the centres which rank in the top 20 in the GFCI with their performance in the GGFI. This shows some disconnection between the highest performing centres in the GFCI and performance on green finance in the GGFI. In total, nine centres feature in the top 20 in both measures with London and Singapore featuring in the top 10 in both indices.

Table 3 | Leading Financial Centres - Comparison of GGFI And GFCI Rankings

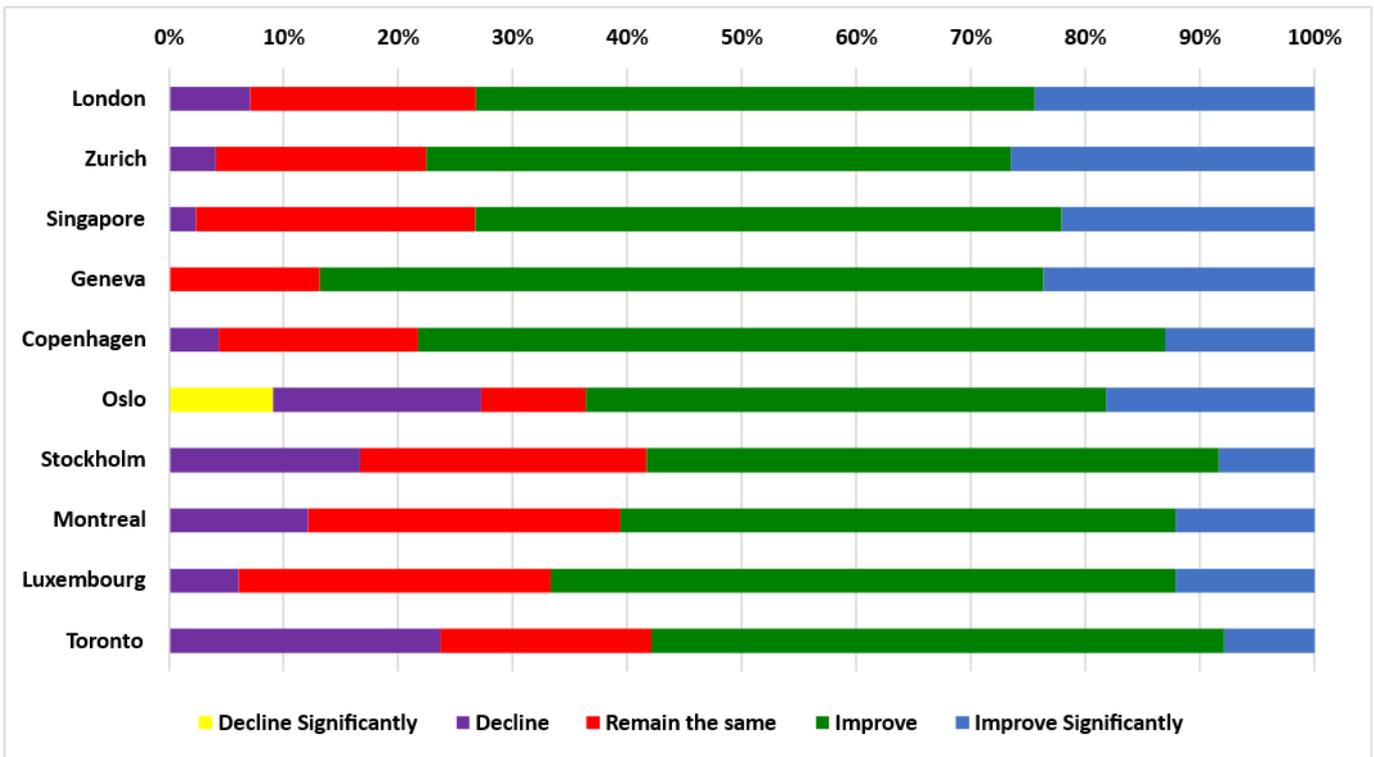
Centre	Global Green Finance Index 15	Green Finance Depth	Green Finance Quality	Financial Centre Competitiveness
New York	16	18	11	1
London	1	2	2	2
Hong Kong	42	36	52	3
Singapore	3	7	3	4
San Francisco	32	31	35	5
Chicago	29	29	30	6
Los Angeles	14	5	21	7
Shanghai	31	36	25	8
Shenzhen	33	28	38	9
Seoul	26	25	25	10
Frankfurt	22	19	22	11
Dubai	34	33	36	12
Washington DC	19	19	18	13
Dublin	53	44	58	14
Geneva	4	2	6	15
Luxembourg	9	11	6	16
Paris	11	14	6	17
Amsterdam	15	14	11	18
Boston	41	41	40	19
Beijing	40	33	49	20
Source	GGFI 15 Rank	GGFI 15 Depth Rank	GGFI 15 Quality Rank	GFCI 37 Rank

GGFI 15 Further Analysis

Expected Change In Centres

We asked respondents whether the centres they rated would improve, decline, or stay the same in relation to their green finance offering over the next two to three years. The results for the top 10 centres are displayed in Chart 9, showing high levels of confidence, with the majority of respondents predicting an improvement by all centres in this group, and with very high levels of confidence in Geneva, Zurich, London, and Singapore.

Chart 9 | Top 10 Centres - Expected Change In Green Finance Offering



“I would like to see much more profiling of the use and advantages of carbon credits in China's private sector.”

CHAIRMAN, PROFESSIONAL SERVICES FIRM, SHANGHAI

Instrumental Factors

The GGFI is a factor assessment index, based on a worldwide survey of finance professionals' assessments on the quality and depth of green finance offerings in financial centres. These assessments are run through a statistical model which uses 127 instrumental factors relating to a range of aspects of financial centre competitiveness. These include measures of sustainability, the business environment, infrastructure, and human capital.

Table 4 shows the top 15 instrumental factors' correlation with the GGFI ranking. The closest correlation is with the Urban Mobility Readiness Index, the Safe Cities Index, and the Future Growth Report.

Table 4 | Top 15 Instrumental Factors By R-Squared Correlation

Instrumental Factor	R-Squared
Urban Mobility Readiness Index	0.694
Safe Cities Index	0.682
The Future Growth Report	0.658
Blavatnik Index Of Public Administration	0.638
Legatum Prosperity Index	0.637
IESE Cities In Motion Index	0.613
Global Cities Outlook ranking	0.610
Quality Of Living City Rankings	0.604
Sustainable Economic Development	0.577
International IP Index	0.576
The Green Future Index	0.567
Adjusted Net National Income Per Capita	0.567
The Global Financial Centres Index	0.560
Global Innovation Index	0.557
Energy Transition Index	0.538

“The regulatory environment is slow in adapting to a changing ecosystem.”

TRADER, JOHANNESBURG

Focusing only on the instrumental factors which relate to sustainability, the factors most closely correlated in terms of their R-Squared relationship with the GGFI rankings are set out in Table 5. The leading factors continue to focus on cities as sustainable places and on the development of the green economy.

Table 5 | Top 15 Sustainability Instrumental Factors By R-Squared Correlation

Sustainability Factors	R-Squared
Urban Mobility Readiness Index	0.694
The Future Growth Report	0.658
IESE Cities In Motion Index	0.613
Quality Of Living City Rankings	0.604
Sustainable Economic Development	0.577
The Green Future Index	0.567
Energy Transition Index	0.538
World Energy Trilemma Index	0.524
Sustainable Cities Index	0.521
The Global Green Economy Index	0.434
Environmental Performance	0.414
Global Sustainable Competitiveness Index	0.403
Proportion Of Population Using Safely-Managed Drinking-Water Services (%)	0.265
Global Green Growth Index	0.244
Quality Of Life Index	0.244



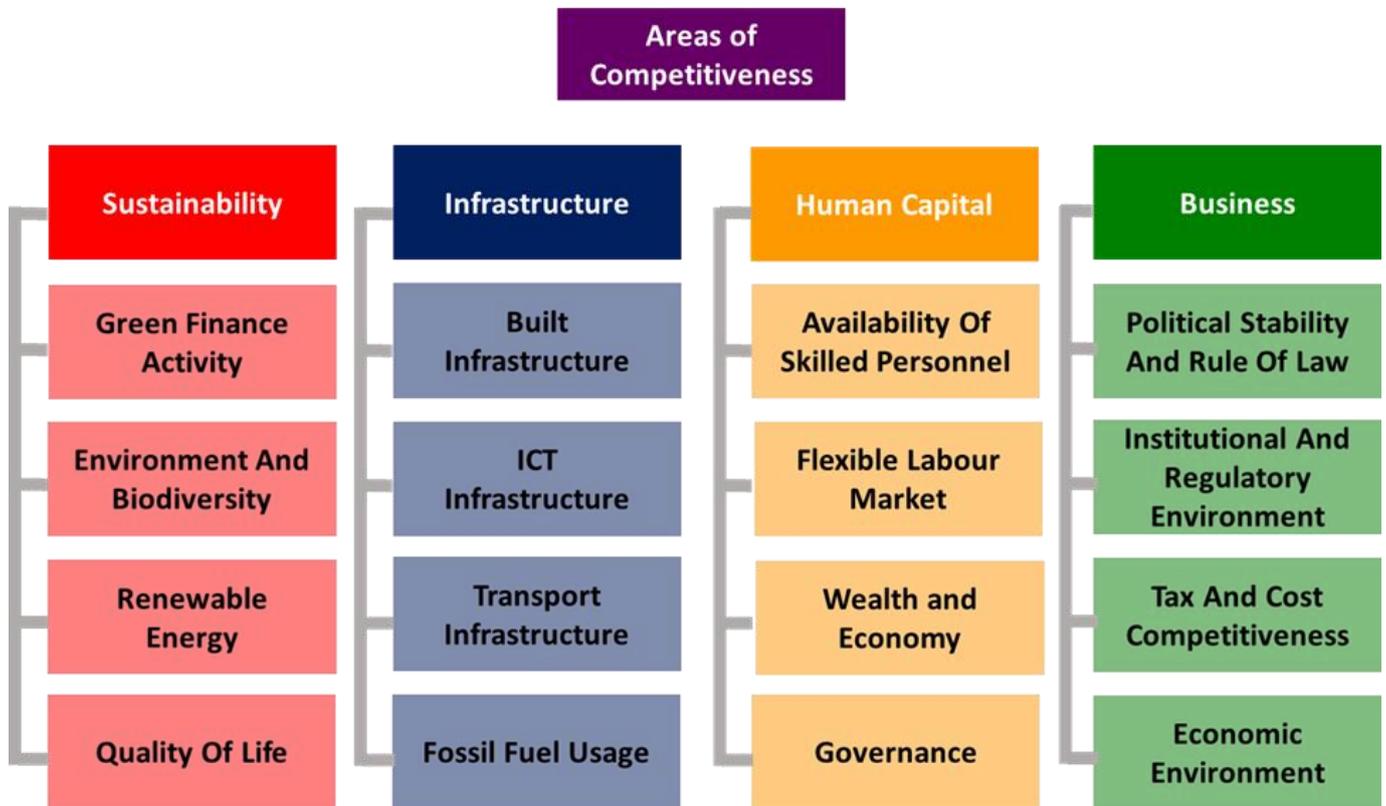
Areas Of Competitiveness

The instrumental factors used in the GGFI model are grouped into four broad areas:

- Sustainability
- Infrastructure
- Human Capital
- Business

These areas, and the instrumental factor themes which comprise each area, are shown in Chart 10.

Chart 10 | GGFI Areas Of Competitiveness



To assess how financial centres’ green finance offerings perform against each of these areas, the GGFI statistical model is run for each area of competitiveness separately, allowing a picture to be built of centres’ strengths and weaknesses. The performance of the top ranked 15 centres in each of these areas is illustrated in table 6.

The leading centres in the GGFI have strengths across all four areas of competitiveness. Some centres are strong in a particular area, for example, Luxembourg in Infrastructure or Los Angeles in Sustainability.

Table 6 | Top 15 Centres By Area Of Competitiveness

Rank	Sustainability	Business	Human Capital	Infrastructure
1	Luxembourg	Zurich	London	London
2	London	London	Luxembourg	Los Angeles
3	Oslo	Luxembourg	Zurich	Luxembourg
4	Zurich	Copenhagen	Geneva	Singapore
5	Geneva	Geneva	Copenhagen	Paris
6	Singapore	Oslo	Singapore	Oslo
7	Copenhagen	Lugano	Oslo	Zurich
8	Amsterdam	Singapore	Montreal	Geneva
9	New York	Stockholm	Stockholm	Copenhagen
10	Los Angeles	Montreal	Paris	Montreal
11	Paris	New York	Amsterdam	New York
12	Stockholm	Paris	New York	Lugano
13	Montreal	Toronto	Toronto	Vancouver
14	Vancouver	Vancouver	Vancouver	Toronto
15	Toronto	Amsterdam	Los Angeles	Stockholm



Index Ranking For Sustainability

We can compare the overall index ranking with the ranking based on the sustainability area of competitiveness, using only the instrumental factors that have a direct relationship to sustainability. This analysis produces slightly different results to the main index, as shown in the comparison in Table 7. The plus and minus figures show the difference between the main index and the index calculated using only sustainability factors.

Where only sustainability factors are included in the analysis, Paris retains its position. Luxembourg, Amsterdam, and New York gain seven or more places, while Lugano drops out of the top 15.

Table 7 | Top 15 Centres Using All Factors And Only Sustainability Factors

Rank	All Factors	Sustainability Factors
1	London	Luxembourg (+8)
2	Zurich	London (-1)
3	Singapore	Oslo (+3)
4	Geneva	Zurich (-2)
5	Copenhagen	Geneva (-1)
6	Oslo	Singapore (-3)
7	Stockholm	Copenhagen (-2)
8	Montreal	Amsterdam (+7)
9	Luxembourg	New York (+7)
10	Toronto	Los Angeles (+4)
11	Paris	Paris
12	Vancouver	Stockholm (-5)
13	Lugano	Montreal (-5)
14	Los Angeles	Vancouver (-2)
15	Amsterdam	Toronto (-5)

“Charting carbon tax or ETS on carbon emissions is essential. Also providing subsidies to R&D and capital spending related to low carbon energy and products and services.”

PROFESSOR, UNIVERSITY, TOKYO

Commentary On Factors

The GGFI survey asks respondents to comment on factors that affect the uptake of green finance, and in particular on regulation, taxation, and the availability of skills. The responses are summarised in Table 8.

Table 8 | Commentary On Areas Of Competitiveness

Area Of Competitiveness	Number Of Mentions	Main Themes
Regulatory Environment	96	<ul style="list-style-type: none"> • A robust regulatory framework, including mandatory ESG disclosure and clear green taxonomies, is crucial to integrate green finance. • Stricter regulation may discourage financial institutions and investors, without consistency across jurisdictions. • Developing and enforcing carbon credit standards and strengthening taxonomy implementation are key green finance growth.
The Availability Of Skills In Green Finance	84	<ul style="list-style-type: none"> • Green finance requires specialised skills in sustainability, ESG criteria, and capacity building, which can be enhanced through training programs, certifications, and collaborations with academia. • There is a significant need for upskilling in green finance, especially through accessible educational programs, to address knowledge gaps and drive broader adoption in the financial sector.
Taxation	88	<ul style="list-style-type: none"> • Tax incentives, such as credits for renewable energy and energy-efficient projects, are crucial for driving green finance investments and adoption, as seen in Mauritius and other global examples. • Carbon pricing mechanisms, including taxes or cap-and-trade systems, along with tax incentives for green financing instruments, are necessary to encourage companies to reduce emissions and invest in sustainable technologies. • Broader, deeper tax incentives are needed for green infrastructure development, climate mitigation, and to address regulatory harmonization and cross-border taxation challenges.
Other	23	<ul style="list-style-type: none"> • Financial centres that support innovation through R&D funding, green startups, and industry-academia collaboration can drive advancements in green finance and create new financial products. • Governments should clarify transition finance criteria and taxonomy, especially regarding lock-in assets, to encourage smoother transitions to greener economies. • Expanding green rating institutions to micro levels globally, alongside profiling the benefits of carbon credits, can help improve awareness and incentivize the financial industry's participation in green finance.

Connectivity

One factor where financial centres' green finance performance differs is the extent to which centres are connected to other financial centres. One way of measuring this connectivity is to look at the number of assessments given to and received from other centres in the GGFI survey. Charts 11 and 12 use Luxembourg and Brussels as examples to contrast the different levels of connectivity that the two centres enjoy. Both cities are well-connected with other European centres, but Luxembourg has a depth of connections across all regions of the world, including better connections with major financial centres.

Chart 11 | GGFI 15 Connectivity - Luxembourg

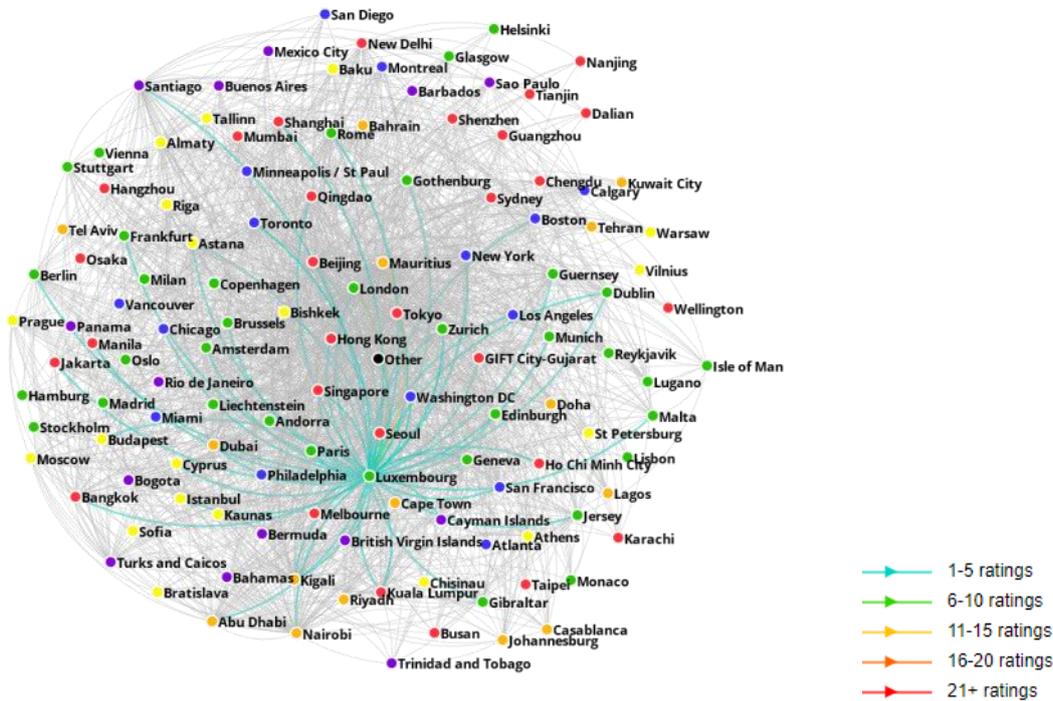
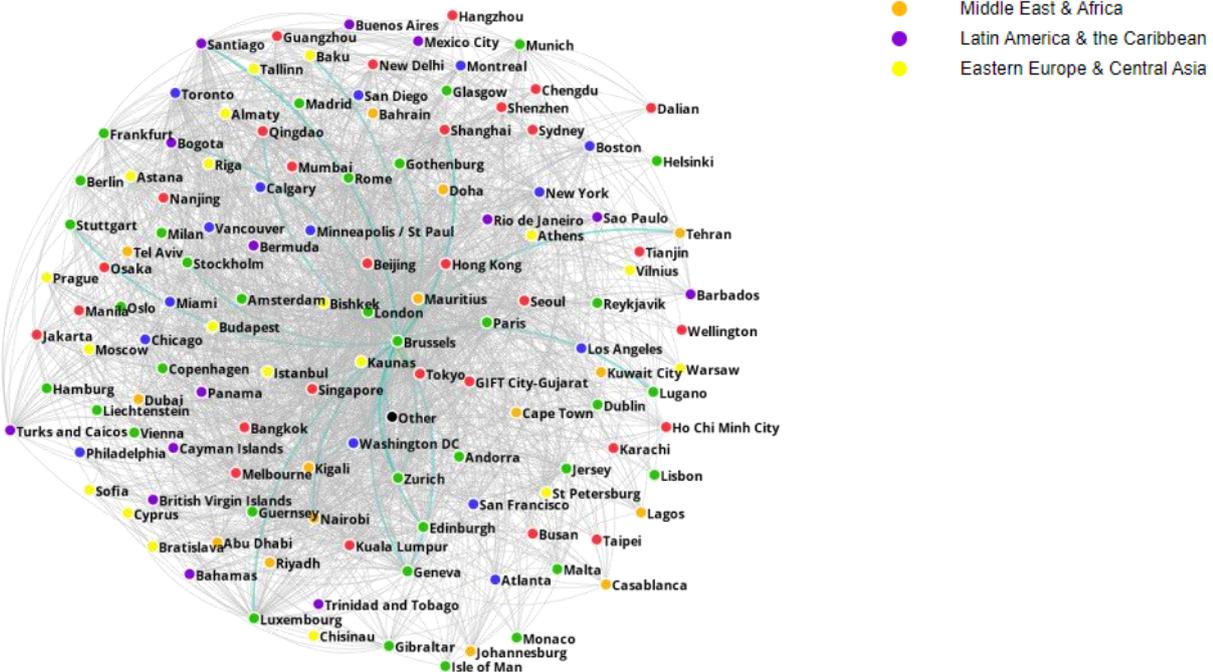


Chart 12 | GGFI 15 Connectivity - Brussels



Financial Centre Profiles

We conduct further analyses based on three measures (axes) that determine a financial centre's profile in relation to three different dimensions.

'Connectivity' – the extent to which a centre is well known among GGFI survey respondents, based on the number of 'inbound' assessment locations (the number of locations from which a particular centre receives assessments) and 'outbound' assessment locations (the number of other centres assessed by respondents from a particular centre).

'Diversity' – the instrumental factors used in the GGFI model give an indication of a broad range of factors that influence the richness and evenness of factors that characterise any particular financial centre.

We consider this span of factors to be measurable in a similar way to that of the natural environment. We therefore use a combination of biodiversity indices (calculated on the instrumental factors) to assess a centre's diversity. This takes account of the range of factors against which the centre has been assessed – the 'richness' of the centre's business environment; and the 'evenness' of the distribution of that centre's scores. A high score means that a centre is well diversified; a low diversity score reflects a less rich business environment.

'Speciality' – the depth within a financial centre of green finance and sustainability. A centre's 'speciality' or performance is calculated from the difference between the overall GGFI rating and the ratings when the model is calculated based only on sustainability factors.

In Table 9, 'Diversity' (Breadth) and 'Speciality' (Depth) are combined on one axis to create a two-dimensional table of financial centre profiles. The 97 centres in GGFI 15 are assigned a profile on the basis of a set of rules for the three measures: how well connected a centre is, how broad its services are, and how specialised it is.

The Global Leaders (in the top left of the table) have both broad and deep green finance activity and are connected with a greater range of other financial centres. Other leading centres are profiled as Established International Centres.

Chart 13 | GGFI Dimensions

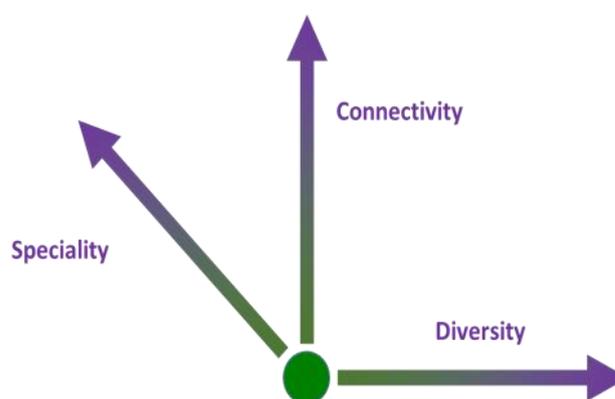
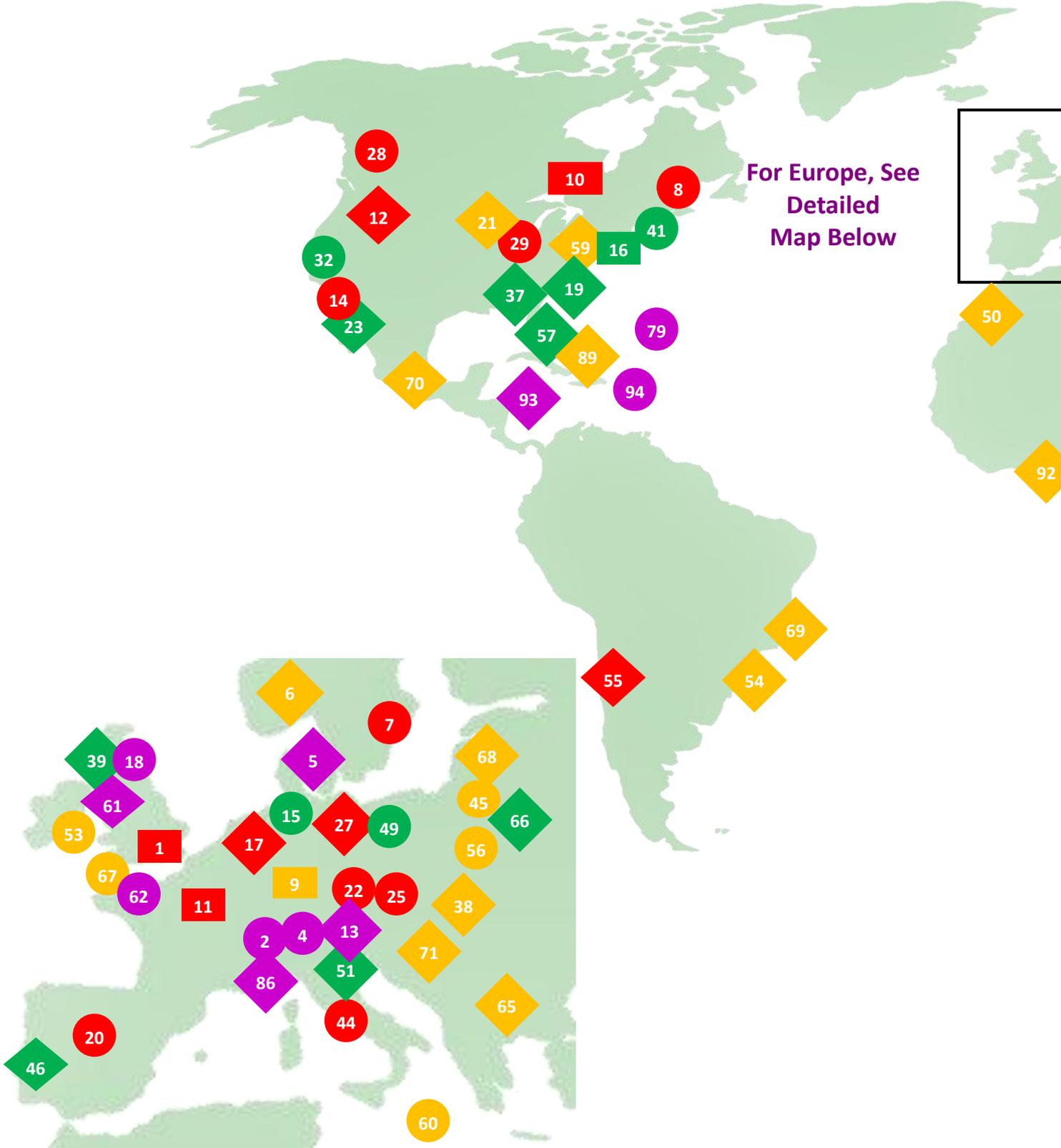


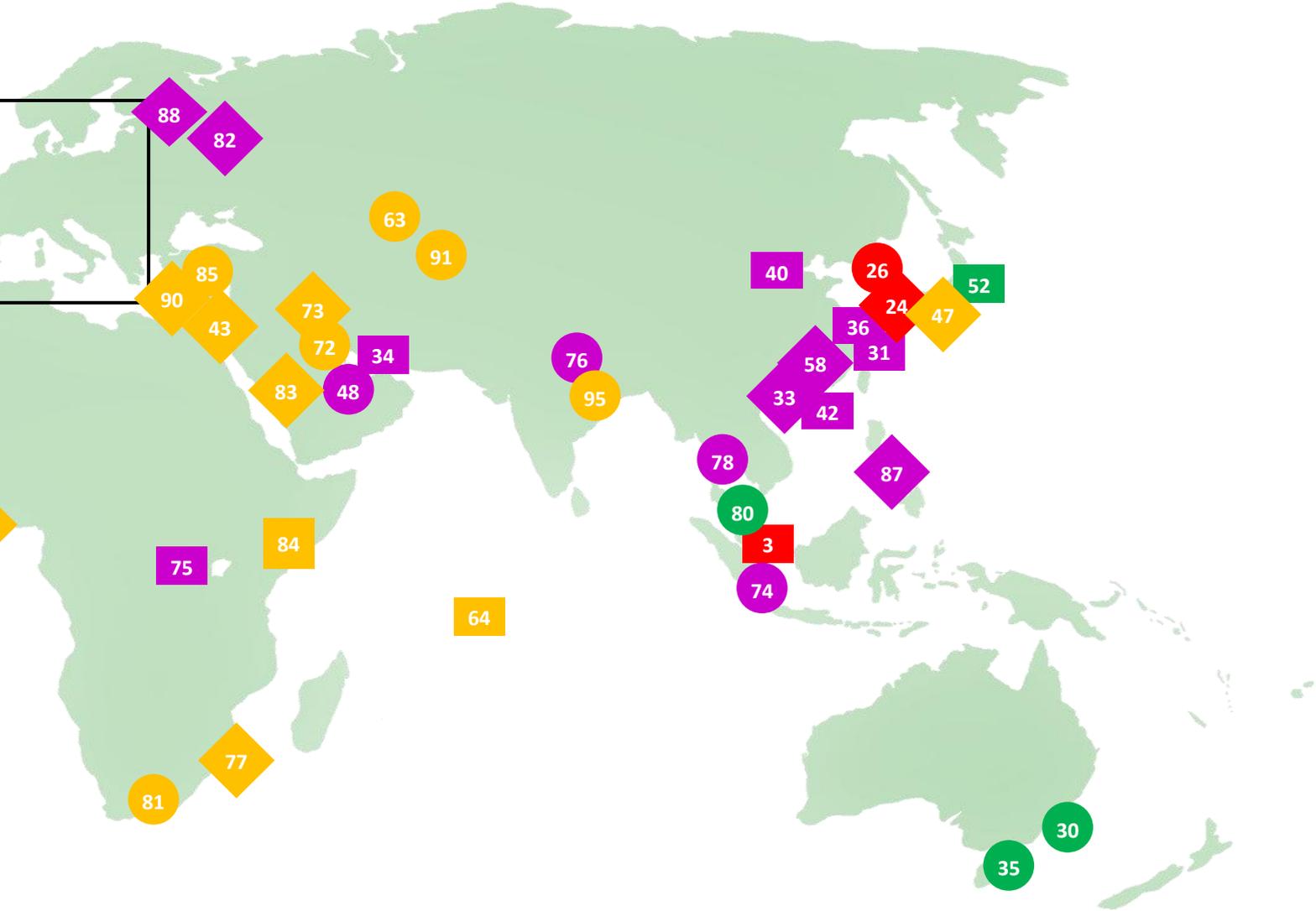
Table 9 | Financial Centre Profiling

	Broad and Deep	Relatively Broad	Relatively Deep	Emerging	
	Global Leaders	Global Diversified	Global Specialists	Global Contenders	
Global	London	New York	Shanghai*	Luxembourg	
	Zurich	Tokyo*	Qingdao	Nairobi	
	Singapore	Washington DC	Beijing*	Mauritius	
	Toronto*		Dubai		
	Paris		Hong Kong		
			Kigali		
International	Established International	International Diversified	International Specialists	International Contenders	
	Stockholm	Amsterdam	Geneva	Kaunas*	
	Montreal*	Sydney	Edinburgh*	Dublin*	
	Los Angeles	San Francisco	Abu Dhabi*	Prague*	
	Madrid	Melbourne*	Jersey	Malta*	
	Frankfurt*	Boston	Jakarta	Astana*	
	Munich*	Berlin	New Delhi*	Guernsey	
	Seoul*	Kuala Lumpur	Bangkok	Doha	
	Calgary		Bermuda	Cape Town*	
	Chicago		British Virgin Islands	Istanbul	
	Rome			Almaty*	
	Santiago			Mumbai	
	Local	Established Players	Local Diversified	Local Specialists	Evolving Centres
		Vancouver*	San Diego	Copenhagen	Oslo
Brussels*		Atlanta*	Lugano	Minneapolis/St Paul*	
Busan*		Glasgow*	Shenzhen*	Vienna	
Hamburg*		Lisbon*	Guangzhou*	Tel Aviv*	
		Milan*	Isle of Man	Osaka	
		Miami*	Moscow*	Casablanca*	
		Philadelphia*	Monaco	Sao Paulo*	
		Warsaw	Manila	Sofia	
			St Petersburg*	Riga	
			Cayman Islands*	Rio de Janeiro*	
				Mexico City	
				Liechtenstein*	
				Bahrain	
				Johannesburg	
				Riyadh*	
				Bahamas	
				Cyprus	
			Lagos		

* An asterisk denotes a change since GGFI 14

The GGFI 15 World - Centres In The Index





The numbers on the map indicate the GGFI 15 rankings.

Broad and Deep		Relatively Broad		Relatively Deep		Emerging	
■	Global Leaders	■	Global Diversified	■	Global Specialists	■	Global Contenders
●	Established International	●	International Diversified	●	International Specialists	●	International Contenders
◆	Established Players	◆	Local Diversified	◆	Local Specialists	◆	Evolving Centres

Momentum Builds On Sovereign Sustainability-Linked Bonds

Introduction

Sustainability-linked bonds (SLBs) are a subset of green bonds, the financial instruments that allow issuers to borrow money for investments that have positive environmental impacts.

However, SLBs differ from green bonds in several crucial ways:

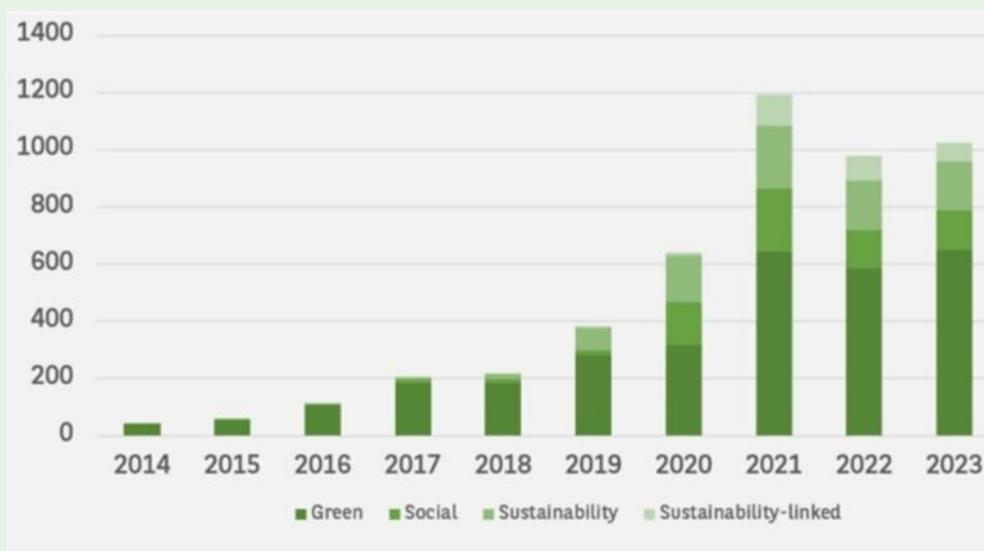
- First, and most importantly the funds raised are not tied to a specific project, but a corporate (or national) objective.
- Second, SLBs are issued with specific sustainability performance targets (SPTs), which contain key performance indicators (KPIs).
- Third, if the SPT is missed the bond is subject to a “step-up” clause, meaning the bond interest increases.

Sovereign sustainability-linked bonds (SSLBs) which are issued by governments in order to finance national sustainability objectives was the topic of the supplement to the ninth edition of The Global Green Finance Index¹. We are returning to this subject topic in this supplement to track the progress that has been made in the issuance of SLBs and to examine the challenges and opportunities which have emerged since our initial report.

Who is issuing SLBs?

The last decade has seen an exponential rise in the issuance of green bonds, although SLBs have remained only a small part of the global green bond market (see graph 1)

Graph 1 | Green Bond Issuance 2014-2023 (Billion \$)

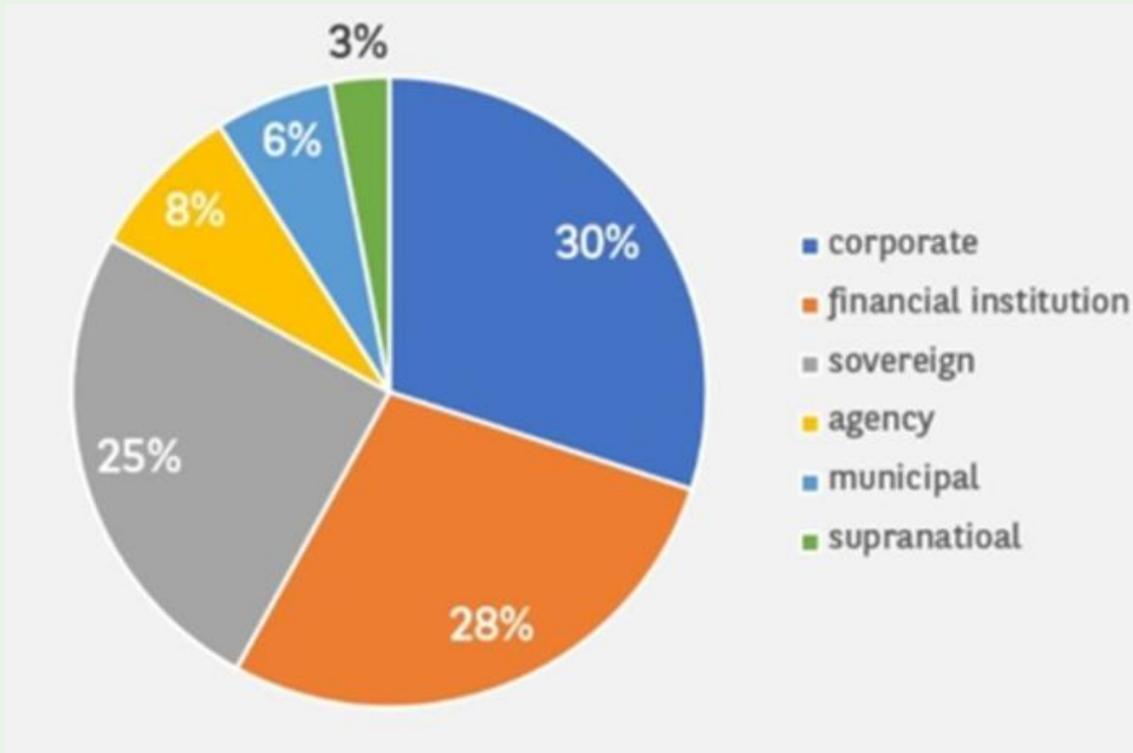


Source: Bloomberg²

1. Bouzidi B, Mills S 2022 The Global Green Finance Index 9 – Supplement: Chile Sets A High Bar <https://www.longfinance.net/programmes/sustainable-futures/london-accord/reports/sovereign-sustainability-linked-bonds-chile-sets-a-high-bar/>
2. Bloomberg 2024 Green bonds reached new heights in 2023 <https://www.bloomberg.com/professional/insights/trading/green-bonds-reached-new-heights-in-2023/>

The type of organisation issuing these bonds has seen a substantial shift over time. Initially green bonds were the purview of private sector institutions, however, in recent years sovereign bonds have been catching up - as of the end of the third quarter of 2024 58 sovereigns, had issued green bonds worth a cumulative amount of USD 630.5 billion³. Of these three bonds are SSLBs. Sovereign issuance made up 16% of global sustainable bond volume issued in 2023³.

Graph 2 | Green Bond Issuance By Issuer Type In 2023



Source: BNP Paribas⁵

Despite the growing enthusiasm of central banks for sovereign green bonds, SSLBs are rarer. Chile issued the first SSLB in 2022 swiftly followed by Uruguay. The latter introduced an innovation which allowed for both a step up (on interest payments) should targets fail to be met and a step down if targets are exceeded.

In late 2024, Thailand became the first country outside South America to issue an SSLB. Thailand's THB30 billion bond includes a step-up and step-down mechanism tied to two sustainability performance targets (SPTs) - total greenhouse gas emissions and new electric vehicle registrations. The bond has a duration of 16 years with a coupon rate of 2.70% paid semi-annually.

3. CBI 2024 Sustainable Debt Market Summary Q3 2024 https://www.climatebonds.net/files/reports/cbi_mr_q3_2024_01c.pdf

4. Nordea 2024 Sustainability-linked bonds in sovereign financing: A new frontier <https://www.nordea.com/en/news/sustainability-linked-bonds-in-sovereign-financing-a-new-frontier#:~:text= Sovereigns%3A%20Active%20issuers%20in%20the%20sustainable%20bond%20market&text= Sovereign%20issuance%20made%20up%2016,share%20in%202021%20and%202022.>

5. BNP Paribas 2024 Sovereign green bonds – Bigger, stronger, and more diverse in 2024 <https://viewpoint.bnpparibas-am.com/sovereign-green-bonds-bigger-stronger-and-more-diverse-in-2024/>

The concept of SSLBs is gaining ground. South Africa⁶ and Kenya⁷ have floated the prospect of issuing SSLBs.

In Europe, Slovenia has become the first European sovereign to publish a sustainability-linked bond framework⁸. Slovenia aims to reach climate neutrality by 2050, and the KPIs contained in the framework include total greenhouse gas emissions, share of energy from renewable sources, and energy efficiency.

Slovenia has taken its lead from Uruguay and Thailand in including the option of a "step-down" coupon, rewarding the country if it exceeds its targets. Slovenia plans to allocate around 5.5% of GDP to public investment projects focusing on green transition for 2025-2028.

Who Is Buying SLBs?

188 investors from Europe, Asia, the United States, and Latin America bought into Uruguay's SSLBs, of whom one-fifth were new holders of the country's national debt⁹. These investors included pension funds, asset managers, and other large financial institutions. Retail investors are also increasingly participating in the SLB market. A significant portion of SLB investors come from outside the country of the issuer, as seen in the case of Uruguay's 2022 SSLB issuance.

Investors are drawn to SLBs because they allow them to invest in companies or governments that are committed to achieving specific sustainability goals. SLBs can provide diversification opportunities for investors, as they are a relatively new asset class compared to traditional bonds.

Why Are SSLBs Attractive To Developing Economies?

Global debt (public plus private debt) amounted to almost USD 250 trillion in 2023¹⁰. As a share of GDP, its value remained high at 237% of GDP, higher than the pre-pandemic level when total global debt corresponded to 229% of GDP.

80% of this new debt burden came from emerging markets, where total debt is now approaching \$100 trillion.

It can be argued that existing sovereign debt markets are not fit for purpose. Vulnerable nations are excluded from accessing the affordable capital and investment that is urgently needed to create sustainable economic growth and adequate fiscal head space.

6. Lester A 2024 *South Africa considering SLB as sovereign sustainable bond debut looms* <https://www.environmental-finance.com/content/news/south-africa-considering-slb-as-sovereign-sustainable-bond-debut-looms.html>
7. Lester A 2024 *Kenya planning \$500m sovereign SLB in 2024* [https://www.environmental-finance.com/content/news/kenya-planning-\\$500m-sovereign-slb-in-2024.html](https://www.environmental-finance.com/content/news/kenya-planning-$500m-sovereign-slb-in-2024.html)
8. Walsh T 2025 *Slovenia publishes SLB framework* <https://www.ifre.com/story/5202253/slovenia-publishes-slb-framework-vc5zlgbfq#:~:text=The%20SLB%20framework%20signals%20Slovenia's,and%20the%20Environmental%20Protection%20Act.>
9. LSE 2023 *What are sustainability-linked bonds and how can they help developing countries?* <https://www.lse.ac.uk/granthaminstitute/explainers/what-are-sustainability-linked-bonds-and-how-can-they-help-developing-countries/#:~:text=To%20take%20the%20case%20of,foreign%20investment%20in%20national%20debt>
10. IMF 2024 *2024 Global Debt Monitor* <https://www.imf.org/external/datamapper/GDD/2024%20Global%20Debt%20Monitor.pdf>

This can lead to a downward spiral of debt defaults, debt restructuring, and further environmental degradation, as sustainability risks, particularly through climate impacts, have a significant effect on countries' economic growth and resilience.

This is why emerging market governments are taking notice of SLBs' flexibility and potential for accessing a deeper pool of international finance, especially to finance energy transition.

Unlike other forms of sustainability-linked debt financing, such as green bonds or debt-for-nature swaps ('use-of-proceeds' bonds that finance specific conservation projects), SSLBs allow governments to maintain control over budget priorities and expenditure.

With SSLBs the issuer decides how the funds that are raised are used instead of ringfencing funds for a particular project. The only caveat being that the issuer meets predetermined key performance indicators (KPIs).

Figure 1 | SSLBs And The Virtuous Circle



To this end SSLBs can help tackle the problems associated with sovereign debt by:

- Creating financial flexibility to support increased public spending.
- Encouraging foreign investment that improves resilience and economic productivity, thus lowering the cost of repayments across a country's entire debt portfolio.
- Directly rewarding sustainable outcomes through reduced costs of debt repayments.
- Reducing the need for post debt structuring by advancing smarter risk sharing between debtors and creditors.

“Sovereign SLBs carry game-changing potential, aligning public finance with climate ambition through long-term, patient action. Like fugu preparation (the delicious but potentially poisonous Japanese fish), success demands precision and ambition. Chile led the way. Uruguay pioneered step-downs and biodiversity KPIs. Slovenia’s new framework builds on this momentum in Europe. Rigorous structuring will be key to building scale, avoiding lemons, and unlocking the full promise of this transformative tool.”

Djellil Bouzidi, Economist, Founder – Emena Advisory

What Are The Challenges Facing SSLBs?

As discussed above, governments' growing interest in the SSLBs is a function of their apparent flexibility and simplicity. However, as with all public debt instruments, implementation comes with considerable practical and political challenges. The challenges facing SSLBs fall into two camps.

The first concerns their credibility and is potentially existential as it strikes at their attractiveness to both institutional and retail investors seeking to diversify ESG risk. Unless the targets and their associated KPIs are carefully constructed, serious questions arise regarding materiality and additionality.

- The European Sustainability Reporting Standards¹¹ state that a sustainability topic is material from an impact perspective, if it is connected to actual or potential significant impacts on people or the environment over the short, medium, or long term. In other words, it is important to ensure that the target of the SSLB will have an impact on the intended outcome. For example, in the case of Thailand's SSLB there are two targets: a reduction in total greenhouse gas emissions and an increase in new electric vehicle registrations. The second of these targets could have materiality issues unless it is aligned with significant investment in renewable energy generation and distribution networks.
- Additionality is an equally complex issue. Investors should consider whether the trajectory of KPIs, whether they are sufficiently stretching, or whether they would have been achieved anyway without any additional effort¹². In some cases, a KPI may relate to a long-term structural trend which the issuer has limited power to affect, and the step up may be too small to provide a significant incentive for action. Issues of leakage, displacement, and substitution must also be considered. Much of Europe's past success in reducing greenhouse gas emissions can be attributed to outsourcing manufacturing to developing economies, and the UK's record in decarbonising electricity production through the 1980's and 1990's was a result of substituting coal-powered generators which were coming to the end of their operational life with more efficient gas fired generations.

The second concerns their functionality.

- The penalties associated with failure to meet KPIs are typically very low at around 12-25 basis points (one basis point is equivalent to 0.01% (1/100th of a percent). In the case of Thailand's SSLB for each target, a 2.5bps step-up/step-down will apply if they are missed/achieved¹³. These penalties are less significant than global interest rate moves.
- Also, as was intimated in our previous report¹, binding future governments to stringent and potentially uncoded KPIs could be considered anti-democratic. Investors must ensure that the contracting government enjoys political legitimacy, that the targets and KPIs have been designed through multi stakeholder consultation, and that the overall governance process is robust. Achieving buy-in across ministries and government agencies and establishing the infrastructure necessary to collect data is a significant undertaking and requires strong drive and leadership.

11. OJEU 2023 *Commission Delegated Regulation (EU) 2023/2772* https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ%3AL_202302772

12. HMG 2008 *Additionality Guide. A standard approach to assessing the impact of Interventions* https://assets.publishing.service.gov.uk/media/5a7568e5e5274a467f7e44e0/Additionality_Guide_0.pdf

13. Loh E & David J 2024 *Thai government embarks on SLB journey* <https://anthropocenefii.org/sovereigns-centralbanks/thai-government-embarks-on-slb-journey#:~:text=The%20bond%20is%20linked%20to,if%20they%20are%20missed/achieved.>

Agreeing on the right KPIs is essential for both investors and issuers. Potential KPIs can span the spectrum of sustainability issues, encompassing both environmental and social themes. Ensuring that robust and independent performance data exists, which is externally verifiable and benchmarked against relevant external factors is critical. The costs of setting up and maintaining these systems and processes are not trivial as the data architecture of governments tends to be highly fragmented, with siloed databases and non-interoperable exchange protocols. Likewise, the decision-making authority that covers cross-cutting policy objectives – such as combating climate change and safeguarding biodiversity - tends to be dispersed across multiple agencies, making them susceptible to coordination failures and bureaucratic politics and may form a significant challenge - not only for developing economies.

SSLB Standards

The majority of the challenges described in the preceding section can be overcome with the application of appropriate standards. Since their debut, several transnational, regional, and national initiatives have been established which seek to develop standards for green bonds, including sustainability linked, and sovereign sustainability linked bonds.

International Standards

The International Capital Markets Association published an update to its Sustainability-Linked Bond Principles (SLBP) in 2024. These provide guidelines that recommend structuring features, disclosure, and reporting and are designed to enhance the provision of information needed to increase capital allocation to such financial products.

The SLBP apply to all types of issuers, including sovereigns and any type of financial capital market instrument. The 2024 version of the SLBP includes clarifications to support KPI selection and a reference to the KPI Registry (including the notion of core and secondary KPIs). It also integrates new definitions in the glossary. Finally, Appendix II, the SLB disclosure data checklist, has been updated to bring more clarity on the expected disclosure.

In March 2025, the Loan Market Association (LMA) published a set of Sustainability Linked Loan (SLL) Principles¹⁴ setting out a framework, enabling all market participants to clearly understand the characteristics of an SLL, based around the following five core components:

- Selection of KPIs
- Calibration of SPTs
- Loan Characteristics
- Reporting
- Verification

The principles state that an SLL borrower shall clearly communicate to its lenders its rationale for the selection of its KPI(s) (i.e. relevance, materiality, whether it is core to the borrower's overall business) and the calibration of the SPT(s) (i.e. ambition level, benchmarking approach, and how the borrower intends to reach its SPTs). Borrowers should position this information within the context of their overarching objectives, sustainability strategy, policy, sustainability commitments, and/or processes relating to sustainability. Borrowers should also inform lenders of any sustainability standards or certifications to which they are seeking to conform.

14. LMA 2025 *Sustainability-Linked Loan Principles* https://www.lma.eu.com/application/files/6317/4298/0865/Sustainability-Linked_Loan_Principles_-_26_March_2025.pdf

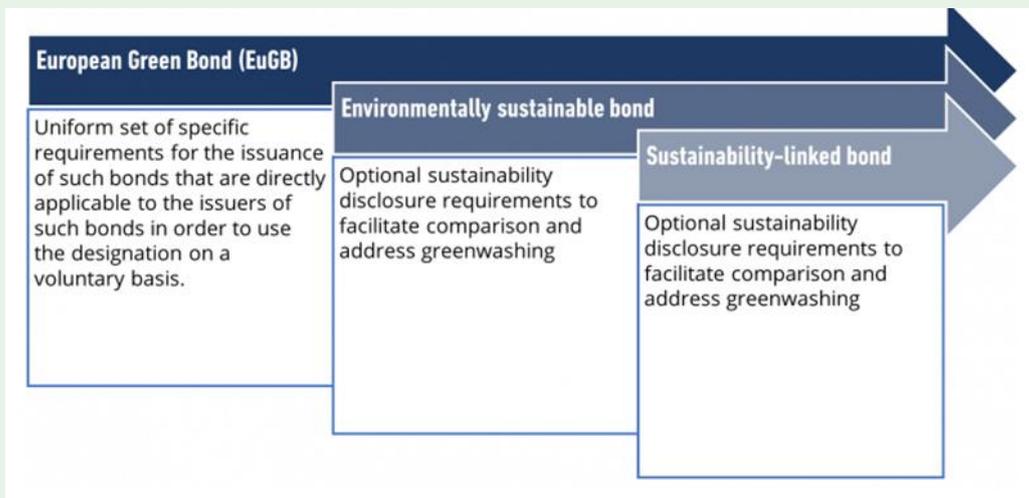
The LMA have also released further guidance on the Sustainability-Linked Bond Principles with clarifications to support KPI selection and a new SLB disclosure data checklist, including an expansion of the SLB KPIs Registry related to environmental themes (biodiversity, circular economy/raw materials and water) as well as additional KPIs for sovereign issuers. There is also a new annex of the Impact Reporting Handbook covering potential environmental and/or social risks associated with eligible project categories for green bonds.

The European Union

The European Union Green Bonds Standard (EUGBS) is set to transform issuance across the EU in terms of reporting and transparency. The Standard, which is voluntary, relies on the EU taxonomy to define green economic activities, that ensuring levels of transparency in line with market best practice. The standard also establishes supervision of companies carrying out pre- and post-issuance reviews by the European Securities and Markets Authority (ESMA).

Issuers of bonds under the EUGBS will be required to disclose detailed information about how the proceeds will be used to ensure alignment with the taxonomy. They must explain how the funds contribute to the sustainable transition, ensuring green investments are not negated by unsustainable activities in other areas. The areas covered by the standard are detailed in figure 2.

Figure 2 | Overview of disclosure requirements under the EU GBS



Source:

European Data Warehouse¹⁵

China

China's Green Bond Principles (CGBP), released in July 2022, aim to promote high-quality green bonds and align the domestic market¹⁶ with international standards by requiring 100% of proceeds to be used for green projects, aligning with the ICMA Green Bond Principles. The CGBP is a self-regulated framework rather than a rule or regulation, it aims for high-level harmonisation on what a green bond in China's domestic markets is and the common requirements that green bond regulation should have.

15. European Data Warehouse 2024 *The EU Green Bond Standard Regulation at a Glance* <https://euodw.eu/the-eu-green-bond-standard-regulation-at-a-glance/>

16. ICMA 2022 *Analysis of China's Green Bond Principles* <https://www.icmagroup.org/assets/Analysis-of-Chinas-Green-Bond-Principles.pdf>

India

India's sovereign green bond framework¹⁷ follows the International Capital Market Association (ICMA) Green Bond Principles and aims to promote transparency and disclosure. Focusing on financing or refinancing environmentally sound projects through four core components: use of proceeds, project evaluation and selection, management of proceeds, and reporting.

Although the framework does not cover sustainability linked bonds, organisations such as Climate Bonds are defining sector-based Transition Finance Standards¹⁸. These standards provide clear guidelines for transition bonds, SLBs, and entities moving towards sustainable practices. The involvement of Sustainability Performance Objectives (SPOs) further enhances transparency, assuring investors of the issuer's commitment to fulfilling their sustainability pledges.

Future Developments

Sustainability linked bonds face significant headwinds going forward. Issuance declined sharply in 2024. This was the second consecutive annual decline for SLBs, leaving issuance 57.3% below 2022 levels. In part corporate SLB issuance may have been affected by the victory of Donald Trump in the US presidential election and the broader backlash against Environmental, Social, and Governance initiatives.

However, the sovereign sustainability linked bond market remains strong, with Thailand's SSLB attracting investor interest nearly three times the issuance amount. The book-building process for the bonds on 19 November generated huge interest from investors, with purchase proposals totalling 55.3 billion baht, or 2.76 times the announced issue size of 20 billion baht¹⁹.

"Sovereign SLBs directly address the core problem of green finance, why it's special, by drastically reducing government policy risk. It is exciting to see SSLBs holding more and more governments around the world to account for the delivery of their goals. SSLBs could provide standard market-based comparisons of carbon border adjustment calculations. I look forward to emerging comparator targets such as a minimum percentage of government debt in SSLBs that commit to normative 2050 or 2060 targets."

Professor Michael Mainelli, Chairman, Z/Yen Group

Although generally offering lower yields than corporate bonds, sovereign bonds are considered less risky than corporate bonds (because governments can raise taxes to meet their obligations, while companies face the risk of bankruptcy), and as SSLBs are tied to national policy, it is highly likely that SSLBs will remain a popular product with investors.

17. Shreeprabha G 2024 *Sovereign Green Bonds: Fuelling India's Sustainability Revolution* <https://www.ispp.org.in/sovereign-green-bonds-fuelling-indias-sustainability-revolution/>

18. CBI 2024 *Frameworks to Assess Transition* <https://www.climatebonds.net/transition-finance-home/frameworks-assess-transition>

19. Chantanusornsiri W 2024 *Huge demand for Asia's first sustainability-linked bonds* <https://www.bangkokpost.com/business/investment/2909952/huge-demand-for-asias-first-sustainability-linked-bonds>

The Collaborative Sovereign Engagement on Climate Change²⁰ (an initiative led by the Principles for Responsible Investment (PRI)) aims to have investors join forces in encouraging governments to undertake comprehensive measures to combat climate change. Members of the initiative have identified Australia as a sovereign debt issuer that would be a suitable candidate for the initiative's pilot project²¹, (Australia passed a Climate Change Act in 2022, but has done poorly compared to peers on climate and environmental measures in sovereign risk ratings).

One issue that has been attracting interest is the concept of a border carbon adjustment mechanism linked to sovereign debt and carbon targets. The EU's Carbon Border Adjustment Mechanism (CBAM)²² aims to price the carbon emitted during the production of goods that are entering the EU in order to encourage cleaner industrial production in non-EU countries.

However, high public debt levels make the financing of climate adaptation and mitigation more difficult, and compounding a climate crisis with a financial crisis is unfair to developing economies. One possible solution is to have a step up/step down mechanism associated with these border tariffs which takes into account national targets and trajectories on carbon. Obviously, nations which have issued SSLBs associated with carbon reduction would benefit from reduced tariffs as they not only have demonstrated a commitment to achieving the Paris Goals, but have the data associated with their SSLB KPIs to prove it.

To illustrate how this mechanism might work, there might be a fluctuating climate tariff based on market forces. This would build up along the following rules:

- Countries must have either a stated and used price or a functioning carbon market.
- Countries must issue X% (say 10% or more) of their national debt in policy performance/ sustainability-linked bonds against an international norm, e.g. net zero by 2050.

Then the tariff is:

- Base national import tariff.
- Add to this current interest being paid on the bond above issue rate.

Conclusions

The growing interest in the sovereign SLB financing structure is a function, on the sell-side, of the way SSLB issuance can initiate and accelerate urgently needed changes in both macro-fiscal policy making and public financial management - regardless of whether the bond is issued or not. This is because the "back end" of an SLB — the data systems and governance processes underpinning the bond — can have multiple applications beyond the "front end" sustainability framework that specifies the targets and KPIs.

On the buy side investors are attracted by low risk and its green credentials. However, as with all public debt instruments, implementation comes with considerable practical and political challenges. Going forward, the triple challenge will be to restore debt sustainability for developing nations, to mobilise funding for climate and sustainability, and to build resilience against future shocks.

20. UNPRI 2024 *Collaborative Sovereign Engagement on Climate Change* <https://www.unpri.org/collaborative-engagements/collaborative-sovereign-engagement-on-climate-change/10525.article>

21. Takhtayeva M 2024 *Sovereign green bonds – Bigger, stronger, and more diverse in 2024* <https://www.bnpparibas-am.com/en-gb/professional-investor/portfolio-perspectives/sovereign-green-bonds-bigger-stronger-and-more-diverse-in-2024/#>

22. SSD Hub 2023 *The understated benefits of sovereign sustainability-linked bonds* <https://www.ssdh.net/news/the-understated-benefits-of-sovereign-sustainability-linked-bonds>

Regional Analysis

In our analysis of the GGFI data, we look at six regions of the world to explore their financial centres' green finance depth and quality.

Alongside the ranks and ratings of centres, we investigate the average assessments received by regions and centres in more detail.

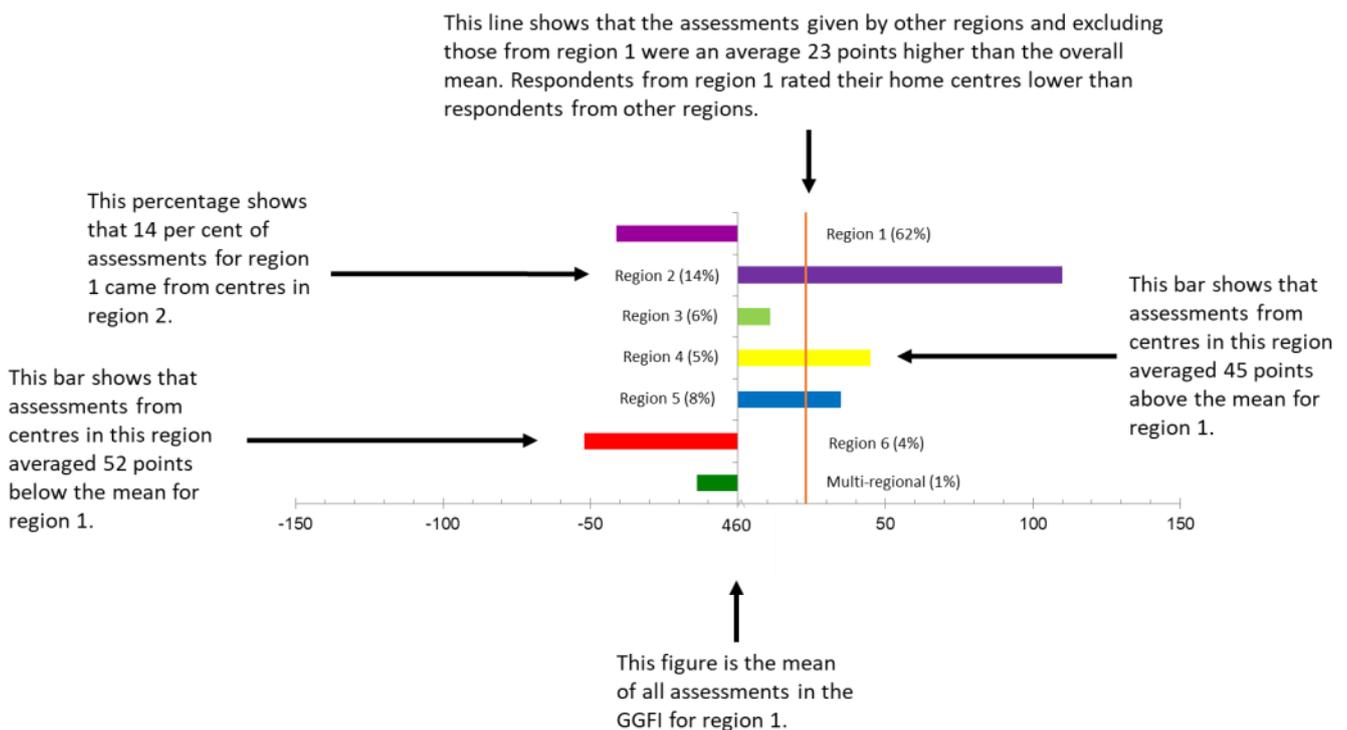
We display this analysis in charts, either for a region or an individual centre. These charts show:

- the mean assessment provided to that region or centre;
- the difference in the mean assessment when home region assessments are removed from the analysis;
- the difference between the mean and the assessments provided by other regional centres; and
- the proportion of assessments provided by each region.

Chart 14 shows an example of this analysis. Coloured bars to the left of the vertical axis indicate that respondents from that region gave lower than average assessments. Bars to the right indicate respondents from that region gave higher than average assessments. Assessments given to a centre by people based in that centre are excluded to remove 'home' bias.

The additional vertical axis (in red) shows the mean of assessments when assessments from the home region are removed. The percentage figure noted by each region indicates the percentage of the total number of assessments that are from that region.

Chart 14 | Example: Assessments Compared With The Mean For A Region



North America

- Canadian centres took the first three places in the region, led by Montreal, while most U.S. centres fell sharply in the index rankings.
- North American centres were rated significantly above average by people from Asia/Pacific and below average by those from all other regions.

Table 10 | North American Centres In GGFI 15

Centre	GGFI 15		GGFI 14		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Montreal	8	587	10	621	▲ 2	▼ 34
Toronto	10	585	16	615	▲ 6	▼ 30
Vancouver	12	583	22	609	▲ 10	▼ 26
Los Angeles	14	581	7	624	▼ 7	▼ 43
New York	16	579	5	626	▼ 11	▼ 47
Washington DC	19	576	12	619	▼ 7	▼ 43
Minneapolis / St Paul	21	574	31	599	▲ 10	▼ 25
San Diego	23	572	14	617	▼ 9	▼ 45
Calgary	28	567	49	581	▲ 21	▼ 14
Chicago	29	566	15	616	▼ 14	▼ 50
San Francisco	32	563	17	614	▼ 15	▼ 51
Atlanta	37	558	41	589	▲ 4	▼ 31
Boston	41	554	32	598	▼ 9	▼ 44
Miami	57	538	67	563	▲ 10	▼ 25
Philadelphia	59	536	53	577	▼ 6	▼ 41

Chart 15 | Top Five North American Centres Ratings Over Time

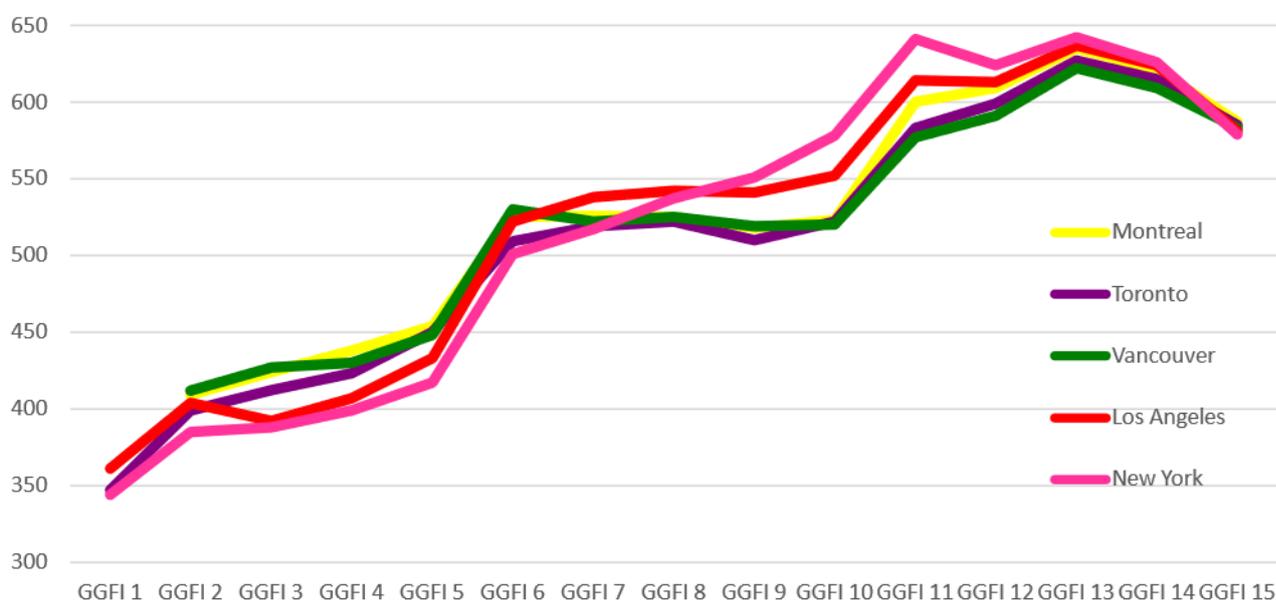


Chart 16 | North American Regional Assessments - Difference From The Mean

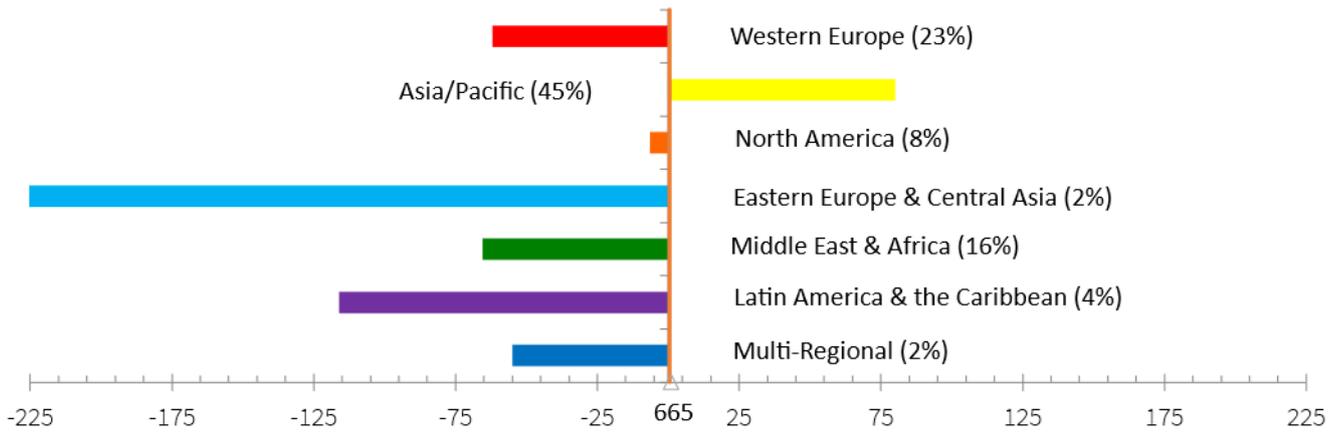


Chart 17 | Regional Assessments For Montreal - Difference From The Mean

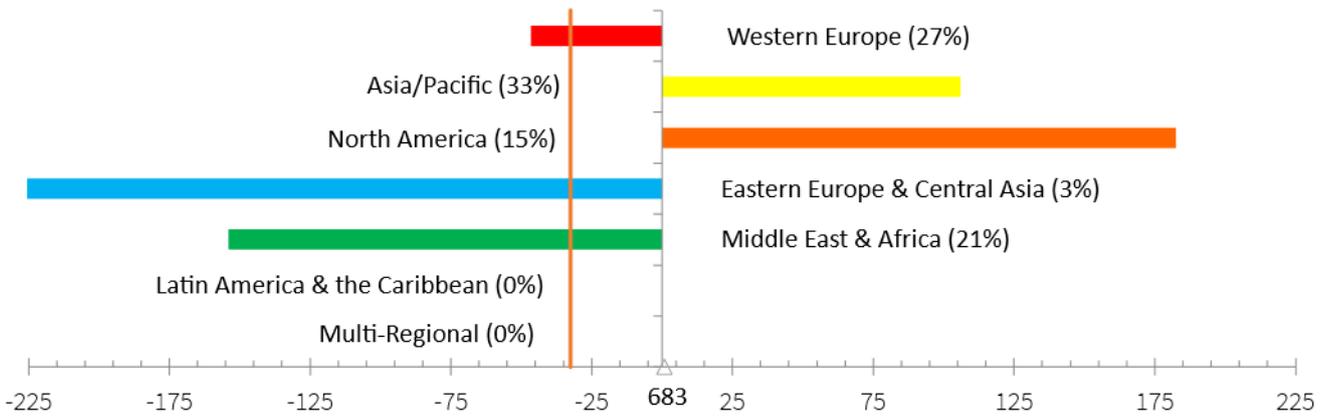
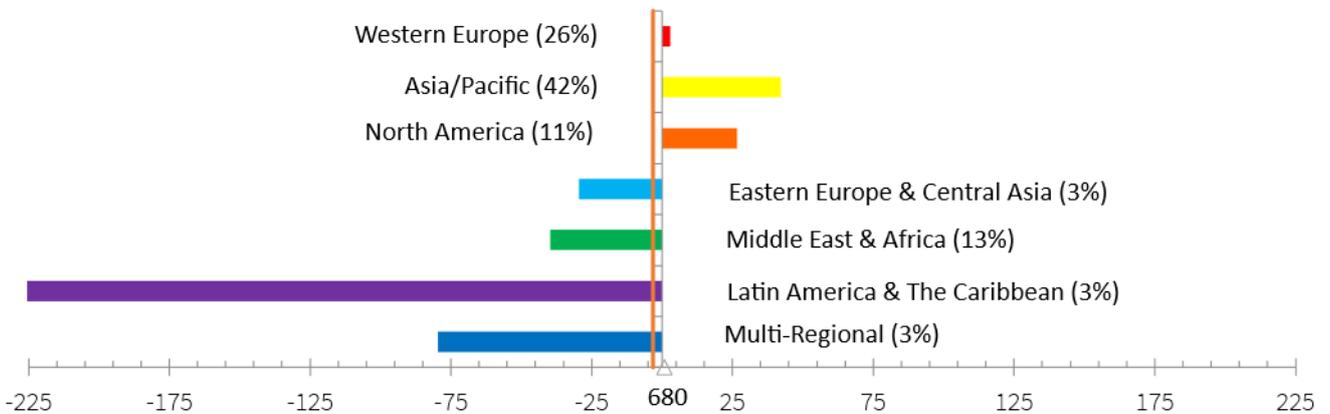


Chart 18 | Regional Assessments For Toronto - Difference From The Mean



Middle East & Africa

- Dubai leads in the region, and rose one place, with Tel Aviv overtaking Abu Dhabi to take second place in the region and Casablanca leading in Africa.
- Most centres in the region improved in the ranking, with Mauritius up 10 places, Bahrain up 17, and Nairobi up 11.
- Respondents from Asia/Pacific, North America, Latin America & The Caribbean, and those with a multi-regional background rated Middle East & African centres higher than average.

Table 11 | Middle Eastern & African Centres In GGFI 15

Centre	GGFI 15		GGFI 14		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Dubai	34	561	35	595	▲ 1	▼ 34
Tel Aviv	43	552	50	580	▲ 7	▼ 28
Abu Dhabi	48	547	39	591	▼ 9	▼ 44
Casablanca	50	545	47	583	▼ 3	▼ 38
Mauritius	64	531	74	556	▲ 10	▼ 25
Doha	72	523	75	555	▲ 3	▼ 32
Bahrain	73	522	90	540	▲ 17	▼ 18
Kigali	75	520	80	550	▲ 5	▼ 30
Johannesburg	77	518	70	560	▼ 7	▼ 42
Cape Town	81	514	85	545	▲ 4	▼ 31
Riyadh	83	512	88	542	▲ 5	▼ 30
Nairobi	84	511	95	530	▲ 11	▼ 19
Lagos	92	503	97	524	▲ 5	▼ 21

Chart 19 | Top Five Middle East & Africa Centre Ratings Over Time

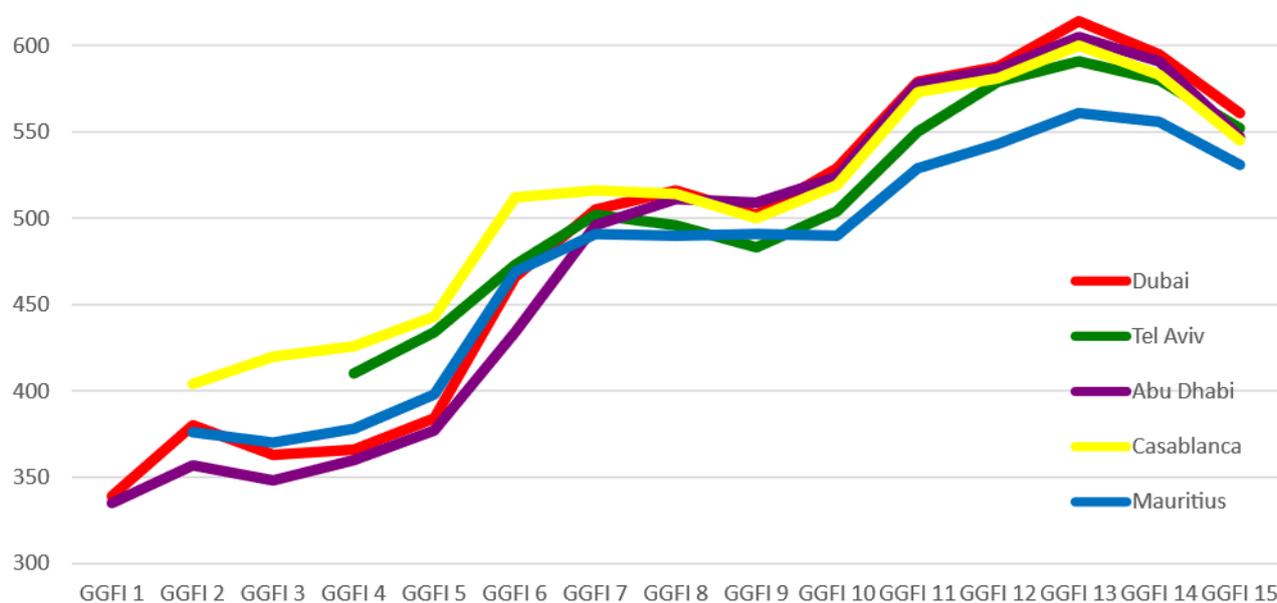


Chart 20 | Middle East & Africa Regional Assessments - Difference From The Mean

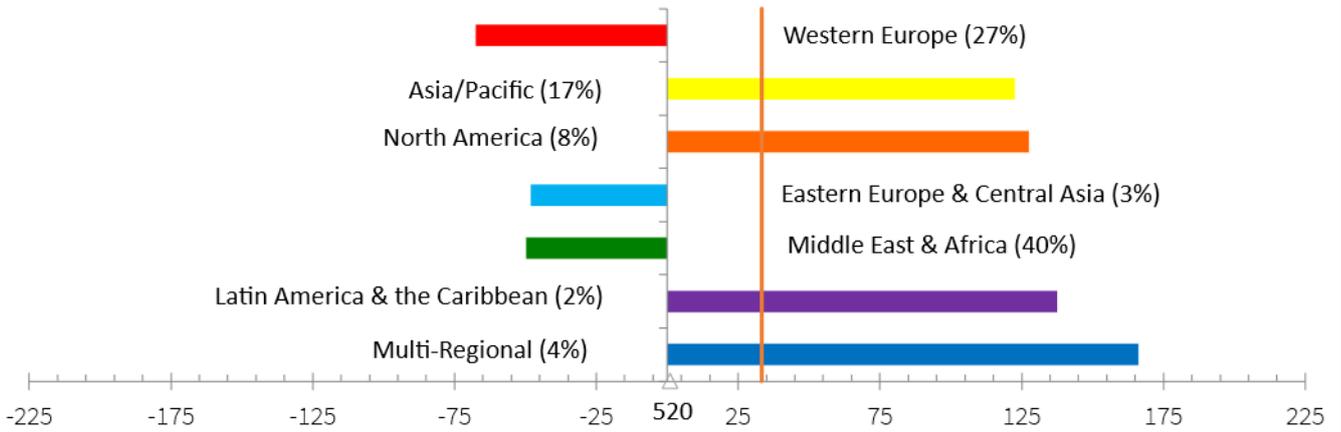


Chart 21 | Regional Assessments For Dubai - Difference From The Mean

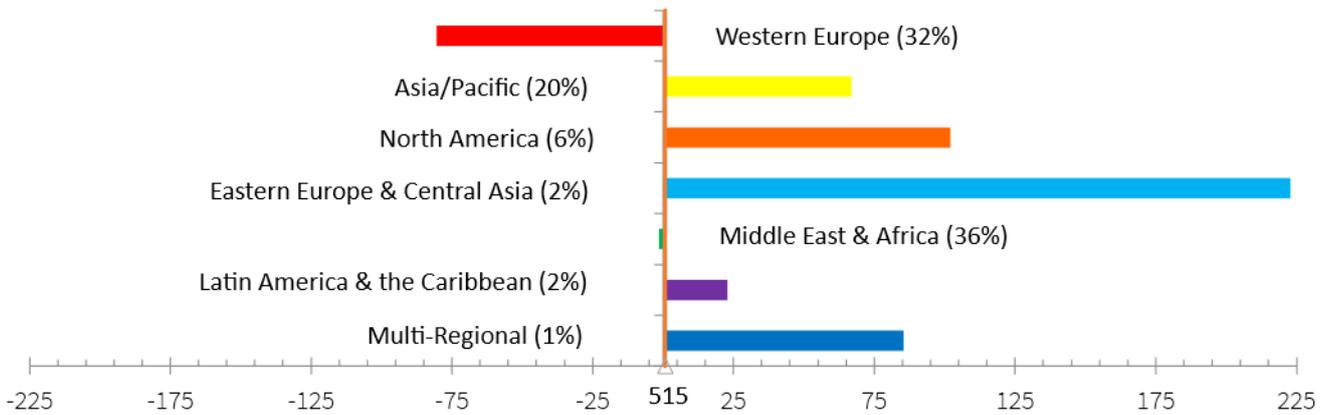
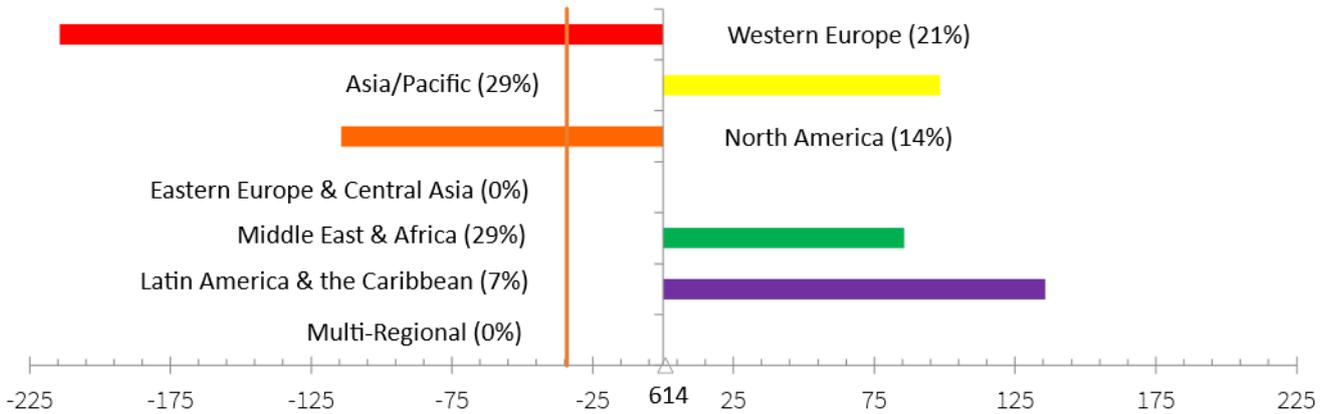


Chart 22 | Regional Assessments For Tel Aviv - Difference From The Mean



Eastern Europe & Central Asia

- Although it only entered the GGFI 18 months ago, Kaunas rose a further thirteen places to maintain its leading position in the region, with Prague up 10 places to take second place above Astana.
- Respondents from Asia/Pacific, North America, Latin America & The Caribbean, and those from a multi-regional background rated Eastern European & Central Asia centres higher than average.

Table 12 | Eastern European & Central Asia Centres In GGFI 15

Centre	GGFI 15		GGFI 14		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Kaunas	45	550	58	572	▲ 13	▼ 22
Prague	56	539	66	564	▲ 10	▼ 25
Astana	63	532	62	568	▼ 1	▼ 36
Sofia	65	530	69	561	▲ 4	▼ 31
Warsaw	66	529	83	547	▲ 17	▼ 18
Riga	68	527	76	554	▲ 8	▼ 27
Moscow	82	513	87	543	▲ 5	▼ 30
Istanbul	85	510	77	553	▼ 8	▼ 43
St Petersburg	88	507	New	New	New	New
Cyprus	90	505	92	538	▲ 2	▼ 33
Almaty	91	504	94	536	▲ 3	▼ 32

Chart 23 | Top Five Eastern Europe & Central Asia Centre Ratings Over Time

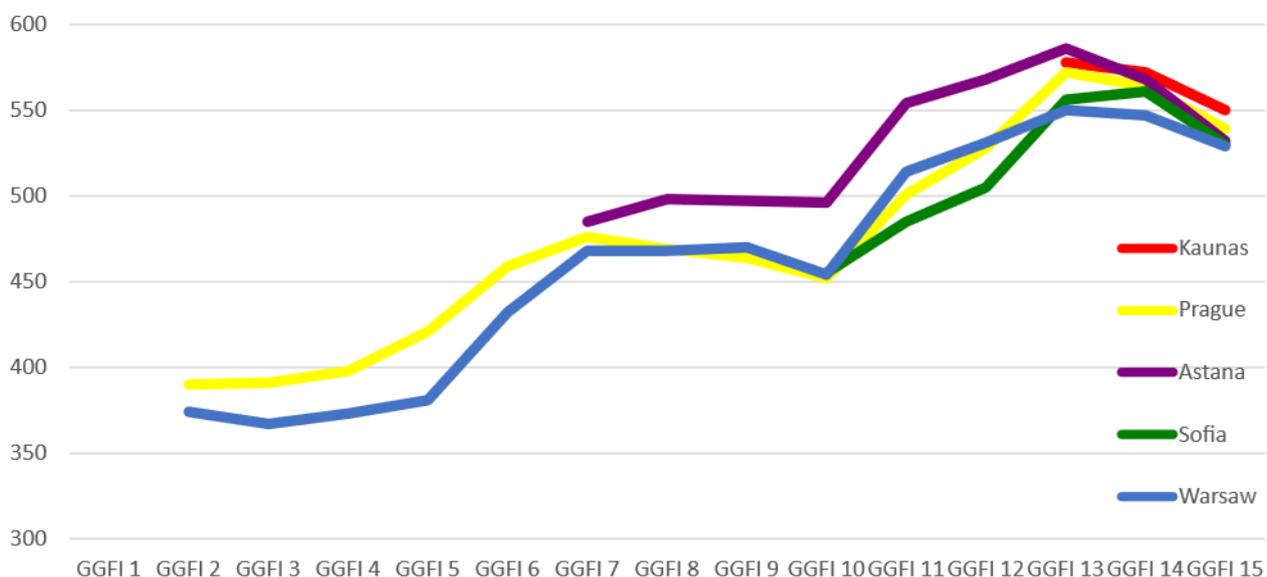


Chart 24 | Eastern Europe & Central Asia Regional Assessments - Difference From The Mean

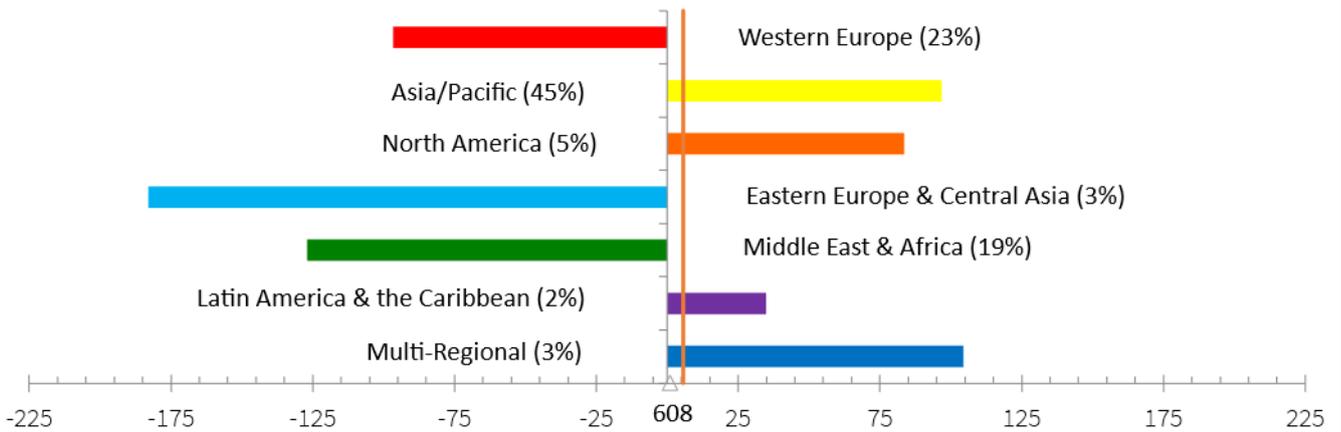


Chart 25 | Regional Assessments For Kaunas - Difference From The Mean

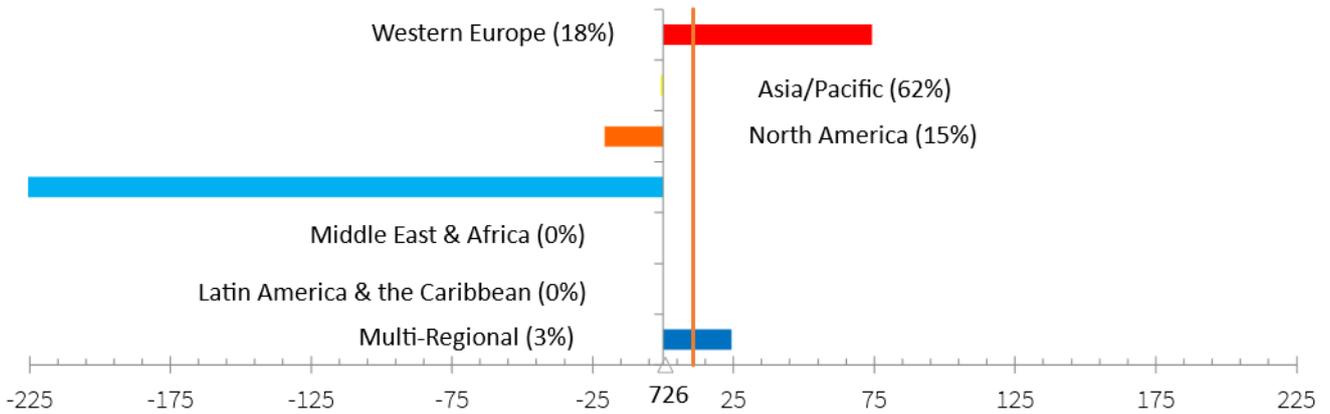
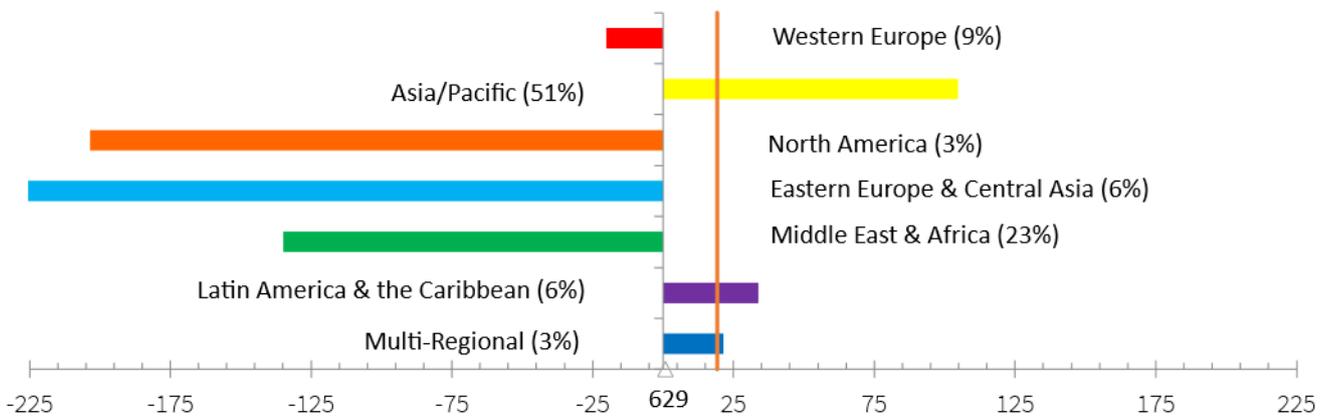


Chart 26 | Regional Assessments For Prague - Difference From The Mean



Western Europe

- London led the region, with Zurich in second place, followed by Geneva, and Copenhagen. Seven Western European centres feature in the world top ten.
- Respondents from Western Europe, Eastern Europe & Central Asia, and the Middle East & Africa rated Western European centres lower than average.

Table 13 | Top 15 Western European Centres In GGFI 15

Centre	GGFI 15		GGFI 14		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
London	1	598	1	634	0	▼ 36
Zurich	2	597	2	633	0	▼ 36
Geneva	4	591	4	628	0	▼ 37
Copenhagen	5	590	9	622	▲ 4	▼ 32
Oslo	6	589	11	620	▲ 5	▼ 31
Stockholm	7	588	6	625	▼ 1	▼ 37
Luxembourg	9	586	8	623	▼ 1	▼ 37
Paris	11	584	18	613	▲ 7	▼ 29
Lugano	13	582	13	618	0	▼ 36
Amsterdam	15	580	23	608	▲ 8	▼ 28
Brussels	17	578	27	604	▲ 10	▼ 26
Edinburgh	18	577	19	612	▲ 1	▼ 35
Madrid	20	575	28	603	▲ 8	▼ 28
Frankfurt	22	573	20	611	▼ 2	▼ 38
Munich	25	570	26	605	▲ 1	▼ 35

Chart 27 | Top Five Western European Centre Ratings Over Time

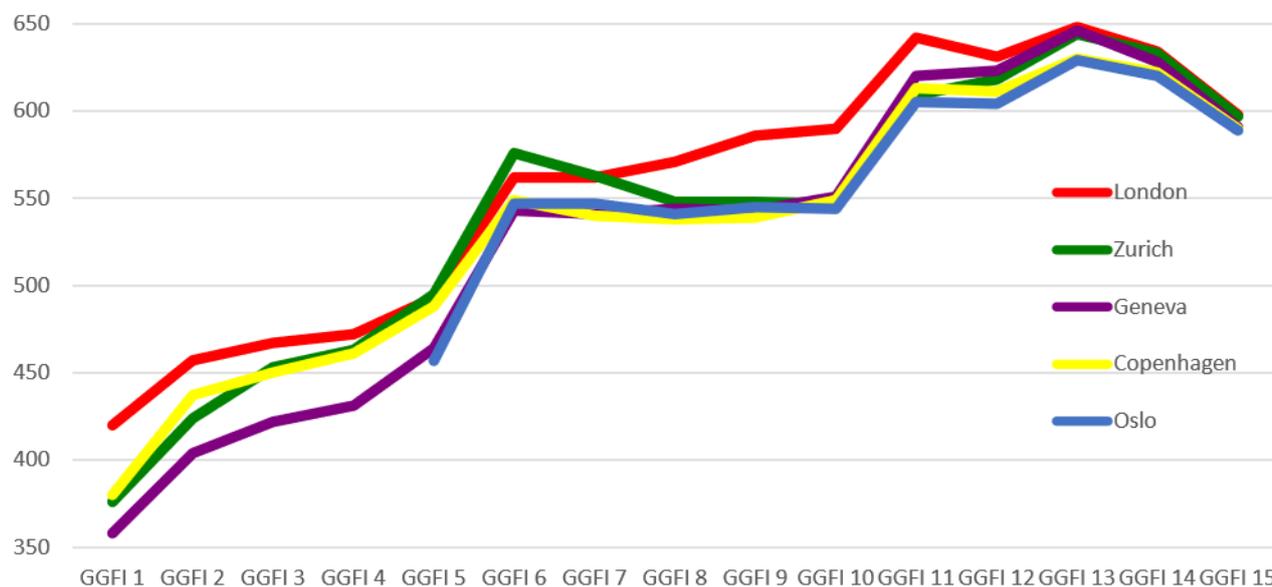


Chart 28 | Western Europe Regional Assessments - Difference From The Mean

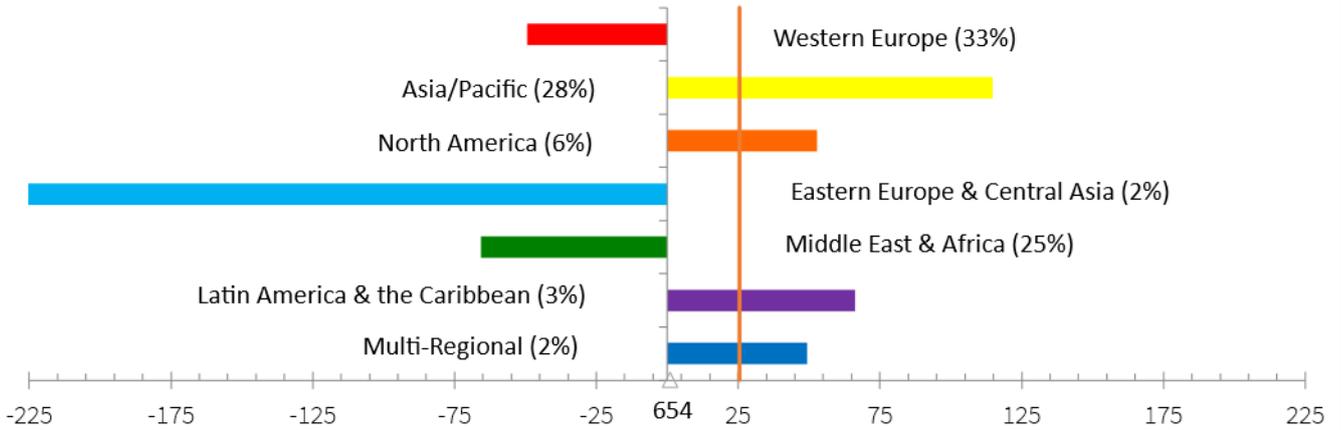


Chart 29 | Regional Assessments For London - Difference From The Mean

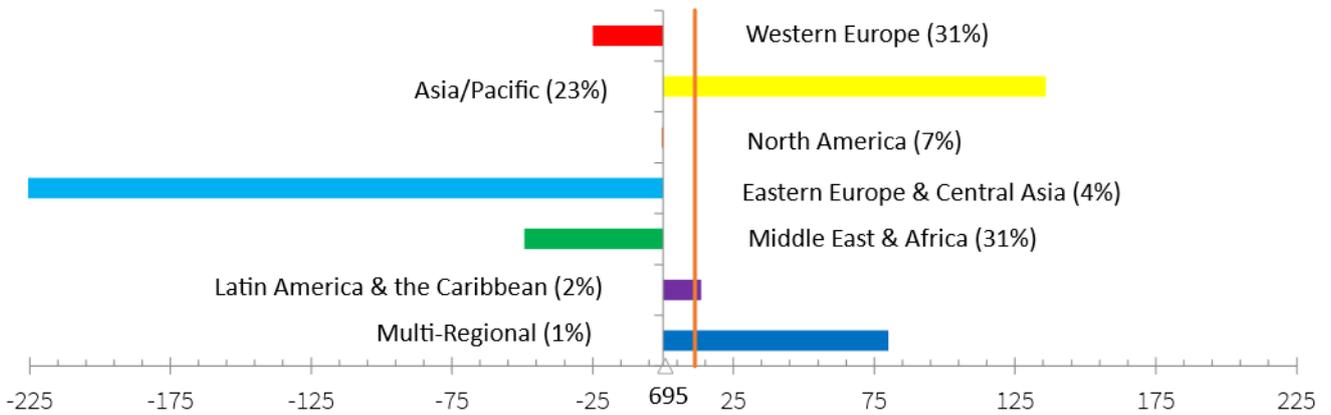
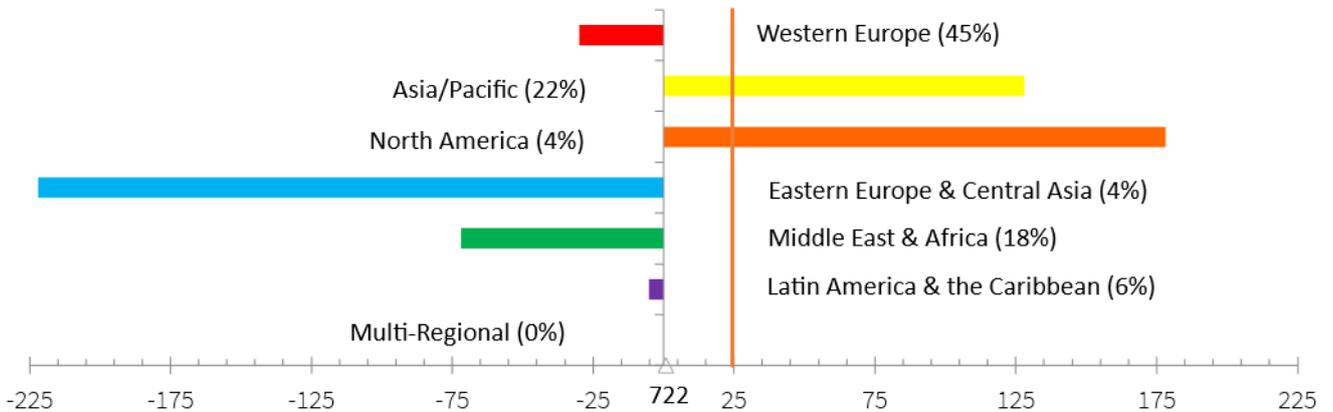


Chart 30 | Regional Assessments For Zurich - Difference From The Mean



Latin America & The Caribbean

- Sao Paulo leads the region, with Santiago in second position.
- Respondents from Asia/Pacific, North America, and those from a multi-regional background rated Latin America & The Caribbean centres above average.

Table 14 | Latin American & Caribbean Centres In GGFI 15

Centre	GGFI 15		GGFI 14		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Sao Paulo	54	541	59	571	▲ 5	▼ 30
Santiago	55	540	64	566	▲ 9	▼ 26
Rio de Janeiro	69	526	79	551	▲ 10	▼ 25
Mexico City	70	525	71	559	▲ 1	▼ 34
Bermuda	79	516	84	546	▲ 5	▼ 30
Bahamas	89	506	89	541	0	▼ 35
Cayman Islands	93	501	93	537	0	▼ 36
British Virgin Islands	94	499	96	527	▲ 2	▼ 28

Chart 31 | Top Five Latin American & Caribbean Centre Ratings Over Time

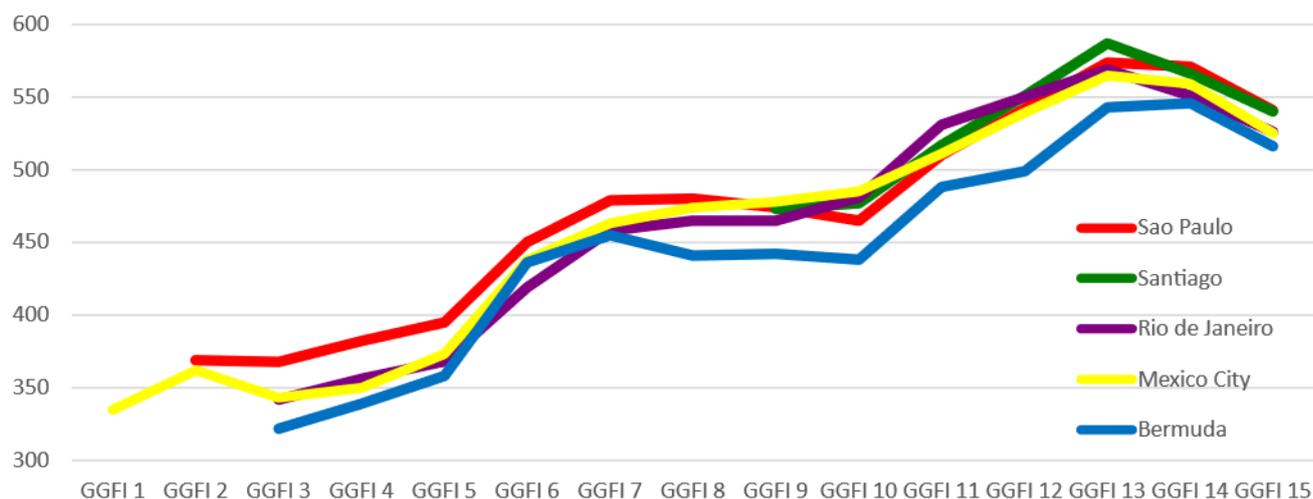


Chart 32 | Latin America & The Caribbean Regional Assessments - Difference From The Mean

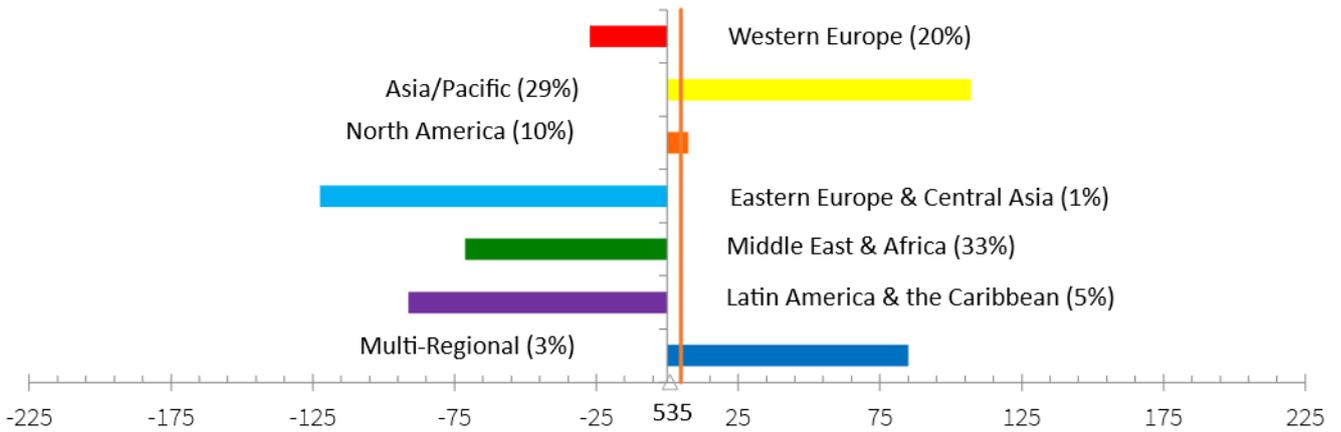


Chart 33 | Regional Assessments For Sao Paulo - Difference From The Mean

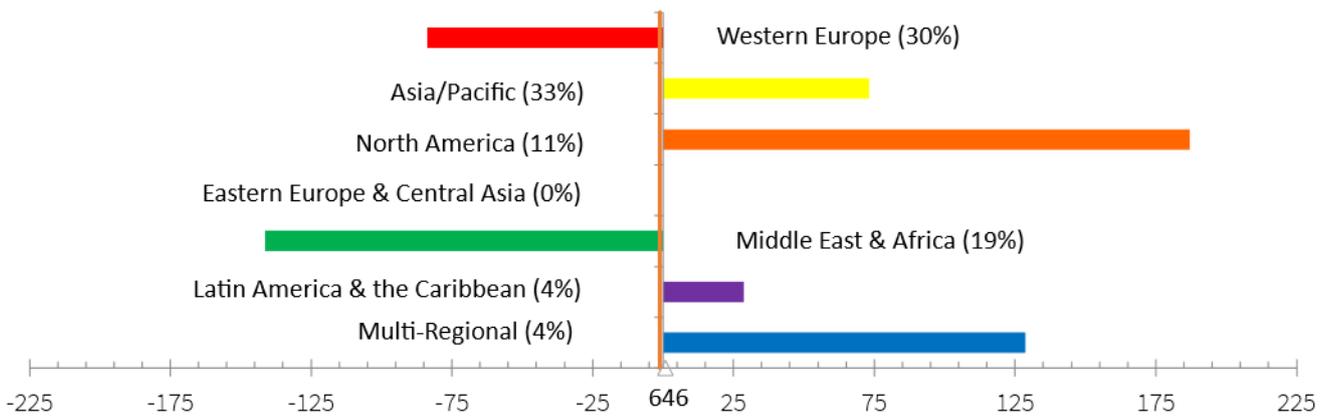
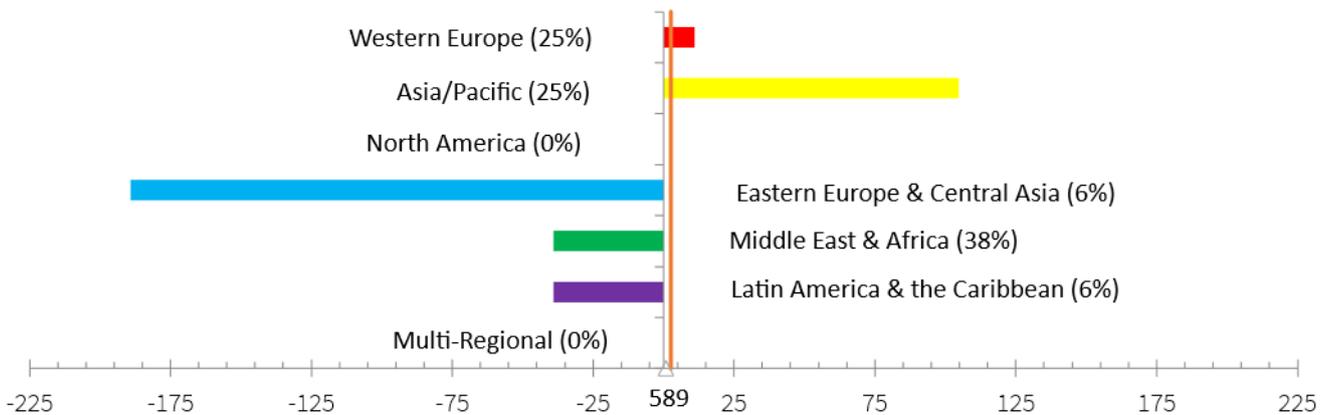


Chart 34 | Regional Assessments For Santiago - Difference From The Mean



Asia/Pacific

- Singapore continued to lead the region in third place globally. Busan and Seoul are second and third in the region.
- Respondents from Asia/Pacific, North America, and people operating across more than one region rated centres in Asia/Pacific above average.

Table 15 | Top 15 Asia/Pacific Centres In GGFI 15

Centre	GGFI 15		GGFI 14		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Singapore	3	592	3	630	0	▼38
Busan	24	571	30	600	▲6	▼29
Seoul	26	569	21	610	▼5	▼41
Sydney	30	565	29	602	▼1	▼37
Shanghai	31	564	34	596	▲3	▼32
Shenzhen	33	562	24	607	▼9	▼45
Melbourne	35	560	37	593	▲2	▼33
Qingdao	36	559	40	590	▲4	▼31
Beijing	40	555	33	597	▼7	▼42
Hong Kong	42	553	38	592	▼4	▼39
Osaka	47	548	51	579	▲4	▼31
Tokyo	52	543	42	588	▼10	▼45
Guangzhou	58	537	54	576	▼4	▼39
Jakarta	74	521	63	567	▼11	▼46
New Delhi	76	519	68	562	▼8	▼43

Chart 35 | Top Five Asia/Pacific Centre Ratings Over Time

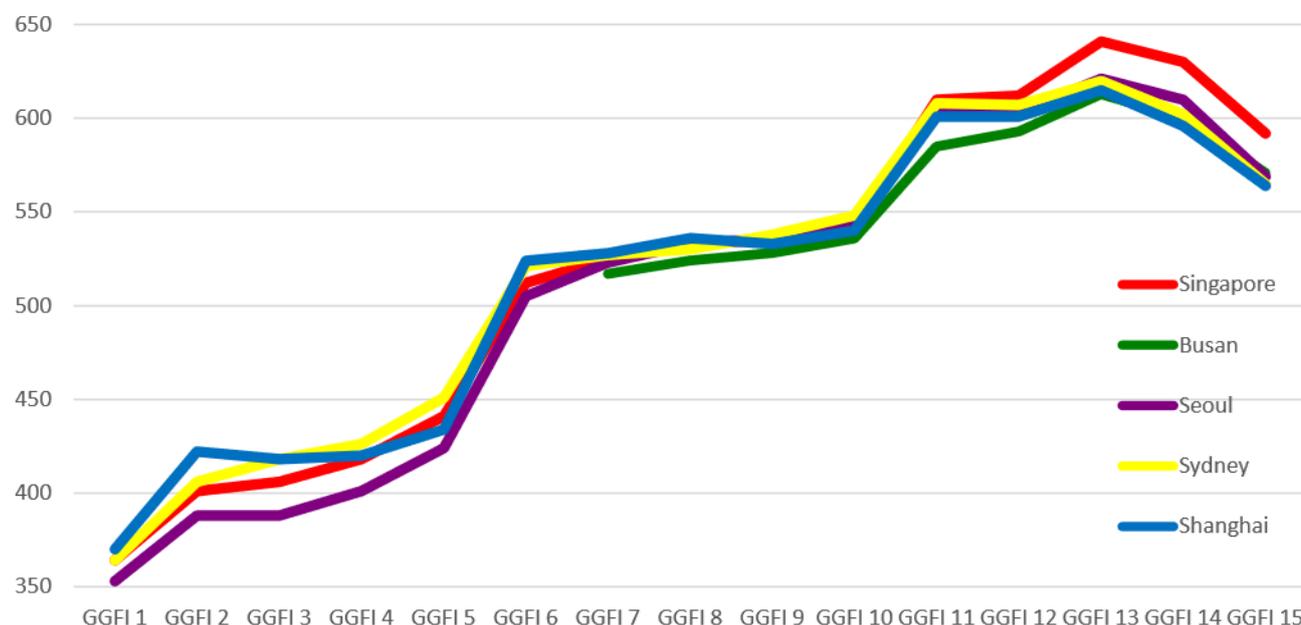


Chart 36 | Asia/Pacific Regional Assessments - Difference From The Mean

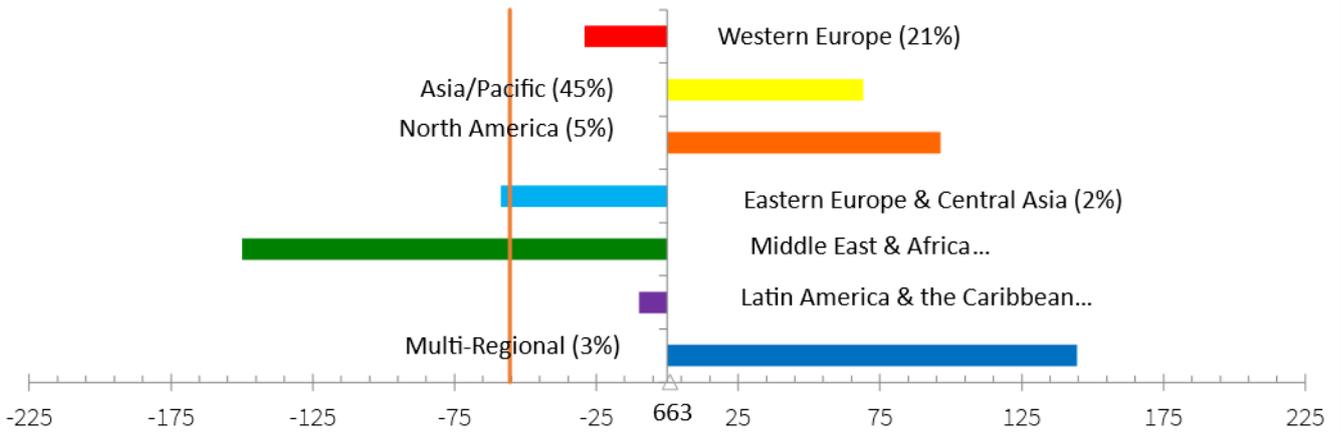


Chart 37 | Regional Assessments For Singapore - Difference From The Mean

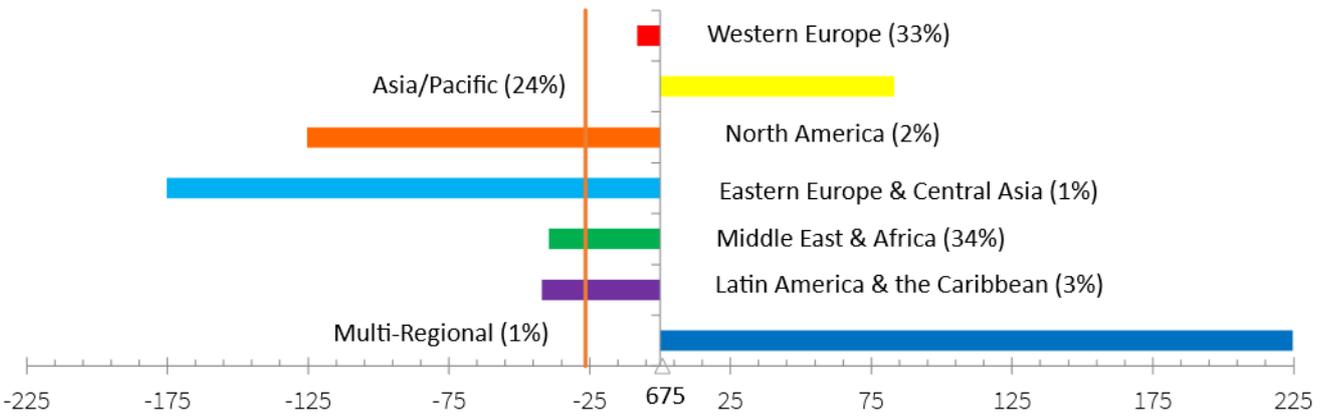
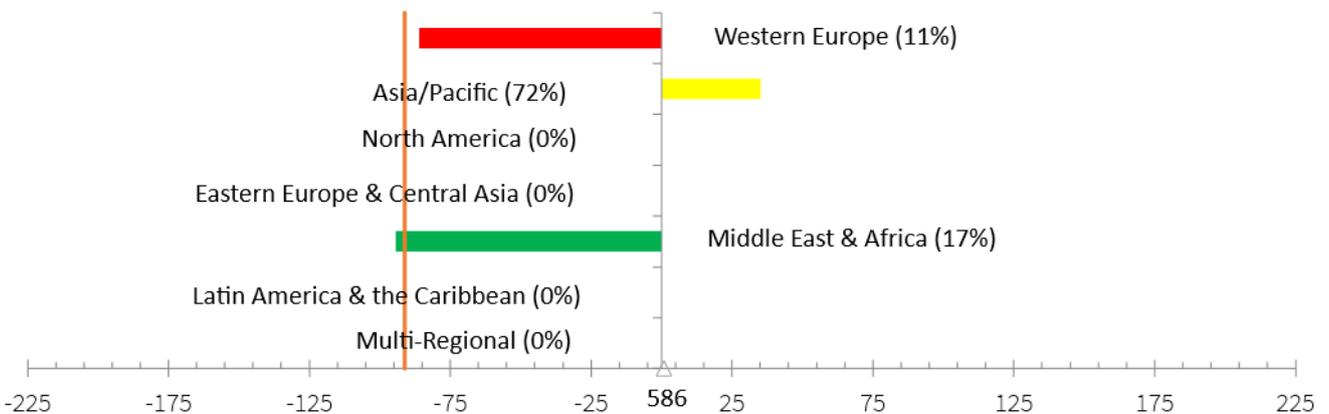


Chart 38 | Regional Assessments For Busan - Difference From The Mean

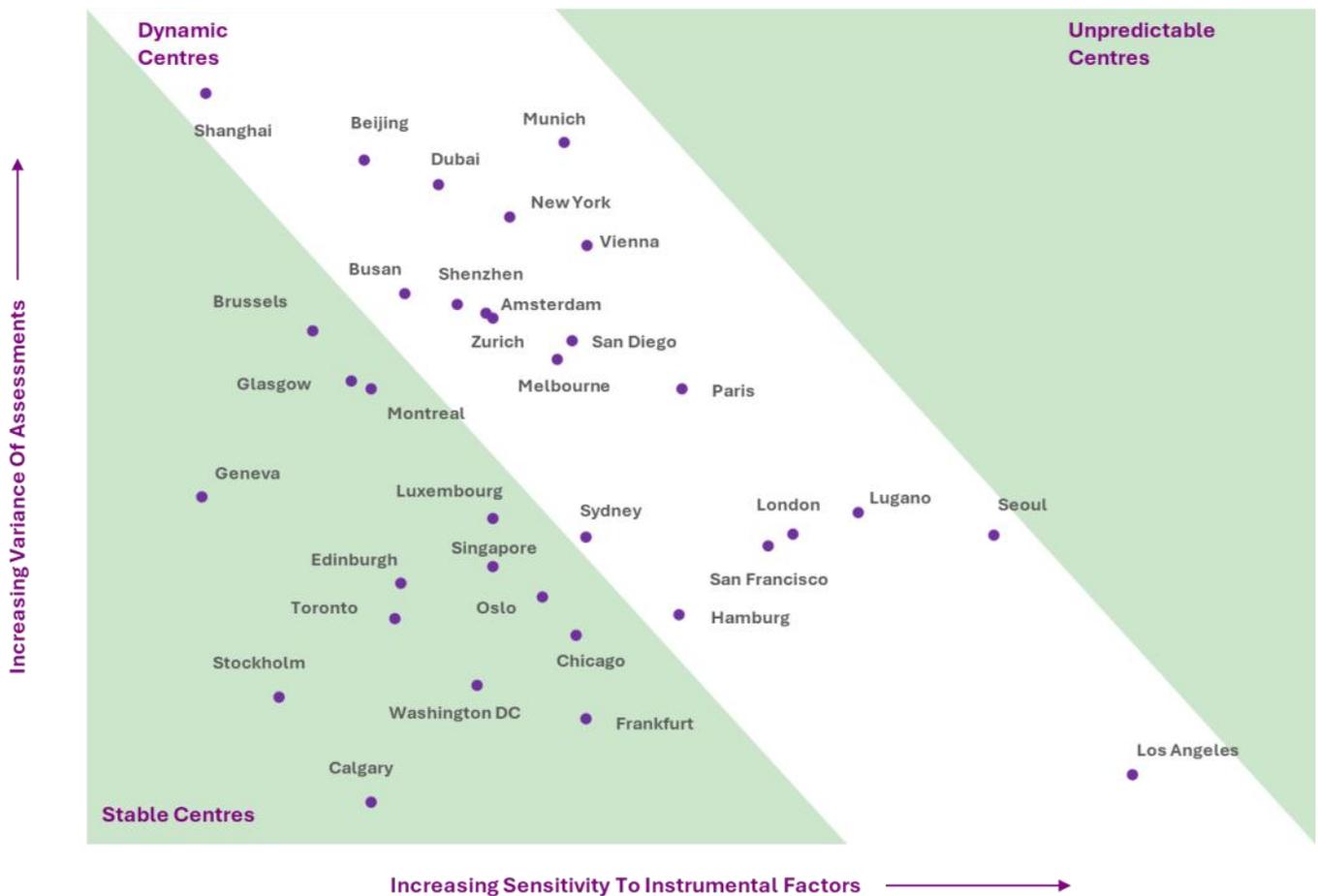


Stability

The GGFI model allows for an analysis of the stability of financial centres in the index, which can be useful for centres when assessing their development strategies. Chart 39 contrasts the ‘spread’ or variance of the individual assessments given to the top 40 centres in GGFI 15, with sensitivity to changes in the instrumental factors.

The chart shows three bands of financial centres. Most centres in the top 40 fall in the dynamic range. The stable centres in the bottom left have a lower sensitivity to change and demonstrate greater consistency in their GGFI ratings.

Chart 39 | Stability In Assessments And Instrumental Factors



Industry Sectors

We can analyse the differing assessments provided by respondents working in various industry sectors by building the index separately using the responses provided only from those industries. This analysis allows a relative measure of the sectoral strengths and weaknesses for each centre.

Table 16 illustrates separate sub-indices for the Policy, Capital Markets, Investment, and Professional Services sectors. The table shows how the index ranking varies according to industry sector. The leading centres in the index generally feature in the higher ranks of the industry sector sub-indices, with London first or second in all groups, although there are interesting strengths and weaknesses. For example, Luxembourg is first in the Capital Markets sub-index and second for Professional Services. Paris scores highly in the Policy sub-index and New York in the Professional Services sub-index.

Table 16 | GGFI 15 Industry Sector Sub-Indices - Top 15

Rank	Industry Sub-Sector			
	Policy	Capital Markets	Investment	Professional Services
1	London	Luxembourg	Zurich	London
2	Geneva	London	London	Luxembourg
3	Luxembourg	Singapore	Copenhagen	Montreal
4	Zurich	Geneva	Singapore	New York
5	Paris	Copenhagen	Luxembourg	Zurich
6	Lugano	Stockholm	Amsterdam	Geneva
7	Los Angeles	Zurich	Geneva	Singapore
8	Singapore	Paris	Oslo	Copenhagen
9	Frankfurt	Los Angeles	Montreal	Oslo
10	Edinburgh	Oslo	Stockholm	Stockholm
11	Montreal	Montreal	New York	Toronto
12	Stockholm	Vancouver	Los Angeles	Los Angeles
13	Copenhagen	Amsterdam	Lugano	Paris
14	New York	New York	Paris	Amsterdam
15	Toronto	Frankfurt	Toronto	Vancouver

“There is a lack of government interest in green financing across much of Africa.”

SENIOR MARKETS DEALER, BANKING, NAIROBI

Taking the sectoral analysis further, we can also calculate the index using the responses only from those working directly in green finance in financial services organisations. The results are shown in table 17.

Table 17 | GGFI 15 Using Responses Only From Respondents Working Directly In Green Finance

Centre	Rating	Adjusted Rank	GGFI 15 Rank	Difference
London	605	2	1	-1
Zurich	599	4	2	-2
Singapore	590	8	3	-5
Geneva	588	10	4	-6
Copenhagen	606	1	5	4
Oslo	593	6	6	0
Stockholm	583	13	7	-6
Montreal	586	12	8	-4
Luxembourg	604	3	9	6
Toronto	581	16	10	-6
Paris	580	18	11	-7
Vancouver	581	16	12	-4
Lugano	587	11	13	2
Los Angeles	592	7	14	7
Amsterdam	594	5	15	10
New York	578	21	16	-5
Brussels	575	27	17	-10
Edinburgh	590	8	18	10
Washington DC	569	38	19	-19
Madrid	573	31	20	-11
Minneapolis / St Paul	569	38	21	-17
Frankfurt	572	32	22	-10
San Diego	582	14	23	9
Busan	577	22	24	2
Munich	582	14	25	11
Seoul	580	18	26	8
Hamburg	577	22	27	5
Calgary	575	27	28	1
Chicago	569	38	29	-9
Sydney	575	27	30	3
Shanghai	576	24	31	7
San Francisco	567	42	32	-10
Shenzhen	579	20	33	13
Dubai	564	45	34	-11
Melbourne	576	24	35	11
Qingdao	572	32	36	4
Atlanta	567	42	37	-5
Vienna	569	38	38	0
Glasgow	576	24	39	15
Beijing	574	30	40	10
Boston	562	46	41	-5
Hong Kong	552	55	42	-13
Tel Aviv	562	46	43	-3
Rome	571	34	44	10
Kaunas	570	35	45	10
Lisbon	562	46	46	0
Osaka	570	35	47	12

Centre	Rating	Adjusted Rank	GGFI 15 Rank	Difference
Abu Dhabi	549	60	48	-12
Berlin	565	44	49	5
Casablanca	570	35	50	15
Milan	560	50	51	1
Tokyo	559	51	52	1
Dublin	558	52	53	1
Sao Paulo	528	85	54	-31
Santiago	551	58	55	-3
Prague	561	49	56	7
Miami	546	63	57	-6
Guangzhou	558	52	58	6
Philadelphia	523	86	59	-27
Malta	546	63	60	-3
Isle of Man	542	67	61	-6
Jersey	529	84	62	-22
Astana	542	67	63	-4
Mauritius	554	54	64	10
Sofia	552	55	65	10
Warsaw	541	69	66	-3
Guernsey	548	61	67	6
Riga	552	55	68	13
Rio de Janeiro	522	88	69	-19
Mexico City	532	79	70	-9
Liechtenstein	530	83	71	-12
Doha	551	58	72	14
Bahrain	532	79	73	-6
Jakarta	537	73	74	1
Kigali	539	71	75	4
New Delhi	532	79	76	-3
Johannesburg	534	76	77	1
Bangkok	538	72	78	6
Bermuda	545	66	79	13
Kuala Lumpur	547	62	80	18
Cape Town	546	63	81	18
Moscow	522	88	82	-6
Riyadh	537	73	83	10
Nairobi	532	79	84	5
Istanbul	534	76	85	9
Monaco	523	86	86	0
Manila	509	93	87	-6
St Petersburg	533	78	88	10
Bahamas	535	75	89	14
Cyprus	522	88	90	2
Almaty	540	70	91	21
Lagos	505	94	92	-2
Cayman Islands	519	91	93	2
British Virgin Islands	505	94	94	0
Mumbai	514	92	95	3

GGFI 15 Interest, Impact, And Drivers Of Green Finance

In addition to requesting ratings of depth and quality for financial centres, the GGFI questionnaire asks additional questions concerning the development of green finance. Among the topics covered are:

- The areas of green finance considered most interesting by respondents;
- The areas of green finance which respondents consider to have the greatest impact on sustainability; and
- Factors driving the development of green finance.

Areas Of Interest In Green Finance And Areas With The Most Impact

We asked respondents to identify the areas of green finance which they considered most interesting and separately the areas of green finance they consider have the most impact on sustainability. The results are shown in Charts 40 and 41.

With respect to interest, Environment, Social And Governance (ESG) Analytics is the leading issue mentioned by our respondents, ahead of Renewable Energy Investment, and Sustainable Infrastructure Finance. The areas considered least interesting are Natural Capital Valuation and Greentech Venture Capital.

Chart 40 | Interest - Percentage Of Total Mentions



With respect to impact, Green Loans, Renewable Energy Investment, and Social and Impact Investment are rated as the areas of green finance with most impact. Natural Capital Valuation, Climate Risk Stress Testing, and Greentech Venture Capital are ranked lowest on this measure by our respondents.

Chart 41 | Impact - Percentage Of Total Mentions

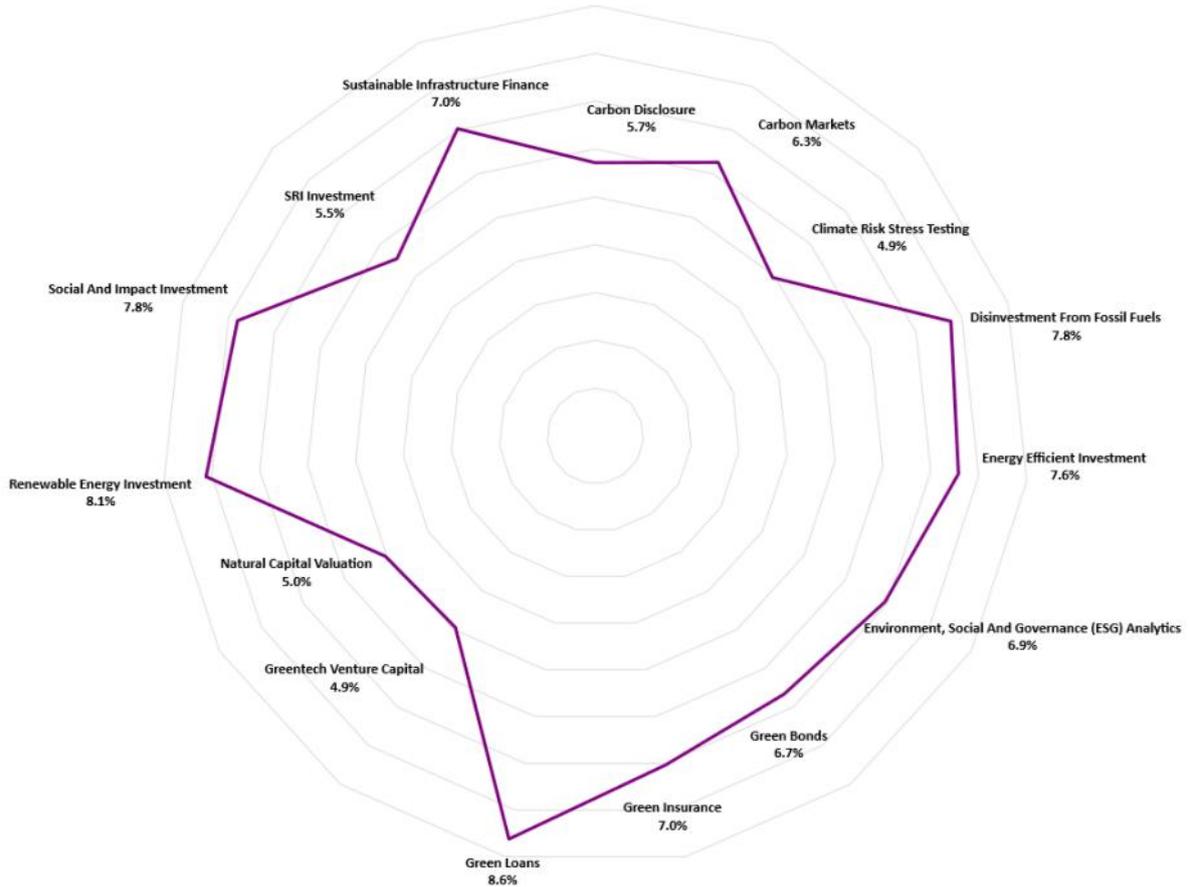
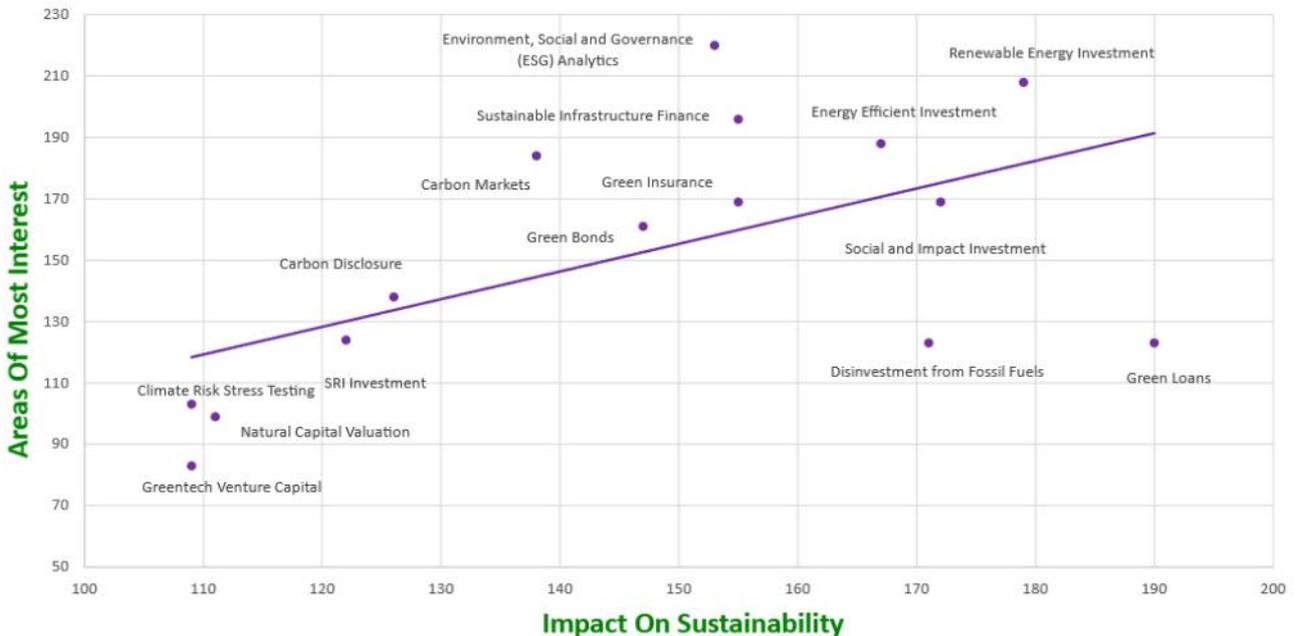
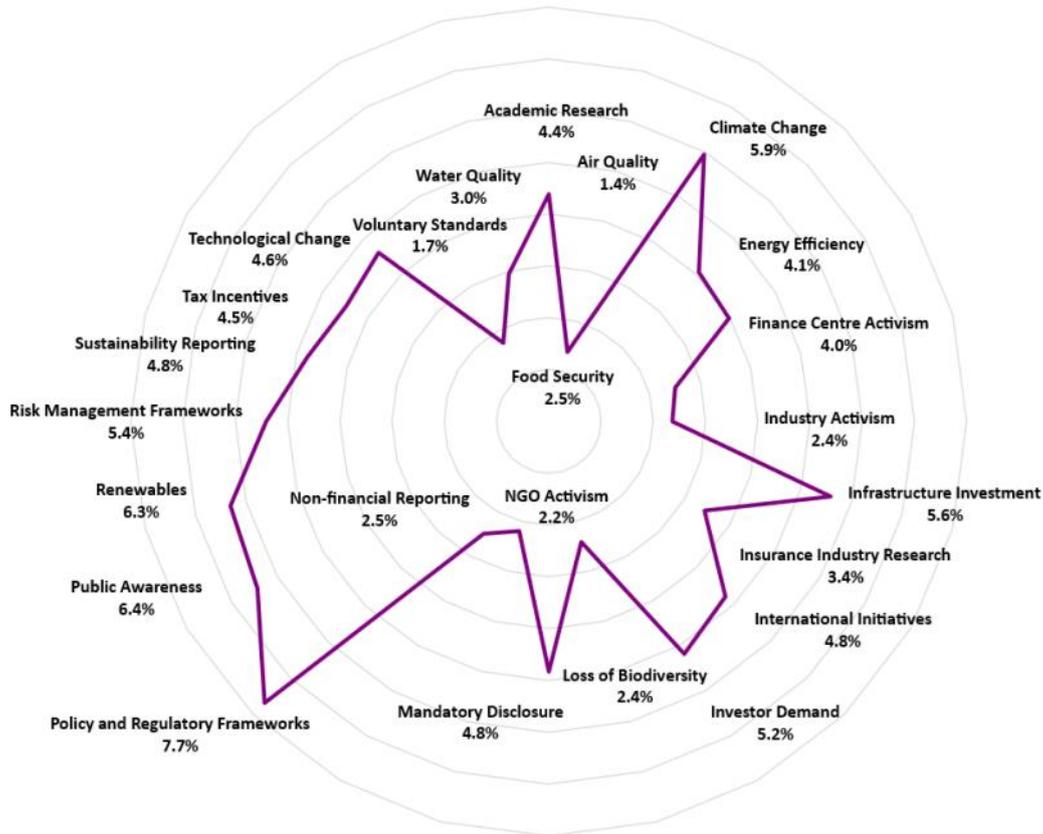


Chart 42 | The Correlation Between Interest And Impact



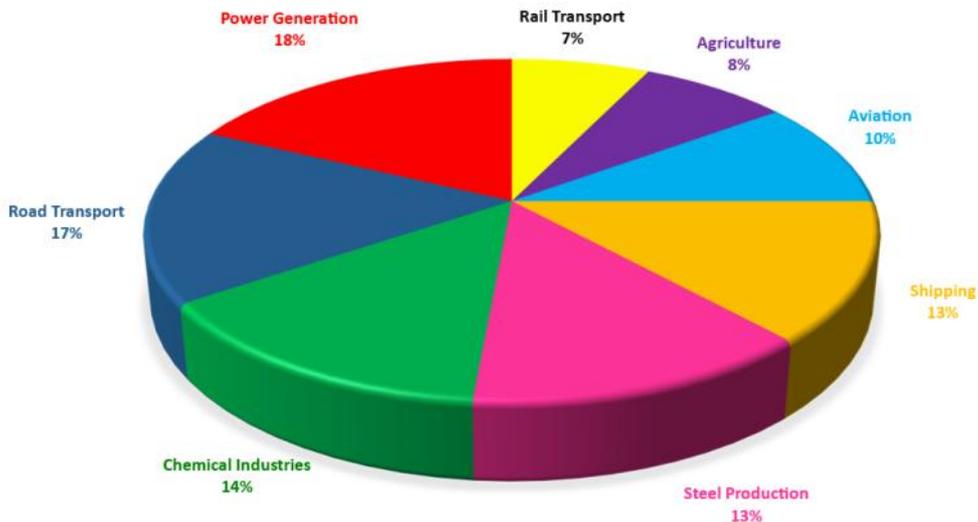
With respect to drivers, Policy and Regulatory Frameworks, Public Awareness, and Renewables are seen as the most important drivers of green finance. Air quality, Voluntary Standards, and NGO Activism, and Air Quality are mentioned least frequently. These results underline the continuing importance of regulatory frameworks and public demand in the development of green finance, alongside risk management.

Chart 43 | Drivers - Percentage Of Total Mentions



We also asked respondents to the GGFI survey to indicate in which sectors hydrogen is likely to replace fossil fuel as a primary fuel source. The results are shown in chart 44, with power generation and road transport mentioned most frequently.

Chart 44 | Hydrogen Futures



Appendix 1: Assessment Details

Table 18 | Details Of GGFI 15 Assessments By Centre

Centre	GGFI 15		Assessments		
	Rank	Rating	Number	Average	Std Dev
London	1	598	128	695	188
Zurich	2	597	49	722	216
Singapore	3	592	87	675	184
Geneva	4	591	39	724	193
Copenhagen	5	590	23	724	142
Oslo	6	589	11	736	180
Stockholm	7	588	36	703	167
Montreal	8	587	33	683	207
Luxembourg	9	586	67	665	190
Toronto	10	585	38	680	177
Paris	11	584	74	660	207
Vancouver	12	583	33	746	133
Lugano	13	582	18	683	191
Los Angeles	14	581	43	719	157
Amsterdam	15	580	52	674	216
New York	16	579	107	594	229
Brussels	17	578	36	637	214
Edinburgh	18	577	30	652	182
Washington DC	19	576	50	652	169
Madrid	20	575	52	686	130
Minneapolis / St Paul	21	574	21	680	138
Frankfurt	22	573	64	648	164
San Diego	23	572	14	611	213
Busan	24	571	18	586	219
Munich	25	570	20	578	238
Seoul	26	569	35	659	188
Hamburg	27	568	16	586	178
Calgary	28	567	48	717	154
Chicago	29	566	51	665	175
Sydney	30	565	25	624	188
Shanghai	31	564	44	651	244
San Francisco	32	563	49	709	187
Shenzhen	33	562	21	743	217
Dubai	34	561	94	515	233
Melbourne	35	560	18	611	210
Qingdao	36	559	289	843	55
Atlanta	37	558	26	681	116
Vienna	38	557	20	583	225
Glasgow	39	556	28	615	208
Beijing	40	555	60	633	236
Boston	41	554	54	676	179
Hong Kong	42	553	77	558	220
Tel Aviv	43	552	14	614	187
Rome	44	551	35	684	155
Kaunas	45	550	34	726	111
Lisbon	46	549	11	673	188
Osaka	47	548	19	695	161

Centre	GGFI 15		Assessments		
	Rank	Rating	Number	Average	Std Dev
Abu Dhabi	48	547	58	502	241
Berlin	49	546	36	611	222
Casablanca	50	545	23	464	235
Milan	51	544	23	638	173
Tokyo	52	543	38	601	217
Dublin	53	542	45	579	193
Sao Paulo	54	541	27	646	210
Santiago	55	540	16	589	173
Prague	56	539	35	629	176
Miami	57	538	25	556	205
Guangzhou	58	537	14	532	217
Philadelphia	59	536	17	640	147
Malta	60	535	36	635	202
Isle of Man	61	534	18	590	189
Jersey	62	533	26	592	163
Astana	63	532	32	544	234
Mauritius	64	531	47	585	249
Sofia	65	530	25	703	137
Warsaw	66	529	25	563	225
Guernsey	67	528	27	531	178
Riga	68	527	31	735	102
Rio de Janeiro	69	526	17	563	200
Mexico City	70	525	22	589	170
Liechtenstein	71	524	19	583	198
Doha	72	523	35	505	211
Bahrain	73	522	24	493	161
Jakarta	74	521	22	508	209
Kigali	75	520	42	557	224
New Delhi	76	519	24	480	219
Johannesburg	77	518	49	487	190
Bangkok	78	517	22	506	213
Bermuda	79	516	26	590	154
Kuala Lumpur	80	515	29	526	206
Cape Town	81	514	43	534	174
Moscow	82	513	32	571	223
Riyadh	83	512	22	495	205
Nairobi	84	511	43	513	200
Istanbul	85	510	33	563	158
Monaco	86	509	16	581	186
Manila	87	508	15	453	216
St Petersburg	88	507	26	691	205
Bahamas	89	506	29	495	205
Cyprus	90	505	32	468	216
Almaty	91	504	14	566	226
Lagos	92	503	32	459	212
Cayman Islands	93	501	37	441	182
British Virgin Islands	94	499	42	456	203
Mumbai	95	497	44	438	185

Table 19 | Details Of Ratings For The GGFI Dimensions By Centre

Centre	Overall Rank	Depth Rating	Quality Rating	Centre	Overall Rank	Depth Rating	Quality Rating
London	1	292	306	Abu Dhabi	48	267	280
Zurich	2	289	308	Berlin	49	267	279
Singapore	3	289	303	Casablanca	50	263	282
Geneva	4	292	299	Milan	51	267	277
Copenhagen	5	290	300	Tokyo	52	261	282
Oslo	6	295	294	Dublin	53	268	274
Stockholm	7	287	301	Sao Paulo	54	267	274
Montreal	8	292	295	Santiago	55	258	282
Luxembourg	9	287	299	Prague	56	262	277
Toronto	10	287	298	Miami	57	268	270
Paris	11	285	299	Guangzhou	58	264	273
Vancouver	12	289	294	Philadelphia	59	256	280
Lugano	13	285	297	Malta	60	259	276
Los Angeles	14	290	291	Isle of Man	61	259	275
Amsterdam	15	285	295	Jersey	62	261	272
New York	16	284	295	Astana	63	265	267
Brussels	17	289	289	Mauritius	64	258	273
Edinburgh	18	285	292	Sofia	65	261	269
Washington DC	19	283	293	Warsaw	66	259	270
Madrid	20	281	294	Guernsey	67	258	270
Minneapolis / St Paul	21	282	292	Riga	68	263	264
Frankfurt	22	283	290	Rio de Janeiro	69	252	274
San Diego	23	283	289	Mexico City	70	257	268
Busan	24	283	288	Liechtenstein	71	258	266
Munich	25	276	294	Doha	72	254	269
Seoul	26	280	289	Bahrain	73	258	264
Hamburg	27	278	290	Jakarta	74	263	258
Calgary	28	280	287	Kigali	75	253	267
Chicago	29	278	288	New Delhi	76	253	266
Sydney	30	275	290	Johannesburg	77	257	261
Shanghai	31	275	289	Bangkok	78	243	274
San Francisco	32	277	286	Bermuda	79	250	266
Shenzhen	33	279	283	Kuala Lumpur	80	243	272
Dubai	34	276	285	Cape Town	81	251	263
Melbourne	35	273	287	Moscow	82	250	263
Qingdao	36	280	279	Riyadh	83	251	261
Atlanta	37	277	281	Nairobi	84	249	262
Vienna	38	268	289	Istanbul	85	246	264
Glasgow	39	269	287	Monaco	86	241	268
Beijing	40	276	279	Manila	87	244	264
Boston	41	272	282	St Petersburg	88	253	254
Hong Kong	42	275	278	Bahamas	89	253	253
Tel Aviv	43	270	282	Cyprus	90	248	257
Rome	44	273	278	Almaty	91	249	255
Kaunas	45	267	283	Lagos	92	242	261
Lisbon	46	265	284	Cayman Islands	93	247	254
Osaka	47	266	282	British Virgin Islands	94	250	249
				Mumbai	95	239	258

Appendix 2: Interest, Impact, And Drivers Details

Table 20 | Areas Of Green Finance With The Greatest Impact

Area Of Green Finance	Number Of Mentions	Percentage Of Total
Green Loans	190	8.6
Renewable Energy Investment	179	8.1
Social And Impact Investment	172	7.8
Disinvestment From Fossil Fuels	171	7.8
Energy Efficient Investment	167	7.6
Green Insurance	155	7.0
Sustainable Infrastructure Finance	155	7.0
Environment, Social And Governance (ESG) Analytics	153	6.9
Green Bonds	147	6.7
Carbon Markets	138	6.3
Carbon Disclosure	126	5.7
SRI Investment	122	5.5
Natural Capital Valuation	111	5.0
Climate Risk Stress Testing	109	4.9
Greentech Venture Capital	109	4.9
Totals	2,204	100.0

Table 21 | Areas Of Green Finance Of Most Interest To Respondents

Area Of Green Finance	Number Of Mentions	Percentage Of Total
Environment, Social And Governance (ESG) Analytics	220	9.6
Renewable Energy Investment	208	9.1
Sustainable Infrastructure Finance	196	8.6
Energy Efficient Investment	188	8.2
Carbon Markets	184	8.0
Green Insurance	169	7.4
Social and Impact Investment	169	7.4
Green Bonds	161	7.0
Carbon Disclosure	138	6.0
SRI Investment	124	5.4
Disinvestment From Fossil Fuels	123	5.4
Green Loans	123	5.4
Climate Risk Stress Testing	103	4.5
Natural Capital Valuation	99	4.3
Greentech Venture Capital	83	3.6
Totals	2,288	100.0



Table 22 | Drivers Of Green Finance

Driver	Number of Mentions	Percentage Of Total
Policy and Regulatory Frameworks	172	7.7
Public Awareness	144	6.4
Renewables	141	6.3
Climate Change	133	5.9
Infrastructure Investment	125	5.6
Risk Management Frameworks	121	5.4
Investor Demand	116	5.2
Mandatory Disclosure	108	4.8
International Initiatives	107	4.8
Sustainability Reporting	107	4.8
Technological Change	103	4.6
Tax Incentives	100	4.5
Academic Research	98	4.4
Energy Efficiency	91	4.1
Finance Centre Activism	89	4.0
Insurance Industry Research	77	3.4
Water Quality	66	3.0
Food Security	56	2.5
Non-financial Reporting	56	2.5
Loss of Biodiversity	54	2.4
Industry Activism	53	2.4
NGO Activism	49	2.2
Voluntary Standards	39	1.7
Air Quality	31	1.4
Totals	2,236	100.0



Appendix 3: Respondents' Details

Table 23 | Respondents By Industry Sector

Industry Sector	Number Of Respondents	Percentage Of Respondents
Banking	46	7.9%
Debt Capital Market	21	3.6%
Equity Capital Markets	21	3.6%
Insurance	16	2.7%
Investment	60	10.3%
Knowledge	69	11.9%
Local Green Initiatives	32	5.5%
Policy and Public Finance	62	10.7%
Professional Services	137	23.5%
Trading	25	4.3%
Other	93	16.0%
Total	582	100.0%

Table 24 | Respondents By Engagement In Green Finance

Engagement In Green Finance	Number Of Respondents	Percentage Of Respondents
Working Full-time On Green Finance	64	11.0%
Working Part-time On Green Finance	255	43.8%
Interested in Green Finance	228	39.2%
Other/not given	35	6.0%
Total	582	100.0%

Table 25 | Respondents By Region

Region	Number Of Respondents	Percentage Of Respondents
Asia Pacific	239	41.1%
Western Europe	140	24.1%
Eastern Europe and Central Asia	10	1.7%
North America	45	7.7%
Middle East and Africa	106	18.2%
Latin America and the Caribbean	14	2.4%
Multi-Regional	28	4.8%
Total	582	100.0%

Table 26 | Respondents By Size Of Organisation

Size of Organisation	Number Of Respondents	Percentage Of Respondents
<100	156	26.8%
100-500	62	10.7%
500-1000	38	6.5%
1000-2000	72	12.4%
2000-5000	70	12.0%
>5000	148	25.4%
Other/not given	36	6.2%
Total	582	100.0%

Table 27 | Respondents By Gender

Gender	Number Of Respondents	Percentage Of Respondents
Female	181	31.1%
Male	290	49.8%
Other	5	0.9%
Prefer not to say/not given	106	18.2%
Total	582	100.0%

Table 28 | Respondents By Age

Age Band	Number Of Respondents	Percentage Of Respondents
18-30	104	17.9%
30-45	214	36.8%
45-60	116	19.9%
60+	46	7.9%
Other/not given	102	17.5%
Total	582	100.0%

Appendix 4: Methodology

The GGFI provides ratings of the green finance offering of financial centres. The process involves taking two sets of ratings – one from survey respondents and one generated by a statistical model – and combining them into a single rating.

For the first set of ratings, the financial centre assessments, respondents use an [online questionnaire](#) to rate the depth and quality of each financial centre's green finance offering, using a 10 point scale ranging from little depth/very poor to mainstream/excellent. Responses are sought from a range of individuals drawn from the financial services sector, non-governmental organisations, regulators, universities, and trade bodies.

For the second set of ratings, we use a database of indicators, or Instrumental Factors, that contain quantitative data about each financial centre. We use a machine learning algorithm to investigate the correlation between the financial centre assessments and these Instrumental Factors, to predict how each respondent would have rated the financial centres they do not know. These 124 Instrumental Factors draw on data from a range of different sources covering sustainability, business, human capital, and infrastructure, including telecommunications and public transport. A full list of the Instrumental Factors used in the model is in Appendix 5.

The respondents' actual ratings as well as their predicted ratings for the centres they did not rate, are then combined into a single table to produce the ranking. We add the results for depth and quality to produce the GGFI.

Factors Affecting The Inclusion Of Centres In The GGFI

The questionnaire lists a total of 128 financial centres which can be rated by respondents. The questionnaire also asks whether there are financial centres that will improve their green finance offering significantly over the next two to three years. Centres which are not currently within the questionnaire and which receive a number of mentions in response to this question will be added to the questionnaire for future editions.

We give a financial centre a GGFI rating and ranking if it receives a statistically significant minimum number of assessments from individuals based in other geographical locations - at least 25 in GGFI 15. This means that not all 128 centres in the questionnaire receive a ranking.

We will also develop rules as successive indices are published as to when a centre may be removed from the rankings, for example, if over a 24 month period, a centre has not received a minimum number of assessments.

Financial Centre Assessments

Financial centre assessments are collected via an online questionnaire which runs continuously and which is at greenfinanceindex.net/survey/. A link to this questionnaire is emailed to a target list of respondents at regular intervals. Other interested parties can complete the questionnaire by following the link given in GGFI publications.

In calculating the GGFI:

- the score given by a respondent to their home centre, and scores from respondents who do not specify a home centre, are excluded from the model – this is designed to prevent home bias;
- financial centre assessments are included in the GGFI model for 24 months after they have been received – we consider that this is a period during which assessments maintain their validity; and
- financial centre assessments from the month when the GGFI is created will be given full weighting with earlier responses given a reduced weighting on a logarithmic scale as shown in Chart 45 - this recognises that older ratings, while still valid, are less likely to be up-to-date.

Chart 45 | Reduction In Weighting As Assessments Get Older



Instrumental Factor Data

For the instrumental factors, we have the following data requirements:

- data series should come from a reputable body and be derived by a sound methodology; and
- data series should be readily available (ideally in the public domain) and be regularly updated.

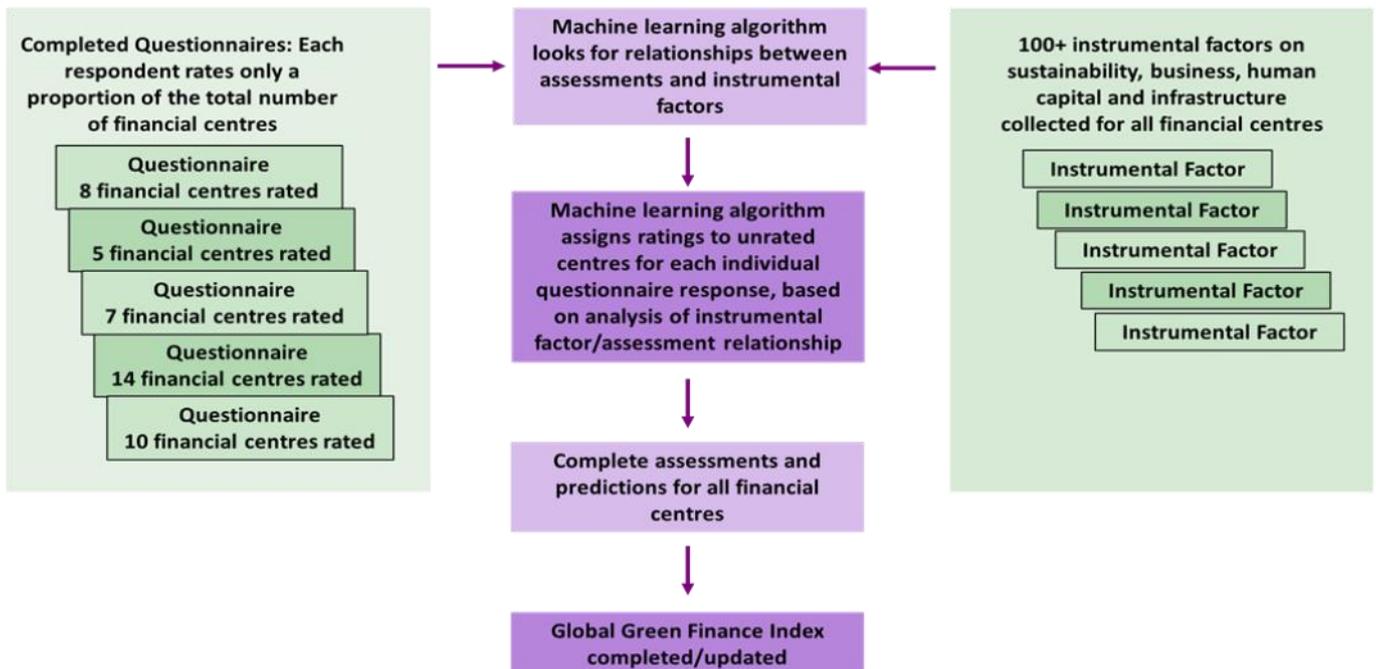
The rules on the use of instrumental factor data in the model are as follows:

- updates to the indices are collected and collated every six months;
- no weightings are applied to indices;
- indices are entered into the GGFI model as directly as possible, whether this is a rank, a derived score, a value, a distribution around a mean or a distribution around a benchmark;
- if a factor is at a national level, the score will be used for all centres in that country; nation-based factors will be avoided if financial centre (city)-based factors are available;
- if an index has multiple values for a city or nation, the most relevant value is used;
- if an index is at a regional level, the most relevant allocation of scores to each centre is made (and the method for judging relevance is noted); and
- if an index does not contain a value for a particular financial centre, a blank is entered against that centre (no average or mean is used).

The details of the methodology can be accessed at <https://www.longfinance.net/programmes/financial-centre-futures/global-green-finance-index/ggfi-methodology/>.

The process of creating the GGFI is outlined in Chart 46.

Chart 46 | The GGFI Process



Appendix 5: Instrumental Factors

Table 29 | Sustainability Instrumental Factor Correlation With GGFI Ratings

Instrumental Factors	R-squared
Urban Mobility Readiness Index	0.694
The Future Growth Report	0.658
IESE Cities In Motion Index	0.613
Quality Of Living City Rankings	0.604
Sustainable Economic Development	0.577
The Green Future Index	0.567
Energy Transition Index	0.538
World Energy Trilemma Index	0.524
Sustainable Cities Index	0.521
The Global Green Economy Index	0.434
Environmental Performance Index	0.414
Global Sustainable Competitiveness Index	0.403
Proportion Of Population Using Safely-Managed Drinking-Water Services (%)	0.265
Global Green Growth Index	0.244
Quality Of Life Index	0.244
Pollution Index	0.238
Share Of Wind And Solar In Electricity Production	0.192
Buildings Energy Efficiency Policies Database (Y/N)	0.151
Share Of Renewables In Electricity Production	0.138
Stock Exchanges With A Green Bond Segment (Y/N)	0.087
Sovereign Green Bond (Y/N)	0.078
Energy Intensity Of GDP	0.065
City Commitment To Carbon Reduction (Individual Action)	0.057
Protected Land Area % Of Land Area	0.056
CO2 Emissions Per Capita	0.031
Forestry Area	0.021
Sustainable Stock Exchanges (Y/N)	0.007
City Commitment To Carbon Reduction (Cooperative Action)	0.002
Average Precipitation In Depth (mm Per Year)	0.000

Table 30 | All Instrumental Factor Correlation With GGFI Ratings - Highest 30 Factors

Instrumental Factors	R-squared
Urban Mobility Readiness Index	0.694
Safe Cities Index	0.682
The Future Growth Report	0.658
Blavatnik Index Of Public Administration	0.638
Legatum Prosperity Index	0.637
IESE Cities In Motion Index	0.613
Global Cities Outlook ranking	0.610
Quality Of Living City Rankings	0.604
Sustainable Economic Development	0.577
International IP Index	0.576
The Green Future Index	0.567
Adjusted Net National Income Per capita	0.567
The Global Financial Centres Index	0.560
Global Innovation Index	0.557
Energy Transition Index	0.538
Logistics Performance Index	0.537
World Energy Trilemma Index	0.524
Sustainable Cities Index	0.521
World Talent Rankings	0.519
Cost Of Living City Rankings	0.479
Corruption Perception Index	0.473
Smart City Index	0.447
Government Effectiveness	0.445
Travel & Tourism Development Index	0.437
The Global Green Economy Index	0.434
Environmental Performance Index	0.414
Good Country Index	0.408
Global Sustainable Competitiveness Index	0.403
Regulatory Quality	0.403
Open Government	0.394

Table 31 | Sustainability Factors

Instrumental Factor	Source	Website	Updated
Average Precipitation In Depth (mm Per Year)	World Bank	http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&series=AG.LND.PRPC.MM	Y
Buildings Energy Efficiency Policies Database (Y/N)	IEA	https://www.iea.org/policies	N
City Commitment To Carbon Reduction (Cooperative Action)	UNFCCC	https://climateaction.unfccc.int/Actors	N
City Commitment To Carbon Reduction (Individual Action)	UNFCCC	https://climateaction.unfccc.int/Actors	N
CO2 Emissions Per Capita	World Bank	https://databank.worldbank.org/reports.aspx?source=2&series=EN.ATM.CO2E.PC&country=#	N
Energy Intensity Of GDP	Enerdata Statistical Yearbook	https://yearbook.enerdata.net/download/	N
Energy Transition Index	World Economic Forum	https://www.weforum.org/reports/1edb4488-deb4-4151-9d4f-ff355eec499a/in-full/rankings	Y
Environmental Performance Index	Yale University	https://epi.yale.edu/	N
Forestry Area	World Bank	http://databank.worldbank.org/data/reports.aspx?source=2&series=AG.LND.FRST.ZS&country=	Y
Global Green Growth Index	GGGI	https://ggindex-simtool.gggi.org/	N
Global Sustainable Competitiveness Index	Solability	http://solability.com/the-global-sustainable-competitiveness-index/the-index	N
IESE Cities In Motion Index	IESE	http://citiesinmotion.iese.edu/indicecim/?lang=en	N
Pollution Index	Numbeo	https://www.numbeo.com/pollution/rankings.jsp	Y
Proportion Of Population Using Safely-Managed Drinking-Water Services (%)	WHO	https://www.who.int/data/gho/publications/world-health-statistics	N
Protected Land Area % Of Land Area	World Bank	http://databank.worldbank.org/data/reports.aspx?source=2&series=ER.LND.PTLD.ZS&country=	Y
Quality of Life Index	Numbeo	http://www.numbeo.com/quality-of-life/rankings.jsp	Y
Quality Of Living City Rankings	Mercer	https://mobilityexchange.mercer.com/Insights/quality-of-living-rankings	Y
Share Of Renewables In Electricity Production	Enerdata Statistical Yearbook	https://yearbook.enerdata.net/download/	N
Share Of Wind And Solar In Electricity Production	Enerdata Statistical Yearbook	https://yearbook.enerdata.net/download/	N
Sovereign Green Bond (Y/N)	Climate Bonds	https://www.climatebonds.net/2021/11/cop26-briefing-sovereign-green-bond-issuance-takes-start-long-boom	N
Stock Exchanges With A Green Bond Segment (Y/N)	CBI	https://www.climatebonds.net/green-bond-segments-stock-exchanges	Y
Sustainable Cities Index	Arcadis	https://www.arcadis.com/en/global/our-perspectives/sustainable-cities-index-2018/citizen-centric-cities/	N
Sustainable Economic Development	Boston Consulting Group	https://www.bcg.com/en-gb/publications/2021/prioritizing-societal-well-being-seda-report	N
Sustainable Stock Exchanges (Y/N)	UN Sustainable Stock Exchange Initiative	https://sseinitiative.org/exchanges-filter-search/	N
World Energy Trilemma Index	World Energy Council	https://trilemma.worldenergy.org/	N
Urban Mobility Readiness Index	Oliver Wyman	https://www.oliverwymanforum.com/mobility/urban-mobility-readiness-index/ranking.html	Y
The Green Future Index	MIT Technology Review	https://www.technologyreview.com/2023/04/05/1070581/the-green-future-index-2023/	N
The Global Green Economy Index	Dual Citizen	https://dualcitizeninc.com/global-green-economy-index/	N
The Future Growth Report	WEF	https://www3.weforum.org/docs/WEF_Future_of_Growth_Report_2024.pdf	New

Table 32 | Human Capital Factors

Instrumental Factor	Source	Website	Updated
Average Wages	OECD	https://data.oecd.org/earnwage/average-wages.htm	Y
Adjusted Net National Income Per Capita	World Bank	https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD	Y
Corruption Perception Index	Transparency International	https://www.transparency.org/en/cpi/2023	N
Cost Of Living City Rankings	Mercer	https://www.mercer.com/our-thinking/career/cost-of-living.html	N
Crime Index	Numbeo	http://www.numbeo.com/crime/rankings.jsp#	Y
Educational Attainment, At Least Bachelor's Or Equivalent, Population 25+, Total (%)	World Bank	https://data.worldbank.org/indicator/SE.TER.CUAT.BA.ZS	Y
Employees Working Very Long Hours	OECD	https://stats.oecd.org/Index.aspx?DataSetCode=BLI	N
English Proficiency	Education First	https://www.ef.com/wwen/epi/	Y
GDP Per Person Employed (Constant 2017 PPP \$)	World Bank	https://databank.worldbank.org/reports.aspx?source=world-development-indicators&series=SL.GDP.PCAP.EM.KD	N
Global Cities Index	AT Kearney	https://www. Kearney.com/service/global-business-policy-	Y
Global Health Security Index	Nuclear Threat Initiative, Johns Hopkins Center for Health Security, and Economist Impact	https://www.ghsindex.org/	N
Global Innovation Index	WIPO	http://www.globalinnovationindex.org/content.aspx?page=GII-Home	Y
Global Peace Index	Institute for Economics & Peace	https://www.visionofhumanity.org/maps/#/	Y
Global Skills Index	Coursera	https://www.coursera.org/skills-reports/global	N
Global Terrorism Index	Institute for Economics & Peace	https://www.visionofhumanity.org/maps/global-terrorism-index/#/	N
Good Country Index	Good Country Party	https://www.goodcountry.org/index/results	Y
Government Effectiveness	World Bank	http://info.worldbank.org/governance/wgi/	Y
Gross Tertiary Graduation Ratio	The World Bank Gender Data Portal	https://liveprod.worldbank.org/en/indicator/se-ter-cmpl-zs?gender=total	N
Health Care Index	Numbeo	http://www.numbeo.com/health-care/rankings.jsp	Y
Henley Passport Index	Henley Partners	https://www.henleypassportindex.com/passport	Y
Homicide Rates	UNODC	https://dataunodc.un.org/dp-intentional-homicide-victims	N
Household Net Financial Wealth	OECD	https://stats.oecd.org/Index.aspx?DataSetCode=BLI	N
Human Development Index	UNDP	https://www.undp.org/arab-states/publications/human-	N
Human Freedom Index	Cato Institute	https://www.cato.org/human-freedom-index	N
Individual Income Tax Rates	PWC	https://taxsummaries.pwc.com/quick-charts/personal-income	N
Innovation Cities Global Index	2ThinkNow Innovation Cities	https://innovation-cities.com/world-city-rankings/	N
International IP Index	U.S. Chamber of Commerce	https://www.uschamber.com/intellectual-property/2023-	N
Legatum Prosperity Index	Legatum Institute	http://www.prosperity.com/#1/ranking	N
Life Expectancy At Birth, Total	World Bank	https://data.worldbank.org/indicator/SP.DYN.LE00.IN	Y
Number Of High Net Worth Individuals	Capgemini	https://www.worldwealthreport.com/	N
Number Of Meetings	ICCA	https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/iccaweb/ICCA_Rankings_2023_230707_795d8dd3-	New
Oecd Country Risk Classification	OECD	http://www.oecd.org/trade/topics/export-credits/documents/	N
Open Government	World Justice Project	http://worldjusticeproject.org/rule-of-law-index	Y
Patent Applications, Residents	World Bank	https://data.worldbank.org/indicator/IP.PAT.RESD?	Y
People Near Services	ITDP	https://pedestriansfirst.itdp.org/	N
Personal Tax Rates	OECD	https://stats.oecd.org/index.aspx?DataSetCode=TABLE_I6	N
Political Stability And Absence Of Violence/ Terrorism	World Bank	http://info.worldbank.org/governance/wgi/	Y

Table 32 | (Continued) Human Capital Factors

Instrumental Factor	Source	Website	Updated
Press Freedom Index	Reporters Without Borders (RSF)	https://rsf.org/en/index?year=2024	N
Prime International Residential Index	Knight Frank	https://www.knightfrank.com/wealthreport	N
Proportion Of Seats Held By Women In National Parliament	World Bank	https://data.worldbank.org/indicator/SG.GEN.PARL.ZS	N
Purchasing Power Index	Numbeo	https://www.numbeo.com/quality-of-life/rankings.jsp?title=2024&displayColumn=1	Y
Ratio of Female to Male Labor Force Participation Rate	World Bank	https://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS	N
Regulatory Quality	World Bank	http://info.worldbank.org/governance/wgi/	Y
Tax Revenue As Percentage Of GDP	World Bank	https://databank.worldbank.org/reports.aspx?source=2&series=GC.TAX.TOTL.GD.ZS&country=#	Y
Travel & Tourism Development Index	World Economic Forum	https://www3.weforum.org/docs/WEF_Travel_Tourism_Development_2021.pdf	N
World Talent Rankings	IMD	https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-talent-ranking/	Y

Table 33 | Business Factors

Instrumental Factor	Source	Website	Updated
Broad Stock Index Levels	The World Federation of Stock Exchanges	https://focus.world-exchanges.org/issue/december-2024/market-statistics	Y
Capitalisation Of Stock Exchanges	The World Federation of Stock Exchanges	https://focus.world-exchanges.org/issue/december-2024/market-statistics	Y
Common Law Countries	CIA	https://www.cia.gov/the-world-factbook/countries/	N
Corporate Tax Rates	PWC	https://taxsummaries.pwc.com/quick-charts/corporate-income-tax-cit-rates	N
Country Brand Ranking	Bloom Consulting	https://www.bloom-consulting.com/en/pdf/rankings/Bloom_Consulting_Country_Brand_Ranking_Tourism.pdf	N
Democracy Index	The Economist	https://www.eiu.com/n/campaigns/democracy-index-2023/	N
Domestic Credit To Private Sector (% Of GDP)	World Bank	https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS?most_recent_value_desc=false	N
Economic Freedom	The Heritage Foundation	https://www.heritage.org/index/ranking	N
External Positions Of Central Banks As A Share Of GDP	The Bank for International Settlements	https://data.bis.org/topics/LBS/tables-and-dashboards/BIS_LBS_A2_1_0	Y
FATF AML Effectiveness	FATF	http://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html	N
FDI Inward Stock (In Million Dollars)	UNCTAD	https://unctad.org/publication/world-investment-report-2024	N
Financial Secrecy Index	Tax Justice Network	http://www.financialsecrecyindex.com/	N
Foreign Direct Investment Inflows	UNCTAD	https://unctadstat.unctad.org/datacentre/dataviewer/US.FdiFlowsStock	Y
GINI Index	World Bank	https://data.worldbank.org/indicator/SI.POV.GINI	N
Global Business Complexity Index	TMF Group	https://www.tmf-group.com/en/news-insights/press-releases/gbci-rankings-revealed-2024/	N
Global Connectedness Index	DHL	https://www.dhl.com/global-en/spotlight/globalization/global-connectedness-index.html	N
Global Services Location	AT Kearney	https://www.kearney.com/service/digital/gslj	N
Government Debt As % Of GDP	IMF	https://www.imf.org/external/datamapper/GG_DEBT_GDP@GDD/SWE	Y

Table 33 | (Continued) Business Factors

Instrumental Factor	Source	Website	Updated
Jurisdictions Participating In The Convention On Mutual Administrative Assistance In Tax Matters	OECD	https://www.oecd.org/ctp/exchange-of-tax-information/Status_of_convention.pdf	Y
Level Of Internet Freedom	Freedom House	https://freedomhouse.org/countries/freedom-net/scores	Y
Net External Positions Of Banks	The Bank for International Settlements	https://data.bis.org/topics/LBS/tables-and-dashboards/BIS_LBS_A3_1_0	Y
Number Of Tax Treaties	ICTD	https://www.treaties.tax/en/data/	N
Open Budget Survey	International Budget Partnership	http://survey.internationalbudget.org/#download	N
Percentage Of Firms Using Banks To Finance Investment	World Bank	http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&series=IC.FRM.BNKS.ZS	N
Real Interest Rate	World Bank	https://databank.worldbank.org/reports.aspx?source=world-development-indicators&series=FR.INR.RINR	Y
Safe Cities Index	The Economist	https://safecities.economist.com/	N
The Global Financial Centres Index	Z/Yen	https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/	Y
The Global Fintech Index	Findexable	https://findexable.com/	N
Total Net Assets Of Regulated Open-End Funds	Investment Company Institute	http://www.icifactbook.org/	N
TRACE Bribery Risk Matrix	Trace International	https://matrixbrowser.traceinternational.org/	Y
Value Of Bond Trading	The World Federation of Stock Exchanges	https://statistics.world-exchanges.org/ReportGenerator/Generator#	Y
Value Of Share Trading	The World Federation of Stock Exchanges	https://focus.world-exchanges.org/issue/december-2024/market-statistics	Y
Volume Of Share Trading	The World Federation of Stock Exchanges	https://statistics.world-exchanges.org/ReportGenerator/Generator#	Y
World Competitiveness Scoreboard	IMD	https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-competitiveness-ranking/rankings/wcr-rankings/#_tab_List	N
Blavatnik Index Of Public Administration	University of Oxford	https://index.bsg.ox.ac.uk/posts/overall_results/	New
Liner Shipping Connectivity Index	World Bank	http://databank.worldbank.org/data/reports.aspx?source=2&series=IS.SHP.GCNW.XQ	N
Global Cities Outlook ranking	Kearney	https://www.kearney.com/service/global-business-policy-council/gcr/2024-full-report	New

Table 34 | Infrastructure Factors

Instrumental Factor	Source	Website	Updated
Agility Emerging Markets Logistics Index	Agility	https://www.agility.com/en/emerging-markets-logistics-index/rankings/	N
INRIX Traffic Scorecard	INRIX	http://inrix.com/scorecard/	N
International Construction Cost Index	Arcadis	https://www.arcadis.com/en/knowledge-hub/perspectives/global/international-construction-costs	N
JLL Real Estate Transparency Index	Jones Lang LaSalle	https://www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index	Y
Logistics Performance Index	World Bank	http://lpi.worldbank.org/international/global	N
Metro Network Length	Metro Bits	http://mic-ro.com/metro/table.html	N
Railways Per Land Area	CIA	https://www.cia.gov/the-world-factbook/field/railways/country-comparison	Y
Refined Oil Products Production	Enerdata Statistical Yearbook	https://yearbook.enerdata.net/download/	N
Roadways Per Land Area	CIA	https://www.cia.gov/the-world-factbook/field/roadways/country-comparison	N
Smart City Index	IMD	https://www.imd.org/smart-city-observatory/smart-city-index/	N
Telecommunication Infrastructure Index	UN	https://publicadministration.un.org/egovkb/en-us/Data-Center	Y
TomTom Traffic Index	TomTom	https://www.tomtom.com/en_gb/traffic-index/ranking/	N

Vantage

Financial Centres

Vantage Financial Centres is an exclusive network of financial centres around the world looking for a deeper understanding of financial centre competitiveness. Members receive enhanced access to GGFI and GFCI data, marketing opportunities, and training for centres seeking to enhance their profile and reputation.



Established in 2001, the Financial Services Commission, Mauritius ("FSC") is the integrated regulator for the non-bank financial services sector and global business and is mandated to license, regulate, and supervise the conduct of business activities in the non-bank financial services sector and global business.

Our vision is to be an internationally recognised financial supervisor committed to the sustained development of Mauritius as a sound and competitive financial services centre.

The FSC aims to:

- promote the development, fairness, efficiency and transparency of financial institutions and capital markets;
- suppress crime and malpractices so as to provide protection to members of the public investing in non-banking financial products; and
- ensure the soundness and stability of the financial system in Mauritius.

fscmauritius@intnet.mu
www.fscmauritius.org



Since 2009 Busan Metropolitan City has been developing a financial hub specialising in maritime finance and derivatives. With its strategic location in the center of the southeast economic block of Korea and the crossroads of a global logistics route, Busan envisions growing into an international financial city in Northeast Asia. Busan Finance Center (BFC) will continue to develop and implement measures to promote Busan as the financial hub and bolster the local financial industry, while working together with various local economic players to pursue sustainable growth of the financial sector including FinTech. These efforts will enable BFC to play a leading role in taking Busan to the next level and become the international financial center and maritime capital of Northeast Asia.

BFC offers an attractive incentive package to global financial leaders and cooperation network of Busan Metropolitan City, and Busan Finance Center will support you to identify opportunities in Busan, one of the fastest developing cities in Asia.

info@kbfc.or.kr
www.kbfc.or.kr/eng/



The Astana International Financial Centre (AIFC) serves as a leading financial hub in the Central Asian and Eastern European region, integrating advanced capabilities and best practices from prominent financial centres around the world. It is the first in the region to establish a comprehensive legal framework designed to attract, protect, and facilitate investment, grounded in business-friendly laws that reflect the principles, norms, and precedents of the law of England and Wales, as well as the standards of the world's leading financial centres.

The AIFC offers its participants and investors exceptional conditions and opportunities, including an independent judiciary, an IOSCO-recognised regulatory framework, a diverse range of financial services and instruments, streamlined visa and employment procedures, and a zero corporate tax rate for licensed companies.

The AIFC is currently home to over 3,000 companies from 82 countries, including the US, UK, EU, China, Turkey, Hong Kong, Singapore and the Middle East.

Since its inception, investments facilitated through the AIFC platform have exceeded \$12 billion, highlighting its key role in driving economic growth and development in Kazakhstan.

www.aifc.kz



Supported by the industry, the Financial Services Development Council (FSDC) is a high-level, cross-sectoral advisory body to the Hong Kong Special Administrative Region Government.

FSDC formulates proposals to promote the further development of Hong Kong's financial services industry and to map out the strategic direction for the development. As of March 2020, 110 of the 137 policy recommendations had been adopted by the Government and relevant regulators since FSDC's inception in 2013. On top of research, FSDC also carries out market promotion and human capital development functions.

Among others, FSDC focuses on topics including Mainland and international connectivity, green and sustainable finance, FinTech, as well as asset and wealth management.

enquiry@fsdc.org.hk
<https://www.fsdc.org.hk/en>

Vantage

Financial
Centres

Please find out more at: www.vantagefinancialcentres.net or by contacting Mike Wardle at mike_wardle@zyen.com



The [Taiwan Academy of Banking and Finance](http://www.tabf.org.tw) (TABF) is the foremost non-profit institution serving Taiwan's banking industry, and a trusted platform promoting the development and advancement of Taiwan's financial services. Advised by the Financial Supervisory Commission (FSC), it was established in 2000 through the merger of the Banking Institute of the Republic of China (BIROC) and the Banking and Finance Institute (BFI), and remains committed to fostering a modern, resilient, and inclusive financial system for a changing world.

TABF brings together stakeholders across the industry to provide opportunities for talent development, knowledge sharing, and networking. Working closely with both domestic and international partners, TABF provides customized and innovative financial training and certification solutions for the banking sector. Furthermore, it has also been working to improve the financial wellness of the public through financial literacy education, aiming to shape a banking sector that serves all of society.

In a nutshell, TABF is a unique and comprehensive platform committed to fostering a sustainable and inclusive banking industry, making it an essential organization in Taiwan and a valuable partner for the global financial community.



Casablanca Finance City is an African financial and business hub located at the crossroads of continents. Recognized as the leading financial center in Africa, and partner of the largest financial centers in the world, CFC has built a strong and thriving community of members across four major categories: financial companies, regional headquarters of multinationals, service providers and holdings.

CFC offers its members an attractive value proposition and a premium "Doing Business" support that fosters the deployment of their activities in Africa. Driven by the ambition to cater to its community, CFC is committed to promoting its members expertise across the continent, while enabling fruitful business and partnership synergies through its networking platform.

Selma Bennis at Selma.Bennis@cfca.ma

www.casablancafinancecity.com



[Dubai International Financial Centre](http://www.difc.ae) (DIFC) is one of the world's most advanced financial centres, and the leading financial hub for the Middle East, Africa and South Asia (MEASA) region, which comprises 72 countries with an approximate population of 3 billion and a nominal GDP of US\$ 7.7 trillion.

DIFC is home to an internationally recognised, independent regulator and a proven judicial system with an English common law framework, as well as the region's largest financial ecosystem of more than 24,000 professionals working across over 2,300 active registered companies – making up the largest and most diverse pool of industry talent in the region. The Centre's vision is to drive the future of finance. Today, it offers one of the region's most comprehensive FinTech and venture capital environments, including cost-effective licensing solutions, fit-for-purpose regulation, innovative accelerator programmes, and funding for growth-stage start-ups.

Comprising a variety of world-renowned retail and dining venues, a dynamic art and culture scene, residential apartments, hotels and public spaces, DIFC continues to be one of Dubai's most sought-after business and lifestyle destinations.

Twitter @DIFC
www.difc.ae



The Long Finance initiative grew out of the London Accord, a 2005 agreement among investment researchers to share environmental, social and governance research with policy-makers and the public. Long Finance was established more formally by Z/Yen Group and Gresham College from 2007 with the aim of exploring long-term thinking across a global network of people.

We work on researching innovative ways of building a more sustainable financial system. In so doing, we try to operate openly and emulate scientific ideals. At the same time, we are looking to create a supportive and caring community where people can truly question the accepted paradigms of risk and reward.

www.longfinance.net

Vantage

Financial Centres

Vantage Financial Centres is an exclusive network of financial centres around the world looking for a deeper understanding of financial centre competitiveness. Members receive enhanced access to GGFI and GFCI data, marketing opportunities, and training for centres seeking to enhance their profile and reputation.



Seoul is a rising star among the financial cities of the world. It is already one of the top 10 cities in the world based on various indices, and it has many more opportunities to offer as a financial hub and great growth potential. Seoul believes global financial companies are our true partners for growth. There are many incentives provided to global financial companies that enter into Seoul, such as the financial incentives provided when moving into IFC, so that we can all jointly work towards the growth and development of the financial market.

It is sure that Seoul will become a top star of global financial hubs in the near future! Pay close attention to Seoul's potentials and pre-emptively gain a foothold in the Seoul financial hub. Seoul is the gateway to Northeast Asia and the world.

**Youkyung Cho at youkyung_cho@seoul.go.kr
www.seoul.go.kr/main/index.jsp**



Scottish Financial Enterprise (SFE) is the representative body for Scotland's financial services industry.

Our member companies range in size from global organisations headquartered in Scotland, to international companies with substantial operations in Scotland through to small, locally-based fintechs and support companies drawn from all areas of financial and related professional services.

SFE's vision is to promote a stronger, more inclusive and sustainable financial and related professional services industry that can play its part in solving the big challenges of our time, both locally and globally.

<https://www.sfe.org.uk/>



Kigali International Financial Centre, KIFC, is Rwanda's financial centre facilitating international investment and cross-border transactions in Africa. KIFC was established in 2020 and positions Rwanda as a preferred financial jurisdiction for investments into Africa by providing an attractive destination for investors, with a robust legal and regulatory framework fully compliant with international standards and competitive tax structures, including a network of double tax treaties.

KIFC attracts regional and international investors such as Pan-African based investment funds, asset managers and administrators, regional holding structures, foundations, and global trading firms.

In addition, with its niche focus on Fintech, KIFC offers FinTechs a framework to pilot their business models in a controlled environment before expanding into the wider African market.

**<https://www.rfl.rw/>
info@rfl.rw**



Approved by the China's State Council, China Development Institute (CDI) was founded in 1989 with 116 representatives from the government, academia and business in China. Being an independent think tank, CDI is committed to develop policy solutions via research and debates that help to advance China's reform and opening-up. After years of development, CDI has become one of the leading think tanks in China. CDI focuses on the studies of open economy and innovation-driven development, regional economy and regional development, industrial policies and industrial development, urbanization and urban development, business strategies and investment decision-making. Via conducting research, CDI provides policy recommendations for the Chinese governments at various levels and develops consultation for corporate sectors at home and abroad. CDI organizes events in different formats that evokes dialogue among scholars, government officials, business people and civil society members around the globe. Based in Shenzhen, Southern China, CDI has one hundred and sixty staff, with an affiliated network that consists of renowned experts from different fields.

**Carol Feng at carolf@cdi.org.cn
www.cdi.org.cn**

PRODUCED BY Z/YEN GROUP



www.zyen.com

Z/Yen helps organisations make better choices - our clients consider us a commercial think-tank that spots, solves and acts. Our name combines Zen and Yen - 'a philosophical desire to succeed' - in a ratio, recognising that all decisions are trade-offs. One of Z/Yen's specialisms is the development and publication of research combining factor analysis and perception surveys.

THE GLOBAL GREEN FINANCE INDEX



www.greenfinanceindex.net

The Global Green Finance Index provides a measure of how financial centres are responding to the challenge of developing a sustainable economy, enabling centres to compare their performance with their peers, improve policy makers' understanding of the drivers of green growth, and assist them in shaping the financial system to support sustainability goals.

SUSTAINABLE FUTURES



<https://www.longfinance.net/programmes/sustainable-futures/>

The sustainable futures programme focuses on ways in which the financial system supports the transition to a sustainable economic model. Alongside the GGFI, the programme supports the [London Accord](#), a free to access collection of over 700 environmental social and governance research reports from over 120 financial services, NGO, academic and policy making institutions.

PUBLISHED BY LONG FINANCE AND FINANCIAL CENTRE FUTURES



www.longfinance.net

Long Finance is a Z/Yen initiative designed to address the question "**When would we know our financial system is working?**" This question underlies Long Finance's goal to improve society's understanding and use of finance over the long-term. In contrast to the short-termism that defines today's economic views the Long Finance timeframe is roughly 100 years.



www.financialcentrefutures.net

Financial Centre Futures is a programme within the Long Finance initiative that initiates discussion on the changing landscape of global finance. Financial Centre Futures comprises the Global Green Finance Index and other research publications that explore major changes to the way we will live and work in the financial system of the future.