Buildwise

FINANCING & AFFORDABILITY OF CONSTRUCTION IN 2031

A PUBLICATION
OF BUILDWISE'S
VISION COMMITTEE

Buildwise

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1/ Foreword

For an innovation centre like Buildwise, it's important to keep scanning the horizon.

To ensure growth in the sector, we need an effective approach focused on adopting innovative techniques and technologies, a clear strategy and a strong vision for the future. Buildwise cannot content itself with merely meeting companies' short-term needs. We must also play a visionary, pioneering role in today's society as it evolves in an increasingly fast and complex manner.

Made up of people working in various building trades and professions, our 15 Technical Committees are a permanent, living link to our members' everyday work. Determining the priorities for action in their respective sectors for the next 12 to 36 months, they are the Innovation Centre's hive of activity. Their work ensures that Buildwise's short-term activities are guided by practice and in line with the industry's current requirements.

With the construction industry looking to us for advice, Buildwise drafted its new strategic plan, Ambitions 2025, in 2020. This provides our members with inspiration, motivation and enthusiasm to meet the challenges they face in terms of technology, the economy, the environment and society by 2025.
We aim to make a real impact on companies' day-to-day work via the research we conduct and by sharing the knowledge we have gathered. The industry must also continue to modernise by adopting new technologies. Over the next few years, we will focus our efforts on the following three strategic fields: construction trades and professions, the Green Deal and Construction 4.0.

Today more than ever, we are faced with unprecedented challenges in the construction industry, while on the other hand technological developments are providing unprecedented opportunities. Against a backdrop of fast-developing technology and advances in education and training, our potential to adopt new technologies is growing. We are developing clear paths for tackling trends in society, backed by the political will to join forces behind Europe's long-term aim to become climate-neutral by 2050, in line with the Paris Agreement. With the construction industry playing a key role in several of these changing areas, we need to develop a clear vision spanning 10 years or more.

Having set up its Vision Committee in 2019, Buildwise endeavours to be a long-term source of inspiration. Committee members see their role as "sharing inspiration and vision as a driver for progress and innovation in construction". We hope that this publication – belonging to a series of workshops organised by the Vision Committee – inspires you to help build the future of our industry.

Olivier VANDOOREN
Director General Buildwise

2/ Introduction

‘Sharing inspiration and vision as a driver for progress and innovation in construction’

The world seems to be turning faster than ever before. New technologies are rapidly emerging, yet there is also no denying that we are facing some major social challenges. Naturally, this is having an impact on the way we live and build. In these exciting times, it is essential for our companies to have a clearer vision of the medium-term future of the construction sector.

Set up in 2019, the remit of Buildwise’s Vision Committee is to develop a medium- and long-term perspective for developments within the construction sector in Belgium. In doing so, it is expected to help chart Buildwise’s long-term strategic vision. The Committee assesses future developments by mapping and analysing challenges and opportunities within the construction sector, taking account of likely **p**olitical, **e**conomic, **s**ocial, **t**echnological, **e**nvironmental and **l**egal evolutions (a PESTEL analysis). One important tool used in developing these visions are thematic sessions with keynote speakers, panel discussions and audience interactions. The insights gained here are complemented by the visions of further experts, in particular those belonging to the Vision Committee, resulting in a Vison Paper such as this publication.

Previous sessions brought specialists together with the members of the Buildwise Vision Committee to discuss the following topics:

- DIGITAL TRANSFORMATION. This session was held in June 2021, with Alain WAHA as keynote speaker
- CITY & BUILDING TRANSFORMATION. Held in September 2021, Luk PEETERS was the keynote speaker at this session.
- CIRCULARITY and CHANGING BUSINESS MODELS. This session was held in December 2021, with Thomas RAU as the keynote speaker.

These sessions resulted in corresponding vision papers, downloadable from **https://visie.buildwise.be**

This Vision Paper is to be seen as part of a broader PESTEL approach, focusing on the theme “FINANCING and AFFORDABILITY in CONSTRUCTION”. It was preceded by a same-named session held in the ‘Koloniënpaleis’ in Tervuren and broadcast live on the internet for the public at large. There were 4 keynote speakers and a panel discussion with a Q&A session in the second part.

The result of this work – this Vision Paper – has two main sections:

- A summary of the vision elements and discussion points from the keynote speeches and the discussion panel, including interactions with the audience
- A summary vision drafted by the Buildwise Vision committee

Summarising the reflections of the Vision Committee, the concluding remarks in this paper are intended to inspire us and set us on the path to building the future of our construction industry.

Our special thanks go to the keynote speakers as well as to Kevin DETHIER, Wim STRAETMANS and Jean-Christophe VANDERHAEGHEN who guided this session in the right direction.
We also thank all Buildwise staff who helped set up the digital event in a professional manner.

Tom WILLEMEN,
Chairman of the Vision Committee
CEO of the WILLEMEN GROUP

Bart INGELAERE
Deputy Director General, Buildwise

3/ Summary

Summary of the vision elements and discussion points from the keynote speeches and the subsequent debate with the panel of experts and interactions with the audience

Wim Straetmans (BAM-KAIROS), Kim Creten (KBC Real Estate), Thierry De Wever (Belfius Bank), Geert Temmermans (BNP Paribas Fortis), Dave Remue (KPMG), Matthijs Lamote (Buildwise)

1 Affordability

1.1 Housing affordability: concept, parameters and determinants

The affordability of (home) ownership is determined by the relationship between house price developments and factors enabling households to actually pay that house price. In essence, it refers to the necessary initial down payment and the monthly instalments to be paid by households to own a home (mainly interest and mortgage repayments, but also maintenance and energy costs) in relation to their monthly disposable income.

The factors affecting (future) affordability are multidimensional:

- The current price level of homes is relatively high and is expected to remain so in the coming years.
- The majority of people take out a mortgage to buy a home. The financing terms help determine the repayment capacity. Not only must one be able to pay the monthly instalments (depending on the interest rate and mortgage term) on the mortgage. A cash down payment is also needed to obtain the mortgage from the bank.
- The level of household income - influenced by economic parameters such as GDP growth, inflation, labour market situation - determines repayment capacity.
- In line with demographic and social evolutions, demand for housing is also changing.
- New housing trends allow housing demand to be met in alternative ways.
  The trend towards smaller living areas is ubiquitous. On the other hand, if (larger) homes become unaffordable, buying and sharing as part of co-housing/kangaroo living could be a solution. These can be solutions to high (own) housing costs. However, the Covid crisis generated new demand for private exterior spaces such as terraces or (small) gardens.
- Housing supply is a further driver of house prices.
  If we can boost building productivity by building more simply (industrialised) and making greater use of technology, then construction costs and house prices can come down.
- Government policies
  The government can influence house prices through subsidies, taxation and imposing building standards (especially regarding energy/environment), but also indirectly through reducing the lead time for obtaining a building permit.
- Energy consumption and home maintenance costs.
  Obviously, if less has to be spent on energy to heat a home, monthly instalments become more bearable.
- The availability of building land (and inversely factors such as the 'bouwshift', a regional government policy aimed at limiting further urban sprawl).

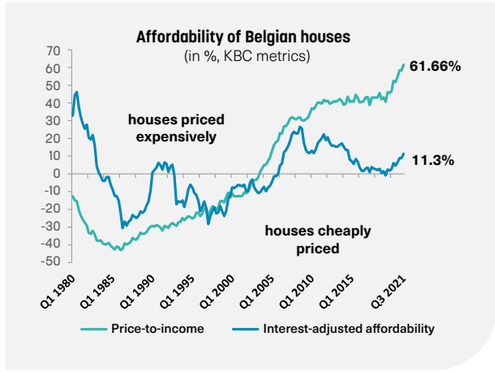
1.2 Price-to-income ratio and interest-adjusted affordability

When assessing the affordability of (own) home ownership, it can be interesting to compare house prices with household income - the price-to-income ratio. The KBC bank has developed an econometric model providing insights into this ratio.

The price-to-income ratio relates the evolution of house prices to that of average household disposable income. The current value of the ratio is compared with the long-term average, which is assumed to correspond to an equilibrium level. A ratio above the long-term average indicates that households' ability to finance home purchases is at risk. Calculated this way, housing in the third quarter of 2021 was overpriced by as much as 62% compared to the long-term average (see ill. 1).

Besides income, affordability also depends on mortgage interest rate trends. Interest-adjusted affordability compares the annual payment (incl. principal and interest) a mortgage holder has to pay out of household disposable income. As with the price-to-income ratio, this extended measure of affordability is expressed as a percentage deviation from the long-term average. Calculated this way, house prices in the third quarter of 2021 were much lower (thanks to sharply lower interest rates) but still 11% over the long-term average (see ill. 1).

Looking ahead, higher interest rates and slower GDP growth are expected to negatively impact affordability. The uncertain situation in 2022 since the invasion of Ukraine, the resulting energy crisis and inflation are set to reinforce this negative tendency.



Illustr. 1: Affordability of Belgian housing (in %, source KBC)

Q & A: AFFORDABILITY

Why can't we extend the term of a mortgage from 20 years to 30 or 40 years to keep repayments affordable?

Geert Temmerman: "Some neighbouring countries already have mortgage loans of 40 years or more. Such mortgages transcend generations. But you shouldn't forget that longer repayment periods also have an impact on prices. Mortgage repayments over a longer period open up the possibility to buy a more expensive house. Cheap mortgages and longer repayment periods make house prices rise, which in fact means there will be fewer affordable houses in the future."

Is leasehold (where the leaseholder gets to use the land for 90 or 99 years and can build a house on it) a way to improve affordability?

Kim Creten: "Every landowner wants some return on his land. This can be achieved by selling or by leasehold. In the latter case, he remains the owner, with the leaseholder having to pay for the use of the land for the leasehold period. You basically spread the price of the land over a longer period, thereby improving affordability. However, lower land prices are also an incentive to increase construction prices."

Building permits play a big role in private investments, but their issuance takes a very long time in Belgium. The government should take measures to seriously reduce lead times. From the banks' point of view, what would be the concrete benefits of shorter lead times?

Kim Creten: "Can I just look at that from a developer's point of view? A lot of time elapses between the purchase of the land, the start of the construction work and the sale or letting. All that time there is capital tied up in the project. The longer that capital is stuck there, the less capacity a developer has to develop other projects. Therefore, if you want to increase the supply of housing on the market while reducing a developer's costs, the procedures to get building permits definitely need to be shortened."

Thierry De Wever: "When I ask property developers what their biggest business risk is, they invariably point to the risk of permits."

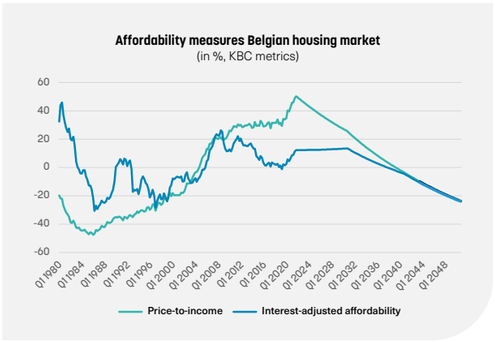
Wim Straetmans: "If your permit is long overdue, you come up against new standards and regulations when you have to submit it a second time. That kills the industry."

1.3 Impact of sustainability requirements (in line with the European Central Bank)

To estimate long(er)-term affordability, we refer to an ECB initiative requiring the stress-testing of European banks to assess the impact of climate change. The parameters of the ECB data set were then used by KBC to assess the impact on affordability.

Assuming the ideal climate scenario (where the Paris climate agreement is met and consequently global warming is limited to 1.5°C), in general, a home will increase in value more when it meets the most stringent standards in terms of energy. Specifically, in 2050, these A-label houses would be some 80% more expensive than today (this figure includes inflation).

Translating the price index of this ideal climate scenario, as well as taking account of interest rate and household income predictions (cf. 1.2), it appears that – especially in the period 2020 - 2035 – the affordability of houses will remain under pressure (see ill. 2).



Illustr. 2: Affordability of Belgian housing assuming 1.5°C climate warming by 2050, deviation from 1980-2050 average (in %, source KBC)

We thus conclude that the affordability situation will not improve in the short term but, based on the ECB's forecasts (on the evolution of household incomes, GDP, house prices, interest rates), we expect housing affordability to return to its historical average from 2035 onwards.

2 Credit policy on mortgage loans and the impact of Basel IV/EBA/EU taxonomy

2.1 Mortgage loans after 2031

Basel regulations are a set of international banking standards for bank capital adequacy, stress testing, and liquidity requirements. Currently, the Basel IV regulations are being drafted, meaning that there is as yet no certainty over future requirements. One possible result is that financial players will have to demand higher down payments before new loans can be granted. Furthermore, it seems that mortgage mandates[1] (as a cheap alternative to traditional collateral in Belgium) will no longer have the same value as mortgages in Basel IV. This could have an impact on a bank's cost of capital, possibly pushing up the cost of borrowing.

The European Banking Authority (EBA) is also imposing new rules. One is related to valuation, meaning that banks will be stricter in assigning a certain value to collateral. This could also result in higher down payments.

1 A mortgage mandate is a common type of immovable property security in Belgium. It is an agreement by which the owner of one or more immovable assets irrevocably grants to one or more parties the power to establish, to the benefit and at first request of a creditor, a mortgage on one or more determined or determinable, currently existing or future immovable assets, for the amount agreed in the mandate and to cover his own determined or determinable, current or future obligations or those of a third party debtor (see https://www.eba.europa.eu/single-rule-book-qa/-/qna/view/publicId/2019_4721).

2.2 EU taxonomy

WHAT?

The EU Sustainable Activities Taxonomy is the EU's classification system for green activities. The taxonomy will help banks and companies determine what are green activities and what are not, helping them report (mandatory transparency) their level of green activities. However, the taxonomy does not mandate or prohibit certain investments. Bear in mind, however, that the taxonomy assesses activities (e.g., an investment or assets), not organisations as a whole.

WHY?

The purpose of the EU taxonomy is to create a transparent framework for sustainable finance, in line with the EU Green Deal. It also serves to combat greenwashing, as only one interpretation applies.

"Either you transform into a sustainable company, or you don't exist as a company in 2050."
— KIM CRETEN —

FOR WHOM?

- 1. Financial institutions
- 2. Companies required to report on sustainability
- 3. Member states setting standards for sustainability

Initially, only European activities fall within the scope.

ORIGIN AND EVOLUTION

The EU taxonomy is new and still under development. It is dynamic, as the criteria are revised about every 5 years.

ASSESSMENT FRAMEWORK

According to the EU taxonomy, an activity is assessed in 6 domains (see ill. left). 3 cumulative requirements determine whether an activity is 'green' (taxonomy-aligned):

- 1. Substantial Contribution (SC): Positive impact of the activity on one of the 6 domains.
- 2. Do No Significant Harm (DNSH): No significant negative impact of the activity on the 5 other domains.
- 3. Minimum Social Safeguards (MSS): The organisation meets the minimum social requirements of the OECD, UN and others.

APPLICATION: CONSTRUCTION OF RESIDENTIAL PROPERTY (SEE ILLUSTRATION, BELOW)

To be labelled green in terms of a 'substantial contribution to climate change' (SC), the EU taxonomy criteria may result in a construction where a rating higher than Nearly Zero Energy is prioritised.

Under the Do No Significant Harm (DNSH) principle, there should be no negative impact on the 5 other domains. For the construction of new buildings, this can translate into the following examples:

- in the context of climate change adaptation, measures will have to be taken to be prepared for flooding.
- In terms of pollution prevention, the use of polluting paints will have to be avoided.
- In context of water management, provisions will be needed to flush toilets sparingly.
- Biodiversity implies that valuable green space will not be used for new developments.
- Finally, with regard to circularity, the aim is to increase the reuse of buildings and building materials, requiring storage and databases...

Following this concise explanation, we can conclude that the EU taxonomy will inevitably add complexity to project development and the construction process. Therefore, expertise will be needed to elaborate and accurately apply it in practice. Moreover, if the taxonomy becomes important for banks (due to the required improvement of their GAR (Green Asset Ratio)), it will also become important for the market at large.

THE 6 DOMAINS	SOLAR ENERGY	NEW CONSTRUCTION
Climate change mitigation (SC)	OK as long as the PV-panels are being installed (no trading)	10% better than Nearly Zero Energy. > 5000sqm: CO_2 calculation to be made, including a thermal study
Climate change adaptation (DNSH)	Check adaptation risks (e.g. flood risks, storm) and limit risks	Check adaptation risks (e.g. flood risks, storm) and limit risks
Pollution prevention (DNSH)	N/A	A long list of substances that should not be used, e.g. Mercury and Persistent Organic Pollutants
Water management (DNSH)	N/A	Residential: do not create dryness when pumping. Non-residential: toilet max 6L flush, showers 8L/min etc
Biodiversity (DNSH)	Check biodiversity risks of the chozen plot of land, and avoid impact	Do not build on fertile land, natural area, habitat of endangered species
Circular economy (DNSH)	Check to what extent materials are used that can be repaired or resued	Min 70% recycling of building materials. Building design should be modular and dismantleable

Illustr. 3: EU taxonomy assessment framework and application to residential property construction (source: KBC)

Q & A: SUSTAINABILITY + TAXONOMY

We want to be sustainable, but most of all we want to let everyone know that we are sustainable. How can we demonstrate to banks that we are operating in a sustainable manner?

Geert Temmerman: "Banks will ask you for a sustainability strategy. The market and the regulator will require us to have such strategies. Sustainability is here to stay – there's no turning back. This means that a lot of companies will have to change their strategy."

Kim Creten: "To check that, we use the EU taxonomy with its very detailed rules. Those rules determine what is sustainable and what can be considered greenwashing."

Domenico Campogrande, director general of Fiec, asked via video link about the practical implications of the taxonomy for contractors.

Kim Creten: "Banks will be obliged to ask for much more data on greenhouse gas emissions. You will have to collect data on your energy consumption, your greenhouse gas emissions, the construction process itself, urban mining of raw materials, etc. All processes have to become greener and there has to be some kind of carbon accounting for all of them. Once all that information is available, it will be stored in databases and connected to systems such as Totem or Madaster. Besides price and quality, sustainability is set to play a very important role in your business."

3 Institutional investors in the residential rental market

As stated earlier, affordability is compromised. One potential solution is the entry of institutional investors into the residential property market (with the aim of developing properties for letting).

To set the scene, a survey was conducted among prominent institutional players on the Belgian market: insurers (AG Real Estate, AXA Investment Managers, Belfius Insurance, KBC Insurance), real estate companies (Home Invest Belgium and Inclusio), private residential real estate funds (Patrizia, Quares, Ion, vicinity). It transpired that each segment has a different approach to this market.

Insurers are mostly not/slightly active in this segment. If active, they focus on real estate development (because of higher returns) to achieve additional capital gains – and only in countries with higher returns. Moreover, they are not interested in letting smaller residential units. Of particular note is the difference between the Belgian market and other European markets. In stark contrast to Germany, Sweden and Switzerland, Belgium has a particularly small/non-existent residential institutional market.

Turning to the Belgian REITs (Real Estate Investment Trusts, i.e., real estate companies) and in particular to two prominent players in the field of residential real estate (Home Invest Belgium and Inclusio), we note that they focus on the so-called 'affordable' market segment, i.e. the middle segment where rents are affordable for the average Belgian.

Finally, private residential real estate funds are also developing rapidly. Again, this is a fairly new phenomenon on the Belgian market. The focus is on affordable new rental housing in the low and middle segments, with high sustainability requirements. All parties approached have only recently started, and thus have almost no portfolios today. Expectations point to portfolios of several thousand units for each of the investors by 2031.[2]

2 In a real estate fund, similar to a mutual fund, the assets of several investors are pooled and invested in the same way by a fund manager. Here, an investor buys one or more units in a real estate fund. The fund then uses the invested assets for real estate investments. The income generated from this constitutes the property fund's return. This money is distributed in the form of dividends to the fund's shareholders. A Real Estate Investment Trust, or REIT, can be seen as a kind of real estate fund but is (mostly) a listed company. As a result, it is traded as if it were a stock, making a REIT a more liquid than a real estate fund.

4 The social housing sector: a drop in the ocean?

Context: the social housing market

The social housing market is a small segment of the Belgian residential housing market, accounting for roughly 6%. This is a consequence of Belgium's historical choices of encouraging homeownership. The flip side of the coin is that the social housing sector has remained relatively small compared to neighbouring countries (17-30%).
There are essentially 2 players in this market: social housing companies (which build and let houses to social tenants) and social rental offices. The latter refers to private-sector organisations which invest in housing to let to social rental agencies, typically via long-term contracts with durations of 18 years – the agency then pays the rent with public money.

The current state of social housing in Belgium cannot exactly be called rosy. First, there is a distressing shortage of housing – demand is greater than supply, creating (growing) waiting lists – driven by demographics, increasing numbers of lower income households and rising house prices and rents (cf. affordability). To help overcome the problem of quantity, budgets are provided. However, they are not fully taken up by the various social housing players.
Another problem is quality. The pace of refurbishment of the ageing social housing stock is very slow, as reflected in its low energy performance.

Expected evolution

Total budgets (already increased) for the 2020-2024 period account solely for 22 650 new homes (cf. 9.5% of the current waiting list) and 22 920 in-depth renovations (cf. 7.6% of the existing social housing stock). To put it mildly, little progress is being made in overcoming the shortage of social housing.
Furthermore, mainly in Flanders, social housing players are being pushed to restructure and merge to boost their operational effectiveness and improve financing. Consequently, available staff is being deployed on restructuring rather than on the core business.
On the other hand, the increased involvement of the municipal level is to be seen as beneficial, due to the input of local knowledge and the availability of land banks.

The challenge: financial viability

Thierry De Wever favours social rental offices, as he sees social housing as a great investment product for the private sector, with leverage as the icing on the cake. However, social housing rents are capped by law, making the segment less attractive for (mostly institutional) investors.
As for the banking sector, the banks continue to provide readily available financing for these investment projects, both to public (cf. state) and private investors.

5 The European Green Deal & infrastructure development in the EU and Belgium between now and 2031

Context: goals and commitments

In the adjacent table are some figures clarifying the context regarding sustainability and the climate impact of buildings.

In short, Europe has an outdated building stock (residential, offices, retail) that consumes a lot of energy and water and emits tonnes of CO2. Moreover, it is only being upgraded extremely slowly (cf. only 0.4% -1.2% annually).

This situation has not escaped the EU's notice. The goal of the European Green Deal is to make Europe the first climate-neutral continent (i.e. net zero greenhouse gas

Buildings are responsible for:

± 40%	of EU energy consumption
± 36%	of EU CO_2 emissions
± 33%	of EU water consumption

Moreover:

± 35%	of buildings in the EU are > 50 years old
± 75%	of the building stock is considered energy-inefficient

emissions) by 2050. The green transition will mainly affect the energy, transport, construction and renovation sectors. We need to move towards this ambitious goal step by step, with 2030 the first milestone.

Looking specifically at the building sector and with 2030 in sight, the new EU Energy Performance of Buildings Directive (EPBD) was published in December 2021. Existing provisions on major renovations of existing buildings are to be made more ambitious, with a view to accelerating the rate of renovation. As far as public and non-residential buildings are concerned, those with a Class G (lowest) energy performance certificate (EPC) would need to undergo renovations to reach at least Class F by 2027 and Class E by 2030. As far as non-public residential buildings are concerned, those with a Class G EPC would need to undergo renovations to reach at least Class F by 2030 (and Class E by 2033).

Funding

Implementation of these goals also involves infrastructure development in the form of: roads, airports and ports. Digitalisation, lean government and energy projects are also targeted. In short, a wide range of investments are required.

Implementing these plans in the coming years will require substantial budgets. The 7-year EU Multiannual Financial Framework (EUR 1.21 trillion; 2021 - 2027) covers the entire EU. On top of that, to counter the effects of the Covid crisis, EUR 723 billion were among other things released for public infrastructure spending under the Next Generation EU Recovery and Resilience Facility, the largest ever EU stimulus package.

As mentioned, we are talking about a broad spectrum of public infrastructure investments. While the Next Generation EU Recovery and Resilience Facility consists of 6 pillars (see illustration below), the bulk of spending is earmarked for the green transition and digitalisation (37% and 20% respectively).

Of the €723 billion EU aid, €5.9 billion will be allocated to Belgium, to be spent in accordance with the “National Plan for the Recovery and Resilience of Belgium”. The investment projects listed in this plan must be implemented by 2026 at the latest. This amount is in addition to other public budgets in Belgium already earmarked for infrastructure spending (€7.2 billion for 2020-2024 budgets). Decision-making power over this amount in Belgium is divided: 17% federal, 53% regional and 30% local.

Illustr. 4: Next Generation EU Recovery and Resilience Facility: 6 pillars

Putting these budgets in a historical perspective, we are moving from a situation of under-investment in public infrastructure to a normal level of investment (where a Member State spends 3-3.5% of its annual budget on public infrastructure) insofar as these projects are implemented.

An overview of investment areas of all Belgian governments (federal, regional and local) indicates that EUR 1 billion is allocated to the renovation of buildings, out of a total of EUR 5.9 billion. Furthermore, roadmaking (mobility) is also a significant construction-related item.
The main message is that these plans and budgets present good opportunities for the construction sector. However, it is important to stress that, to qualify for implementation, conditions must be met, for instance the DNSH principle of the EU taxonomy for sustainable economic activities (i.e. ‘Do No Significant Harm to the environment’). With governments – and the EU in particular – dictating the direction through budgets, banks are set to follow suit in their financing arrangements for these investment projects.

Investment domains within Next Generation EU Facility	
Digital	**753,3**
Cybersecurity	78,8
Optic fibre, 5G & New technology	99,5
Public administration	575,0
Economy of the future and productivity	**1002,3**
Circular economy	197,9
Supporting economic activity	440,3
Training and labour market	364,1
Mobility	**1299,5**
Cycling and walking infrastructure	417,5
Greening road transport	210,0
Modal shift	672,0
Social & Inclusive	**832,5**
Education 2.0	440,0
End of career and pensions	-
Social infrastructure	227,2
Training and Employment for Vulnerable Groups	165,3
Sustainable	**2021,1**
Climate & Environment	400,8
Emerging energy technologies	608,0
Renovation of Buildings	1012,3
Grand Total	**5908,7**

(EUR million)

Illustr. 5: Overview of investment targets Next Generation EU Facility for Belgium (source:)

6 Circularity in the construction sector: can it be financed?[3]

Reuse

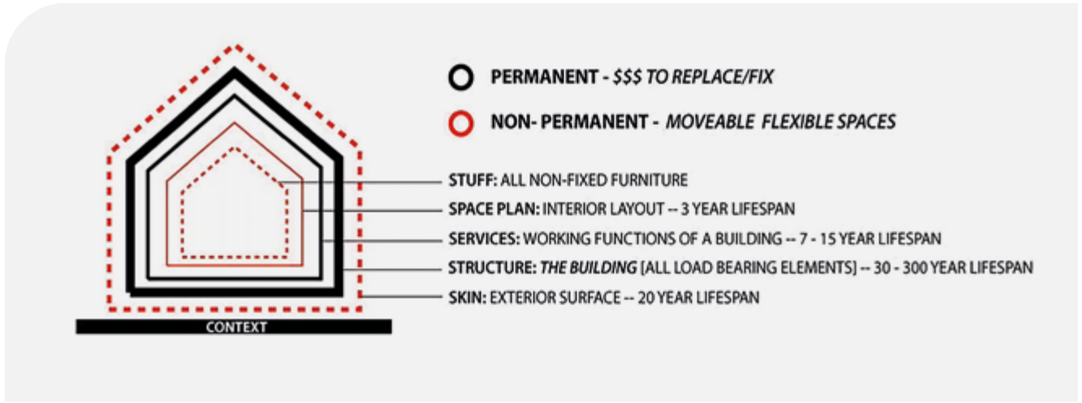
Circular construction refers to reuse through adapted building design and material selection. A welcome side effect is the focus on improving the lifespan of materials. Featuring the reuse of materials from existing buildings, the concept of urban mining is also central to circularity. With recycled building materials as their key ingredients, circular business models can be created. One relevant and necessary aspect here is the extension of the lifespan of materials and buildings, making the choice for circularity more economically feasible.

An alternative and now well-known business model is the ‘as a service’ model, whereby banks and/or producers retain ownership of the facilities in question, with the customer only paying for their use. For example, the 3,000 screens (showing departure/arrival times) at Schiphol Airport are not owned by the airport. In the context of digital signage as-a-service, the airport has a usage contract with the supplier (incl. installation, maintenance, support, etc). At the end of the lifecycle, the components are reused or recycled in an environmentally friendly way.

Financing circular/as-a-service business models

When we consider a building, we find different types of materials used. Structural elements easily have a lifespan of 100 years, while the materials used for the outer shell may last 20 years. Technical systems (i.e., for ventilation,

3 For more info, see WTCB Monograph 28: Towards a circular economy in construction. Introduction to the principles of the circular economy in construction. https://www.wtcb.be/publicaties/monografieen/28/



Illustr. 6: Building envelope and components with lifetime

heating and plumbing) have a lifespan of 7-15 years, while interior fittings and furniture have the shortest lifespan. In short, each of these material categories has intrinsic properties affecting their specific lifespans and payback aspects.

Some materials have a shorter payback period, others a longer one. Banks will have to ask whether certain materials can be financed over 15-20 years, perhaps exceeding their operational life. Each time, banks will have to find the right balance between financing and the operational life of materials. A second important parameter is the long-term residual value at the end of a material's lifespan, after – ideally easy and efficient – disassembly/disposal. In some cases, a safety promise / assurance of quality may be needed.

In this context, an interesting sustainability initiative is taking place in Australia, where the government, the private sector and academia are collaborating on a building assurance solution. They are creating a digital ID of a building over its entire lifecycle, from its design (through the digital twin) to its maintenance. It captures the resources and materials used as well as their origin (cf. wood from a nearby forest or shipped from the Amazon Forest). This data is added to the building's identity map, which acts as a trustworthiness index and as a sustainability certification for banks and insurers when assessing the financial risk involved in financing / insuring a building.
While banks are open to alternative/circular business models, much depends on the materials used and their specific properties and applications.

Q & A: CIRCULARITY

Circularity is the future, but it is often more expensive. Are banks prepared to take this into account when it comes to investing in projects?

Thierry De Wever: "It is an important issue for the sector. Ultimately, it's about three basic principles: repayment capacity, risk and residual value. For some materials this will apply more than others. If we can finance a major player in circularity, we might succeed. Everything depends on the risk."

Kim Creten: "We have some experience with that. Some time ago, we co-financed the new business model 'light as a service'. The customer pays for his light and the banks retain ownership of the lighting infrastructure. But the number of deals on the market is very limited. It requires a different mindset. Nevertheless, I am convinced that this is coming, also for other business models. If part of the investment is in residual value, banks are willing to take long-term risks."

7 Sustainable operations: drivers and trends

When we talk about sustainability, we are all convinced that doing nothing is no longer an option. Companies are already being pushed towards sustainability from different directions.

Legal requirements

First, there are the European and Belgian government regulations adopted within the context of the EU Green Deal, the Paris Climate Agreement, etc. that encourage companies (incl. banks) to make their activities sustainable. Examples include the EU taxonomy regulation and EU regulations on new emission reduction targets.

Customers, suppliers and competitive advantage

Second, there is increasing pressure from the market itself. Customers will increasingly be influenced by product and brand sustainability. Consequently, they will demand that production/construction is based on sustainable parameters. Suppliers will similarly set standards, meaning that ultimately the entire chain guarantees the supply of sustainable raw materials and products.

Furthermore, ESG[4] parameters will be integrated into companies' financial reporting. (Larger) companies are already publishing their carbon emissions in addition to revenue and results. This is the direction we are all set to take. Indeed, we are now seeing that a sustainable business strategy can provide a competitive advantage (cf.

4 ESG stands for Environmental, Social and Governance and refers to the three central factors in measuring sustainability. The term is derived from the 'Triple Bottom Line', also known as 'People, Planet and Profits' (PPP). The concept states that companies should focus on each of the three Ps and not just on 'Profits' because the other two elements are equally important for a commercial enterprise to be sustainable. This concept evolved into ESG.

"Make sustainability part of your business model. In larger companies, this is often already the case, while small companies should follow suit as soon as possible."
— GEERT TEMMERMAN —

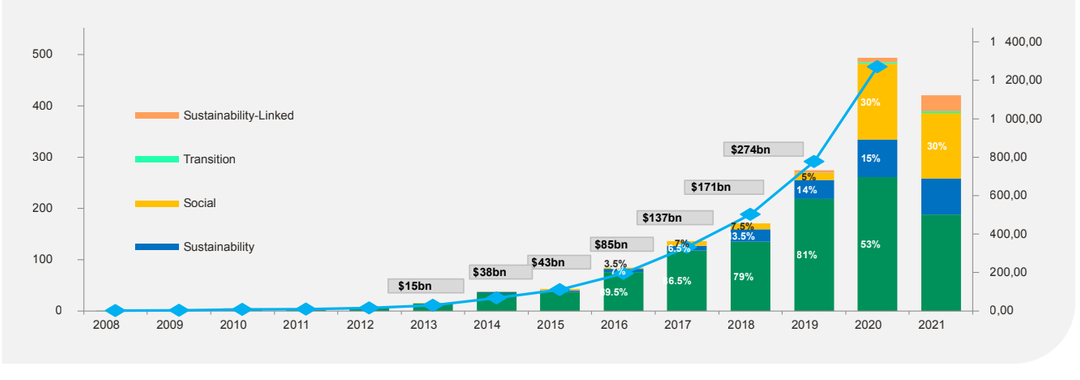
investments in natural capital, greenhouse gas reduction, the circular economy, plastic recycling and alternatives). These sustainability strategies are creating operational improvements and innovative products and services. The motto is: prepare your business for the future, of which sustainability is certainly a part.

Banks, investors and financial markets: There will also be pressure from the banking world, as banks will ask their customers whether their business models are future-proof in terms of sustainability. For instance, BNP Paribas is already asking its customers about the CO2 emissions and primary energy consumption of their buildings.

Investors too will (have to) bring their portfolios in line with European climate and sustainability targets, with shareholders taking on the role of climate ambassadors (cf. voting for climate change measures). This will lead to the full integration of ESG targets and parameters in financial assessments. ESG engagement goes hand in hand with better financial performance and returns.

In conclusion, shifts in business and investment dynamics are set to lead to new business opportunities for all economic sectors.

Turning to green/social/sustainable bonds, the chart below shows their importance. While in 2012/2013 the market for them was still very small, the market has since grown tremendously. Total issuance in 2021 was around USD 423 billion, up from approx. USD 169 billion in the previous year. While the chart shows just green bonds, bear in mind that green loans are also following the same path.



Illustr. 7: Evolution of green, social and sustainable bond issuance

8 Sustainable financing solutions

Sustainable financing strategies

The aim of a sustainable banking solution is to link a sustainable ambition and strategy to the financing of the business. The banking sector has created banking products to encourage and support such sustainability ambitions. There are two main product lines.

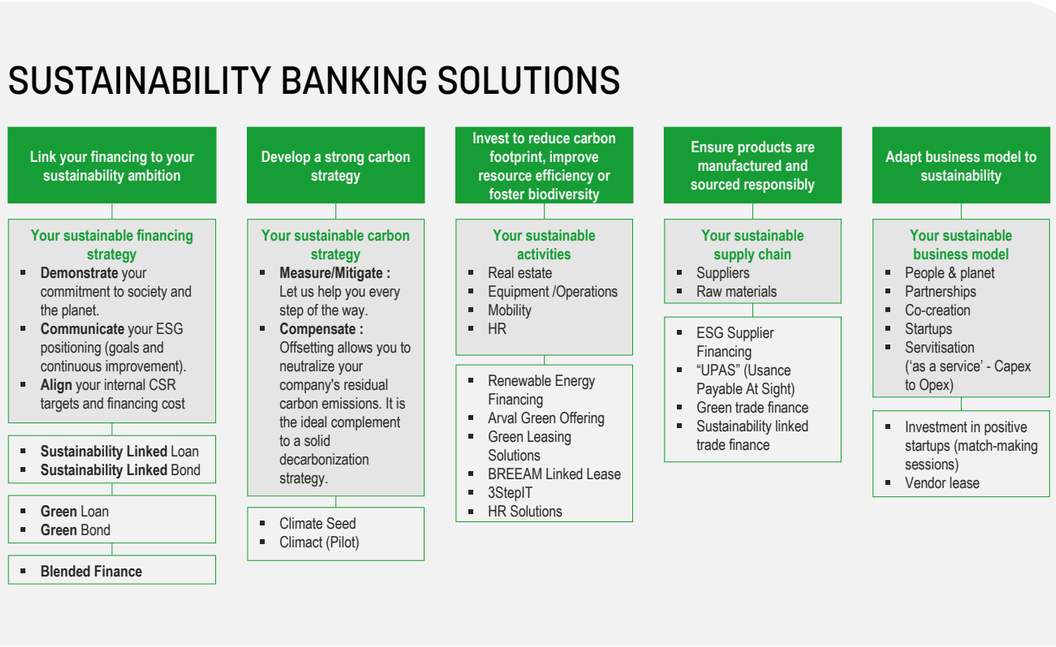
First, there are loans based on a company's ESG[3] performance indicators. A pricing mechanism is attached to this loan (as a function of delivering ESG performance). For example, a company may target reducing its carbon emissions to improve its ESG rating. The bank operates a mechanism whereby, if the company achieves that goal, it gets an interesting price for this loan. Besides loans, the same concept also relates to sustainability-linked bonds.

Second, there are loans for projects linked to a green, social or sustainable project. For example, if a company invests in solar panels or heating systems, such a loan can be used to finance it.

On top of those two main financing options, there are other banking solutions. For instance, banks now offer green leasing (cf. green mobility packages combining car and bike use), BREEAM-Linked Lease agreements, green trade finance, etc. Such offerings are set to continue to evolve in the coming years, with both Belgian and European banks offering new product ranges linked to sustainability. For their part, central banks will help support sustainable financing.

Besides various forms and types of financing, banks also support other green initiatives. For instance, BNP has invested €1 billion in sustainable maritime transport and supported 500 start-ups active in sustainable innovation.

The diagram below gives an overview of the types of sustainable banking solutions: topics range from sustainability-linked finance, CO2 emissions, biodiversity, sustainable integrated supply chains to the transition to a sustainable business model.



Illustr. 8: Sustainable banking solutions

9 Will property finance fundamentally change between now and 2031?

Digitalisation and automation

Digitalisation and automation in the banking sector are in full swing, impacting banks' front and back offices and with positive effects on customer experience and operating costs (for banks and customers). Next comes the question of whether automation (in the form of artificial intelligence (AI)) will fundamentally change decision-making on mortgage loans or financing in general. It can be assumed that, at least for commercial real estate (offices, retail, shopping centres, warehouses), there will be insufficient data available to feed AI's learning process. In the absence of a generic product in this segment, AI is thus unlikely to intervene in financing decisions. Moreover, there are regulations that need to be complied with, meaning that governments are unlikely to allow AI to take control.

However, the residential housing market (B2C) is a different kettle of fish. In this segment, data on many homes is already available in digital form, meaning that AI could take over certain processes. In any case, real estate finance is set to evolve towards a mix of human and computer-based decision-making.

Criteria for obtaining real estate finance

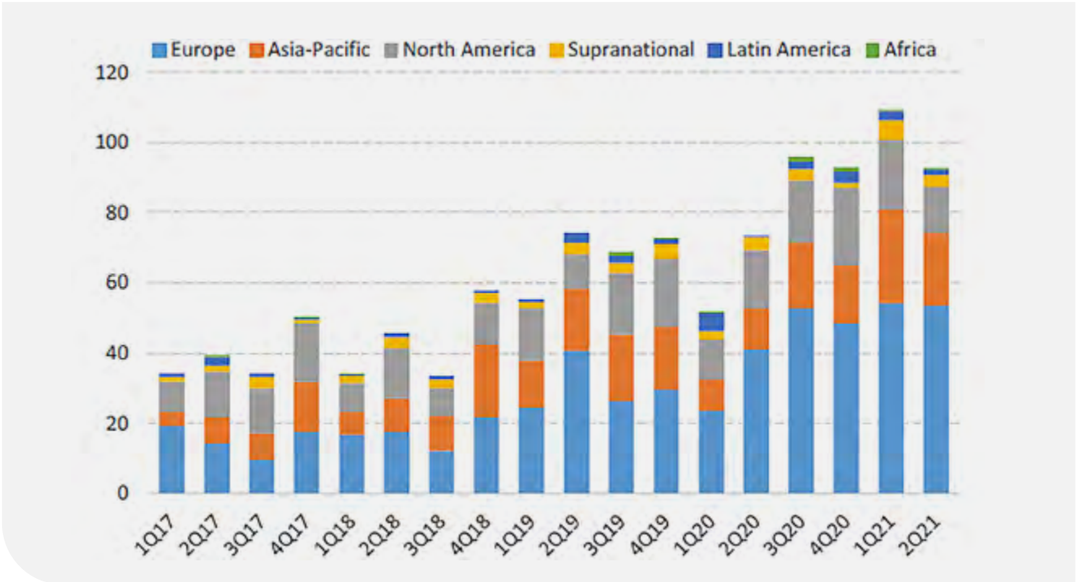
When assessing real estate loans, banks look primarily at a project's profitability: the location, feasibility, equity/debt ratios, the quality of the developer – these are the main factors and will never change. Due to regulatory requirements (ECB, NBB, the government) and market demand, sustainability will be added as a real estate parameter. However, this does not mean that all green or sustainable projects will be financed by a bank. A project's profit potential remains a fundamental condition.

The inclusion of sustainability aspects will lead to a transformation of banks' business models. Sustainable banking products are already available and new banking solutions will certainly follow in the coming years. Banks will also insist on their customers adopting a sustainable strategy and will evaluate the sustainability of the assets and projects they finance. Therefore, banks' risk policies will include sustainability aspects.

Green finance is increasingly setting the agenda

Looking at the global volumes of green finance, we are observing a rising trend spearheaded by Europe due to pressure from legislation and the market itself. In terms of green bonds for example, Europe accounts for the largest share of issuance (see ill. 9). Listed property companies, for the most part in Europe, are thus setting the trend in implementing the green agenda.

However, one condition for qualifying for green financing



Illustr. 9: Issue volume ($Bn) of green bonds, by world region (Source: Climate Bonds initiative, RBC Capital Markets)

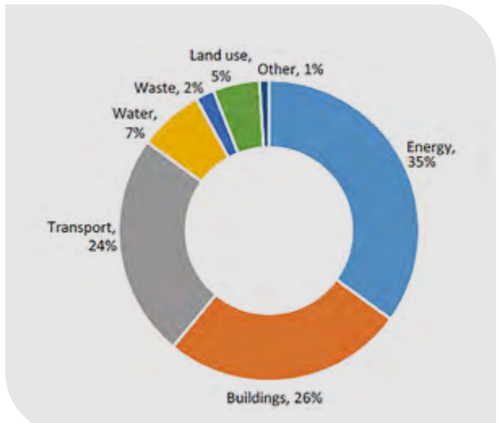
(bond issue/loan) is proof of its green use. Looking at the subjects of green financing, the largest share is taken up by energy products, followed by buildings (see ill. 10). For the construction sector, this is obviously good news.

While the issuing costs of green and regular bonds are similar, green finance benefits from better financial terms (cf. adjustable coupon/margin based on ESG performance). At some stage, we will reach a tipping point where brown finance is more costly to obtain, thereby incentivising a shift towards green finance. Moreover, when green financing is used for sustainable developments, it can have a beneficial effect on cooperation with local authorities (cf. permits and zoning of land). One challenge, however, is whether you have sufficient green assets to justify your green financing. Specifically for the construction sector, this means a preference for higher-quality green assets (as opposed to brown assets). This will potentially result in higher interest rates for brown assets, compared to their green counterparts.

The intensive workload in terms of setting up an initial framework and fulfilling reporting requirements (cf. administrative burden) is a challenge. Other hurdles include a lack of sufficient 'green' portfolios/pipelines, as well as 'greenwashing'.

Banks will follow both the market and regulations. Consequently, they will increasingly offer and promote 'green' financing. Looking specifically at regulations, in the context of the EU taxonomy, a new directive was proposed by the European Commission in April 2021, the Corporate Sustainability Reporting Directive (CSRD) [5]. A game changer with a great impact, it will cover some 50 000 large and listed companies (representing >75% of EU turnover), requiring them to align their sustainability reporting with financial reporting over time. From 2023 onwards, they will have to report their % compliance with the EU taxonomy. Banks, in turn, will have to publish their 'GAR' (Green Asset Ratio) from 2024 onwards. In fact, banks have already started building a sustainability repository on their customers and transactions. Sustainability reporting will become a mandatory part of each loan file.

5 https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en



Illustr. 10: Green bonds destination in 2020
(Source: Climate Bonds initiative, RBC Capital Markets)

Q & A: ALTERNATIVE FINANCING

Peggy Totté of Architectuurwijzer had a specific question about loans to cooperatives. The municipality of Knokke-Heist has high housing prices and wants to build 50 flats for local young people on land it wants to lease to a cooperative. But banks do not want to give a loan to such a cooperative. What are the conditions for giving a loan to such new cooperatives and what contribution is expected from the members? Is there also a need for a guarantee from the municipality, which remains the owner of the land?

Thierry De Wever: "The price of a house consists of the land, the construction costs and a premium on top of that. If you take out the cost of the land, the residual value is smaller. Banks have to recoup their loan over a relatively short period. Maybe there are also restrictions on construction or people cannot just resell their homes. That is very difficult for a financial institution. It is certainly negotiable, but I cannot give a general answer. We need more details for that. We have to look at the specific conditions each time and find out what the risk structure is and how profitable such projects can be. The scale is also important: should we come up with a separate type of loan for five or 10 houses or are we talking about two hundred houses? The framework conditions are very important in such financing."

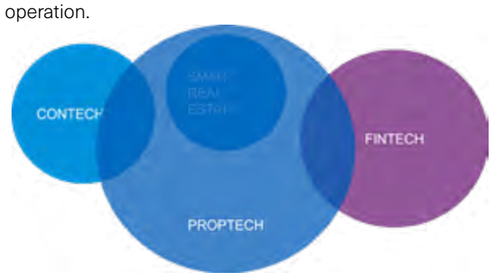
10 Customer expectations and the impact of technology

"Technology will make the construction process more efficient and cause people across all sectors to collaborate much more, including with finance."
— DAVE REMUE —

Customer profiles and expectations have evolved.

With families in general becoming smaller, the way homes are designed is changing. Single-parent families are no longer an exception, while larger or flexible homes are also needed for patchwork families. Customers don't want to live in isolated dwelling blocks: life in the city has evolved, with new urban concepts catering for the wishes of inhabitants (such as mixed living/work/shop/entertain/green areas where everything is accessible within a small distance (cf. the Vision Committee publication 'City Transformation'). Requirements related to technical facilities and comfort are similarly shifting and increasing.
Financing products, renting or even purchasing a property should be faster and easier: customers live in a one-click world, ordering personalised products via their smartphones in several other sectors. They make their product choices based on a multitude of specifications and at least as many reviews. What about construction?
"Technology is set to make construction more efficient and will allow people across all sectors to collaborate much more, including with finance." (Dave Remue)

The annual KPMG survey on innovation in the real estate sector shows that more and more technological solutions are being developed. In the field of proptech, tools are available to help with design, with financing, but also with the actual construction of a building and its subsequent operation.



Illustr. 11: Fintech meets proptech (source: KPMG)

Financing a home

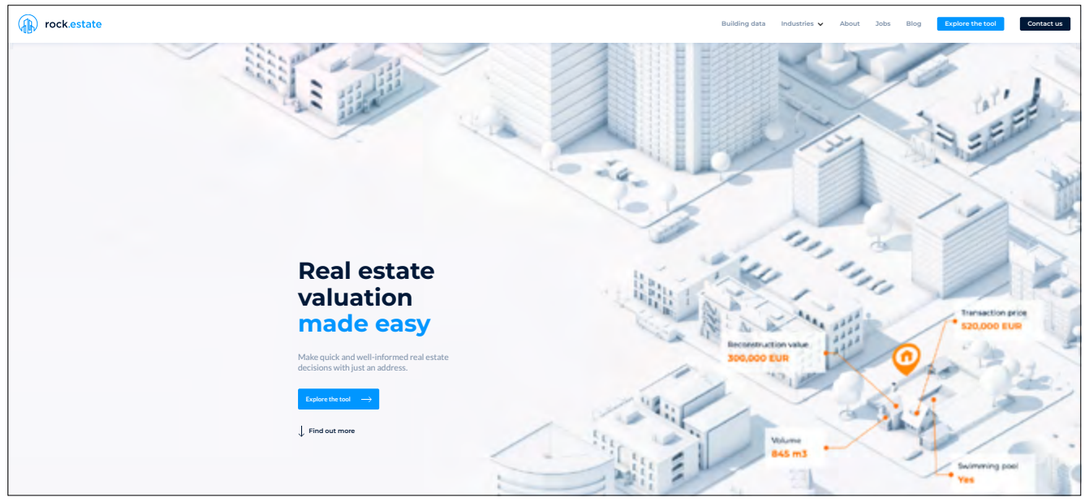
Financing a home is not something everyone does, even in 2022 when interest rates were low.
However, new and innovative solutions are appearing on the market. Hamsterhuren (Hamster rents) is an initiative on the Belgian market where a company offers to buy the house the customer likes. The customer then pays a rent, part of which is put aside in a savings account until enough capital is accrued to obtain the mortgage loan needed to purchase the house.

The concept of hamster rents is emerging in different parts of the world. In the US, Divvy[6] is the market leader in an expanding segment attracting the attention of several professional investors. The model is simple: Divvy buys the house, provides the financing and then gets an interesting return on investment (thanks to a combination of the house's appreciation in value, the rent and the negotiated financing terms).
Besides offering the house, they support customers with moving arrangements, utility contracts, garden maintenance, etc., thereby offering a one-stop shop for everything to do with the new home.

The model also works the other way round: ibuyer [7] or instant-buyer companies buy houses, with a sale (including cash payment) completed quite quickly, often on the same day. We are increasingly seeing this model not only in the US but also in Europe. Open Door [8] is a key player in the US market, with a market capitalisation of around $6 billion. In Europe, the French company Zefir [9] has secured significant funding to further build its portfolio.
The value proposition is simple and greatly dependent on technology. A customer wanting to sell his house uses a smartphone to record a tour of the house. Using AI, its value is estimated, resulting in an initial offer being made. Upon approval, the contract can be concluded entirely online, without any risk of a buyer changing his mind at the last minute or not obtaining the necessary financing. Again in Europe, we recently saw the company Clikalia [10] raise more than 600 million euros to expand. We can thus expect the iBuyer model to become increasingly common, including in our regions.

Applying for a mortgage online is no longer exotic – it has become the norm. Through a search website like Immoweb, people are referred to a party that offers the option to apply for a mortgage. Online mortgage applications are handled by both fintechs and banks, with online communications now the standard.

6 https://getdivvy.com/
7 https://ibuyer.com/
8 https://www.opendoor.com/
9 https://www.zefir.fr/
10 https://clikalia.com/es

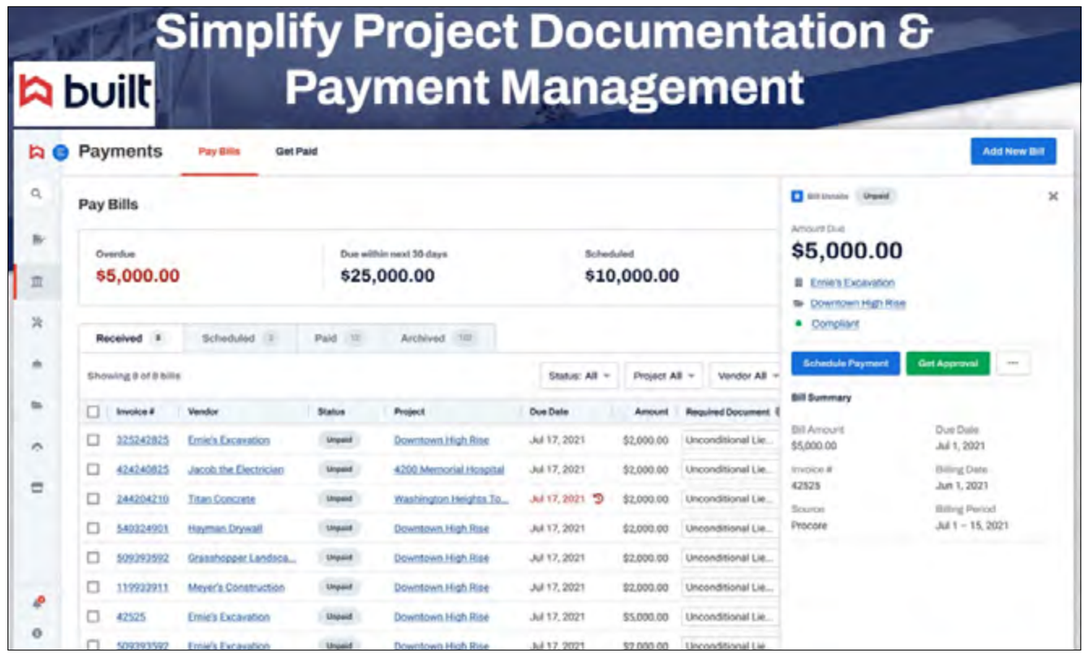


Furthermore, numerous specialised players are driving the digital shift. Working closely with banks and insurance companies, the Belgian company Rock.estate[11] helps estimate the value of properties via AI.

Project and financial management on a single platform

We are also seeing interesting combinations of platforms where financial technology influences the way homes are being built. The US company Built[12] offers project management and financial management on a single platform recording various interactions with contractors and subcontractors. When work is completed, payments to them are triggered directly. By working more efficiently, construction costs can be reduced, thus ultimately improving affordability. Built has already been used for more than 200 000 projects, meaning that it is no longer a niche activity or niche platform but increasingly becoming the standard in the construction industry.

11 https://www.rock.estate/
12 https://getbuilt.com/



Crowdfunding

Crowdfunding is growing rapidly. However, in terms of total market size in Belgium, it is still small compared to the Netherlands or France where the concept is more popular. Tokenisation is expected to become a modern version of crowdfunding. Here and there, we are seeing first experiments with tokenisation for real estate (cf. Immotekens, BE), though these are insufficient to be comprehensively and fully assessed. By the way, today you can invest in a flat on the German market for as little as € 500, fully legal and compliant (via Finexity[13], DE).

Metaverse

According to Gartner, 25% of the population will spend at least one hour a day in the metaverse by 2026[14]. We are seeing a lot of money being spent in the metaverse and, according to some analysts, we have not yet seen the peak. However, it remains to be seen how relevant this virtual world will become in reality.

13 https://finexity.com/
14 The metaverse' is a virtual world in which people can manifest themselves online as an avatar, a digital doppelganger. In this, virtual reality and/or augmented reality are an important aspect. In the metaverse, through their avatars, people can interact with each other and carry out all kinds of activities (including acquiring real estate).

Q & A: PPP + TECHNOLOGY

Can blockchain offer a solution to make the legal framework manageable for SMEs (cf PPP projects)?

Dave Remue: "That's an interesting idea. Blockchain can increase efficiency, but for that you need some standardisation between the different parties in the blockchain. It can also help automate certain things, such as contractual obligations, but the different participants have to agree to that. Then the blockchain becomes the legally binding element. With blockchain, the technology is the easy part. The non-technical aspect should not be underestimated. The advantage of blockchain is that the more people in the network, the more effective the network as a whole will work. The disadvantage is that you have to make more agreements and need more standardisation the more participants you have."

4/ Summary vision of the Buildwise Vision Committee

Wim Straetmans (BAM-KAIROS), Kevin Dethier (Dethier Bouwbedrijf), Jean-Christophe Vanderhaegen (Confederatie Bouw Brussel-Hoofdstad), Bart Ingelaere (Buildwise), Matthijs Lamote (Buildwise)

English version Vision Committee

There can be no denying that building our homes and infrastructure is getting more and more expensive: comfort demands are increasing, regulations are becoming tighter, materials more expensive, etc. In addition, the sector is characterised by low productivity with far too high failure costs compared to the generally small profit margins. To tackle the problem of affordability and ensure access to housing, Buildwise, in collaboration with other stakeholders, can provide the following activities (identified and elaborated in discussions within the Vision Committee).

A number of earlier takeaways, cited in previous Vision Committee publications, remain valid for this topic and have been repeated.
Clearly, a lot is possible with good preparation.

1) HELP COMPANIES TO IMPROVE THE CONSTRUCTION PREPARATION PHASE:

- (a) Convince companies to reduce valuable site time & failure costs by spending more time in the preparation phase. Preach and support a culture shift: before work starts, the client must have made all final decisions. Support this process through VR and other "BUILD 4.0" applications to give clients insight into the final design.
- (b) The total cost of a project is greatly influenced by design decisions. In the traditional successive way of working, where the design is first determined and finalised by the architect(s) and engineering offices without prior consultation with the contractor, this can result in financially non-optimised designs. Therefore: provide more information about how better cooperation can be achieved in construction projects. Convince/ incentivise customers of the construction sector as well as other construction partners/stakeholders (logistics!) to work together as early as possible, i.e., from the design stage, for example via a Design & Build or a construction team formula. This generally leads to more affordable, better, more sustainable buildings thanks to design technology and implementation optimisation. Help create collaboration protocols. Investigate the potential of "new ways of working" (e.g., agile principles), illustrate this with use cases, and guide/support (the transformation) based on proven change management methodologies.
- (c) Drive the uptake of Building Information Management (BIM) systems across the industry and continue to support their development to get the most out of the technology. Standardisation (European, international and local) can lead to better cooperation and an optimised information exchange framework. In particular, the recent publication of the EN ISO 19650 series and the standards on 'Level of Information Need' offer the opportunity to significantly improve the construction process. Support the implementation of 'easy to use' protocols, customisation in partner relationships, business management, project planning, logistics, etc. for all partners in the construction process. This will also have a far-reaching impact on specification texts, BIM models, etc. All Buildwise TCs must be involved in this.
- (d) To really have an impact, the sector needs to absorb these 'new ways of working'. Help the sector through demonstration and experience centres, training sessions, webinars, education courses, etc. Demonstrate new technologies, devices, software, etc. Help companies engage in a 'change management' culture and training.

2) BUILDING BETTER TECHNOLOGICALLY AND MORE EFFICIENTLY

- (a) Companies must be further informed about a 'LEAN' approach on and off site and about other management philosophies (e.g., 'agile working') that allow better control of the construction process.
- (b) Buildwise and partners can contribute to better process management by further focusing on techniques to "detect errors, register them and learn how to do things better through analysing source causes (using LEAN process analysis methodologies)". We can think of all registration systems, AI applications, "learning from our own mistakes", exchanging data anonymously so that a company can benchmark where it stands.
- (c) Stimulate building industrialisation and standardisation, find compatible new building systems and building details. Normalisation and standardisation are also an important facilitating and driving force here. Construction industrialisation – by which things can be produced 'offsite', weather-independent, robotised and of very high quality, with short assembly times onsite – can lead to technologically better and more affordable buildings. It also means that more effort must be invested in standardisation with regard to both the product/system and the process itself. At the moment, too much work is done with prototypes. Construction industrialisation is much easier to achieve when standardisation is more accepted in the market. This could also include the standardisation of contract management and payment processes. After all, new financing models (especially those using Blockchain) are in dire need of a clear and standardised approach. All this can also give rise to new business models.

3) NEW BUSINESS MODELS CAN MAKE BUSINESSES MORE PROFITABLE AND HOUSING MORE AFFORDABLE/ ACCESSIBLE

- (a) A company's profitability and its potential for cheaper construction also depend on its strategic choices. Can Buildwise and EMBUILD help you make strategic choices: e.g., whether it is better for companies to do everything themselves (and grow, for example), downsize and/or collaborate with specialised, trusted partners (for example, the carpenter who produces everything in his workshop and finds it cheaper to call on a trusted installer of his products). Help with the development of ECO systems is essential here.
- (b) Can Buildwise and EMBUILD explore 'win-win' situations where new business models emerge 'as a service' for contractors, making sustainable services (e.g. installations) more accessible/affordable for the customer? Can buildings generate additional income during their lifetime via "smart technology" through optimal and wider use (e.g., car parks during the day for companies, in the evening for residents; energy control...)
- (c) Qualitative energy RENOVATIONS at a record pace are absolutely necessary in the short term to achieve the climate objectives. Buildwise should function here as a catalyst for the further development of new renovation systems that allow massification and are flanked by adapted business models, digital work models, etc. Buildwise should, among other things, further focus on supporting modular and demountable (renovation) construction techniques as well as standardisation and massification.

4) REGULATIONS MADE EVEN BETTER:

- (a) New regulations such as the EU TAXONOMY are set to play a decisive role in the banking sector, the financing of construction companies and construction projects. The construction industry needs help to absorb and implement the new regulations. Interpretation with use cases, among other things, should help companies to leverage these new European regulations to their advantage.
- (b) Buildwise, together with its partners, can assist companies by clarifying what exactly sustainability/circularity means and what exactly needs to be reported. This applies to the operation of your own company, its approach on site and the project itself.
- (c) Circularity and sustainability require a new way of thinking, designing, building systems and materials, valuation of buildings ('end of life' value, etc.). Buildwise must help with quality systems, standards, measurement techniques and supplementary solutions to determine and/or improve the residual value of older materials.
- (d) Buildwise should also continue to support modular and demountable (renovation) construction techniques as well as standardisation and massification (both technically and in terms of owner models). In this way, construction and the use of materials can be optimised in line with the expected lifespan of each part of a building (e.g., the outer shell can be easily renewed after 15 years, while the shell structure can remain in place for more than 30 years).

Nederlandse versie Vision Committee

Bouwen wordt almaar duurder, daar kunnen we niet omheen. Algemeen worden de comforteisen hoger, de reglementering strikter, materialen duurder, etc. Bovendien wordt de sector gekenmerkt door een lage productiviteit en veel te hoge faalkosten in vergelijking met de doorgaans kleine winstmarges. Om het probleem van de betaalbaarheid aan te pakken en toegang tot wonen te verzekeren, kan Buildwise in samenwerking met andere stakeholders de volgende acties op touw zetten die in de discussie binnen het visiecomité werden geïdentificeerd en uitgediept.

Een aantal 'take-aways' uit eerdere publicaties van het Visiecomité zijn hierbij van toepassing.
Met een goede voorbereiding wordt veel mogelijk.

(1) HELP BEDRIJVEN OM DE VOORBEREIDENDE FASE VAN HET BOUWPROCES TE VERBETEREN:

- (a) Overtuig bedrijven om kostbare werftijd en faalkosten te verminderen door meer tijd in de voorbereidingsfase te steken. Pleit voor en ondersteun een cultuurshift: vóór aanvang van de werken moet de klant alle definitieve beslissingen genomen hebben. Ondersteun dit proces via VR en andere 'BOUW 4.0'-toepassingen om de klant inzicht te geven in het finale ontwerp.
- (b) De totale kosten van een project worden grotendeels beïnvloed door ontwerpbeslissingen. In de traditionele successieve manier van werken, waarbij het ontwerp eerst wordt vastgelegd en wordt afgewerkt door de architect(en) en studiebureaus zonder voorafgaand overleg met de aannemer, kan dit resulteren in financieel niet geoptimaliseerde ontwerpen. Geef daarom meer uitleg over hoe er beter kan worden samengewerkt bij bouwprojecten. Overtuig/stimuleer klanten van de bouwsector alsook andere bouwpartners/stakeholders (logistiek!) om zo vroeg mogelijk – van bij het ontwerp – samen te werken, bv. via een Design & Build of een bouwteamformule. Dit leidt in het algemeen tot betaalbaardere, betere en duurzamere gebouwen dankzij optimalisatie van ontwerptechnologie en uitvoering. Help samenwerkingsprotocollen op te stellen. Tast de mogelijkheden af van 'nieuwe werkmethodes' (bv. Agile principes), gebruik daarvoor 'use cases', en begeleid/ondersteun (de transformatie) aan de hand van bewezen change management methodieken.
- (c) Stimuleer de introductie van BIM (Building Information Management) in de hele sector, en blijf de ontwikkeling ervan ondersteunen om het maximale uit de technologie te halen. Standaardisatie (Europees, internationaal en lokaal) kan tot een betere samenwerking en optimaler kader voor informatie-uitwisseling leiden. Vooral de recente publicatie van de EN ISO 19650-reeks en de normen over het niveau van informatiebehoefte maken het mogelijk om het bouwproces aanzienlijk te verbeteren. Ondersteun de implementatie van gebruiksvriendelijke protocollen, de customisatie van partnerrelaties, bedrijfsbeheer, projectplanning, logistiek, … en dit bij alle partners in het bouwproces. Dit zal ook een drastische impact hebben op bestekteksten, BIM-modellen, etc. Alle Buildwise-TC's moeten hierbij betrokken worden.
- (d) Om echt impact te hebben, dient de sector deze 'nieuwe werkmethodes' aan te nemen. Help de sector via demonstratie- en ervaringscentra, opleidingen, webinars, opleidingscursussen, … Demonstreer nieuwe technologieën, toestellen, software, … Help bedrijven om een 'change management'-cultuur en opleidingstraject uit te bouwen.

(2) TECHNOLOGISCH BETER EN EFFICIENTER BOUWEN

- (a) Bedrijven moeten uitgebreider worden geïnformeerd over een 'LEAN'-aanpak op en naast de werf en over andere managementfilosofieën (zoals Agile working), waarmee het bouwproces beter kan worden beheerst.
- (b) Buildwise en partners kunnen bijdragen aan beter procesbeheer door zich nog meer te richten op technieken om 'fouten te detecteren, te registreren en te leren hoe het beter moet via analyse van bronoorzaken (met behulp van LEAN-procesanalyse methodieken)'. Denken we maar aan alle registratiesystemen, AI-toepassingen, 'leren uit eigen fouten' of anoniem data uitwisselen, zodat het bedrijf kan benchmarken waar het staat.
- (c) Stimuleer bouwindustrialisatie en standaardisatie, ga op zoek naar compatibele nieuwe bouwsystemen en bouwdetails. Normalisatie en standaardisatie vormt ook hier een belangrijke faciliterende en stuwende kracht. Bouwindustrialisatie waarbij zaken 'off-site' weersonafhankelijk, gerobotiseerd en zeer kwaliteitsvol met korte assemblagetijden op de werf kunnen worden geproduceerd, kan tot technologisch betere en betaalbaardere gebouwen leiden. Het houdt ook in dat er meer moet worden ingezet op standaardisatie, zowel wat betreft het product/systeem als het proces zelf. Nu wordt nog veel te veel met prototypes gewerkt. Bouwindustrialisatie is veel makkelijker te realiseren indien standaardisatie meer ingeburgerd zou zijn in de markt. Hierbij kan ook gedacht worden aan standaardisatie op het vlak van contractbeheer en betalingsprocessen. Nieuwe financieringsmodellen (zeker als ze gebruikmaken van Blockchain) hebben immers bijzondere nood aan een duidelijke en gestandaardiseerde aanpak. Dit alles kan ook aanleiding geven tot nieuwe businessmodellen.

(3) NIEUWE BUSINESSMODELLEN KUNNEN BEDRIJVEN RENDABELER EN WONEN BETAALBAARDER/ TOEGANKELIJKER MAKEN

- (a) De bedrijfsrentabiliteit en het potentieel dat bouwbedrijven hebben om goedkoper te bouwen, hangt ook af van de strategische keuzes die ze maken. Kunnen Buildwise en EMBUILD u helpen bij het maken van strategische keuzes: bv. kunnen bedrijven beter alles zelf doen (en bv. groeien), afslanken en/of samenwerken met gespecialiseerde, vertrouwde partners (bv. de schrijnwerker die alles in zijn atelier produceert en het goedkoper vindt om een beroep te doen op een vertrouwde installateur van zijn producten)? Hulp bij de ontwikkeling van ECO-systemen is hier essentieel.
- (b) Kunnen Buildwise en EMBUILD 'win-win'-situaties onderzoeken waarbij nieuwe businessmodellen van het type 'as a service' ontstaan voor aannemers, waardoor duurzame diensten (bv. installaties) toegankelijker/ betaalbaarder worden voor de klant? Kunnen gebouwen tijdens hun levensduur extra inkomsten genereren via 'slimme technologie' door een optimaal en breder gebruik (bv. parkeergarages overdag voor bedrijven en 's avonds voor bewoners, energiesturing…).
- (c) Kwalitatieve energetische RENOVATIES aan een recordtempo zijn op korte termijn absoluut nodig om de klimaatdoelstellingen te halen. Buildwise dient hier te functioneren als katalysator voor de verdere ontwikkeling van nieuwe renovatiesystemen die massificatie toelaten en vergezeld zijn van aangepaste businessmodellen, digitale werkmodellen, enz. Hierbij dient Buildwise o.a. verder in te zetten op het ondersteunen van modulaire en demonteerbare (renovatie)technieken alsook standaardisatie en massificatie.

(4) REGLEMENTERING NOG BETER DUIDEN:

- (a) Nieuwe regels zoals de EUROPESE TAXONOMIE worden binnenkort bepalend voor de banksector, de financiering van bouwbedrijven en bouwprojecten. De bouwsector heeft hulp nodig om de nieuwe regels aan te nemen en te implementeren. Interpretatie aan de hand van use cases moet bedrijven onder meer helpen om deze nieuwe Europese regels in hun voordeel om te buigen.
- (b) Buildwise kan samen met zijn partners bedrijven bijstaan door te verduidelijken wat duurzaamheid/circulariteit juist inhoudt, en wat er precies gerapporteerd dient te worden. Dit geldt zowel voor de werking van het eigen bedrijf, zijn aanpak op de werf als voor het project zelf.
- (c) Circulariteit en duurzaamheid vergen een nieuwe manier van denken, ontwerpen, bouwsystemen en materialen, waardebepaling van gebouwen ('waarde aan het einde van de levensduur', …). Buildwise moet helpen met kwaliteitssystemen, normen, meettechnieken en aanvullende oplossingen om de restwaarde van oudere materialen te bepalen en/of te verbeteren.
- (d) Ook dient Buildwise verder in te zetten op het ondersteunen van modulaire en demonteerbare (renovatie) technieken, maar evengoed op standaardisatie en massificatie (zowel technisch als op het vlak van eigenaarschapsmodellen). Op die manier kan de bouw en het materiaalgebruik geoptimaliseerd worden in functie van de verwachte levensduur van elk onderdeel van een bouwwerk (bv. de buitenschil kan makkelijk worden kunnen vernieuwd na 15 jaar, terwijl de ruwbouw meer dan 30 jaar kan blijven (be)staan).

Résumé de la vision de la commission Vision de Buildwise

Construire coûte de plus en plus cher, c'est un fait. De manière générale, les exigences en matière de confort sont de plus en plus élevées, les réglementations plus contraignantes, les matériaux plus chers… De plus, le secteur se caractérise par une faible productivité et des coûts de défaillance bien trop élevés au regard des marges bénéficiaires généralement faibles. Pour s'attaquer à ce problème d'accessibilité des prix et assurer l'accès au logement, Buildwise, en collaboration avec d'autres parties prenantes, peut inclure les actions suivantes qui ont été identifiées et élaborées lors de discussions au sein de la commission Vision.

Différents enseignements qui ont déjà été cités dans des publications antérieures de la commission Vision restent d'application et ont été repris dans les paragraphes suivants. Il est clairement possible de réaliser de grandes choses moyennant une bonne préparation.

1) AIDER LES ENTREPRISES À AMÉLIORER LA PHASE DE PRÉPARATION DE LA CONSTRUCTION

- (a) Convaincre les entreprises de réduire le temps précieux sur chantier et les coûts de défaillance en consacrant plus de temps à la phase de préparation. Prôner et soutenir un changement de culture : le client doit avoir pris toutes les décisions finales avant le début des travaux. Soutenir ce processus via la réalité virtuelle et d'autres applications « CONSTRUCTION 4.0 » pour donner au client un aperçu de la conception finale.
- (b) Le coût total d'un projet est en grande partie influencé par les décisions en matière de conception. La méthode de travail classique, où les tâches se succèdent et qui commence par la détermination et la finalisation de la conception par le ou les architectes et bureaux d'étude, sans consultation préalable avec l'entrepreneur, peut déboucher sur des créations qui sont loin d'être optimales sur le plan financier. Il convient donc de donner plus d'explications sur la voie à suivre pour atteindre une meilleure coopération dans les projets de construction. Convaincre/inciter les clients du secteur de la construction, ainsi que les autres partenaires de la construction/acteurs (de la logistique !) à travailler ensemble le plus tôt possible, de préférence dès la phase de conception, par exemple via une solution intégrée pour la conception et la construction (Design & Build) ou une formule d'équipe de construction. Cette manière de procéder permet globalement de réaliser des bâtiments plus abordables, de meilleure qualité et plus durables grâce à une optimisation des technologies de conception et de la mise en œuvre. Aider à concevoir des protocoles de collaboration. Analyser le potentiel des « nouvelles manières de travailler » (par exemple, les principes Agiles), illustrer les avantages avec des exemples concrets et guider/soutenir (la transformation) au moyen de méthodologies de gestion du changement éprouvées.
- (c) Favoriser l'adoption de systèmes de modélisation des informations du bâtiment (Building Information Management, ou BIM) dans le secteur et continuer de soutenir leur développement afin de tirer le meilleur parti de la technologie. La standardisation (à l'échelle européenne, internationale et locale) peut conduire à une meilleure coopération et à un cadre d'échange des informations optimisé. En particulier, la récente publication de la série de documents normalisés EN ISO 19650 et les normes sur le « niveau du besoin d'information » offrent l'opportunité d'améliorer considérablement le processus de construction. Soutenir entre autres la mise en place de protocoles faciles à utiliser, la personnalisation des relations avec les partenaires, la gestion commerciale, la planification de projet et la logistique, pour tous les partenaires dans le processus de construction. Cette évolution aura également un impact notable sur les textes des cahiers des charges, les modèles BIM, etc. Tous les CT de Buildwise doivent être impliqués dans ce trajet.
- (d) Pour avoir un impact réel, le secteur doit absorber ces « nouvelles manières de travailler ». Il faut aider le secteur en mettant à disposition des centres de démonstration et d'expérience, des formations, des webinaires, des filières d'enseignement… Montrer concrètement l'utilisation des nouveautés en matière de technologies, d'appareils, de logiciels, etc. Aider les entreprises à intégrer une culture de la gestion du changement et à mettre en place des formations dans ce domaine.

2) CONSTRUIRE MIEUX SUR LE PLAN TECHNOLOGIQUE ET PLUS EFFICACEMENT

- (a) Les entreprises doivent être mieux informées sur l'approche « LEAN » sur chantier et hors site, ainsi que sur d'autres philosophies de gestion (par ex. le travail « Agile ») qui permettent de mieux maîtriser le processus de construction.
- (b) Buildwise et ses partenaires peuvent contribuer à améliorer la gestion des processus en se concentrant davantage sur des techniques visant à « détecter les erreurs, les enregistrer et apprendre comment mieux travailler grâce à l'analyse des causes fondamentales (à l'aide des méthodologies d'analyse des processus LEAN) ». Nous pensons ici à tous les systèmes d'enregistrement, aux applications d'IA, aux « enseignements tirés de nos erreurs », à l'échange anonyme de données de manière à ce que l'entreprise puisse évaluer où elle en est.
- (c) Stimuler l'industrialisation et la standardisation des bâtiments, chercher de nouveaux systèmes et détails de construction compatibles. La normalisation et la standardisation sont également une force motrice et un facteur de facilitation importants à cet égard. L'industrialisation de la construction, qui permet de produire des éléments « hors site », indépendamment des conditions météorologiques, de façon robotisée et de très haute qualité, avec des temps de montage courts sur chantier, peut conduire à des bâtiments plus avancés sur le plan technologique et plus abordables. Cela signifie également qu'il faut investir davantage dans la standardisation des produits/systèmes et des processus. À l'heure actuelle, les entreprises travaillent beaucoup trop avec des prototypes. L'industrialisation de la construction serait bien plus facile à réaliser si la standardisation était mieux acceptée dans le marché. Cela peut également concerner la standardisation de la gestion des contrats et des processus de paiement. En effet, les nouveaux modèles de financement (en particulier ceux qui ont recours à la Blockchain) ont grand besoin d'une approche claire et standardisée. Qui peut également donner lieu à de nouveaux modèles commerciaux.

(3) DE NOUVEAUX MODÈLES COMMERCIAUX PEUVENT RENDRE LES ENTREPRISES PLUS RENTABLES ET LE LOGEMENT PLUS ABORDABLE/ ACCESSIBLE

- (a) La rentabilité d'une entreprise et sa capacité à fournir des constructions moins chères dépendent également de ses choix stratégiques. Buildwise et EMBUILD peuvent vous aider à faire des choix stratégiques, par ex. à discerner s'il est préférable de tout faire vous-même (et, partant, de vous développer), de réduire votre taille et/ou de collaborer avec des partenaires de confiance spécialisés (pensez au menuisier qui produit tout dans son atelier et se rend compte qu'il serait plus avantageux de faire appel à un installateur de confiance pour ses produits). Il est essentiel d'aider les entreprises à développer des écosystèmes.
- (b) Buildwise et EMBUILD peuvent explorer des situations « gagnant-gagnant » permettant l'émergence de nouveaux modèles commerciaux « as a service » pour les entrepreneurs qui rendent les services durables (par ex. l'installation) plus accessibles/abordables pour le client. Les bâtiments peuvent générer des revenus supplémentaires tout au long de leur durée de vie grâce à des « technologies intelligentes » par le biais d'une utilisation optimale et plus large (par ex., parkings réservés aux entreprises en journée et aux riverains en soirée ; maîtrise de l'énergie…).
- (c) Il est absolument nécessaire de prévoir des RÉNOVATIONS énergétiques de qualité à un rythme soutenu dans un avenir proche pour atteindre les objectifs climatiques. Buildwise doit ici jouer un rôle de catalyseur pour la poursuite du développement de nouveaux systèmes de rénovation permettant la massification et accompagnés de modèles commerciaux adaptés, de modèles de travail numériques, etc. Buildwise doit, entre autres, mettre davantage l'accent sur le soutien des techniques de construction modulaires et démontables (rénovation) ainsi que sur la standardisation et la massification.

4) RÈGLES ENCORE AMÉLIORÉES

- (a) Les nouvelles règles, comme la TAXONOMIE DE L'UE, vont jouer un rôle décisif dans le secteur bancaire et le financement des entreprises et des projets de construction. Le secteur de la construction a besoin d'aide pour assimiler et mettre en œuvre les nouvelles règles. L'interprétation de ces règles avec des cas d'utilisation, entre autres, devrait aider les entreprises à utiliser ces nouvelles règles européennes à leur avantage.
- (b) En collaboration avec ses partenaires, Buildwise peut aider les entreprises en clarifiant les notions de durabilité/circularité et les attentes précises en matière de rapports, qu'il s'agisse du fonctionnement de l'entreprise proprement dite, de son approche sur chantier ou du projet en tant que tel.
- (c) La circularité et la durabilité exigent de nouvelles façons de penser, de concevoir et de construire les systèmes et les matériaux, et d'évaluer les bâtiments (valeur de « fin de vie », etc.). Buildwise doit apporter sa contribution en proposant des systèmes de qualité, des normes, des techniques de mesure et des solutions supplémentaires visant à déterminer et/ou améliorer la valeur résiduelle des matériaux usagés.
- (d) Buildwise doit également continuer à soutenir les techniques de construction modulaires et démontables (rénovation) ainsi que la standardisation et la massification (à la fois sur le plan technique et en termes de modèles de propriété). De cette manière, la construction et l'utilisation des matériaux peuvent être optimisées en fonction de la durée de vie prévue de chaque partie d'un bâtiment (par ex. l'enveloppe extérieure peut être facilement renouvelée après 15 ans, tandis que la structure de l'enveloppe peut rester en place pendant plus de 30 ans).

5/ Appendix

Tom Willemen
Willemen Groep
PRESIDENT, VISION COMMITTEE

Having graduated in 1998 from the KU Leuven as a civil engineer in structural engineering, Tom Willemen now heads the Willemen Groep, a family-owned Belgian construction group familiar with numerous segments of the construction market, such as buildings, civil engineering, road construction, special techniques, foundations and real estate development. Active in Belgium, its neighbouring countries and Morocco, the company has 2,200 employees and an annual turnover of approximately €800 million. Tom also sits on a number of advisory boards and boards of directors, including those of COPRO, Federale Verzekering/Assurance and ADEB-VBA. Moreover, he chairs the Buildwise Vision Committee. In addition to his operational tasks, his focus is on innovation in the construction industry and how digitalisation and new technologies such as drones, wearables, virtual and augmented reality and AI can help people in the industry to carry out construction projects better and more efficiently.

Kevin Dethier
Dethier Bouwbedrijf

Co-CEO of the company since 2012, Kevin Dethier has a Master's degree in Real Estate from the Antwerp Management School. His construction company specialises in larger projects such as school buildings, apartment and industrial buildings, offices, social housing and public buildings. Started in 1947 as a one-man business, Bouwbedrijf Dethier has grown into a flourishing company with a permanent core of 135 employees and a large network of suppliers and partners.

Wim Straetmans
BAM-Kairos

Wim Straetmans, an architectural engineer by training, joined Immo BAM in 2008 and was a board member of Immo BAM for several years and later also of BAM Contractors. He is currently managing director of Kairos, BAM's real estate developer in Belgium, and also director of BAM Interbuild. Kairos, BAM Interbuild and BAM FM together form BAM Bouw en Vastgoed België, a company aiming to see the development, construction and maintenance of buildings as a package. Heading an ambitious and dynamic management team, Wim is developing an urban renewal strategy and optimising the Kairos portfolio.

Jean-Christophe Vanderhaegen
Confederatie Bouw Brussel-Hoofdstad

Jean-Christophe Vanderhaegen is Director General of the Construction Confederation (CNC/NCB). The CNC/NCB represents more than 14,000 affiliated small, medium and large Belgian companies in all domains of the construction industry. Jean-Christophe is responsible for Brussels and the Brabant Region.
He obtained a Bachelor in Law from the Facultés Universitaires Notre-Dame de la Paix de Namur (FUNDP) and a Master in Law from the Law Faculty of the Vrije Universiteit Brussel (VUB).

Dave Remue
KPMG

Head of Fintech at KPMG Advisory in Belgium, Dave Remue has more than 20 years of experience in financial services and management consulting, working with fintechs and financial institutions on innovative solutions. Before joining KPMG, Dave led the blockchain and regtech operations at B-Hive Europe, a financial innovation ecosystem in Brussels. He co-launched a project with support from the European Commission to better understand fintech and the related risks among local regulators. Earlier in his career, he held several management positions at Mastercard Europe and leading consulting firms with clients in the Benelux, UK, France, Scandinavia, Central Europe and South Africa.
Studies:
• Civil engineer, KU Leuven
• M.S. Engineering, University of Houston
• MBA, Oxford University

Thierry De Wever
Belfius Bank

Thierry De Wever joined Belfius in August 2017.
As a manager, he supports and ensures the quality and growth of Belfius' real estate financing activities in Belgium,
offering real estate investors and developers a financing solution that best serves their business.
He graduated from the University of Antwerp (1988-1993) and has a Diploma of Commercial Engineering.
Main subject: Computer Science obtained with Distinction.

Bart Ingelaere
Buildwise

A civil engineer by trade, Bart Ingelaere obtained his diploma at UGent and has been working at Buildwise for 31 years, where he is Director of Information and Management Techniques and Deputy Director-General.

Kim Creten
KBC Real Estate

As the CEO of KBC Real Estate, Kim Creten has been working for KBC for 15 years.
He is also co-owner of credeconsult, a company responsible inter alia for issuing energy performance certificates (EPCs) for buildings for sale or to let.
Preparation of EPB reports for new constructions & renovations.
Issuing energy performance certificates for public buildings.
Building websites and online stores.
Having graduated from the University of Ghent as a Civil Engineer (Electromechanics) in 1988, in 2007 he took a 1-year training course at Rics, an organisation promoting and maintaining the highest professional qualifications and standards in the development and management of land, real estate, construction and infrastructure.

Geert Temmerman
BNP Paribas Fortis

After graduating in accountancy, Geert Temmerman joined the then General Bank, later BNP Paribas Fortis, where he has been Deputy Head Real Estate Finance Belgium since 2015. He has more than 20 years of experience in real estate financing, for both domestic and foreign developers and investors. He is also a guest speaker at University College Ghent and Antwerp.

Matthijs Lamote
Buildwise

Matthijs Lamote has been working at Buildwise for 5 years as researcher & advisor in construction management. His fields of specialisation are cost & management accounting, lean/process optimisation & logistics.
He holds an MSc degree in Business Engineering (graduated in 2009 from KU Leuven).

Buildwise