

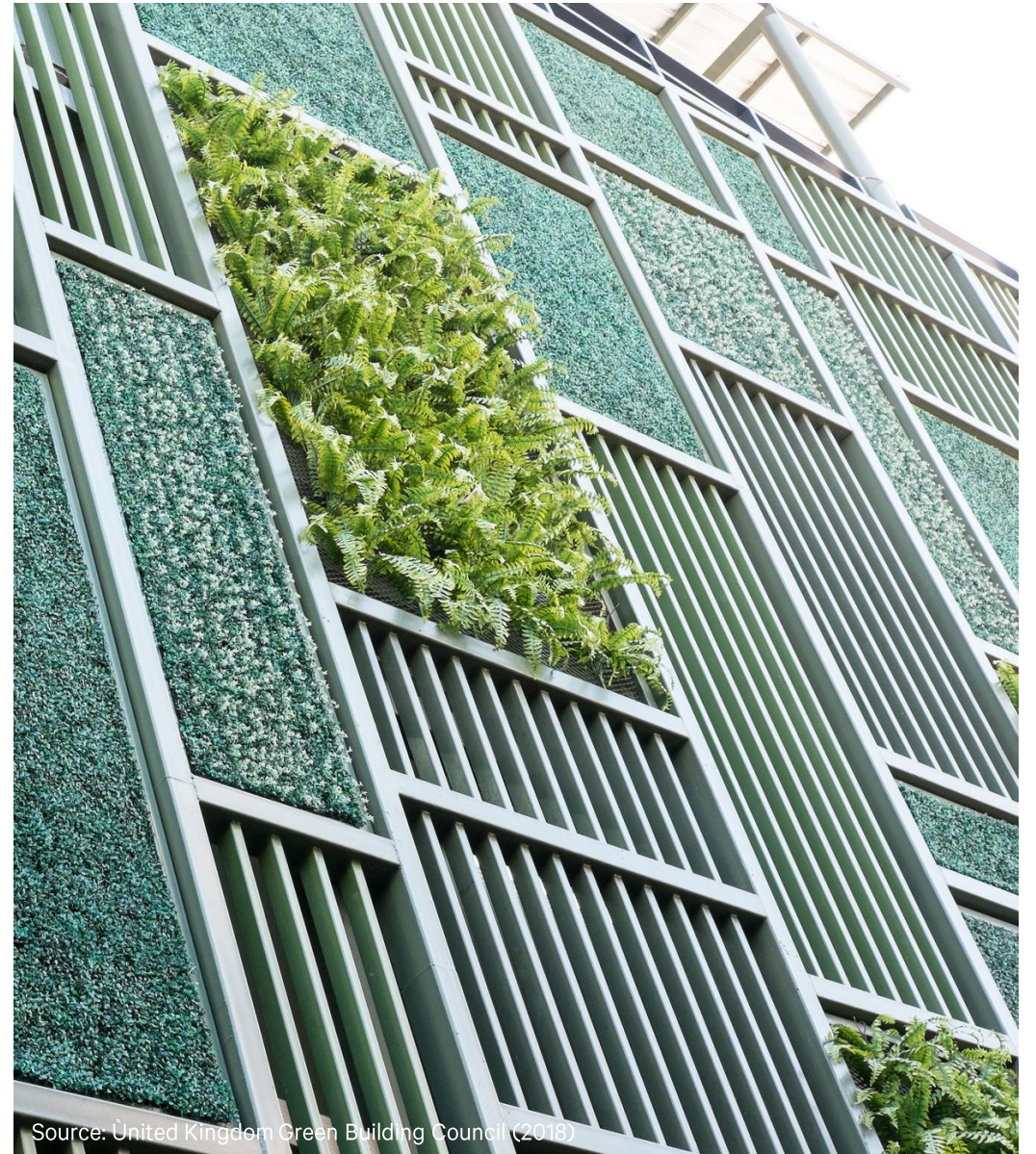
Sustainable Value Drivers

A Research on the Added Value of Environmental Certification in the Dutch office market

Rens van Overbeek

January 18, 2023

Public presentation



Source: United Kingdom Green Building Council (2018)

Problem statement

- Built environment responsible for 38% of total CO2 emissions¹.
- Heating of the commercial real estate stock is responsible for 5% of total CO2 emissions².
- Formal integration of sustainability in property valuation.
- Recognising (economic) benefits of green buildings.
- Practical evidence on the willingness to pay from the occupier market is needed.

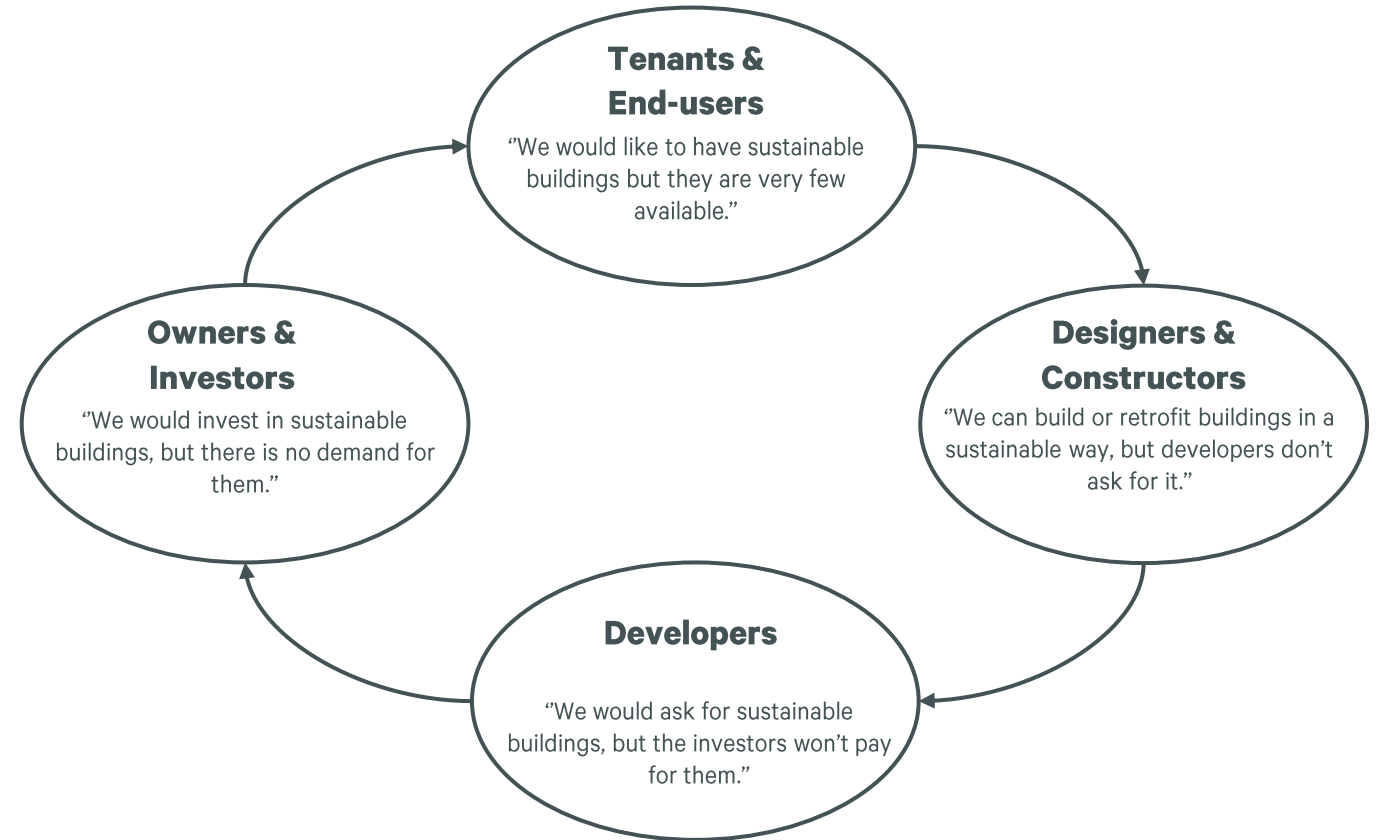


Figure 1: Vicious Circle of Blame (RICS, 2008)

1; Dutch Green Building Council (2021). Whole Life Carbon Position Paper

2; Netherlands Environmental Assessment Agency (2022). Klimaat- en Energieverkenning 2022.

Research questions

How does **environmental certification** influence **market value** within the dynamics of the Dutch office market?

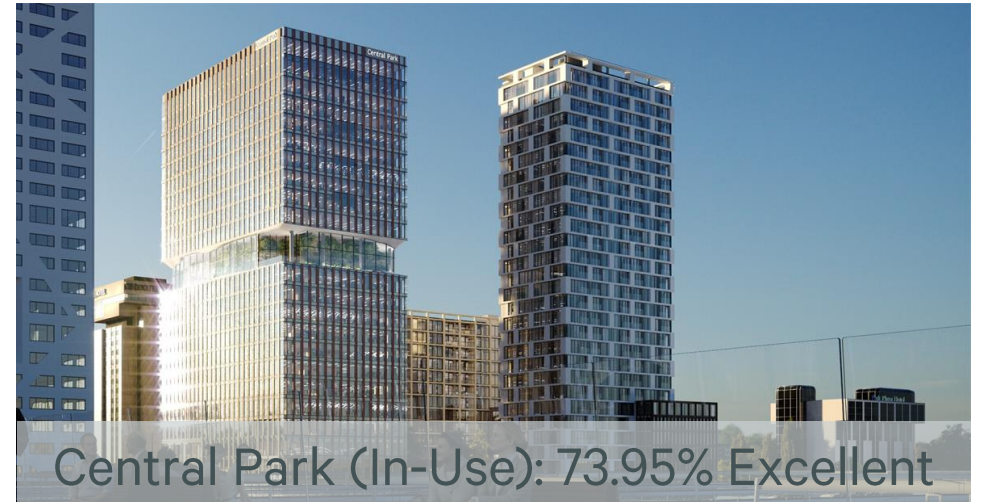
1. What concepts are driving real estate markets?
2. What are sustainable value drivers in the real estate market?
3. What building characteristics are determinants for real estate market value?
4. What drives the Vicious Circle of Blame in the Dutch real estate market?
5. How does **BREEAM-NL certification** influence **market rent prices** and **occupancy rates** in the Dutch office market?

BREEAM-NL



- Offices
- Retail
- Educational building
- Hotel
- Logistics
- Industrial
- Healthcare
- Sports

New Construction In-Use



Hypotheses

- H1:** BREEAM-NL certified office buildings receive higher rents over non-certified office buildings.
- H2:** Price premiums associated with environmental certification are positively correlated with BREEAM-NL label score.
- H3:** Price premiums associated with environmental certification are likely to be higher in environmental-harmful and labour-intensive sectors.
- H4:** BREEAM-NL certified office buildings enjoy higher occupancy rates over non-certified office buildings.

Research methodology

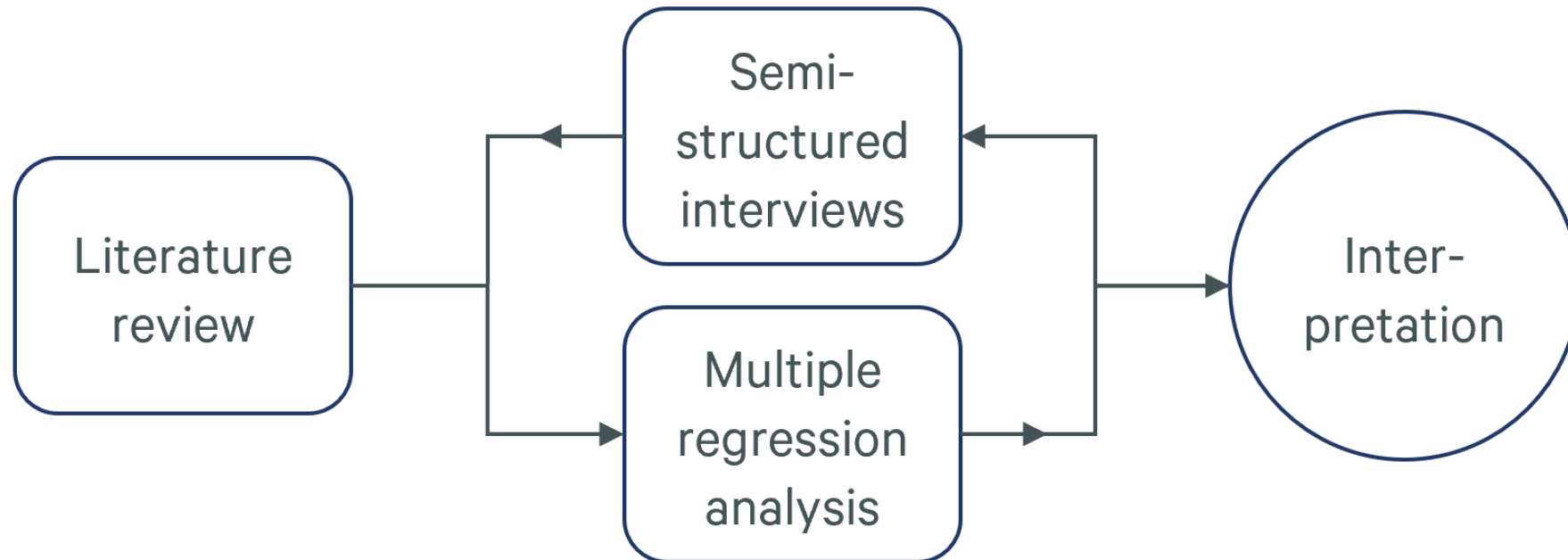


Figure 2: Research design (source: author)

Theoretical underpinnings

- Interrelationship between real estate markets for assets and space.

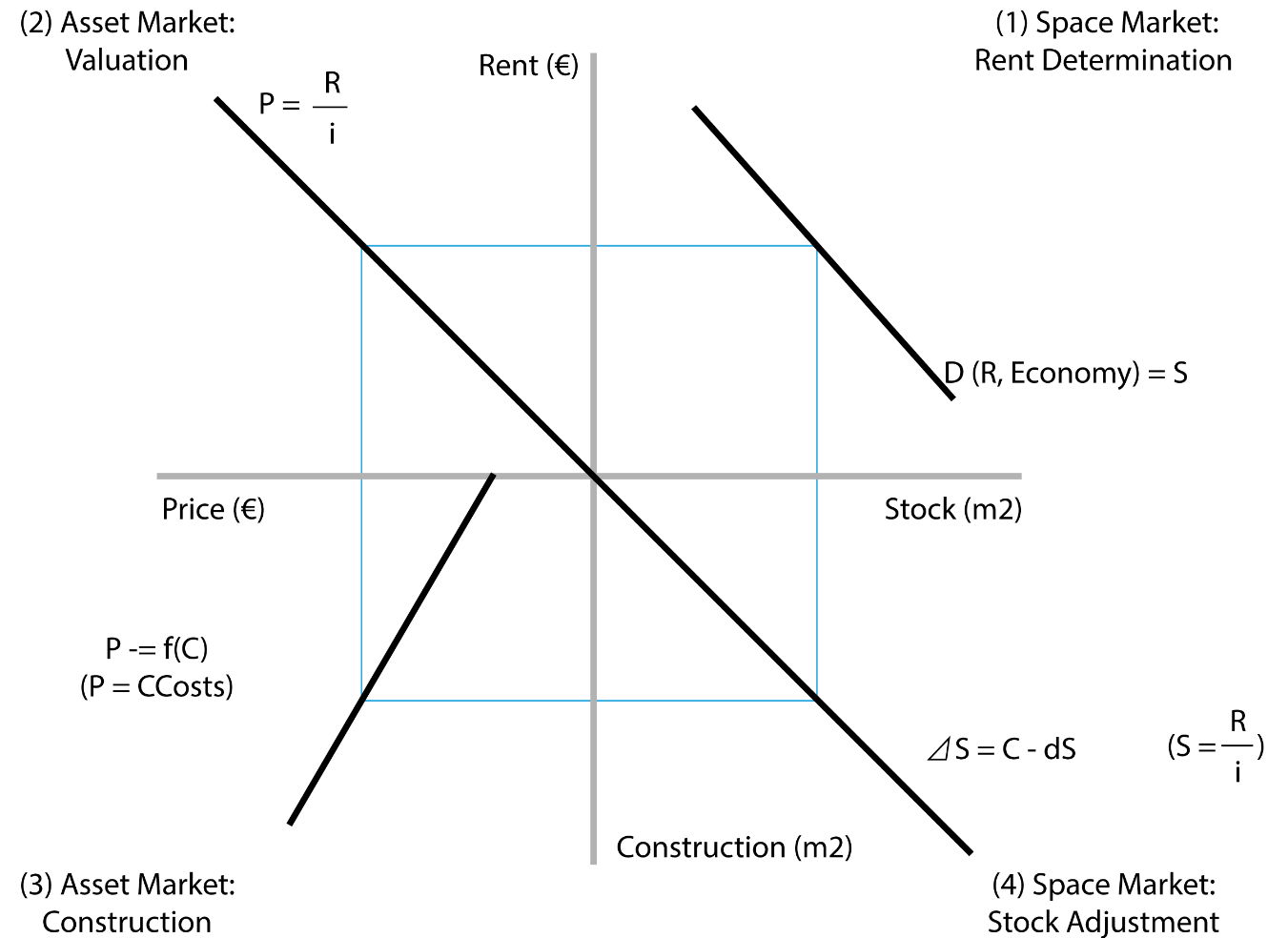
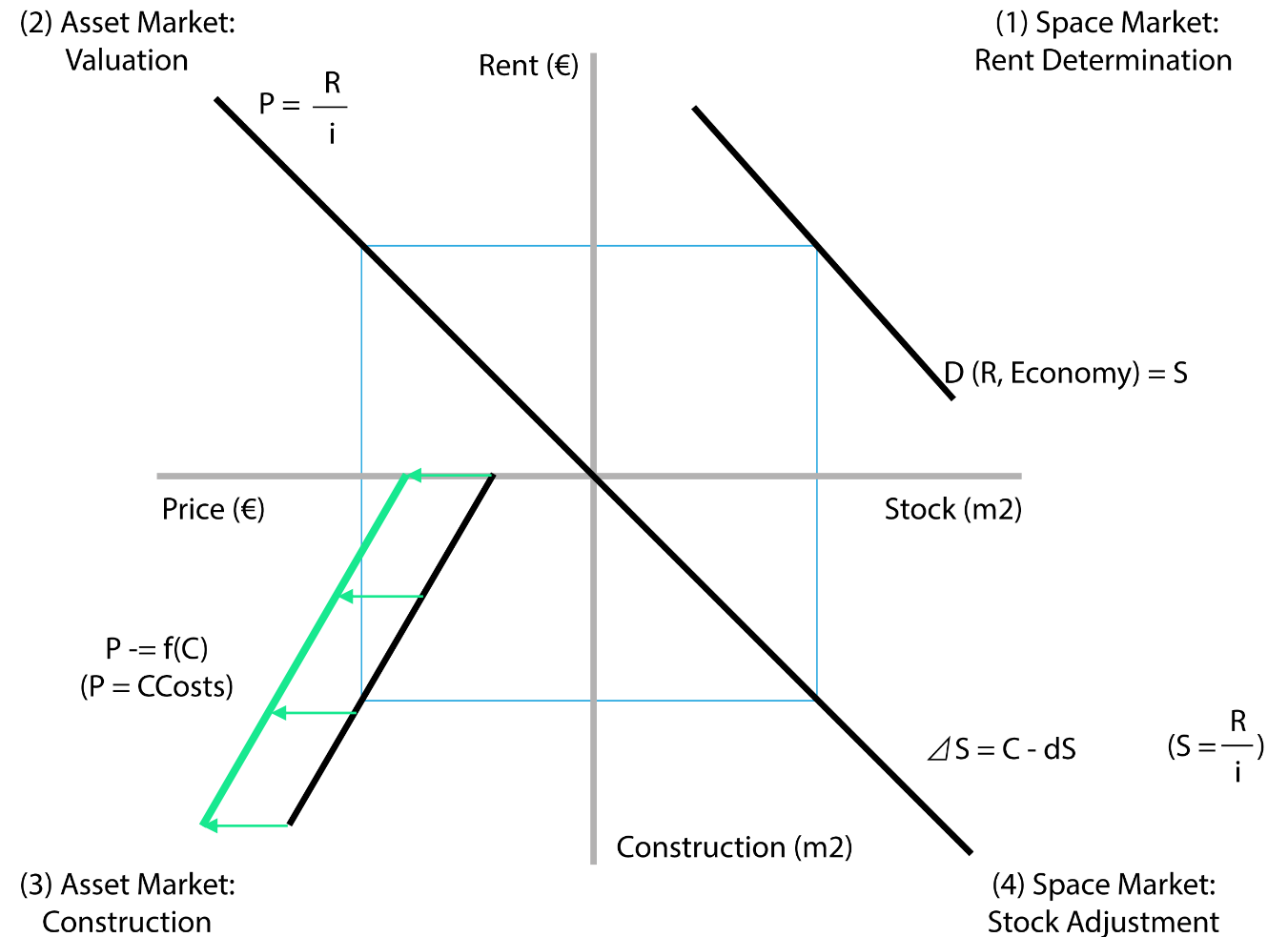


Figure 3: 4-quadrant model (DiPasquale & Wheaton, 1992)

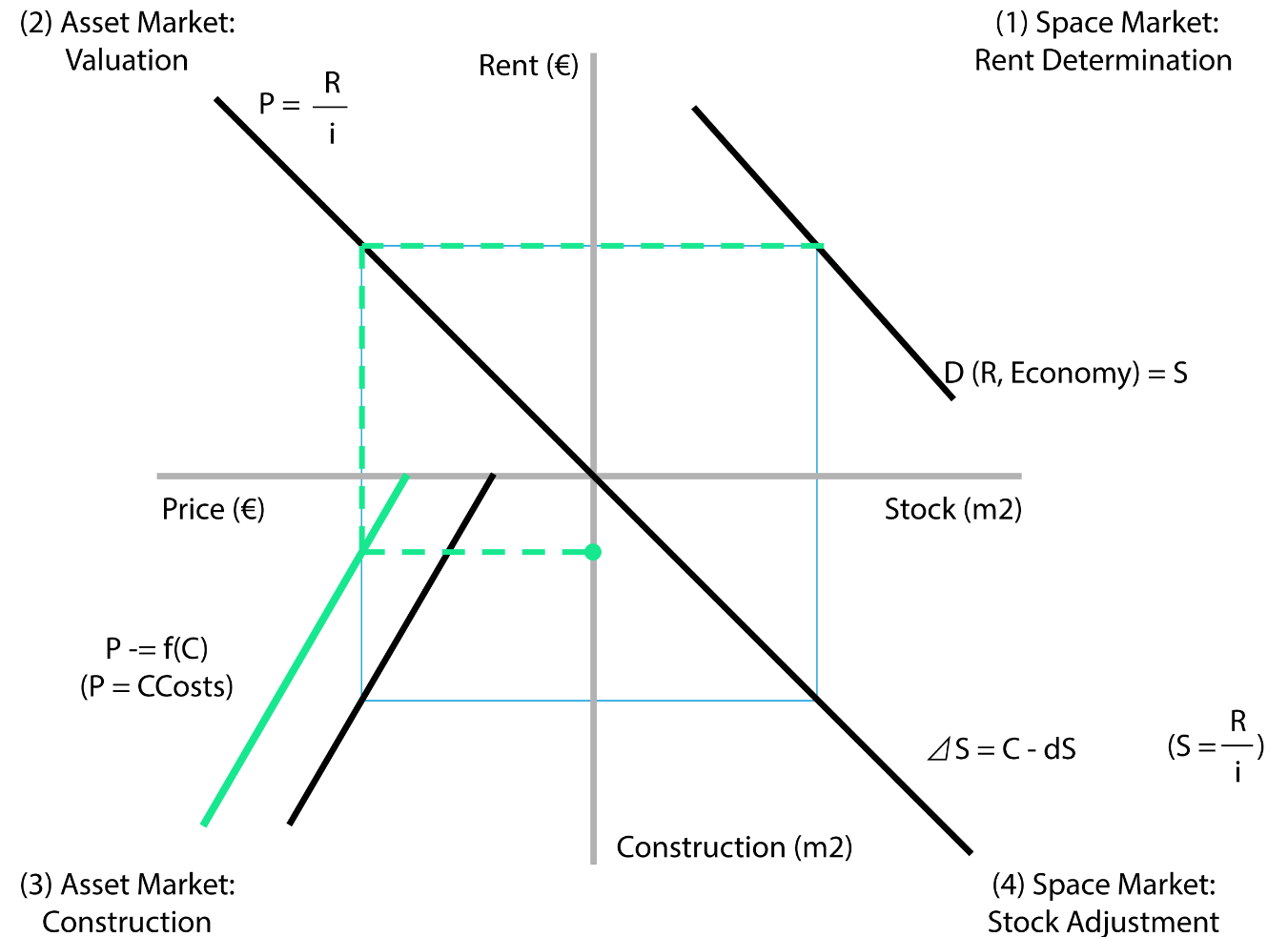
Theoretical underpinnings

- Interrelationship between real estate markets for assets and space.
- Sustainable buildings are more costly to construct².



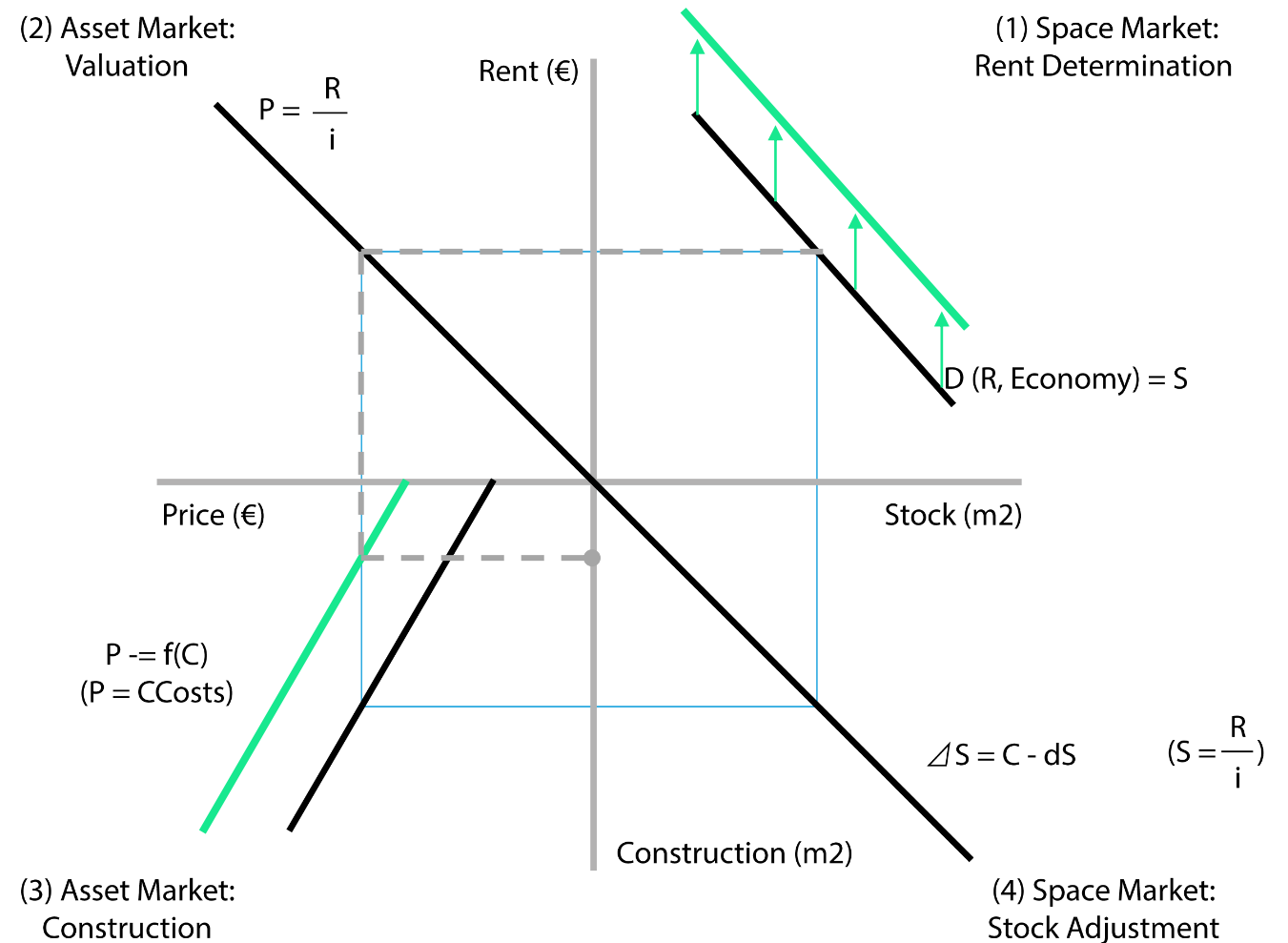
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- With equal asset values, construction volume will decrease.
- With increasing demand for green buildings in an equal stock, rent prices will increase.



Theoretical underpinnings

- Interrelationship between real estate markets for assets and space.
- Sustainable buildings are more costly to construct².
- With equal asset values, construction volume will decrease.
- With increasing demand for green buildings in an equal stock, rent prices will increase.
- Higher rent levels will increase asset value and eventually stimulate green building construction.
- Evidence on the willingness to pay can help to break the Vicious Circle of Blame.

²; BouwkostenKompas (IGG Bouweconomie)

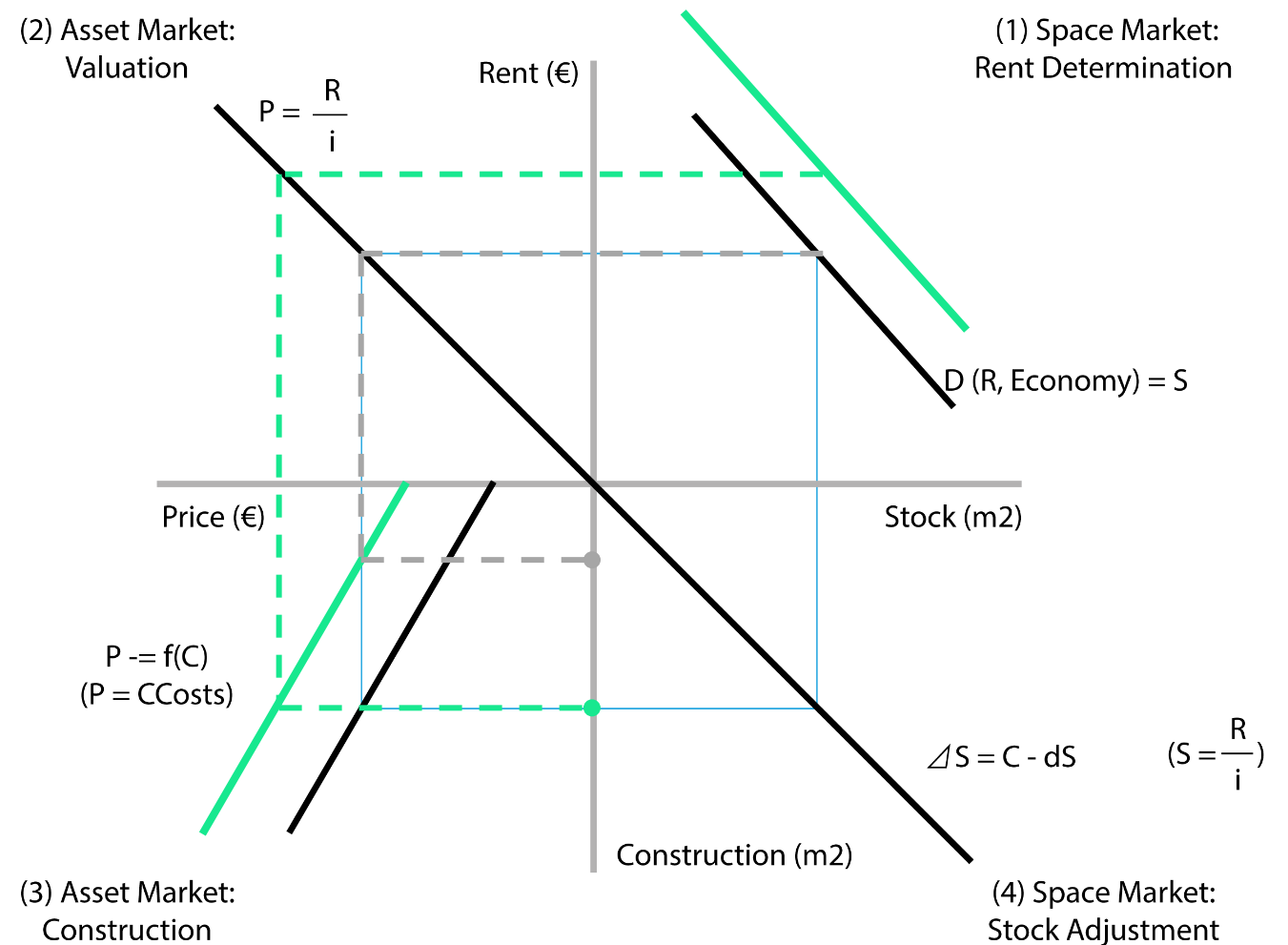


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Conceptual model

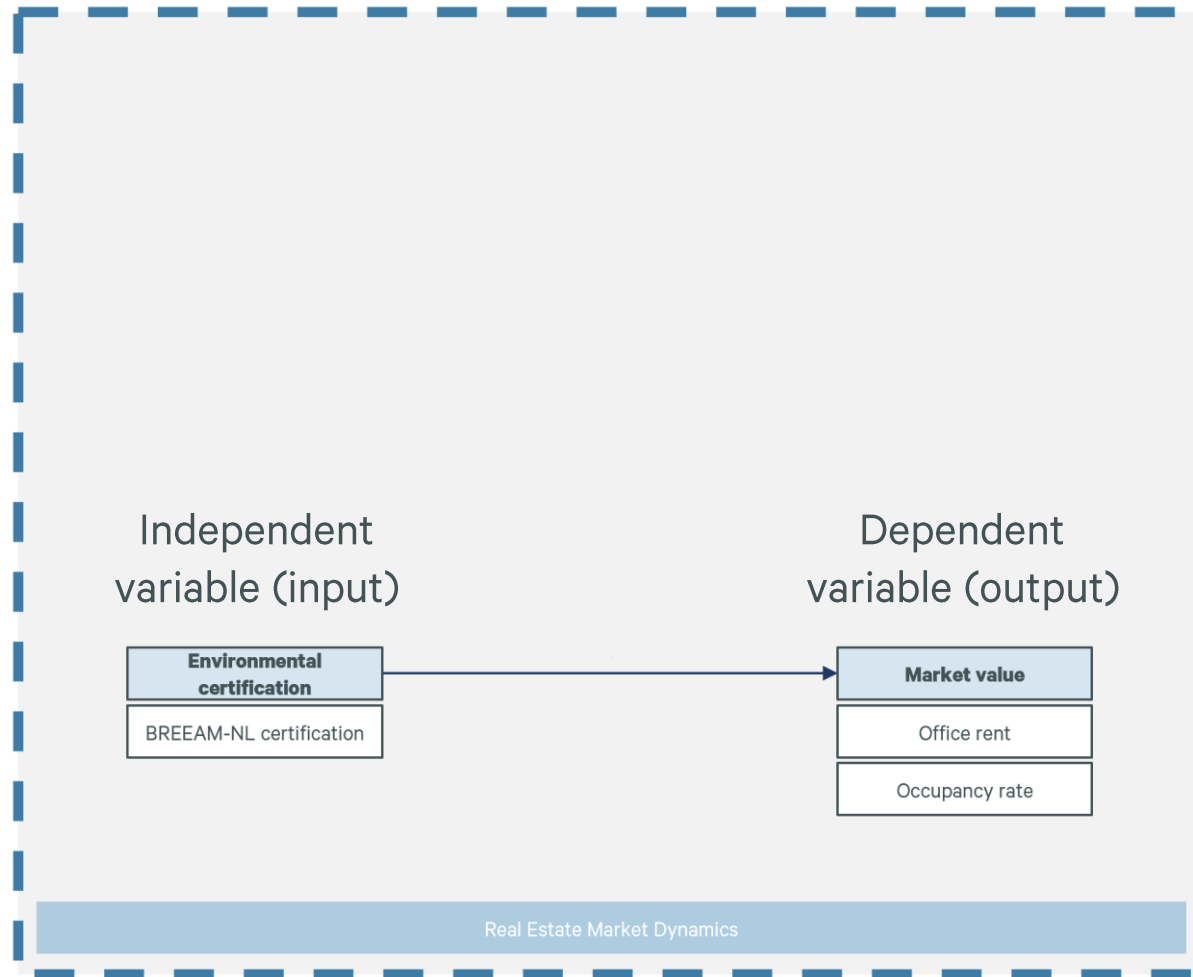


Figure 4: Conceptual model (source: author)

Starting points

Dataset provided by CBRE B.V.

4,244 lease transactions

2015 H1 – 2022H2

€30 – €550 rent per square meter

Amsterdam: 1,244

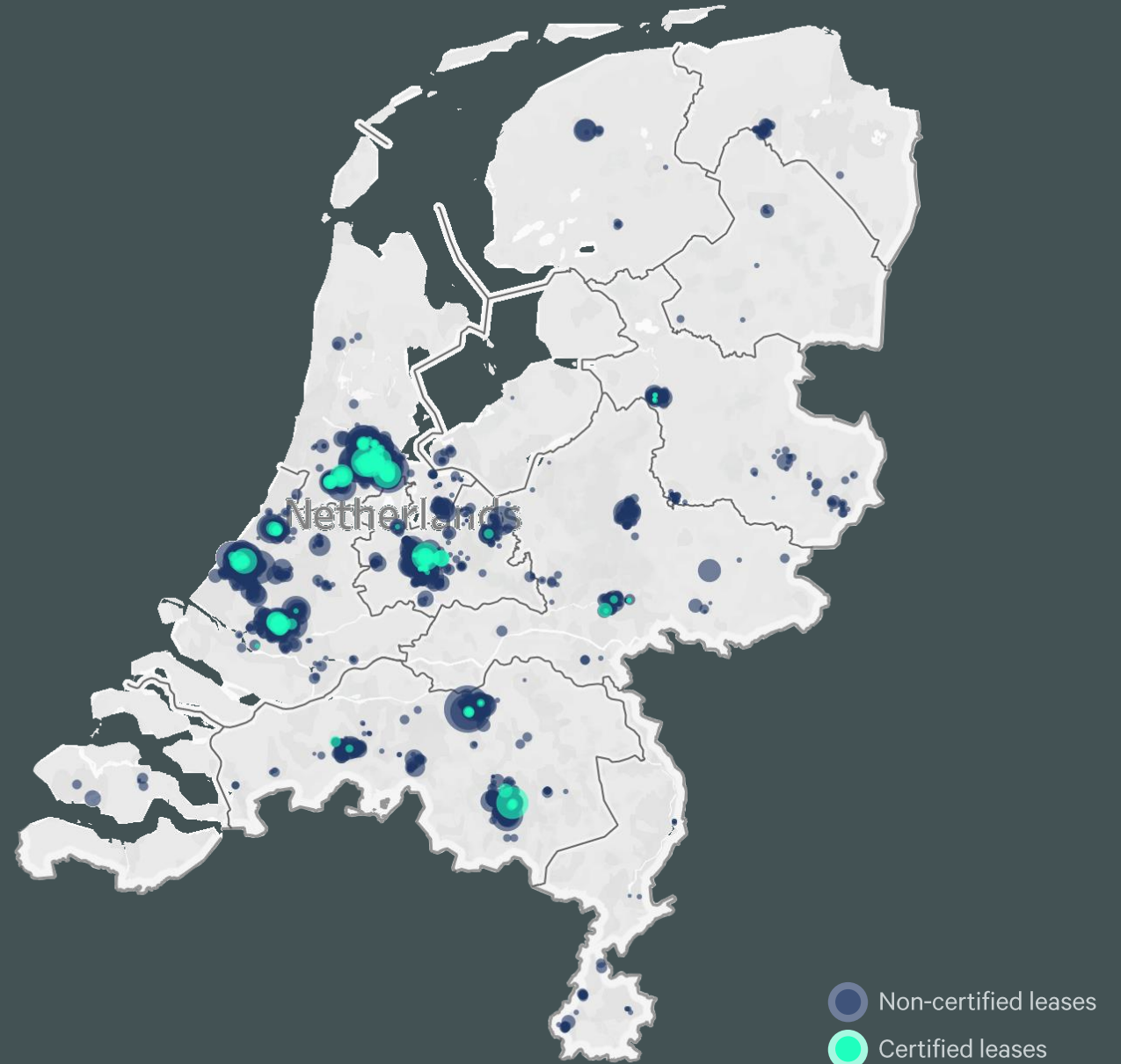
Utrecht: 422

The Hague: 397

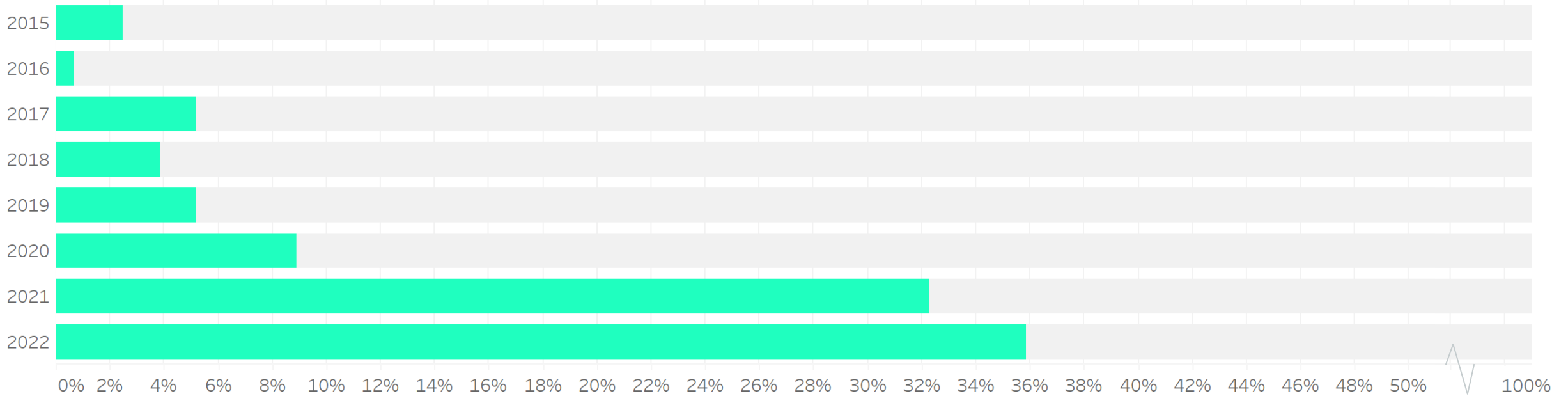
Rotterdam: 392

Eindhoven: 249

Other: 1,651



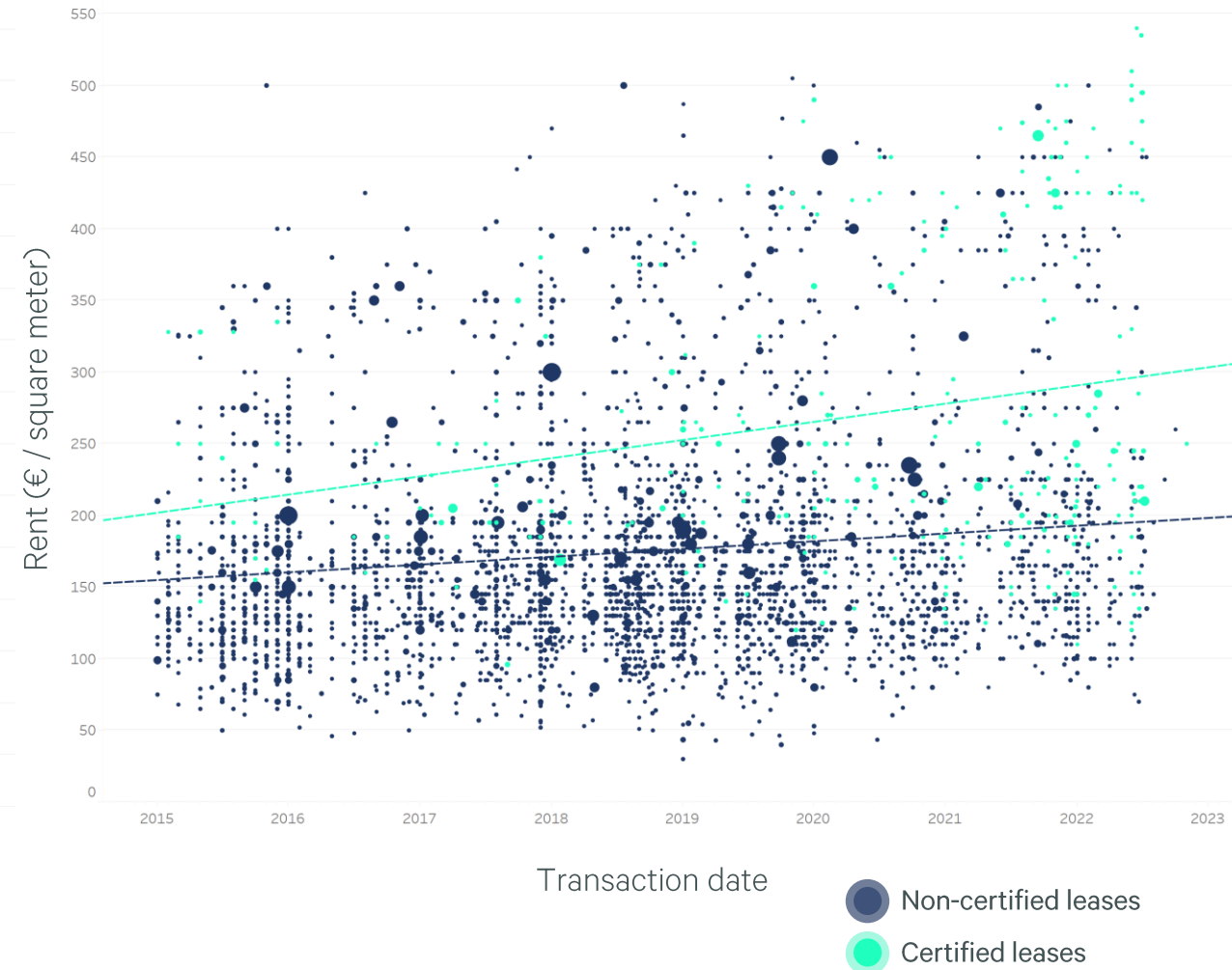
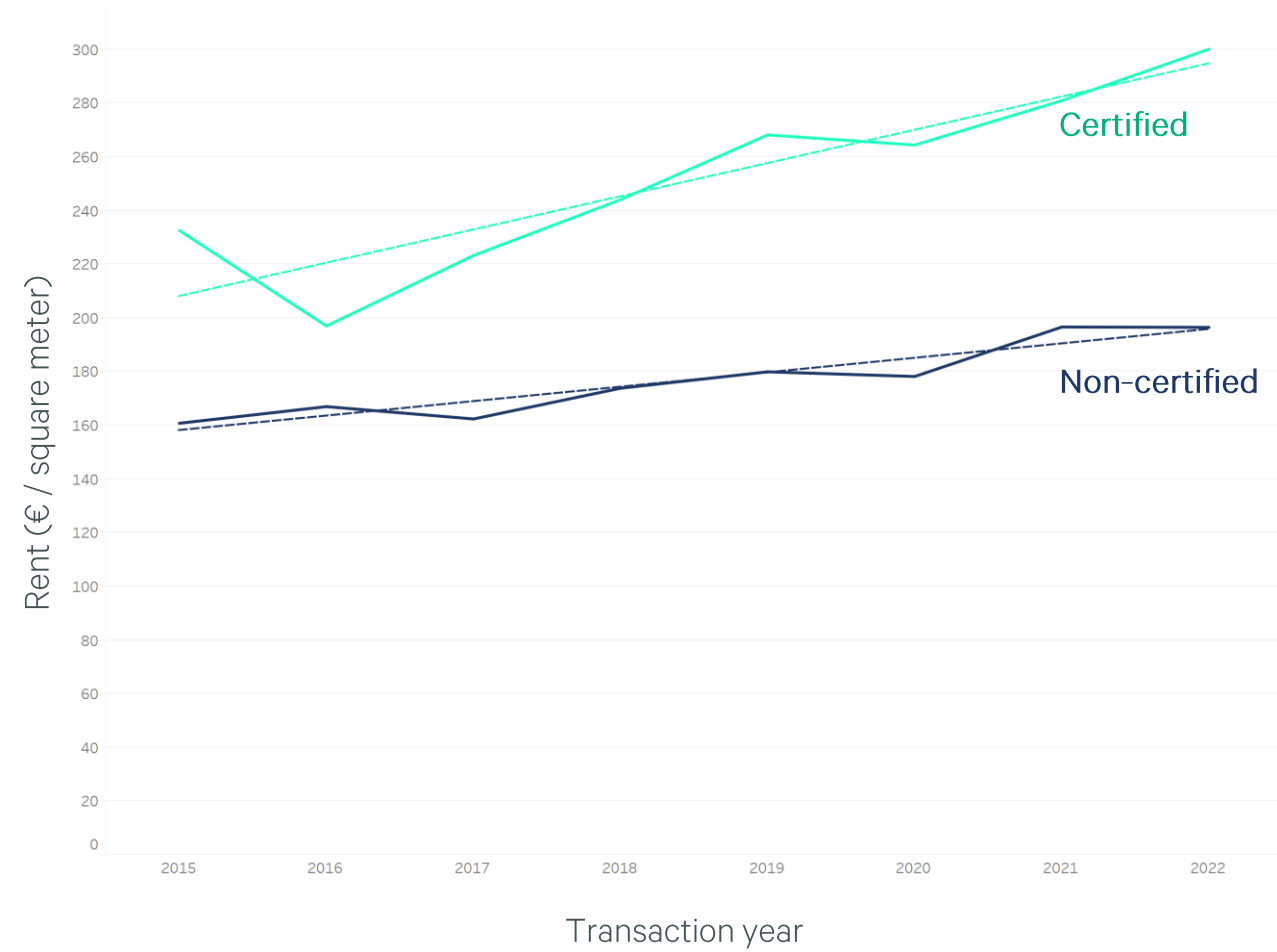
Preliminary analysis



Percentage of total leased floor area

- Non-certified leases
- Certified leases

Preliminary analysis



Preliminary analysis

- BREEAM-NL certified offices contain premium building characteristics.

	Non-certified leases	Certified leases
Lease rent (€ / sqm)	173.41	271.35
Occupancy rate at moment of lease (%)	83.89	88.13
Building size	10,640	23,017
Building age	45.80	27.05
Major renovation (%)	5.52	18.60
Energy label*	5.54	6.68
Number of supermarkets	1.29	1.79
Number of restaurants	43.48	63.61
Number of sport facilities	1.48	2.45
Walk time to train station	14.43	6.59

*Energy performance is coded as 1 = G, 2 = F, 3 = E, 4 = D, 5 = C, 6 + B, 7 = A, 8 = A+ - A+++

Preliminary analysis

- BREEAM-NL certified offices contain premium building characteristics.
- **Property characteristics: Larger, more occupied, newer and more energy-efficient.**

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Preliminary analysis

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- Property characteristics: Larger, more occupied, newer and more energy-efficient.
- **Location proxies: Better accessible locations with higher levels of amenities.**

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Green premium

H1: BREEAM-NL certified office buildings receive higher rents over non-certified office buildings.

	(1)	(2)	(3)	(4)
BREEAM-NL certification	0.450*** (0.023)	0.234*** (0.016)	0.163*** (0.015)	0.098*** (0.012)
Year of transaction		YES	YES	YES
Location proxies		YES	YES	YES
Property characteristics			YES	YES
Submarkets				YES
Adjusted R2	0.085	0.611	0.654	0.780
Observations	4,234	4,211	4,062	4,062

Note: The dependent variable is the natural logarithm of the transaction rent per square meter office space. Standard errors are shown in brackets. Significance at the 0.10, 0.05 and 0.01 levels are indicated by *, ** and *** respectively.

Green premium

H1: BREEAM-NL certified office buildings receive higher rents over non-certified office buildings.

After controlling for important rent determinants, BREEAM-NL certified offices enjoy a rental premium of **10.30%** compared to non-certified offices.

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BREEAM-NL certification	0.450*** (0.023)	0.234*** (0.016)	0.163*** (0.015)	0.098*** (0.012)
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Green premium

H1: BREEAM-NL certified office buildings receive higher rents over non-certified office buildings.

The heterogeneity of real estate markets causes varying green premiums across the G5.

	Amsterdam	The Hague	Rotterdam	Utrecht	Eindhoven
BREEAM-NL certification	0.009 (0.018)	0.119*** (0.046)	0.050* (0.026)	0.063** (0.030)	-0.073 (0.065)
Adjusted R2	0.787	0.556	0.551	0.630	0.445
Observations	1,224	383	379	416	232

Note: The dependent variable is the natural logarithm of the transaction rent per square meter office space. Standard errors are shown in brackets. Significance at the 0.10, 0.05 and 0.01 levels are indicated by *, ** and *** respectively.

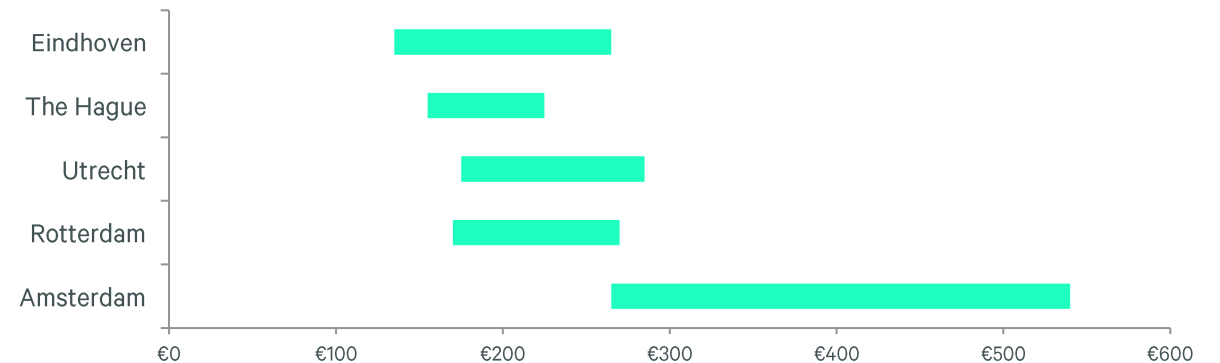


Figure 5: Average rent and top rent per city (source: author)

Green premium

H1: BREEAM-NL certified office buildings receive higher rents over non-certified office buildings.

The heterogeneity of real estate markets causes varying green premiums across the G5.

BREEAM-NL certified offices enjoy a rental premium of **12.64%** in The Hague, **5.13%** in Rotterdam and **6.50%** in Utrecht.

Local rent ceilings might hamper the possibilities for rental premium potential in the area³.

	Amsterdam	The Hague	Rotterdam	Utrecht	Eindhoven
BREEAM-NL certification	0.009 (0.018)	0.119*** (0.046)	0.050* (0.026)	0.063** (0.030)	-0.073 (0.065)
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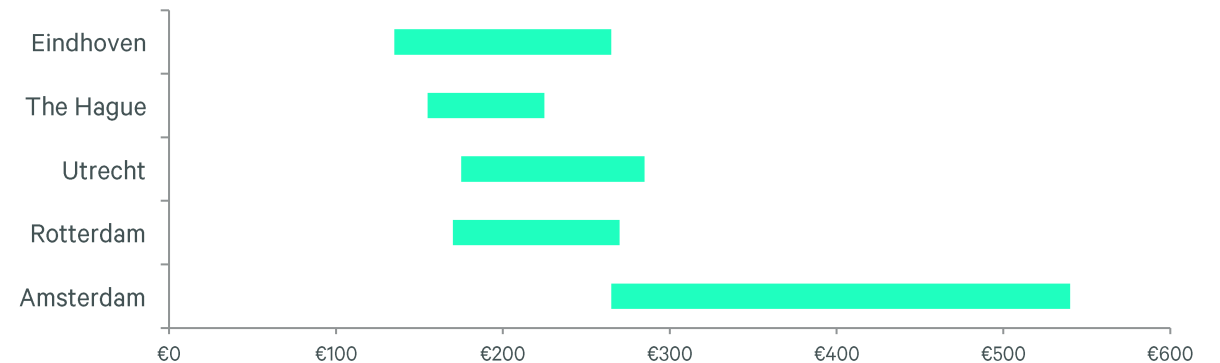


Figure 5: Average rent and top rent per city (source: author)

³; Interview with Real Estate Investor B – August 17, 2022

Green premium

H2: Price premiums associated with environmental certification are positively correlated with BREEAM-NL label score.

Rent levels are highly correlated with BREEAM-NL label score.

	BREEAM-NL Pass	BREEAM-NL Good	BREEAM-NL Very Good	BREEAM-NL Excellent	BREEAM-NL Outstanding
BREEAM-NL certification	0.048 (0.051)	0.097*** (0.021)	0.060*** (0.021)	0.134*** (0.021)	0.021 (0.054)
Adjusted R2	0.756	0.759	0.769	0.767	0.757
Observations	3,761	3,840	3,843	3,843	3,759

Note: The dependent variable is the natural logarithm of the transaction rent per square meter office space. Standard errors are shown in brackets. Significance at the 0.10, 0.05 and 0.01 levels are indicated by *, ** and *** respectively.

Green premium

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Rent levels are highly correlated with BREEAM-NL label score.

BREEAM-NL labels Good, Very Good and Excellent have rental premiums of respectively **10.19%**, **6.18%** and **14.34%**.

Tenants value the (in)tangible benefits, such as **tenant enjoyment** and **savings on operating costs**.

	BREEAM-NL Pass	BREEAM-NL Good	BREEAM-NL Very Good	BREEAM-NL Excellent	BREEAM-NL Outstanding
BREEAM-NL certification	0.048 (0.051)	0.097*** (0.021)	0.060*** (0.021)	0.134*** (0.021)	0.021 (0.054)
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Observations	3,761	3,840	3,843	3,843	3,759

Note: The dependent variable is the natural logarithm of the transaction rent per square meter office space. Standard errors are shown in brackets. Significance at the 0.10, 0.05 and 0.01 levels are indicated by *, ** and *** respectively.



Figure 6: BREEAM-NL categories (source: author)

Green premium

H3: Price premiums associated with environmental certification are likely to be higher in environmental-harmful and labour-intensive sectors

Some industries are willing to pay more for certified offices than others.

Industries*	All labels
Business Services	0.098** (0.046)
Energy & Utilities	0.130*** (0.050)
Finance	0.118** (0.043)
Hospitality & Leisure	-0.221** (0.098)
Life Sciences	0.065 (0.065)
Manufacturing	0.164*** (0.056)
Public & Non-Profit	-0.006 (0.063)
Retail & Distribution	0.148*** (0.045)
Technology & Media	0.091** (0.042)
Transportation	0.139** (0.054)
Adjusted R2	0.897
Observations	323

Note: The dependent variable is the natural logarithm of the transaction rent per square meter office space. Standard errors are shown in brackets. Significance at the 0.10, 0.05 and 0.01 levels are indicated by *, ** and *** respectively.

Green premium

H3: Price premiums associated with environmental certification are likely to be higher in environmental-harmful and labour-intensive sectors

Some industries are willing to pay more for certified offices than others.

Business Services, Energy & Utilities, Finance, Retail & Distribution, and Technology & Media show additional willingness to pay for Very Good labelled offices.

Industries*	All labels	Pass	Good	Very Good	Excellent	Outstanding
Business Services	0.098** (0.046)		0.001 (0.063)	0.198** (0.097)	-0.011 (0.059)	
Energy & Utilities	0.130*** (0.050)		0.109 (0.100)	0.297*** (0.112)	-0.037 (0.064)	
Finance	0.118** (0.043)		0.001 (0.065)	0.239*** (0.109)	-0.019 (0.061)	
Hospitality & Leisure	-0.221** (0.098)			-0.246 (0.170)	-0.219** (0.093)	
Life Sciences	0.065 (0.065)		-0.190 (0.120)		0.380*** (0.094)	
Manufacturing	0.164*** (0.056)		0.068 (0.127)	0.179 (0.119)	0.043 (0.079)	
Public & Non-Profit	-0.006 (0.063)		-0.175 (0.136)	0.101 (0.115)	-0.021 (0.094)	
Retail & Distribution	0.148*** (0.045)		0.084 (0.068)	0.322*** (0.104)	0.016 (0.064)	
Technology & Media	0.091** (0.042)		0.022 (0.063)	0.223** (0.104)	-0.051 (0.059)	
Transportation	0.139** (0.054)		0.061 (0.076)	0.346* (0.192)	0.000 (0.073)	
Adjusted R2	0.897		0.936	0.898	0.956	
Observations	323		96	98	97	

Note: The dependent variable is the natural logarithm of the transaction rent per square meter office space. Standard errors are shown in brackets. Significance at the 0.10, 0.05 and 0.01 levels are indicated by *, ** and *** respectively.

Occupancy premium

H4: BREEAM-NL certified office buildings enjoy higher occupancy rates over non-certified office buildings.

Scope: 2020H1 – 2022 H1

BREEAM-NL certified buildings **do not show** significant occupancy premiums after moment of certification.

BREEAM-NL assessments often backed with renovations and do require initial vacancy.

As frictional vacancy is included in the analysis, small differences in occupancy rate do not have to lead to decreasing market value.

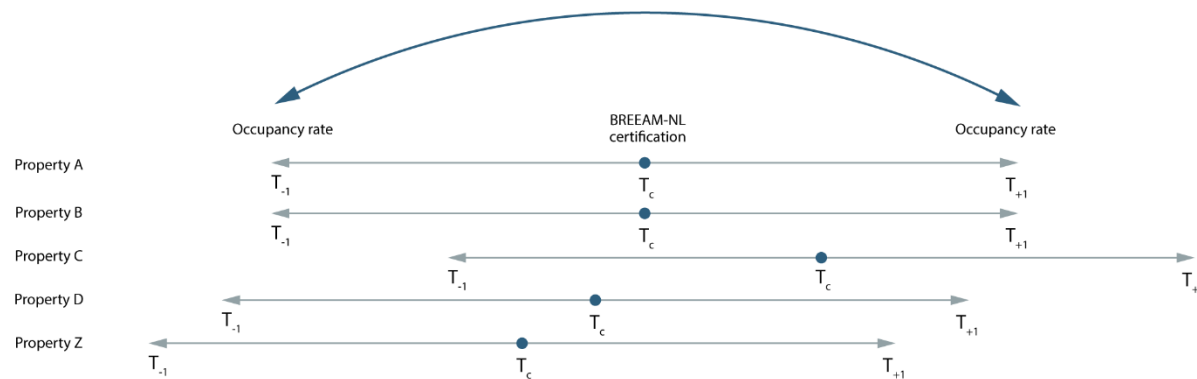


Figure 6: Concept of occupancy rate analysis on comparable basis (source: author)

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Vicious Circle of Blame

- Interviews showed a changing position of both investors and occupiers since the RICS report (2008).
- Intangible benefits of green buildings widely acknowledged by occupiers and investors.
- European regulations are an important driver for organisations to choose for certified real estate.

Investors:

- “Occupiers are still conservative in sustainability measures when it costs them money.” - Investor A
- “As long as tenants lease C or B labelled offices, (private) investors do not have incentive to invest.” – Investor B
- Capacity to recover marginal costs with rental premium is rather limited.

Occupiers:

- Decreasing demand for buildings which do not comply with sustainability and ESG requirements.
- Occupiers frequently reduce sustainability ambitions for the sake of the business case.

Conclusion

- **End-users are increasingly adopting sustainability measures in their overall strategy.**

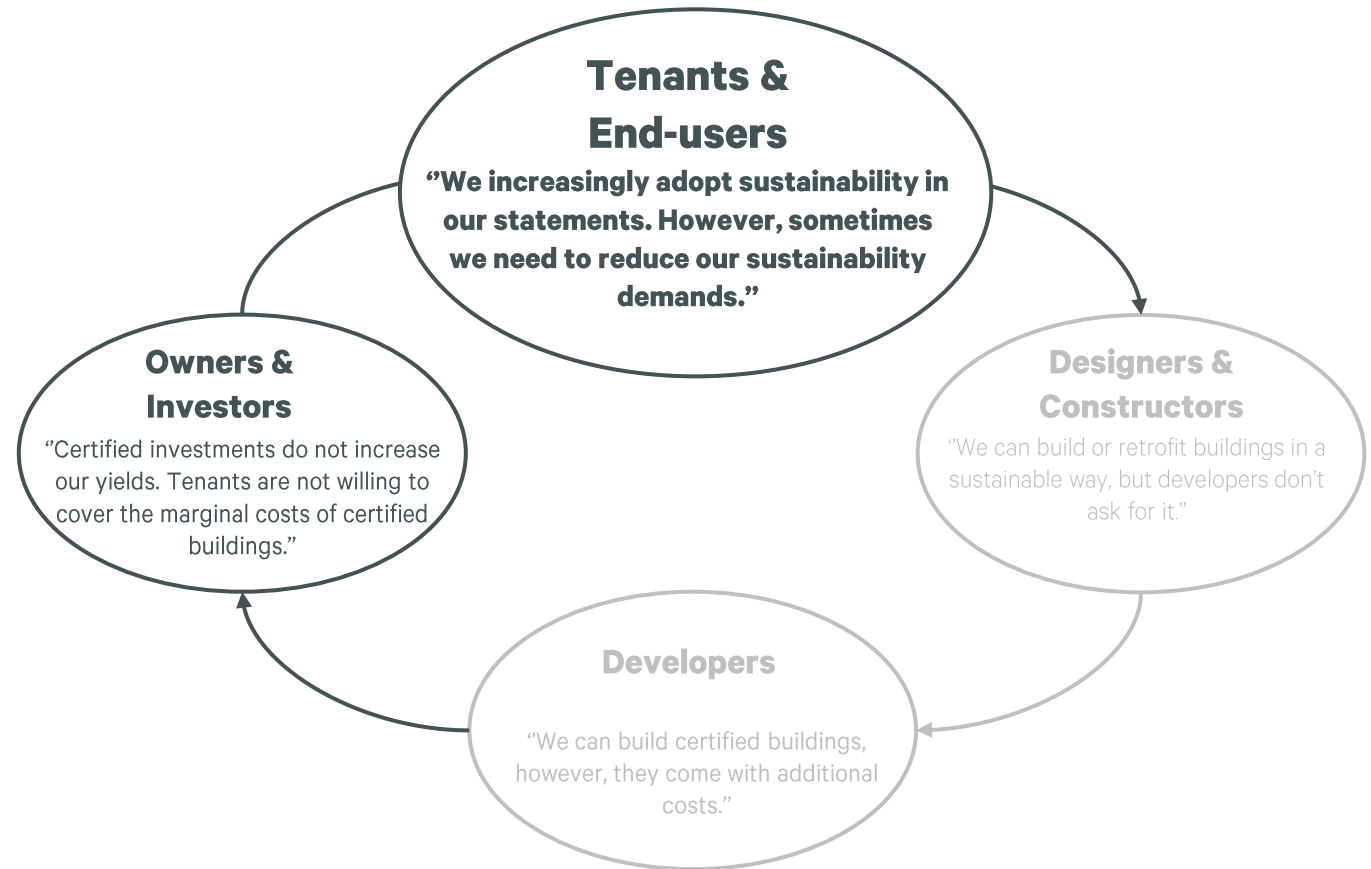


Figure 7: Current state of the Vicious Circle of Blame (adapted from RICS, 2008)

Conclusion

- End-users are increasingly adopting sustainability measures in their overall strategy.
- **BREEAM-NL positively influence real estate market value.**
- **Better performing buildings generally hold higher rental levels.**

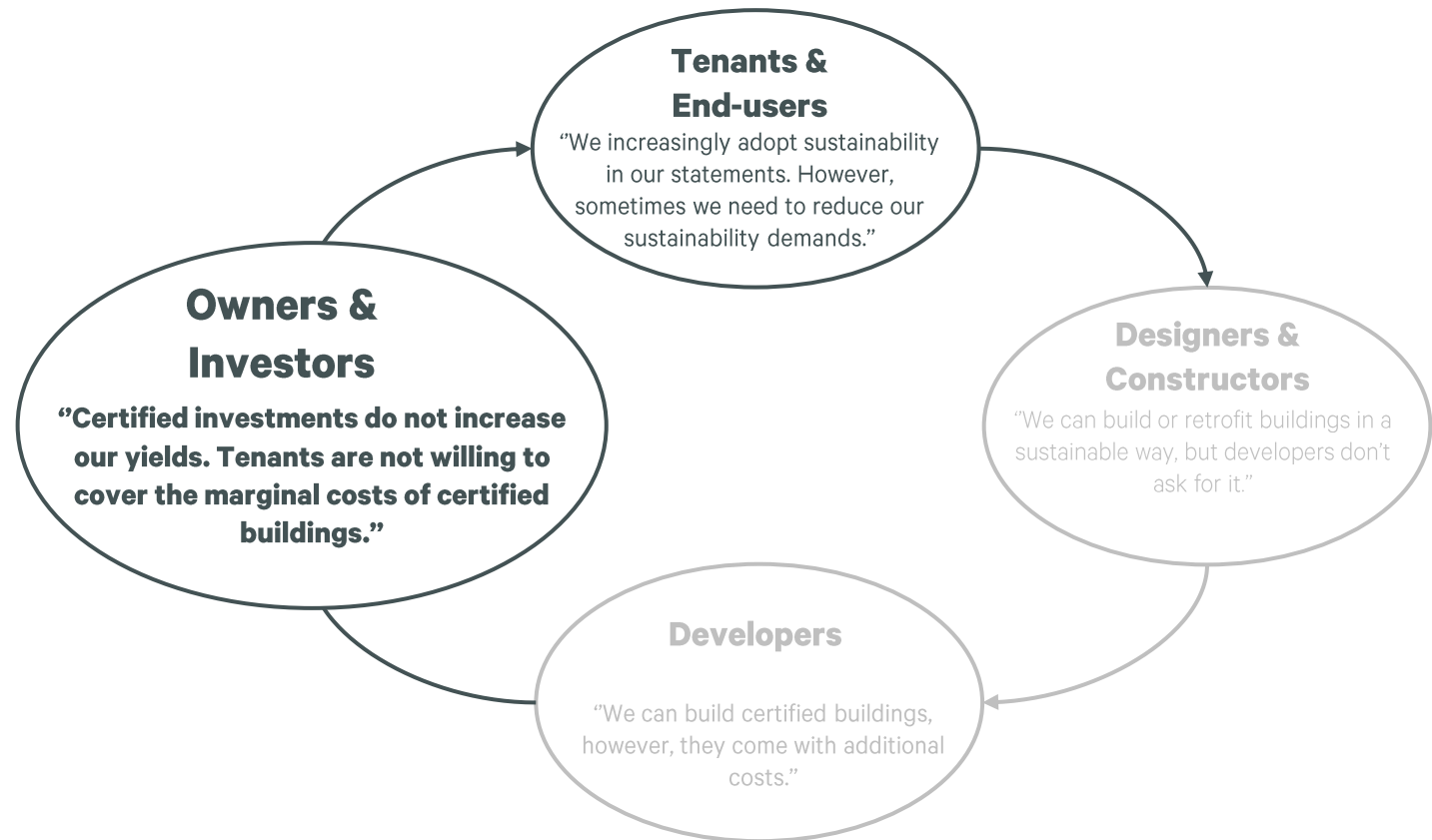


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- End-users are increasingly adopting sustainability measures in their overall strategy.
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- **More research on the added value during the entire life-cycle is needed (operating costs, productivity, health)**

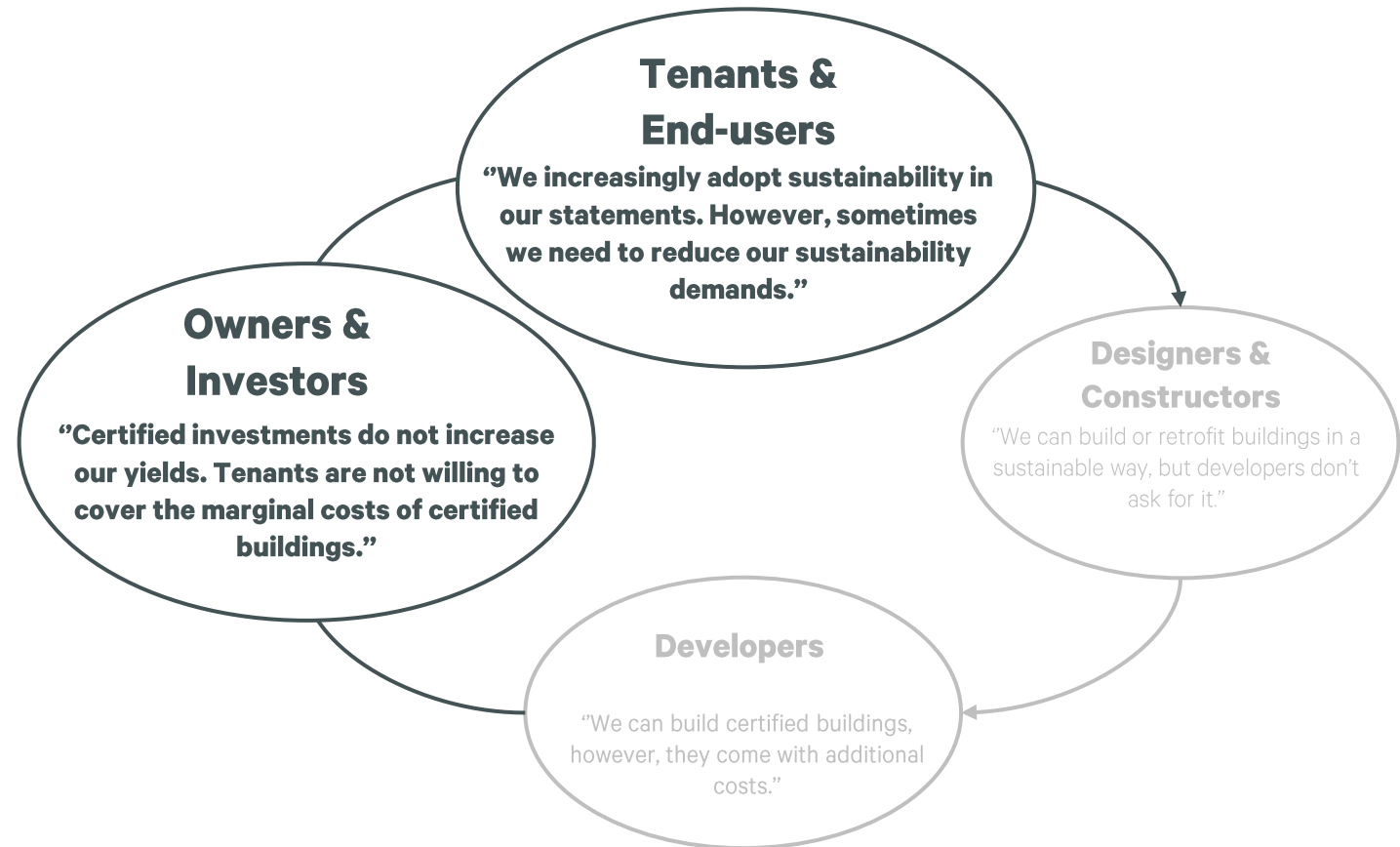


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- **More research on the marginal costs of green buildings**

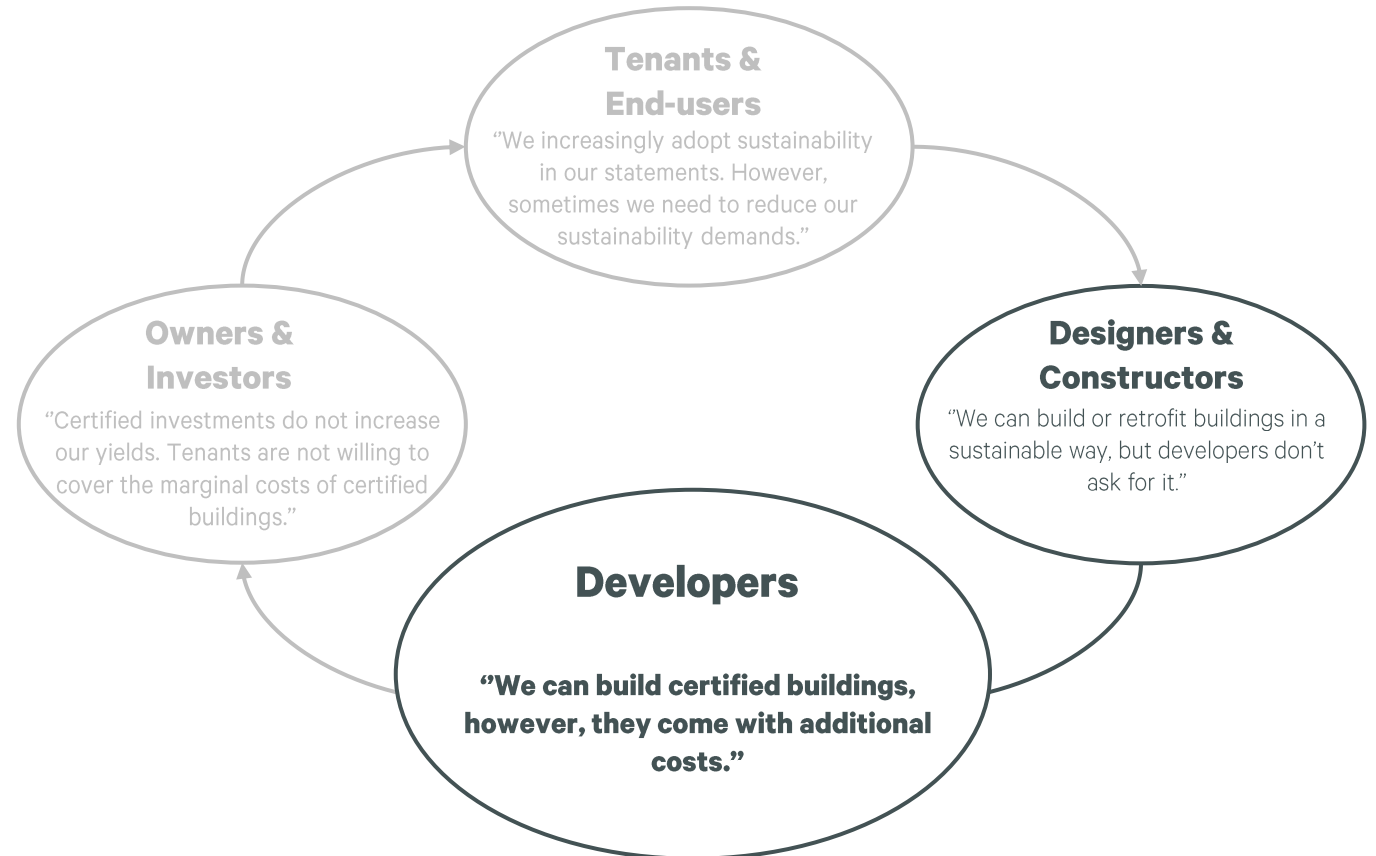


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- More research on the added value during the entire life-cycle is needed (operating costs, productivity, health)
- More research on the marginal costs of green buildings
- **Turning the Circle of Blame into a positive feedback loop**

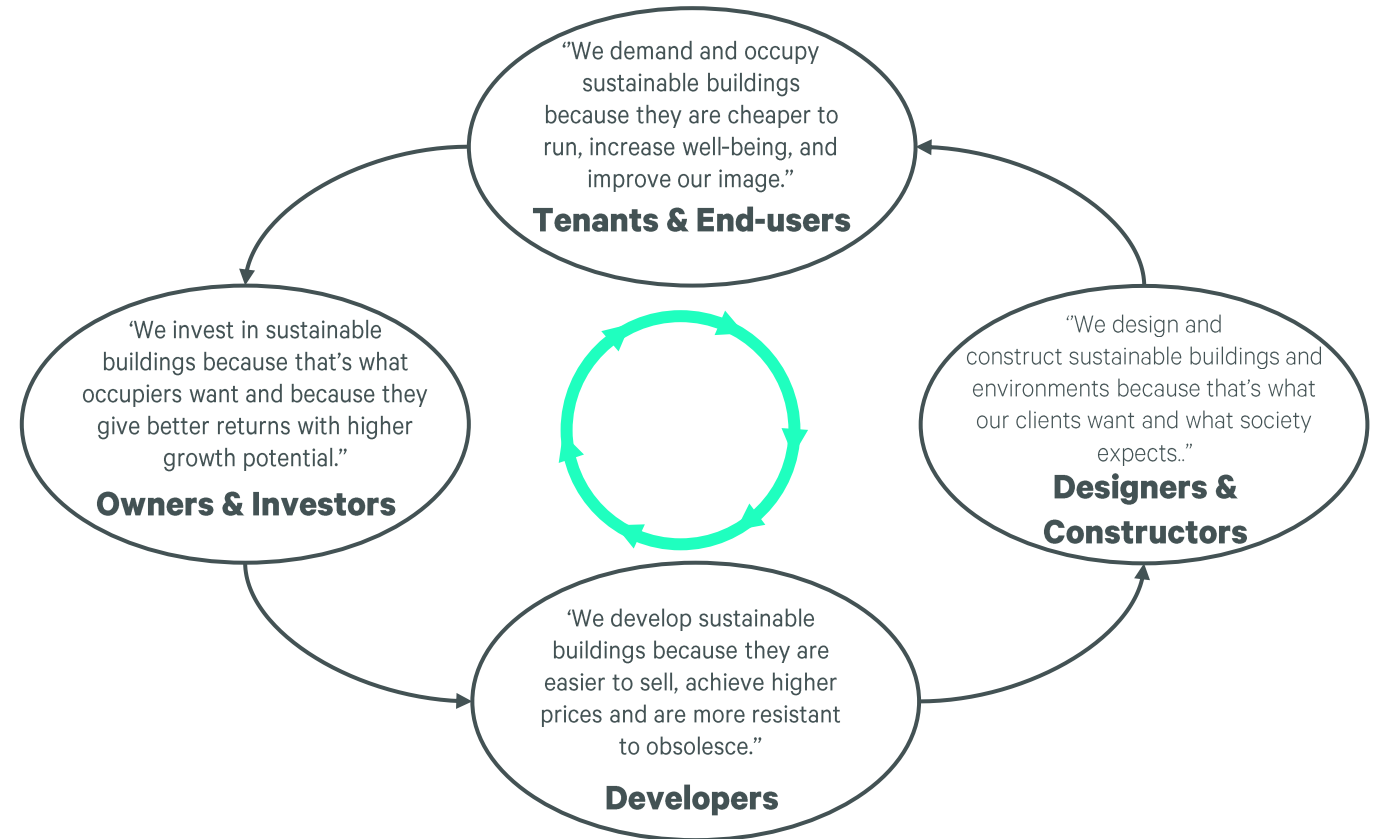
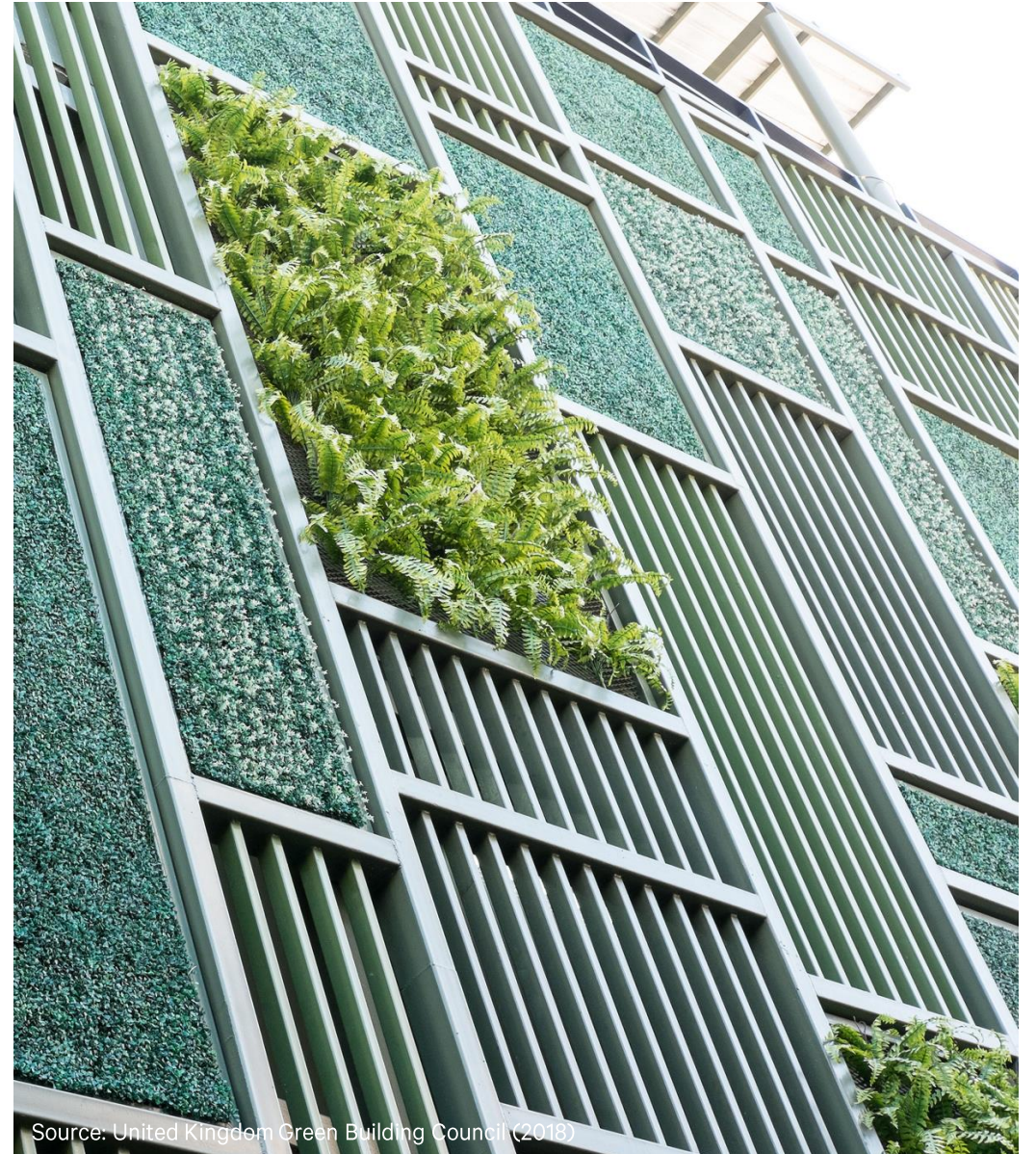


Figure 8: Positive feedback loop (adapted from RICS, 2008)

Sustainable Value Drivers

A Research on the Added Value of Environmental Certification on Office Pricing



Source: United Kingdom Green Building Council (2018)

Sources

CBS (n.d.). *Welke sectoren stoten broeikasgassen uit?* Retrieved December 4, 2022, from <https://www.cbs.nl/nl-nl/dossier/dossier-broeikasgassen/welke-sectoren-stoten-broeikasgassen-uit-#:~:text=In%202021%20werd%20van%20de,het%20stoken%20van%20aardgas%20voor>

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