Real Estate development between stagnation and modernisation

After a historical peak in 2001 the Dutch non-residential real estate market is characterized by growing vacancy, discontinuity of building construction and uncertainty about development opportunities. The recession in 2008/2009 -and again in 2011/2012- strengthens the uncertainties about the future. Nevertheless the real estate market was in the last six years overflowed with 95 million square meter new buildings. Generally the recent and future building activity primarily depends more on replacement and modernisation, and less on extension of the building stock. However, a sectoral review shows striking differences between the industrial, office, retail, healthcare, educational and public real estate development.

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This article provides insight in the structural changes in property development and in the consequences for the past and future sectoral building activity. Since the mid-eighties 350-355 million gross square meters new buildings were produced. This may be divided in cheap square meters in industrial and agrarian buildings (2/3) and more expensive square meters in offices, shops and other private and public buildings (1/3). This voluminous production of new buildings was far above what was needed for growth of the building stock in use. The consequence was a considerable replacement and disinvestment of existing buildings. Consequently this led to a strong growth of the young and modern building stock and to reduction of the older stock in use. On sectoral level the quantitative and qualitative relations between stock, extension, replacement and disinvestment vary strongly. This requires sectoral analysis and comparison.

Focus, objective and research method
The aim of the this research is to model and explain the adjustment of the building stock, in relation with the growth of the stock in use and with the observed and future replacement of the building stock. The analysis encloses 3 steps:

Step 1. What happened in the period 1986-2005?
The building stock in use ultimo 2005 is confronted with the available stock ultimo 1985 (TU Eindhoven, 1987) and the construction statistics 1986-2005 (CBS). The estimated stock in use is derived from former research (Soeter, 2010) and updated for retail outlets (Locatus, 2012). The confrontation leads to conclusions in terms of a relative "young" or a relative "old" sectoral stock in use and about extension, replacement, disinvestment and the way of modernisation. Moreover the growth of the stock in use 1985-2005 is linked with relevant indicators for this growth, like the growth of office employment, the growth of industrial production and so on. The findings are used in step 2 and step 3 to determine the split between new buildings for expansion and those for replacement of the stock in use.

Step 2. What changed after 2005?
The period 2006-2011 is analysed more in detail. The production of new buildings is divided in an expansion and a replacement component. The expansion component is -if available- based on the observed growth of the stock in use. Otherwise the expansion component is determined with the help of the best available indicator for the growth of the stock in use, mostly the production and/or employment growth.
This period started with an upswing of the building activity to an all times record in 2008. After 2008 followed a strong decline, in the meantime the GDP-shrinkage in 2009 directly led to a drop of demand with 45% less square meters of building permits. For a sectoral review see *Table 1.*

In *Table 2* follows an overview with the sectoral production of new buildings 2006-2011 and the estimated sectoral growth of the stock in use.

Step3. What may be expected in the long run?
What are the structural forces behind expansion, replacement and modernisation of the sectoral building stock(s) and to what future building activity will that urge? What are the deviations from the historic trends?
The analysis starts here with the interpretation of the sectoral replacement of buildings 2006-2011 in relation with the pre-1985 part of the stock in use 2005. This provides insight in the circulation time of the building stock. In *Table 3* follows an overview with successively: the Sectoral Stock in Use ultimo 2005 > the Post-1985-part > the Estimated Replacement 2006-2011 > the Estimated Circulation Time 1985-stock. The overview is completed with a forecast of the production of new buildings in the period 2012-2017 and the deviation with the period 2006-2011 (+/- %). The forecast 2012-2017 is based on the expected output of the construction pipe line in 2012 (EIB, 2012), on a 1% GDP growth-scenario for 2013-2017 and on additional sectoral growth trends.
Here follow the most important findings for the industrial, the retail, the office, the healthcare and the public sector.

Industrial and Commercial Buildings
The industrial and commercial building stock ultimo 1985 was underperforming, highly vacant and insufficient adaptable to meet the standards of the new industry. Manufacture, Trade, Transport and Communication have in common that they are characterised by permanent restructuring, with scaling-up, concentration and innovation of production, equipment and buildings. The unavoidable consequence is a relative high replacement and disinvestment activity. The functional and economic outdated stock, with a specific lay out, is gradually replaced by modern large scale buildings, with a more generic form and layout, with function linked logistics and ICT and with a better economic performance. In 2005 nearly 50% of the stock in use was in buildings which were built after 1985. In the meantime the new buildings also facilitated a strong growth of production, especially of Trade, Transport and Communication (and the slogan became "Nederland Distributieland"/"The Netherlands Distribution country"). In the period 2006-2011 nearly a fourth part of the new built square meters for this sector was in large scale logistical buildings (EIB, 2011, 2012).
The recent replacement activity tends to an estimated circulation time of the 1985-stock of 47 years. The continuation of this replacement tempo and the moderate growth of the stock in use accords with a general 1% economic growth scenario. Then the production of industrial and commercial buildings and warehouses in the period 2012-2017 may equal those in the period 2006-2011.

Agrarian buildings
The relative highest building and replacement activity is observed in the agrarian sector. The recent replacement of *Glass houses* and of *Barns and Sheds* tends in both cases to an estimated circulation time of the 1985-stock of 36 years. For the total agrarian sector the disinvestment roughly equals the addition of new buildings. The high replacement is driven by a combined strive for scaling-up, cost reduction, automation, energy conservation, "green" industrialisation, higher food quality and animal protection. The volatility of earnings, production costs and profit is in this sector relative high. The go/no go of building activities depends on rapidly changing market conditions, funding problems after the financial crisis and growing social resistance against the growth and scaling-up of agrarian buildings. A normative circulation time of 38 years (based on CBS, 2009) allows a 20% lower replacement activity after 2011 and a 6,5 million square meters loss of production of new agrarian buildings in 2012-2017).

Retail outlets and Other Buildings Market Sector
The surface of retail outlets grew in 20 years with nearby 50%. The link between *Retail outlets* statistics (Locatus, 2012) and construction statistics (CBS, 2012 and EIB, 2011, 2012) is problematic. The replacement component is undeterminable. The stock in use -as registered by Locatus- encloses all retail outlets, that are all detached shops, including those who are used for repair and consumer services, those who are incorporated in mix buildings and additionally the large scale retail outlets in industrial buildings. The expectation for 2012-2017 is again 3 million new built gross square meters, with a shift from expansion to replacement.

Demarcation problems also arise in relation with the residual *Other Buildings Market Sector.* The average annual GDP growth in the period 2005-2011 was about 1,1%.
Though the production numbers Other Buildings Market Sector for 2005-2011 fit well with a 1%-scenario and are copied for 2012-2017

Offices
The office sector was the most expanding sector in the past decades. The background was a comparable expanding of office employment, especially in the Financial, Business and
ICT Services sector. In 2005 nearly 70% of the square meters in use was in post-1985 buildings. The office stock is consequently the most youngest and modernized sectoral building stock. After 2001 the last office building boom came to its end. The office real estate market could not any longer absorb all the new office buildings which came out of the construction pipe line, while the growth of office employment stagnated. In reaction on the overflow of the market by developers a lot of new initiatives were cancelled and many office users seized the opportunity to remove from their excisting office accommodations to vacant new buildings. The consequence was that the vacancy gradually shifted from new to outdated buildings. The vacancy of existing offices rapidly rose to 12% of the available office stock in 2005. A revival of the office development & construction market was after 2005 out of the picture. Ultimo 2011 the vacancy of the commercial office stock is 14%, while the supply on the office user market of new buildings is extreme low, only 1%. The developers became extreme risk-avoiders.
The office stock in use in 2005 (80% commercial, 20% non-commercial) is in the last six years expanded with about 5%. After 2008 the employment in Financial, Business and ITC services sector shrunk by 6 to 7%. The impact of this decline on the office stock in use is not manifest yet, but it will -in combination with stagnating growth of office employment elsewhere- lead to a decline or zero growth of office use. If in the future all new buildings are for replacement, a continuous annual replacement activity of 1 mln square meters would lead to a reduction of the circulation time of the 1985-office stock to 39 years. Consequently this results in a 25% drop of the production of new office buildings.
In the office sector modernisation was identically to realizing new buildings. Vacancy, crisis and free office concepts changed the scope more in the direction of upgrading of existing buildings to meet higher technological, social, functional and environmental standards. New, free office concepts are easy to integrate in existing buildings.

Healthcare and public buildings
In the eighties and nineties the investment in *healthcare buildings* had a low public priority. This changed in the last decade. In the long run an unavoidable strong growth of the healthcare production -in relation with an ageing population- urges for more facilities. Due to financial restrictions the annual new building activity is recently not higher than 1,2 million square meter and the circulation time tends to 65 years. Modernisation by upgrading nevertheless leads to a high renewal activity inside the existing building stock (recently 40% of total investment in healthcare buildings). A 15% higher production of new buildings will reduce the circulation time to 43 years. The uncertainty about the future funding and structuring of healthcare services and accommodations leads to a permanent slowdown of initiatives. For this reason the expected production of new healthcare buildings in the period 2012-2017 varies between 6 and 7 million square meter.

Educational buildings
In the eighties and nineties the investment in educational buildings had a low priority too. After 2000 total investment in educational buildings grew again until 2008. The number of scholars and students was in that time slightly growing. This growth was concentrated in the tertiary schools and the universities.
Total employment and production in schools and universities grew in the last eight years
with 2%.The observed replacement of educational and university buildings 2006-2011 leads by continuation to a circulation time of the sectoral building stock of 62 years. Further zero growth of the sector in combination with the same level of production of new buildings will reduce the circulation time to 53 years. Since the mid-nineties refurbishment & main repairs nearby equals the production of new buildings in this sector.

Other public buildings
In the construction statistics this are the residual buildings for government and for the non-profit sector. The production of new buildings 2012-2017 is heavily influenced by shrinking public funding in relation with governmental budget cuts and by stagnation of the growth of public employment. For the period 2012-2017 a 20% reduction of the production of new buildings is assumed.

A changing development perspective
Observation and analysis of the period 1985-2005 and more in deep of the period 2006-2011 leads to the following conclusions and expectations:

- The market sector is characterized by a more young and modern building stock. The favourite adjustment strategy is "modernisation by replacement and disinvestment". Since the mid-nineties this was stimulated by abundant "cheap finance". On the contrary the budget sector has a relative old building stock and is primarily dependent on "modernisation by upgrading'.
- In the last six years the average annual mutations were: the production of new buildings in square meters was 3 % of stock in use, divided in 1% expansion and 2% replacement.
- In combination with a 1% GDP-growth scenario the expectations for the coming six years are: an annual 2,6% production of new buildings, divided in 0,8 % expansion and 1,8% replacement.
- High production of new buildings before 2008 was favoured by abundant "cheap finance", rising real estate values and prices, and by a high demand for new real estate space. All has changed after 2008 and that slowdowns the production of new buildings after 2008.
- The social-economic context of future real estate development is:
  - diminishing population growth, but increasing growth of 70+ population,
  - low GDP-growth >> 1% scenario,
  - urge to meet higher technological, social, functional and environmental standards.
- Project development after the crises means:
  - in general less production of new buildings for expansion and replacement of the building stock,
  - more modernisation by upgrading and transformation in combination with more "green" modernisation,
  - more financial complications around projects and
  - more critical clients and users.

Expected Circulation Time of the Building Stock 1985
These is here approached as the period after which the continuous replacement of buildings would be sufficient to take the complete 1985 Building Stock out of use. For example: A continuation of the observed replacement of offices in the years 2006-2011 is sufficient to take the last office buildings from before 1985 out of use in 2044. That is 59 years after 1985. Though the expected circulation time of the 1985 stock of offices tends to 59 years. A higher future replacement activity than in the years 2006-2011 would reduce this circulation time.

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Table 1: Drop in demand for new buildings

	Sectoral economic growth 2008-2009	*Gross Floor Area of building permits for new buildings 2009/2010 compared with 2007/2008*	
Market sector			
Agriculture	+3%	Glass houses	-83%
		Barns & Sheds	-3%
Industry	-7%	Industrial & commercial buildings & warehouses	-49%
Trade, Hotels and Catering	-7%	Shopping stores	-50%
Transport and Communication	-5,5%	Other buildings market sector	-12%
Fin. and Business services	-3%	Offices	-44%
Public sector			
Education	+1,5%	Schools	-33%
Government		Offices	+78%
Healthcare	+2,5%	Other buildings	-4%
Non-profit services			
Total of all sectors	**-3,5%**		**-45%**

Source: CBS

Table 2: Expansion of the building stock

	Estimated stock in use ultimo 2005 (m^2 GFA)	*New buildings 2006-2011 (m^2 GFA)*	*Estimated growth stock in use 2006-2011*
Glass houses	105 mln	24 mln	5,5 mln m^2 extension of area vegetables & fruit
Barns and Sheds	70 mln	19 mln	3,5 mln m^2 for extension live stock
Industrial and Commercial Buildings and Warehouses	170 mln	26 mln	7 mln m^2 related to growth of production
Retail outlets	31 mln	3 mln	3 mln m^2 GFA observed
Other Buildings Market Sector	24 mln	2 mln	1 mln m^2 related to growth of production
Offices	58 mln	5,5 mln	3 mln m^2 related to growth stock in use
Healthcare buildings	24 mln	6,5 mln	4 mln m^2 related to growth healthcare production
Educational buildings	33 mln	4 mln	1 mln m^2 related to growth educational production
Other buildings public sector	25 mln	4,5 mln	1,5 mln m^2 related to employment growth
All building types	**540 mln**	**95 mln**	**30 mln m^2 in total**

Available for replacement: 11 mln m^2/year

Table 3: Building stock and production new buildings

	Estimated stock in use 2005 (m^2 GFA)	Of which in post-1985 buildings (%)	Estimated replacement 2006-2011 (m^2 GFA)	Observed circulation time pre-1985 stock	Forecast production of new buildings 2012-2017 (compared with 2006-2011)
Glass houses	105 mln	50-55%	18,5 mln	36 years	20,5 mln (-15%)
Barns and Sheds	70 mln	35-40%	15,5 mln	36 years	16 mln (-15%)
Industrial and Commercial buildings and Ware houses	170 mln	45-50%	19 mln	47 years	26 mln (equal)
Retail Outlets	31 mln	30-35%	Undeterminable	Undeterminable	3 mln (equal)
Other buildings market sector	24 mln	50-55%	1 mln	62 years	2 mln (equal)
Offices	58 mln	65-70%	2,5 mln	59 years	4 mln (-25%)
Healthcare buildings	24 mln	20-25%	2,5 mln	65 years	6,5-7,5 mln (0 to +15%)
Educational buildings	33 mln	30-35%	3 mln	62 years	4 mln (equal)
Other buildings	25 mln	30-35%	3 mln	53 years	3,5 mln (equal)
All building types	**540 mln**	**45-50%**	**65 mln**	**46 years**	**86 mln (-10%)**