

Global Green Finance Index 4 Global Launch



27 September 2019

House Of Startups, Luxembourg

Hosted By Luxembourg For Finance



Agenda

11:45 Welcome And Introduction

Nicolas Mackel, CEO Luxembourg For Finance

11:50 Keynote Presentation

Flavia Micilotta, Director, Luxembourg Green Exchange

12:00 GGFI 4 Results Measuring Green Finance

Mike Wardle, Head of Indices, Z/Yen

12:30 Focus on Biodiversity

Greg Ford, Senior Advisor, Projects & Strategy, Finance Watch

12:40 Questions

12:55 Concluding Remarks

Nicolas Mackel

13:00 Reception And Refreshments

Welcome And Introduction

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Nicolas Mackel CEO Luxembourg For Finance



Keynote Presentation

Flavia Micilotta
Director
Luxembourg Green Exchange



GGFI 4 Results

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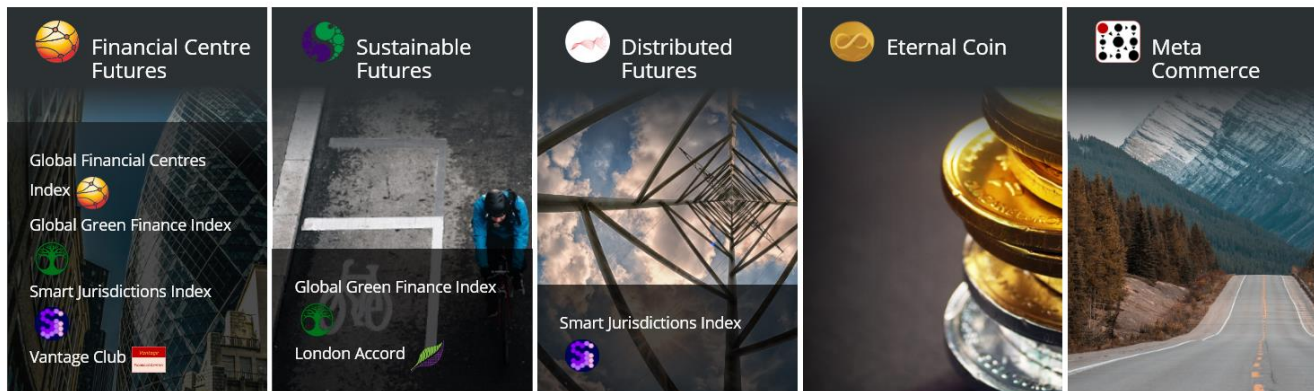
Mike Wardle
Head Of Indices
Z/Yen Group



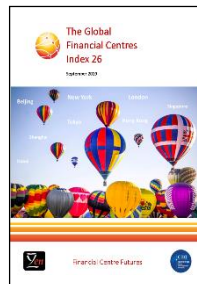
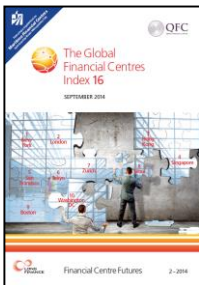
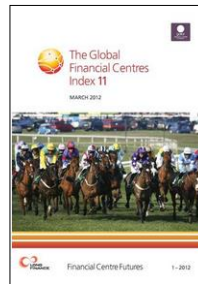
Long Finance

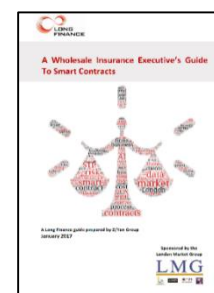
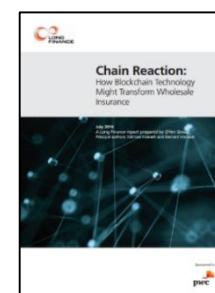
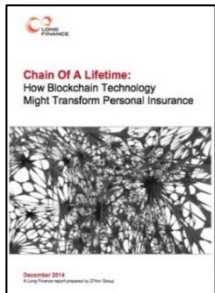
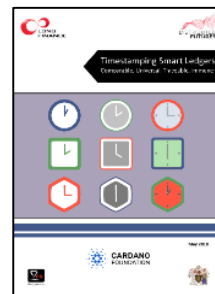
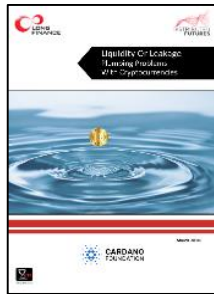
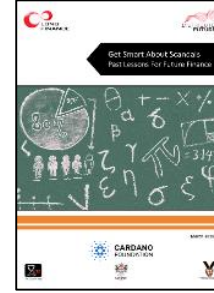
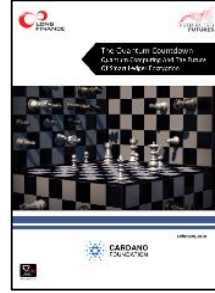
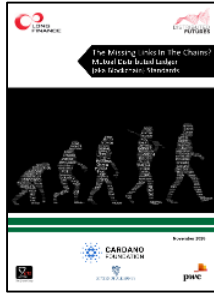
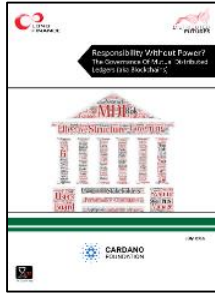
“When Would We Know Our Financial System Is Working?”

This is the question underlying 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 view, the Long Finance time-frame is roughly 100 years.



Financial Centre Research





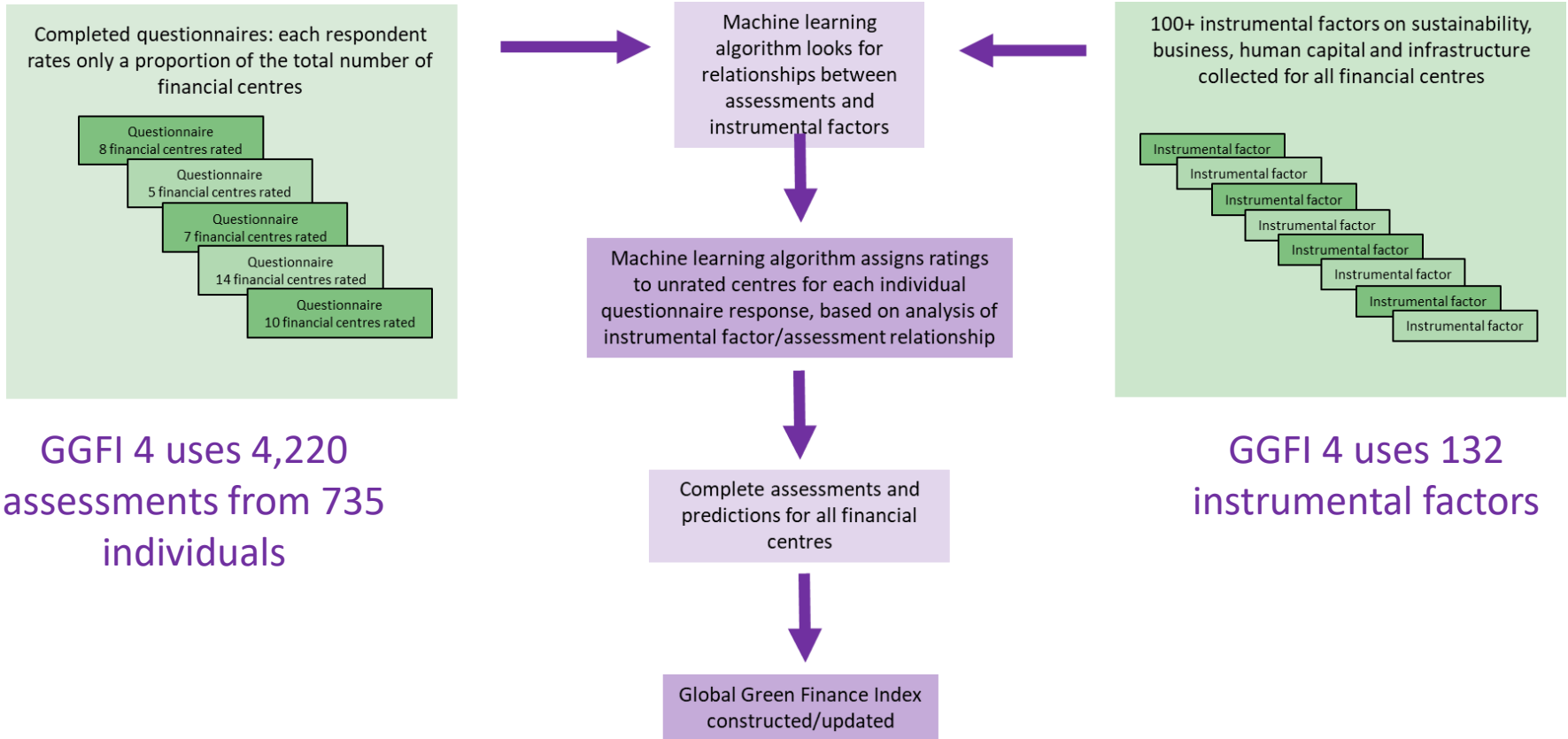
The Global Green Finance Index

- ◆ Initiative sponsored by the MAVA Foundation and delivered by Finance Watch and Long Finance
- ◆ Aims to:
 - encourage financial centres to become greener, and the financial system to deliver sustainability
 - encourage collaboration and competition
 - help to catalyse growth in this sector, and help policy makers' understanding of what makes a financial centre 'green'

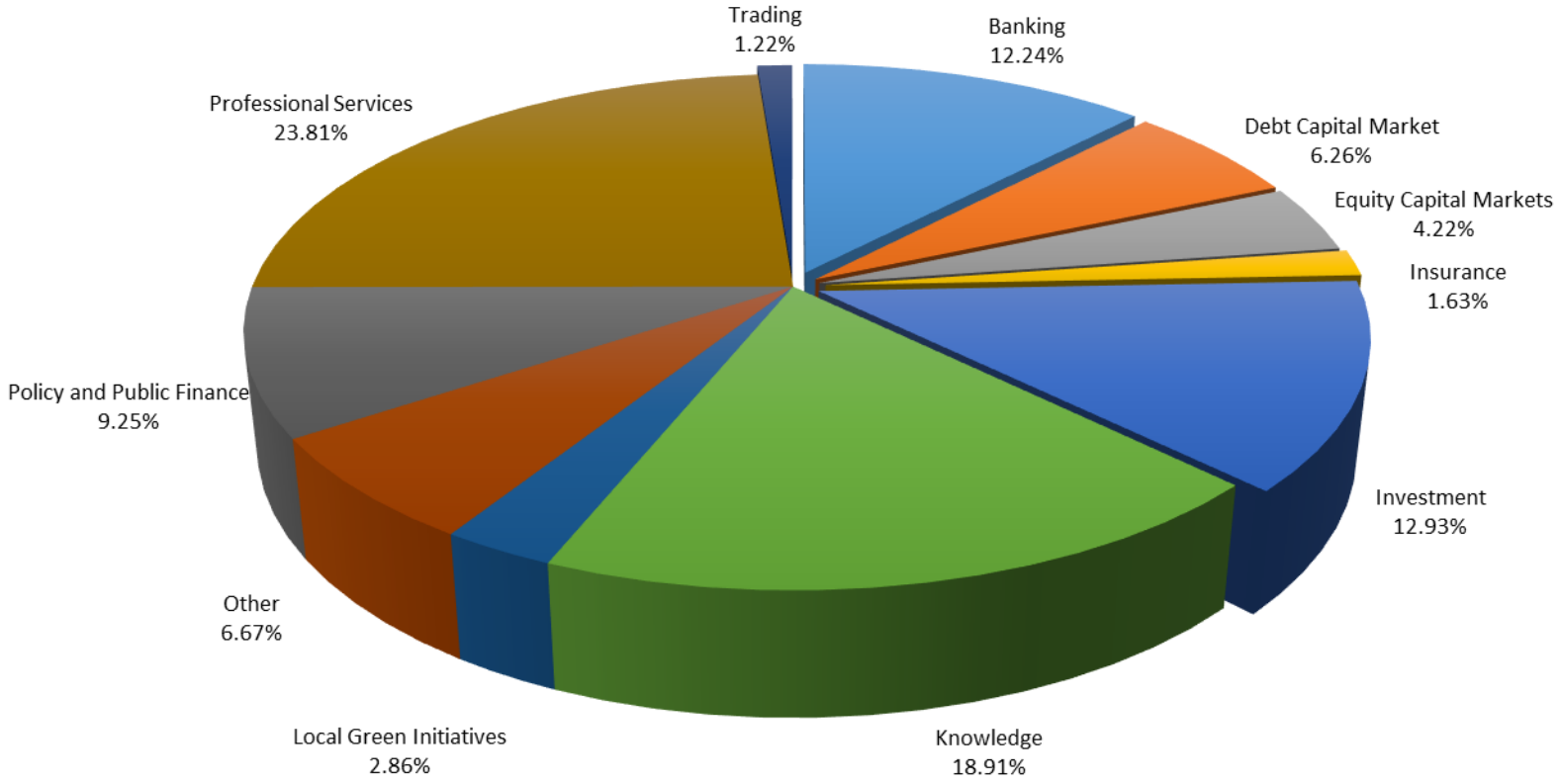
Definitions

- ◆ **Financial Centres** - UNEP defines financial centres as “cities with an intense concentration of financial activity involving an interlocking set of financial sectors and transactions”.
- ◆ **Green Finance** - refers to any financial instrument or financial services activity – which results in positive change for the environment and society over the long term (sustainability). The most basic “greenness” criterion of a company or project is that it contributes to reducing the emission of Greenhouse Gases.

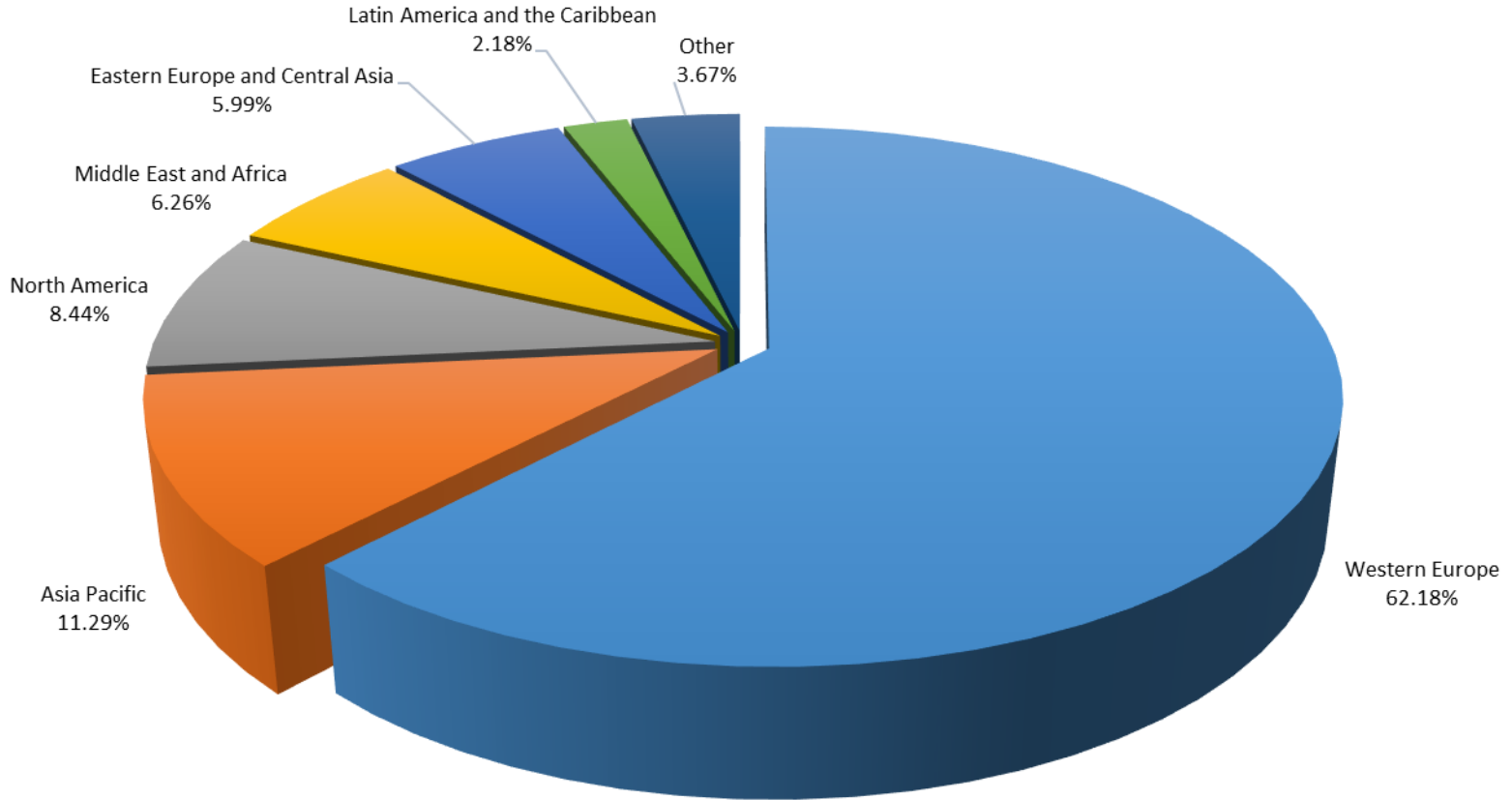
Factor Assessment Index



Respondents By Sector

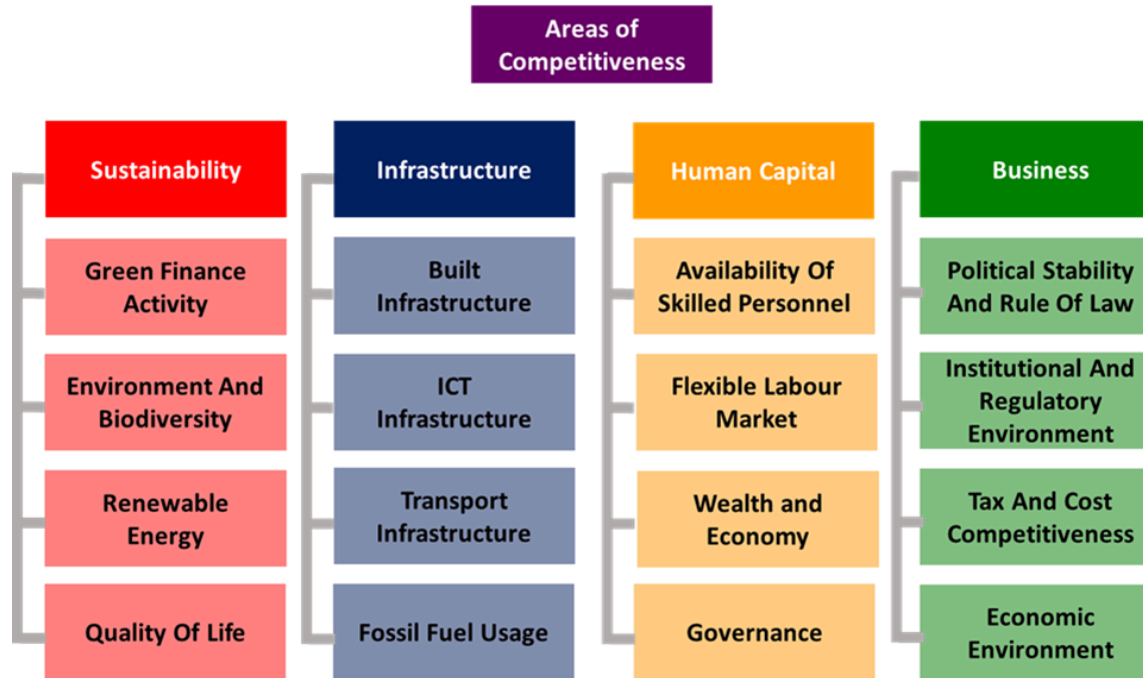


Respondents By Region



Total Respondents 735
Total Assessments 4,220

Instrumental Factors



◆ **Top Factors By R Squared Correlation:**

- Arcadis Sustainable Cities Index;
- Mercer Quality of Living City Rankings;
- Yale Environmental Performance Index;
- OECD Water Quality Index;
- The IMD World Talent Rankings;
- The Ericsson Networked Society City Index.

Depth & Quality

- ◆ GGFI measures depth and quality
 - The depth question in our survey focuses on green finance intensity, asking users to rate financial centres on how much of their overall financial offering they consider to be “green”
 - The quality question asks users to rate centres on their perception of the quality of each centre’s green finance offering
- ◆ Measurement of both factors is important to understand the balance between green and brown finance as well as the quality of advice and delivery in centres

Headlines – Depth Top 10

| Centre | Rank | Rating | Change in Rank |
|------------|------|--------|----------------|
| Amsterdam | 1 | 471 | ▶ 0 |
| Luxembourg | 2 | 459 | ▲ 1 |
| Copenhagen | 3 | 455 | ▼ -1 |
| Stockholm | 4 | 453 | ▲ 1 |
| Zürich | 5 | 452 | ▼ -3 |
| London | 6 | 447 | ▼ -1 |
| Paris | 7= | 440 | ▶ 0 |
| Hamburg | 7= | 440 | ▲ 3 |
| Montréal | 9 | 439 | ▼ -1 |
| Vancouver | 10 | 424 | ▼ -1 |

Headlines – Quality Top 10

| Centre | Rank | Rating | Change In Rank |
|------------|------|--------|----------------|
| London | 1 | 497 | ▶ 0 |
| Amsterdam | 2 | 479 | ▲ 1 |
| Paris | 3 | 477 | ▼ -1 |
| Hamburg | 4 | 476 | ▶ 0 |
| Zürich | 5 | 473 | ▶ 0 |
| Copenhagen | 6 | 466 | ▲ 1 |
| Stockholm | 7= | 465 | ▼ -1 |
| Luxembourg | 7= | 465 | ▲ 1 |
| Munich | 9 | 458 | ▶ 0 |
| Brussels | 10 | 452 | ▲ 2 |

Depth And Quality



- ◆ Close correlation between the assessments of each factor by respondents.
- ◆ However, some major, long-established centres such as New York, London and Paris score higher for quality than depth.

Sustainability Factor Ranking

Running the GGFI model using only the instrumental factors relating to sustainability gives a different picture – Zurich gains strongly on this analysis

| Rank | All Factors | | Sustainability Factors | |
|------|--------------|-----------------|------------------------|---------------|
| | Depth | Quality | Depth | Quality |
| 1 | Amsterdam | London | Zürich +4 | London |
| 2 | Luxembourg | Amsterdam | Luxembourg | Zürich +3 |
| 3 | Copenhagen | Paris | London +3 | Paris |
| 4 | Stockholm | Hamburg | Copenhagen -1 | Copenhagen +2 |
| 5 | Zürich | Zürich | Amsterdam -4 | Amsterdam -3 |
| 6 | London | Copenhagen | Paris +1 | Luxembourg -4 |
| 7 | Paris | Stockholm | Stockholm -3 | Munich +2 |
| 8 | Hamburg (7=) | Luxembourg (7=) | Vancouver +2 | Hamburg -4 |
| 9 | Montréal | Munich | Toronto +4 | Stockholm -2 |
| 10 | Vancouver | Brussels | Munich +1 | Geneva +1 |

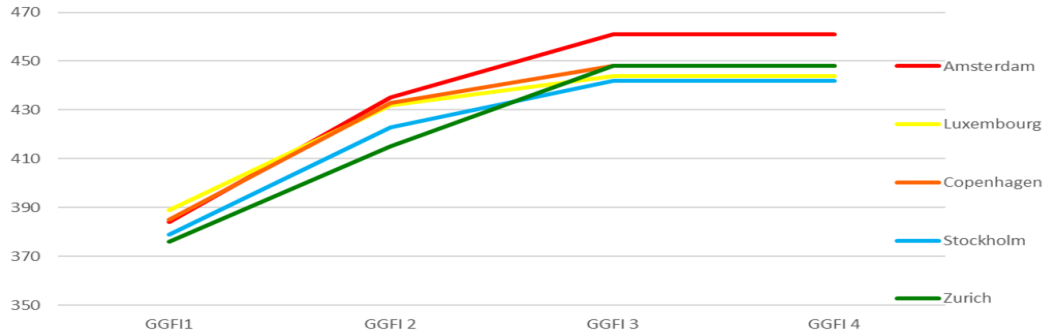
Leading Financial Centres

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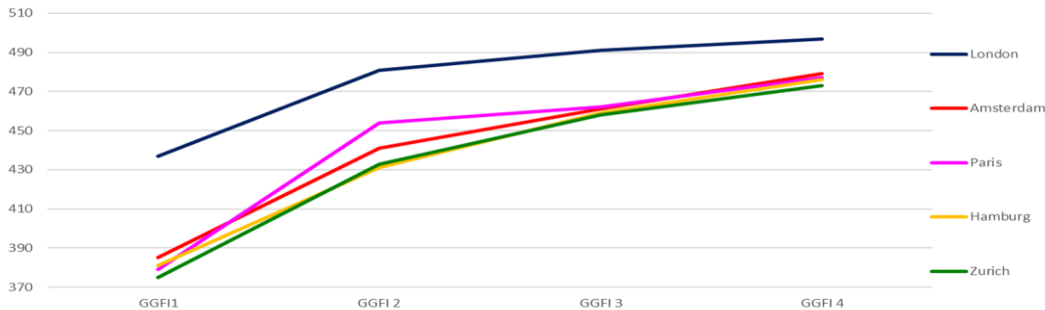
| Centre | Green Finance Depth | Green Finance Quality | Financial Centre Competitiveness |
|-----------|---------------------|-----------------------|----------------------------------|
| New York | 41 | 29 | 1 |
| London | 6 | 1 | 2 |
| Hong Kong | 35 | 40 | 3 |
| Singapore | 24 | 21 | 4 |
| Shanghai | 11 | 28 | 5 |
| Tokyo | 32 | 24 | 6 |
| Beijing | 19 | 25 | 7 |
| Dubai | 52 | 53 | 8 |
| Shenzhen | 21 | 31 | 9 |
| Sydney | 15 | 17 | 10 |
| Source | GGFI 4 Depth Rank | GGFI 4 Quality Rank | GFCI 26 Rank |

- ◆ Some leading financial centres perform less well than expected in the GGFI.
- ◆ Historically, green finance not a leading factor in overall competitiveness as measured by the Global Financial Centres Index.

The top five centres in the index for depth improved their ratings in the first three editions of the GGFI, but their ratings have levelled off in GGFI 4.



On the quality index, the top five centres have continued the improvement in their ratings, although the rate of increase for London has been slower than for the other leading centres.



Headlines – Western Europe

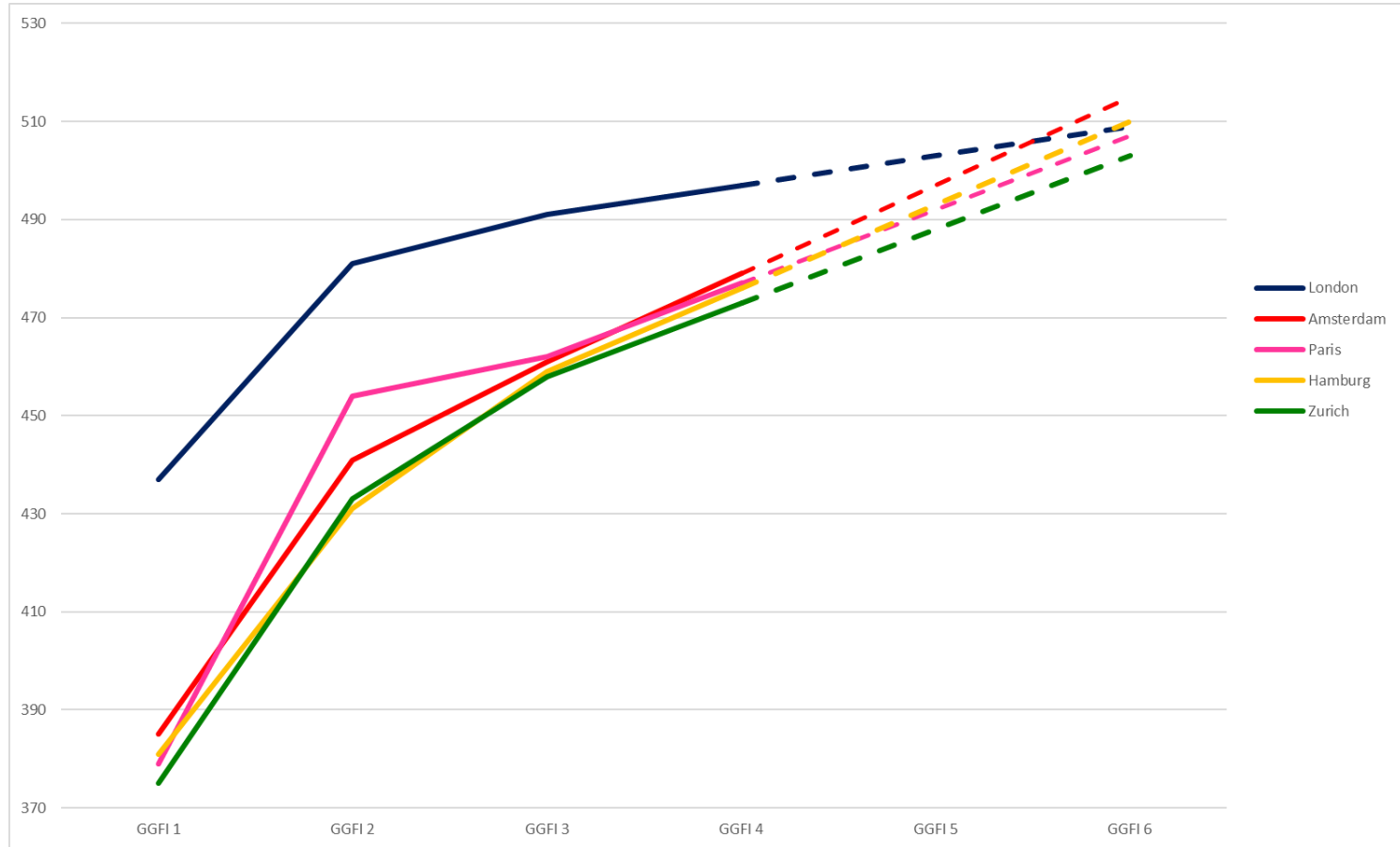
| Depth | | |
|------------|------|--------|
| Centre | Rank | Rating |
| Amsterdam | 1 | 471 |
| Luxembourg | 2 | 459 |
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| Stockholm | 4 | 453 |
| Zürich | 5 | 452 |
| London | 6 | 447 |
| Paris | 7= | 440 |
| Hamburg | 7= | 440 |
| Munich | 11 | 422 |
| Geneva | 15 | 419 |

| Quality | | |
|------------|------|--------|
| Centre | Rank | Rating |
| London | 1 | 497 |
| Amsterdam | 2 | 479 |
| Paris | 3 | 477 |
| Hamburg | 4 | 476 |
| Zürich | 5 | 473 |
| Copenhagen | 6 | 466 |
| Stockholm | 7= | 465 |
| Luxembourg | 7= | 465 |
| Munich | 9 | 448 |
| Brussels | 10 | 444 |

- ◆ Western European centres continue to perform well, with eight of the top ten ranked centres for depth and all ten for quality.
- ◆ In the quality index, London’s improvement in ratings was slower than the main challengers. A straight line trend would see London lose its first place by GGFI 6

Western Europe – Quality Trend

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Headlines – Asia/Pacific

| Depth | | |
|-----------|------|--------|
| Centre | Rank | Rating |
| Shanghai | 11= | 422 |
| Sydney | 15= | 419 |
| Guangzhou | 17= | 416 |
| Beijing | 19 | 415 |
| Shenzhen | 21= | 413 |
| Seoul | 21= | 413 |
| Singapore | 24 | 412 |
| Melbourne | 25 | 411 |
| Tokyo | 32 | 399 |
| Hong Kong | 25 | 392 |

| Quality | | |
|-----------|------|--------|
| Centre | Rank | Rating |
| Melbourne | 15= | 433 |
| Sydney | 17= | 432 |
| Singapore | 21 | 424 |
| Tokyo | 24 | 419 |
| Beijing | 25= | 418 |
| Shanghai | 28 | 417 |
| Shenzhen | 31= | 412 |
| Guangzhou | 39 | 400 |
| Hong Kong | 40 | 399 |
| Seoul | 44= | 388 |

- ◆ Shanghai retained its leading position in the region for depth, with Australian centres leading for quality.
- ◆ Seoul fell in both the depth and quality rankings, although its ratings remained reasonably stable, suggesting that other centres have overtaken its position.

Headlines – North America

| Depth | | |
|---------------|------|--------|
| Centre | Rank | Rating |
| Montréal | 9 | 437 |
| Vancouver | 10 | 424 |
| Toronto | 13 | 420 |
| San Francisco | 17 | 416 |
| Los Angeles | 29 | 405 |
| Washington DC | 33 | 397 |
| Boston | 34 | 393 |
| Calgary | 36 | 391 |
| New York | 41 | 381 |
| Chicago | 42 | 379 |

| Quality | | |
|---------------|------|--------|
| Centre | Rank | Rating |
| San Francisco | 11 | 443 |
| Montréal | 13 | 438 |
| Vancouver | 14 | 435 |
| Toronto | 20 | 426 |
| New York | 29 | 416 |
| Washington DC | 30 | 415 |
| Los Angeles | 33 | 392 |
| Boston | 35 | 408 |
| Calgary | 37 | 404 |
| Chicago | 41 | 393 |

- ◆ Montréal is top in the region for depth, while San Francisco takes top position for quality.
- ◆ Canadian centres continue to outperform the USA both in depth and quality.

Eastern Europe & Central Asia

| Depth | | |
|----------|------|--------|
| Centre | Rank | Rating |
| Prague | 44 | 375 |
| Moscow | 51 | 361 |
| Warsaw | 53 | 359 |
| Istanbul | 57 | 350 |

| Quality | | |
|----------|------|--------|
| Centre | Rank | Rating |
| Prague | 22= | 420 |
| Warsaw | 48 | 386 |
| Istanbul | 58 | 354 |
| Moscow | 62 | 346 |

- ◆ Prague remained the leading centre for depth and quality in the region; but lost a ranking place for depth.
- ◆ Moscow rose five places for depth and it is interesting to note that the first green bond in Russia was issued recently for the electrification of passenger trains.

Latin America & The Caribbean

| Depth | | |
|------------------------|------|--------|
| Centre | Rank | Rating |
| São Paulo | 46 | 374 |
| Cayman Islands | 54 | 356 |
| Rio de Janeiro | 55= | 353 |
| Mexico City | 58= | 349 |
| Bermuda | 60 | 336 |
| British Virgin Islands | 61 | 325 |

| Quality | | |
|------------------------|------|--------|
| Centre | Rank | Rating |
| São Paulo | 43 | 390 |
| Cayman Islands | 50= | 378 |
| Rio de Janeiro | 55= | 358 |
| British Virgin Islands | 57 | 357 |
| Mexico City | 59 | 351 |
| Bermuda | 63 | 342 |

- ◆ São Paulo continued to lead the region for both depth and quality and improved its ranking by three places in the quality measure;
- ◆ The British Virgin Islands and Mexico City fell in both the depth and quality rankings.

Middle East & Africa

| Depth | | |
|--------------|------|--------|
| Centre | Rank | Rating |
| Casablanca | 13 | 420 |
| Tel Aviv | 30 | 401 |
| Mauritius | 43 | 376 |
| Cape Town | 48 | 367 |
| Abu Dhabi | 49 | 362 |
| Dubai | 52 | 360 |
| Johannesburg | 58= | 349 |

| Quality | | |
|--------------|------|--------|
| Centre | Rank | Rating |
| Casablanca | 17 | 432 |
| Tel Aviv | 25 | 418 |
| Cape Town | 46 | 387 |
| Mauritius | 49 | 379 |
| Johannesburg | 50 | 378 |
| Dubai | 53 | 372 |
| Abu Dhabi | 55 | 358 |

- ◆ Casablanca retained its position as the leading centre in the Middle East & Africa. It stayed at 13th place in the depth rankings and fell 2 places to 17th in the quality rankings after gaining 13 places in GGFI 3.
- ◆ New entrant to the index, Tel Aviv, placed second in the region.

Reputational “Advantage” Top 10

Top 10 Centres Assessments and Ratings – Reputational Advantage for Quality in GGFI 4

| Centre | Weighted Average Assessment | GGFI 4 Rating | Reputational Advantage |
|---------------|-----------------------------|---------------|------------------------|
| Casablanca | 496 | 432 | 64 |
| Stockholm | 522 | 465 | 57 |
| Copenhagen | 518 | 466 | 52 |
| San Francisco | 493 | 443 | 50 |
| Hamburg | 523 | 476 | 47 |
| Istanbul | 396 | 354 | 42 |
| Shanghai | 458 | 417 | 41 |
| Montréal | 475 | 438 | 37 |
| Amsterdam | 508 | 479 | 29 |
| Los Angeles | 433 | 408 | 25 |

Reputational “DIS-Advantage”

Bottom 10 Centres Assessments and Ratings –
Reputational Advantage for Quality in GGFI 4

| Centre | Weighted Average Assessment | GGFI 4 Rating | Reputational Advantage |
|------------------------|-----------------------------|---------------|------------------------|
| British Virgin Islands | 286 | 357 | -71 |
| Johannesburg | 307 | 378 | -71 |
| Cayman Islands | 304 | 378 | -74 |
| Bermuda | 249 | 342 | -93 |
| Malta | 308 | 401 | -93 |
| Bangkok | 255 | 348 | -93 |
| New Delhi | 234 | 334 | -100 |
| Isle of Man | 284 | 387 | -103 |
| Mumbai | 213 | 349 | -136 |
| Calgary | 260 | 404 | -144 |

Conclusions

- ◆ Stable policy frameworks appear critical - Strong performance of Western Europe, and the gap between Canada and the US, underline this point
- ◆ Green cities do well – where a centre is focussed on sustainability across the board, green finance is strong
- ◆ Long-established centres with a history of fossil-fuel financing tend to fare worse for depth than quality
- ◆ Premium to be gained from demonstrating leadership in particular sectors or products, for example, Luxembourg on green bonds, Paris on climate change and disclosure, London in relation to insurance and prudential regulation, or ESG equity in Hamburg

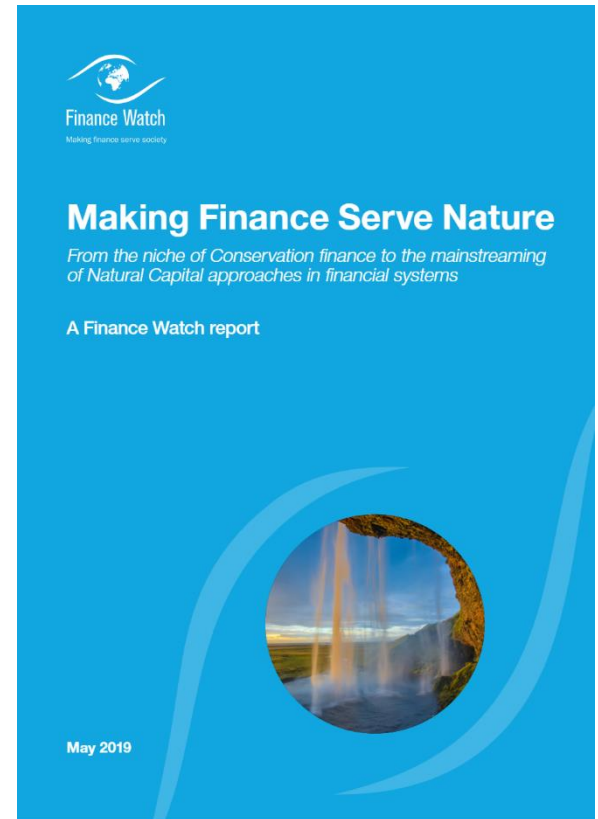
Focus On Biodiversity

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Greg Ford
Senior Advisor, Policy & Strategy
Finance Watch



- ◆ Non-profit NGO working on EU financial regulation and reform
- ◆ 90 Members: consumer organisations, trade unions, think tanks, NGOs, academics...
- ◆ Public interest advocacy to policymakers
- ◆ FW report: “Making Finance Serve Nature”
- ◆ GGFI 4 feature: “Burning Rembrandts”



www.finance-watch.org/topic/sustainable-finance/

Biodiversity Loss

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“The loss of species, ecosystems and genetic diversity is already a global and generational threat to human well-being.” IPBES, May 2019

40% of insect species face extinction

33% of marine fish stocks are overfished

29% of global land is degraded

30% of wild birds in the US and Canada have disappeared

85% of wetlands (area) have been lost

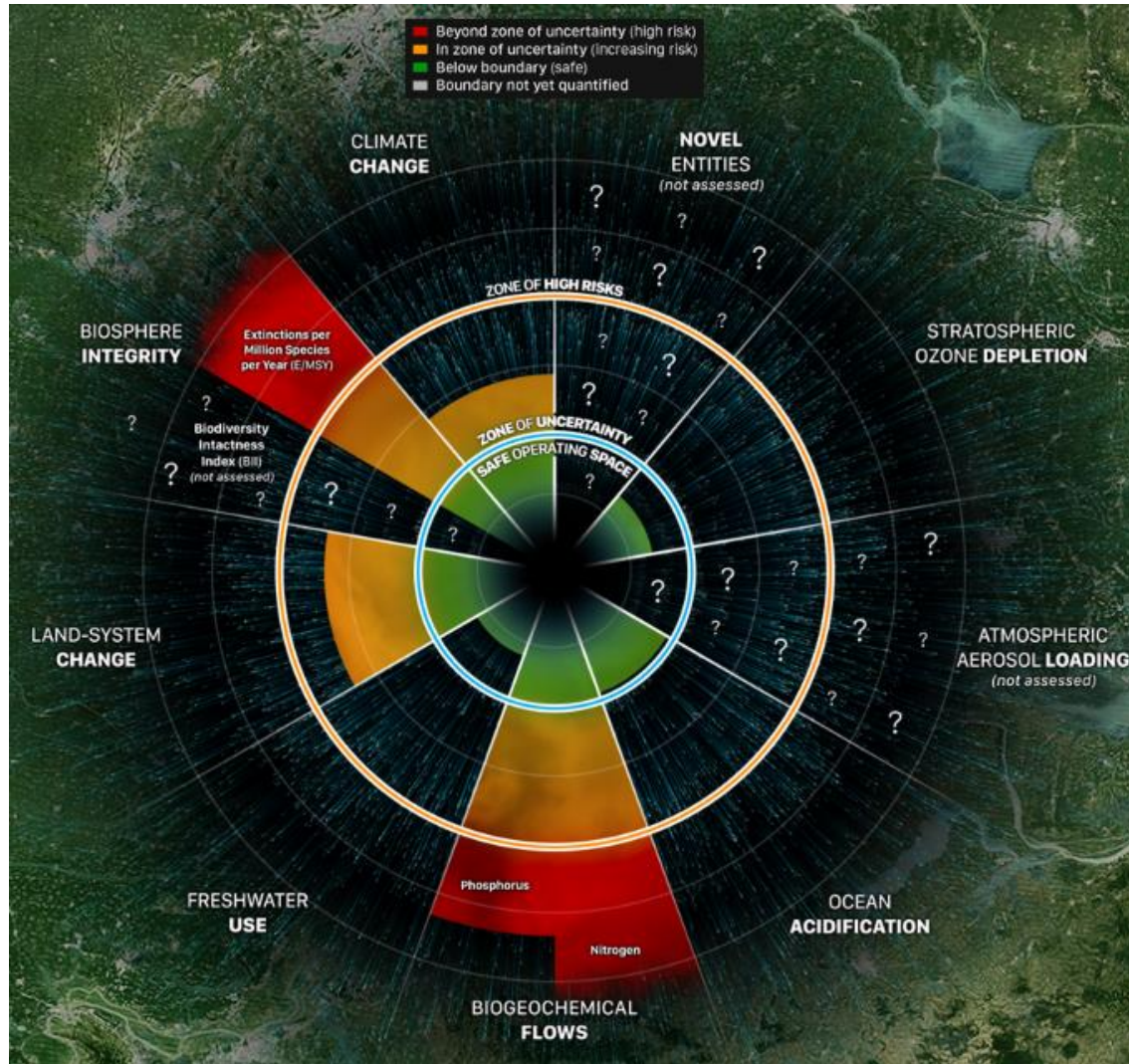
Rate of species extinction is 1000x higher than in pre-human times

6th mass extinction > 1 million species under threat

⇒ **Convention on Biological Diversity 15th COP, Beijing, Oct 2020**

⇒ **We are on track to miss 16 of the 20 Aichi Biodiversity Targets**

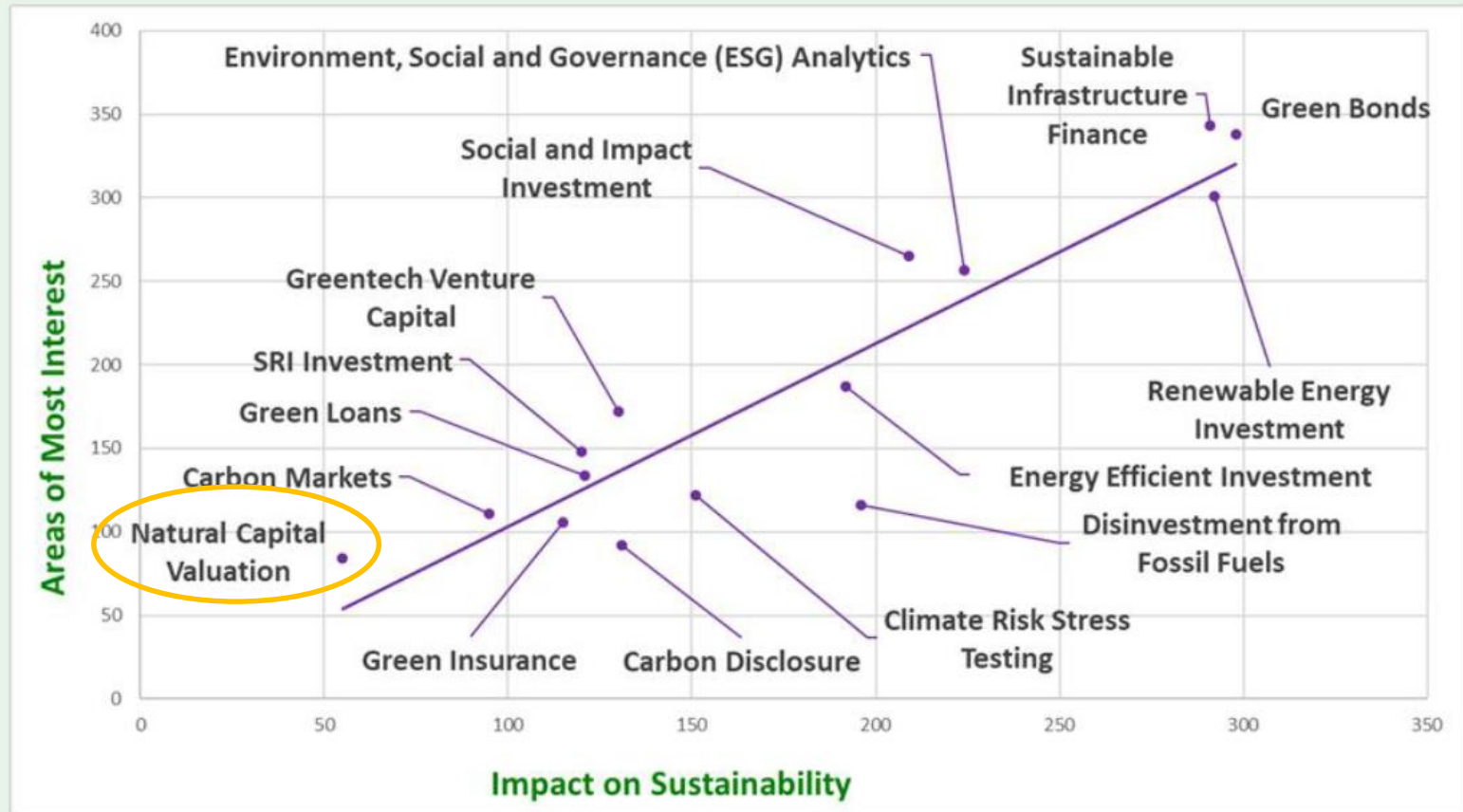
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Low Awareness In Financial Sector

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Figure 4 | The Views of Financial Services Professionals On Green Financial Products And Services



What Is Biodiversity Worth To The Financial Sector?

- ◆ Biodiversity- the variety of life at genetic, species and ecosystem levels
- ◆ Ecosystem Services - the benefits people obtain from ecosystems
- ◆ Natural Capital - stock of natural resources that might yield a flow of valuable goods and services

What Is Biodiversity Worth To The Financial Sector?

- ◆ Estimate of total global value of ecosystem services in 2011 ~ USD 125 trillion p.a.
- ◆ Estimated loss of eco-services from 1997 to 2011 due to land use change ~ USD 4.3 trillion to USD 20.2 trillion p.a. (Costanza et al, 2014)

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- ◆ Conservation finance needed to implement the 20 Aichi targets ~ \$150 to \$440 billion per year (UNEP, 2013)
- ◆ Conservation financing ~ \$50 billion p.a. (Parker et al, 2012)

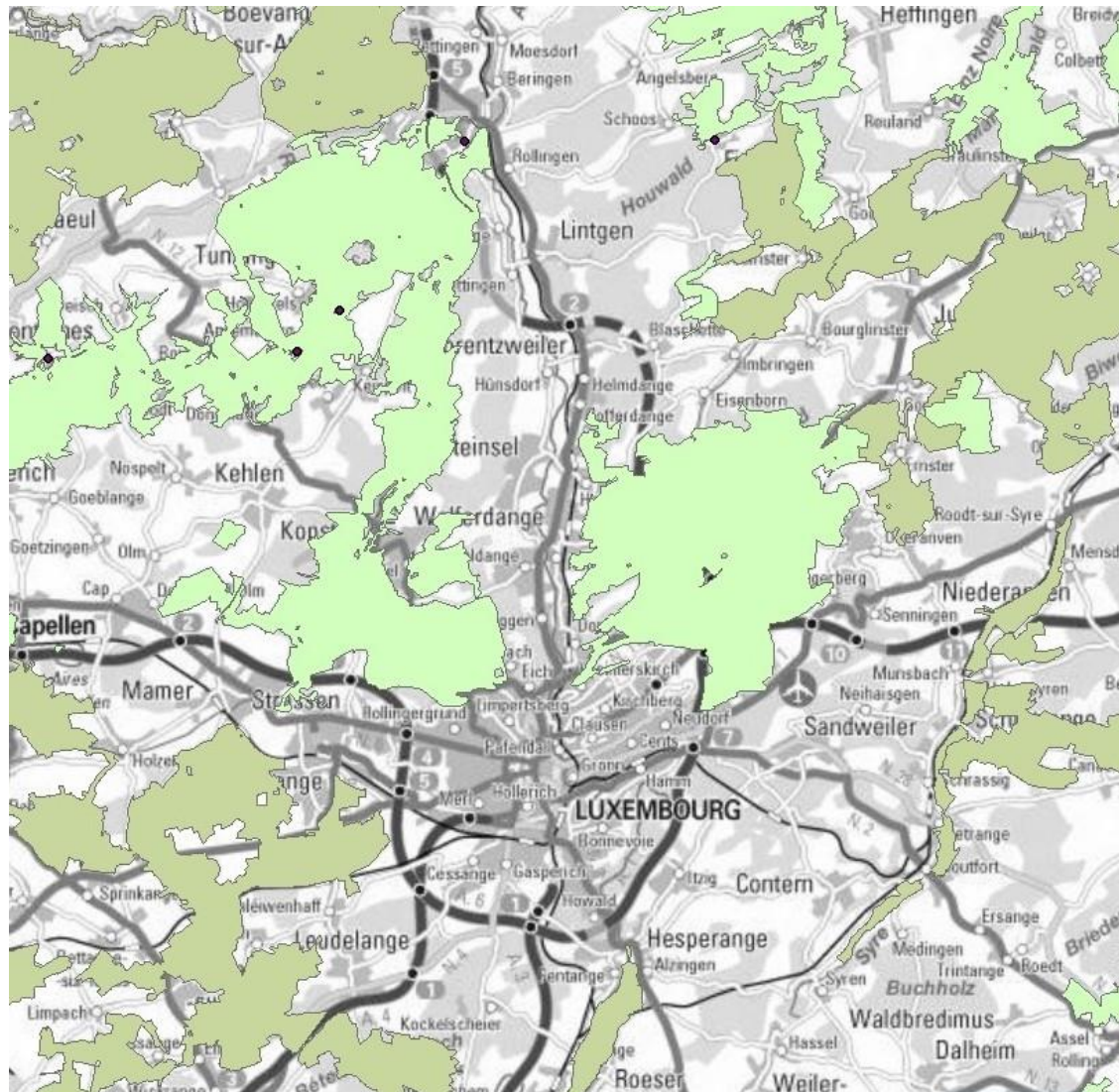
Conservation Has A Very High Return

- ◆ Cost of managing the EU's Natura 2000 sites:
~ EUR 5.8 billion p.a.
- ◆ Value of ecosystem service benefits from Natura 2000:
~ EUR 200-300 billion p.a.

= 35-50x !!

Luxembourg's Natura 2000 Sites

© Z/Yen Group 2019



But Still Does Not Get Enough Funding

- ◆ Cost of managing the EU's Natura 2000 sites:
~ EUR 5.8 billion p.a. EC (2011)
- ◆ Value of ecosystem service benefits from Natura 2000:
~ EUR 200-300 billion p.a. ten Brink et al (2011)

= 35-50x !!

- ◆ Across the EU, Natura 2000 conservation is likely to have a funding shortfall of at least 50%
(BirdLife International 2015)

Example Of Public Finance

- ◆ **GLOBAL - Aichi Target 15:**
 - By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems...

- ◆ **REGIONAL - EU Biodiversity Strategy Target 2**
 - By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

- ◆ **NATIONAL - Luxembourg's "Plan national concernant la protection de la nature 2017-2021" (PNPN2)**
 - (13) Intégration du concept des Infrastructures vertes dans l'urbanisme et l'aménagement du territoire

Green Infrastructure In Luxembourg

© Z/Yen Group 201

| Measure | Financing source | Estimated costs (EUR) |
|---|-------------------------------|-----------------------|
| Renaturation of water bodies | Water management fund | |
| Wetland restoration | Environmental protection fund | 4.75 million |
| Restoration of semi-open landscapes and grasslands | Environmental protection fund | 10 million |
| Development and adaptation of management plans, coordination of committees for Natura2000 network | Environmental protection fund | 2.3 million |
| Implementation of conservation measures related to the Natura2000 network | State funds | 12.2 million |
| Designation of protected areas | Environmental protection fund | 0.75 million |

Increasing Public Finance

- ◆ Include natural capital in national accounts
- ◆ Strengthen public banking system
- ◆ Promote Mission-led financial institutions

1. FINANCE IGNORING NATURE

GOVERNMENTS

- No deal For Nature - limited deal at CBD
- NDCs Biodiversity - weak or incoherent
- No mainstreaming of national NC acting
- Gov. don't use information from NC accounting in their decision-making & public policy
- Gov. do not fund cons. project needed

CENTRAL BANKS & SUPERVISORY AUTHORITIES

- Monetary policy**
- Neutral - brown & green without distinction
 - Corporate QE - buy 'brown' bonds
- Macroprudential policy**
- No environmental-related stress test ($+3$ years)
 - No use of macroprudential tools

FINANCIAL REGULATIONS & PRACTICE

- 'Tragedy of the horizon' - mismatch time horizon
- Too-big-to-fail prevail - short term finance
- Lack of flow diligence
- No NC-related risk assessment (banks)
- Public & stakeholder banks are constraint
- Investors are blind to NC risks & opportunities
- CRAs & financial analyst are blind to NC
- Insurance sectors do not assess NC risks.

DISCLOSURE

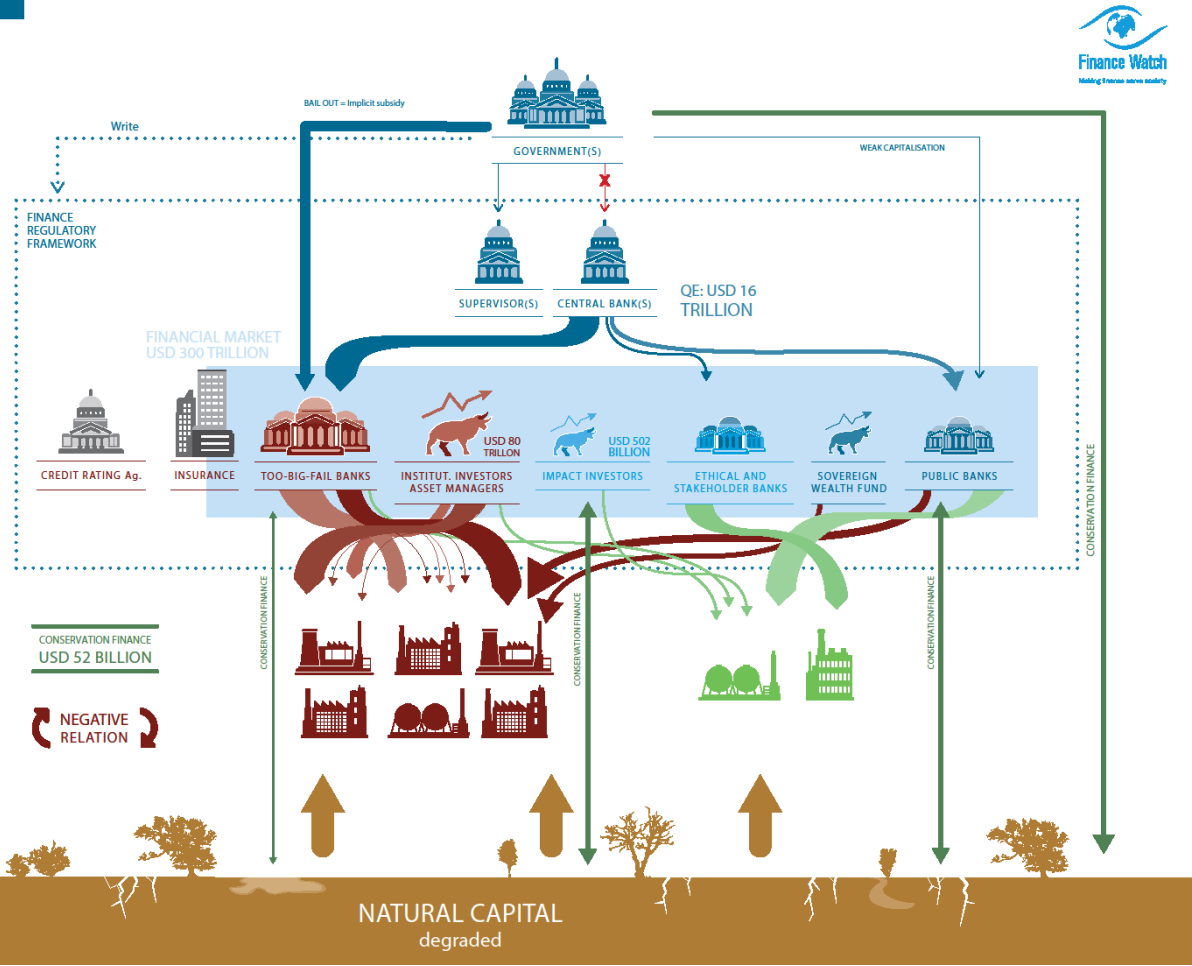
- No disclosure of NC information
- When ESG disclosure: lack of harmonization, consistency, appropriate KPIs, etc.
- Reporting non-fin. is separated from fin. rep.

ECONOMIC REGULATIONS

- No clarity on what is green or not
- NC is not describe in accounting
- Corporate governance push for short termism

ENVIRONMENTAL REGULATIONS

- Lack of consistent environmental reg.
- No pricing of negative externalities



Institutional barriers

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2. FINANCE FOR NATURE

GOVERNMENTS

- Deal For Nature at CBD 2020
- Ambitious NDCs Biodiversity
- National NC accounting
- Gov. use information from NC accounting in their decision-making & public policy
- Recapitalize public banks to expand their role
- Unlocking public investment (tax avoidance; fiscal rules, etc.)

CENTRAL BANKS & SUPERVISORY AUTHORITIES

- Green monetary policy
 - Green TFRG / Green refinancing lines
 - Collateral framework (haircuts brown/green)
 - Green corporate QE (ECB/CSPP) - e.g. criteria
- Green macroprudential policy
 - Environmental-related stress test (>3 yrs)
 - Transitional Countercyclical capital buffers
 - (Brown) Large Exposure Restrictions
 - ...

FINANCIAL REGULATIONS & PRACTICE

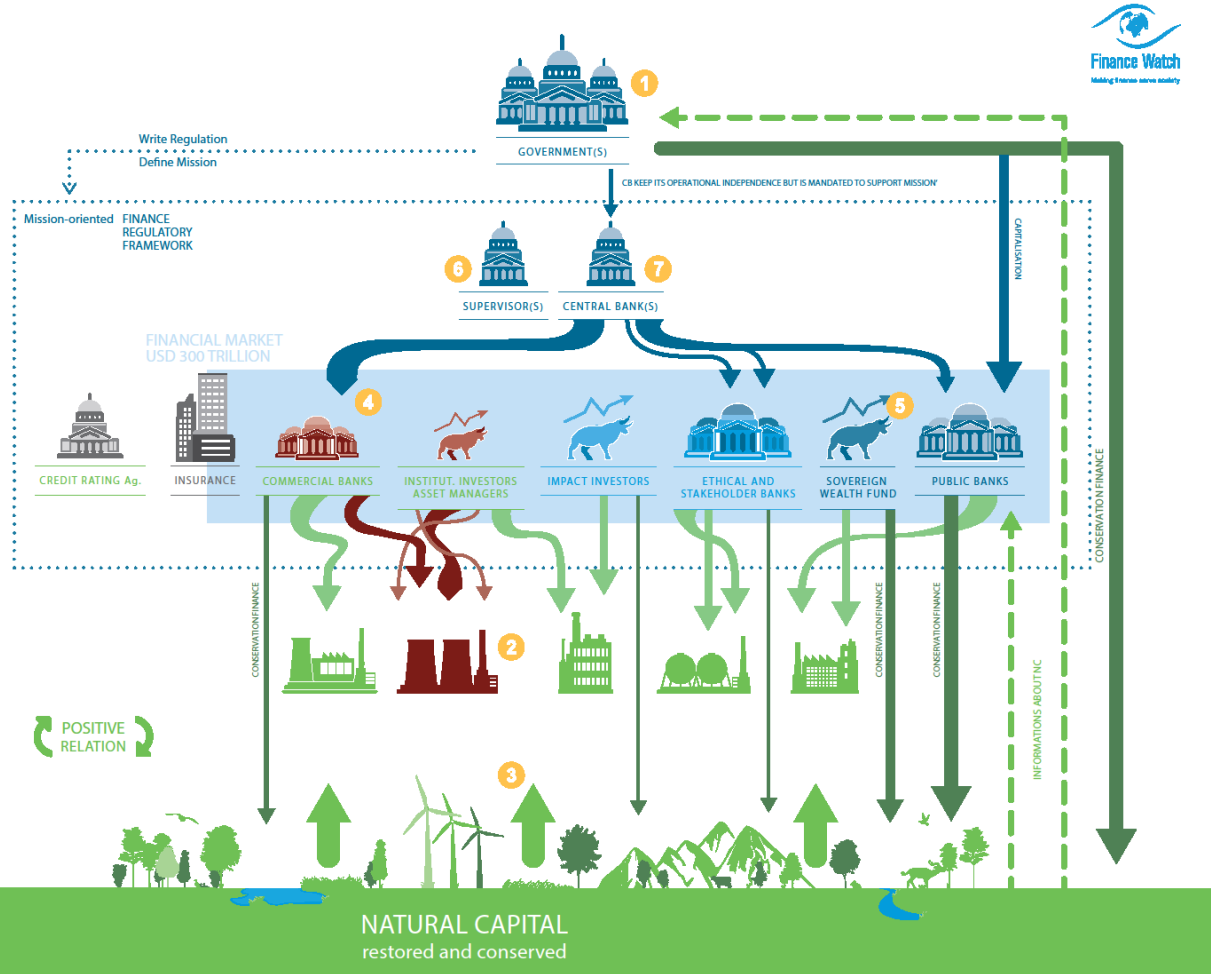
- NC in risk assessment
 - Transfer of the burden is solved
 - Structural reforms (BSR)
 - NC in Baie III (Brown Penalizing Factors)
 - Due diligence
 - Unlocking Mission-oriented FI (public banks, impact invest., stakeholder banks, etc.)
 - CIAM/fin analysts integrate NC risk assess.
- DISCLOSURE of NC
 - Mandatory & harmonized disclosure of NC metrics (as part of ESG reporting)
 - Integrated reporting (non-fin. & fin. rep.)

ECONOMIC REGULATIONS

- NC accounting - consolidated/IFRS
- Clear Taxonomy (climat & NC)
- Corporate governance
- ...

ENVIRONMENTAL REGULATIONS

- NC in decision-making
- Price on envl. negative externalities
- Circular economy
- ...



Barriers To Private Finance

- ◆ Features of conservation:
 - Lack of bankable projects
 - Lack of revenue streams
 - Low rates of financial return
 - Small size of the projects (< USD 5m)
 - High transaction costs

- ◆ Features of private finance:
 - Short-term horizons for risk and reward
 - Failure to deal effectively with externalities
 - Discounting of assets

Risks To Private Finance

- ◆ “Environmental degradation could cascade to risks for financial institutions, as reduced availability of fresh water or a lack of biodiversity could limit the operations of businesses in a specific region. These could turn into drivers of financial risks.”

Network for Greening the Financial System, April 2019

Engaging Private Finance

- ◆ Understand the risks:
 - Natural capital accounting and disclosure - create TNFD
 - Regulate biodiversity risks – NGFS

- ◆ Look for opportunities:
 - Specialised financial products – biodiversity green bonds, equity investments in ecotourism, sustainable forestry...
 - Beware offset markets!
 - Sustainable investing so far has higher investment returns

A Modern Perspective

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From cowboy to spaceman,
exploiting to conserving



Questions & Discussion



Global Green Finance Index Ranking The World's Green Financial Centres

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