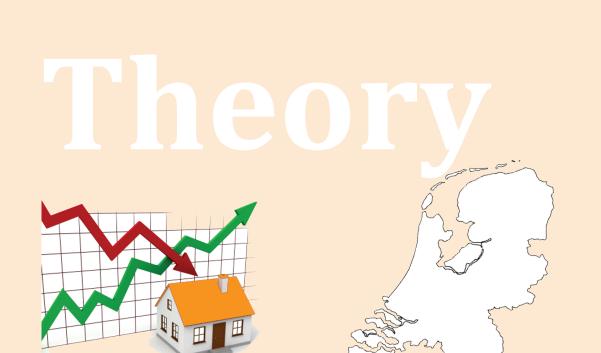
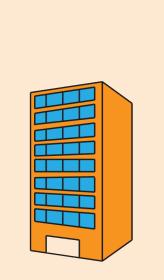
Life Cycle Costs of

Transformation

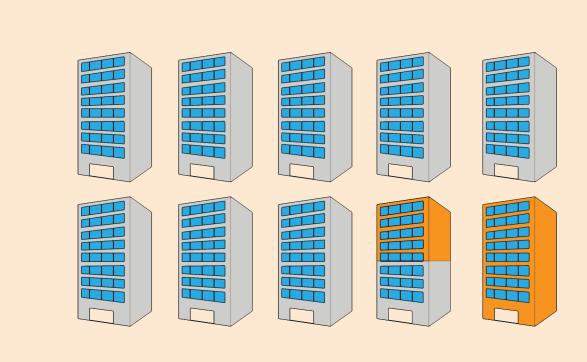
An LCC model for developers and investors for comparing the costs and benefits of different intervention strateaies for vacant office buildina



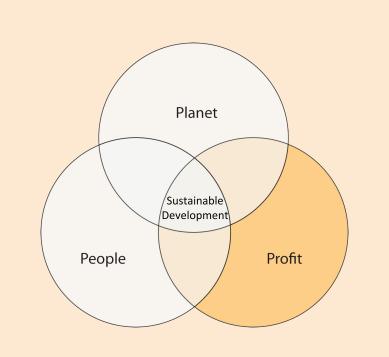




Building



15% office vacancy



3P mode

Empirical Research

Caca Studios













Variables

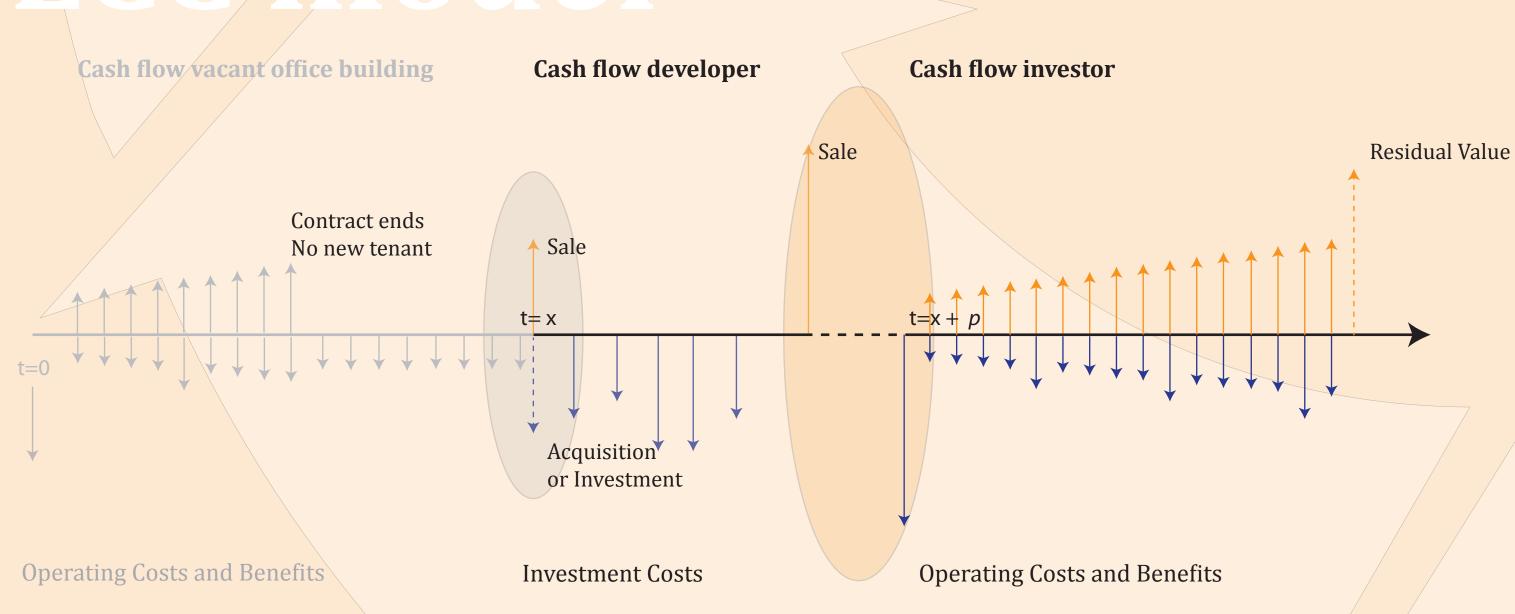












	New-Build		/
€ 20.000.000,00			
€ 15.000.000,00			
€ 10.000.000,00		Acquisition	
€ 5.000.000,00		Sale	
€ -	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Revenues	
€ -3.000.000,00	0 1 2 3 4 3 6 7 8 9 10 11 12 13 14 13 16 17 18 19 20 21 22 23 24 23 26 27 28 29 30	Costs	
€ -10.000.000,00			
€ -15.000.000,00		Accumulated NPV	
€ -20.000.000,00			
€ -25.000.000,00			



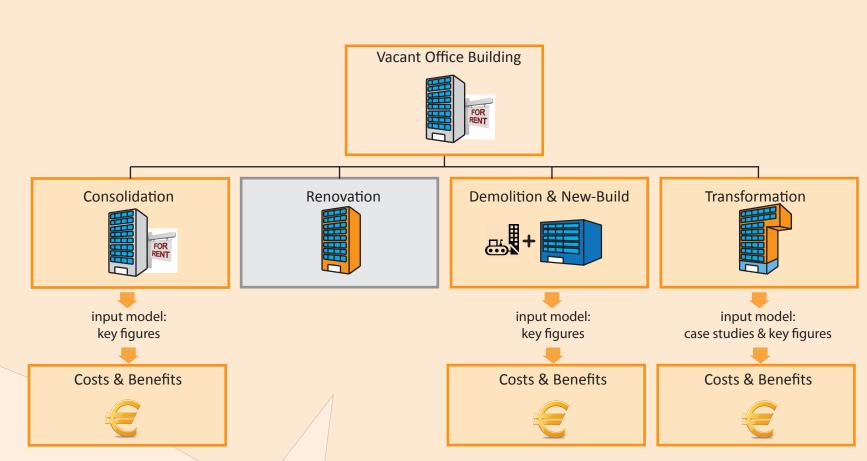


jg bouweconomie.

Jelle de Groot

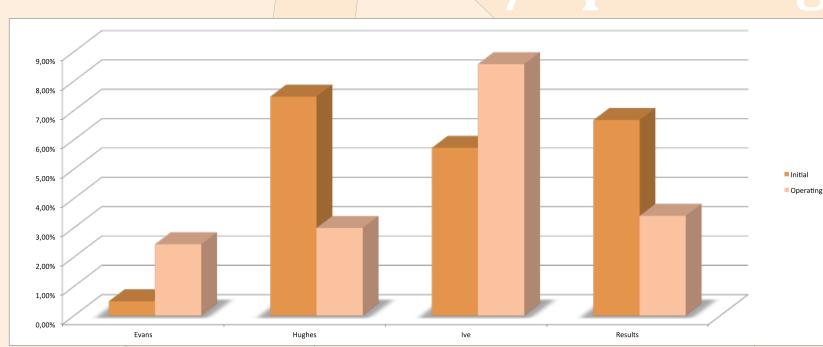
In the netherlands there is about 16 million m2 of vacant real estate. This consists of different types of real estate like; churches, schools, and office. The vacant office buildings play a large role in the total vacancy problem and is the focus of my research.

The 7 million m2 could fit almost 90.000 housing units (just the offices). These 90.000 units is twice to annual total current construction production. Transformation could therefore solve the vacancy problem and housing problem for significant part.



Strategies LCC model

Ratio Investment/Operating





Sheets LCC model

	Inpu	t Sł	neets
Office input -Specific building cha	racteristics		Benefit input -Rental income & WOZ-value
Strategies input -Specific decisions co building strategies	ncerning new		Economic Variables -Marco economic variables, indexat & other economic variables

Cost Database Sheets For each strategy: -Investment Costs -Operating Costs

Investment Costs Sheets

For each strategy:
-A summery of all Investment Costs

Operating Costs Sheets

For each strategy:
-A summery of all Operating Costs

Cash Flow Sheets

For each strategy:
-All Costs & Benefits plotted and indexed over the lifespan

Summary/Output Sheet

For each strategy:
-Investment Costs
-Operational Costs
-Revenues

	Tra	nsformation	ı	Demolition & New-build		Consolidation
Energy Label		D		A+		G
Total Investment Costs	€	15.760.800,95	€	16.735.724,28	€	3.625.637,87
Investment Costs € / GFA	€	1.881,89	€	1.998,30	€	541,14
Total Operating Costs / year	€	-314.436,29	€	-381.529,22	€	-2.114.403,27
Total Operating Costs (30 years)	€	-9.433.088,77	€	-11.445.876,63	€	-63.432.098,08
Operating Costs / GFA / year	€	-37,54	€	-45,56	€	-315,58
Operating Costs / GFA (30 years)	€	-1.126,34	€	-1.366,67	€	-9.467,48
Ratio Operating / Investment		0,60		0,68		17,50
Potential Value (GIY)	€	21.049.761,69	€	22.052.668,69	€	3.908.333,33
Result (year 0)	€	5.288.960,74	€	5.316.944,40	€	282.695,46
Total Revenues / year	€	1.041.823,02	€	1.515.720,28	€	-2.280,11
Total Revenues (30 years)	€	31.254.690,71	€	45.471.608,38	€	-68.403,27
Revenues € / GFA / year	€	124,40	€	180,98	€	-0,34
Revenues / GFA (30 years)	€	3.731,90	€	5.429,45	€	-10,21
Residual value	€	7.422.535,64	€	8.479.332,82	€	-68.403,27
 LCC € / GFA / year	€	25,28	€	71,39	€	-333,96
LCC € / GFA (30 years)	€	758,52	€	2.141,83	€	-10.018,83
NPV	€	6.352.602,22	€	17.937.865,92	€	-67.126.139,23
IRR		7,52%		9,56%		N.A
ROE		8,22%		14,47%		#DIV/0