



Real Estate Predictions 2022  
Building a more sustainable  
and future-proof business

# Executive Summary

## Real Estate Predictions 2022

### Building a more sustainable and future-proof business

From advanced analytics for the cities of the future to meeting stakeholder expectations regarding Environmental, Social, and Governance (ESG) issues. Deloitte's Real Estate Industry predictions 2022, developed by Deloitte Netherlands, is an inspiring outlook on 2022 and beyond, based on Real Estate insights. Our predictions will help you to future-proof your Real Estate business.

#### **Prediction 1 | Creating smarter urban environments**

When considering the design of buildings and land use planning for urban development, traditional processes result in a number of constraints. First of all, data-driven design is challenging, since there are so many factors to consider, including economics, feasibility, social governance, land use and capital investment. Secondly, the planning output represents a fixed-state based on current problems, while development might take years. This makes it more vulnerable to shifts in the market or changes to the environmental and social context. Finally, it takes a lot of effort to make a plan, inhibiting our ability to quickly generate alternative scenarios or pivot our approach.

#### **Prediction 2 | Driving into the future of Real Estate**

The rise of Autonomous Vehicles (AVs) and ridesharing technology is likely to revolutionize urban transportation. Also, the impact on Real Estate is likely to be profound and far-reaching. What is going to happen during the coming revolution and what could be the effects on urban spaces and Real Estate?

#### **Prediction 3 | Incorporating ESG: Living up to stakeholder expectations and business opportunities**

Environmental, Social, and Governance (ESG) issues have emerged as a top focus, and companies need to respond

to meet growing investor, tenant, and employee expectations. According to 60% of Real Estate respondents of the 2022 Deloitte Center for Financial Services Outlook Survey, ESG initiatives are driving new business opportunities for their organization, and half of them think that these initiatives are giving them a competitive edge. What can you do to prepare for the new market realities?

#### **Prediction 4 | How AI can enhance urban planning, asset management and investments**

Customized AI tools can support a review of large files for Real Estate research, quality checking data and providing insights into the driving factors behind trends. Scenario simulation and an evaluation of their impact can be used to enhance key decisions on investing, budgeting and planning. In this article, which includes a case study, we discuss how to harness the exponential power of AI for urban planning, asset management and investment decision-making for the cities of the future.

#### **Prediction 5 | CSRD: Booster for a sustainable Real Estate industry**

The Corporate Sustainability Reporting Directive (CSRD) will radically improve the scope and existing reporting requirements of the EU's Non-Financial Reporting Directive (NFRD). This ambitious package will make it mandatory for many Real Estate organizations to report on all relevant inward and outward Environmental, Social

and Governance (ESG) issues and will have a significant impact in the short term. The proposed regulations will be in effect from 2023, and therefore, it is essential to be prepared. To comply with the requirements of the CSRD, it is crucial to do a materiality analysis and baseline assessment, set your ESG goals within a long-term ESG strategy and prepare your management systems and internal controls. The time to start is now.

#### **Prediction 6 | The future of the housing business**

Inadequate management of aging multi-dwelling units have become a social issue. Digital transformation can help property management companies to address concerns in this field, so they can benefit from the opportunities of an increasing demand.

#### **Prediction 7 | Mobility hubs, the enabler of healthy urbanization?**

A major challenge in many cities across Europe is the (growing) housing shortage. To solve this, new residential developments are needed. Most municipalities plan these within the city borders to keep the surrounding areas green. Additionally, many municipalities aim to free up the scarce city space that is currently used by (parked) cars. This will make the inner city greener, healthier and more livable. However, it also raises a challenge: how can cities accommodate a growing number of citizens within their borders when they

are reducing the amount of space that these citizens can use to travel from A to B? Mobility hubs are coined as the key solution for the transition to a more space-efficient transport system. Yet, only a few of them have been realized. So what can be expected of this trend?

### **Prediction 8 | The value of green buildings**

Buildings and construction processes need to become “greener” and more environmentally friendly. This is a cross-industry challenge for all stakeholders. What is happening in the field of regulation, how are start-ups stepping in, and how can all stakeholders prepare for a greener future?

### **Prediction 9 | Building a sustainable future together**

In today's corporate world, sustainability is a key concept. It improves the quality of our lives and ensures harmony between humans and nature. It is well known that the Construction and Real Estate industry can play a significant role in the development of a more sustainable society. But it is also one of the sectors with a lot of unreleased potential. The advancement of sustainability in Real Estate provides a solid opportunity to tackle climate change's origins and consequences. How can the industry reduce its footprint?

### **Prediction 10 | The future of smart buildings**

Market participants are still facing a lot of uncertainty when it comes to smart buildings. This article provides an overview of current barriers as well as drivers of the future of smart buildings, based on a set of interviews with different market participants from both the owner/developer and the user side.

### **Prediction 11 | The rise of digitalization**

The Real Estate industry is growing rapidly. Investments are expanding to new countries with investors from different countries seeking alternative opportunities. Manual tax reporting solutions no longer meet the requirements, and poor quality and delayed deliveries can trigger compliance breaches at fund level. It is now necessary to adopt a more streamlined and digitalized approach. What are the options? And is there such a thing as a “one-stop shop” with automated solutions for tax reporting?

### **Prediction 12 | Responsible Real Estate**

Corporate Social Responsibility (CSR) is the concept that an organization has a responsibility to the society, environment and economy in which it operates. Organizations can use Corporate Social Responsibility reports, also called CSR Reports, to communicate their CSR strategy. Over the past decade, CSR

Reports have become more common. In fact, 92% of companies on the S&P 500 Index publish a CSR Report. In an increasing amount of countries, it is even mandatory to publish CSR reports annually. CSR has the potential to change the future of Real Estate, and more importantly; to increase the value in servicing the needs of planet, people and prosperity. But how can you integrate Real Estate as a theme into your CSR Report?

### **Prediction 13 | Digital transformation**

The pandemic has had a significant impact on many industries, including Real Estate, and will continue to do so. More citizens will continue to work from home, more companies will use online channels to reach customers, and remotely operated processes will increase significantly. However, the Real Estate industry is still in the early stages of digitalization. What new technologies are key for the industry, what does the focus on data mean in terms of investor profile and performance indicators, and what are the biggest challenges?

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# Creating smarter urban environments

## How AI-powered Generative Design can enhance urban and development planning

When considering the design of buildings and land use planning for urban development, traditional processes result in a number of constraints. First of all, data-driven design is challenging, since there are so many factors to consider, including economics, feasibility, social governance, land use and capital investment. Secondly, the planning output represents a fixed-state based on current problems, while development might take years. This makes it more vulnerable to shifts in the market or changes to the environmental and social context. Finally, it takes a lot of effort to make a plan, inhibiting our ability to quickly generate alternative scenarios or pivot our approach.

Urban and development planning is currently undergoing a massive upgrade, taking a data-centric approach to design that leverages the power of AI and analytics. In so doing, it introduces an agile approach to master-planning, creating a centralized digital twin to manage an urban ecosystem in operations.

Traditional processes for the design of buildings and land use planning for urban development render a number of constraints. A data-centric approach to design, based on the power of AI and data analytics, could enhance a massive upgrade of urban and development planning. Here's why and how.

### How does AI play a part?

The rise of artificial intelligence (AI) and cloud-based processing has created a wealth of opportunities across all industries. It offers us the power to approach complex computing problems with incredible speed and accuracy that exceed our human capacity. What would have taken humans weeks to complete can now be resolved in hours. This is the basis for a revolution in the design process which can change our approach to planning buildings and cities.

### A comparison to nature

To explain generative design best, let's have a look at nature. When we consider a flower, for example, we marvel at its perfection. Every nuance is perfectly calibrated to capture moisture, to survive in harsh conditions, and to reproduce in a living ecosystem. However, this flower did not come to be overnight. It took millions of years of evolution. Millions of design iterations one after the other, trial and error, update after update. This flower collected information from its existence to change its properties over time until it reached the peak of performance and efficiency. Generative design emulates this process of evolution.

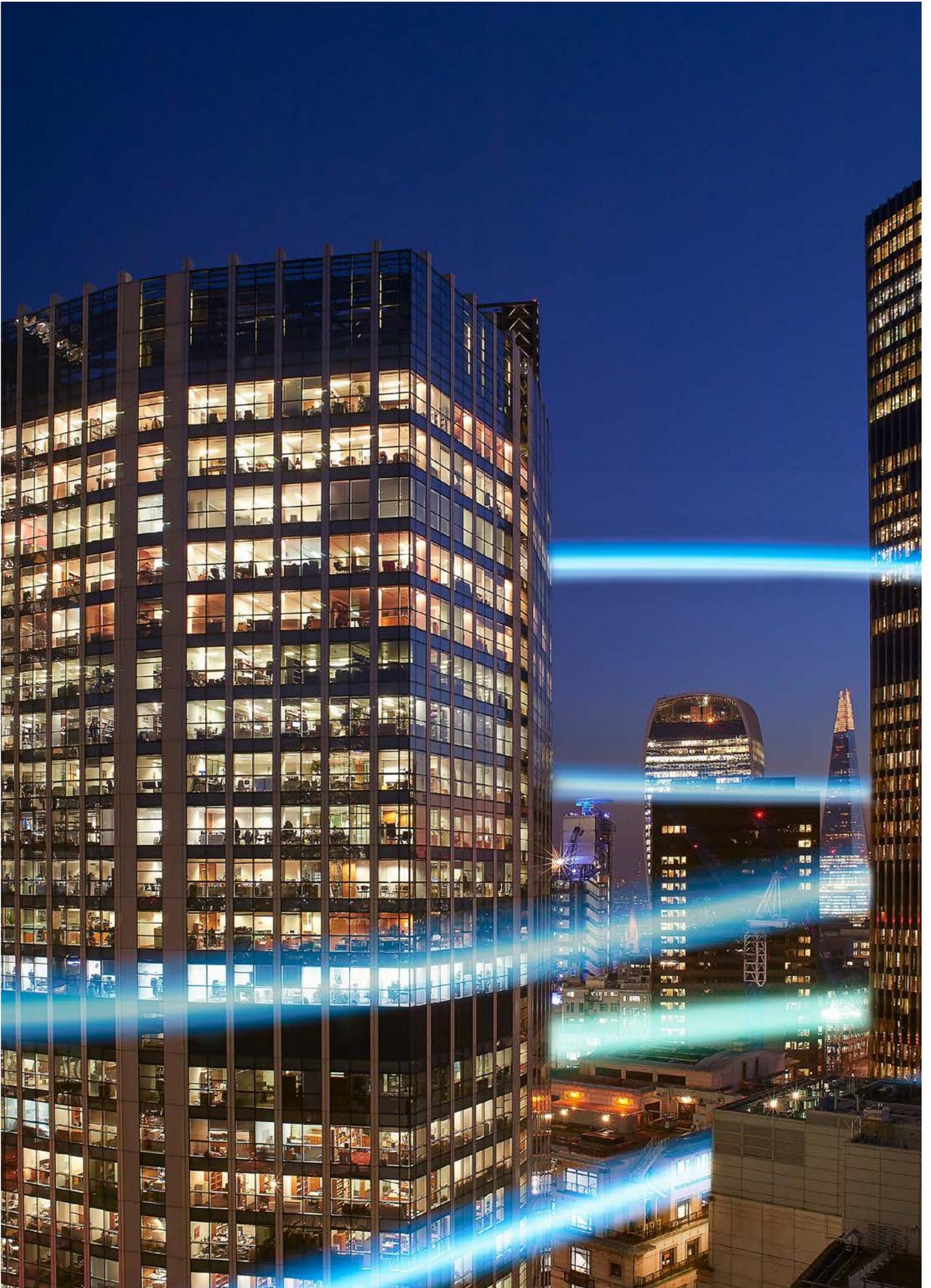
### Data-driven design

Generative design creates a virtual world to test versions of a design solution. Various data are entered, for example about building use, building height, construction area, loss rate, cost of construction, GHG emissions targets, number of residents, availability of green space, access to natural light, connectivity, and proximity to transport. A generative design process then renders this information into a series (hundreds) of typologies and spatial development options through computational design: the basic building

blocks to inform detailed master planning. However, it doesn't stop there. Each typology is tested and validated based on simulating various conditions, comparing one typology against the other to identify weaknesses and redundancies. This creates stronger and stronger design options the model achieves acceptable operational performance based on project success criteria. In essence, thousands of hours of design evolution are being condensed into a single afternoon—based on the power of the processor that is running the computations. It would be impossible to achieve the same output through traditional, human-powered processes.

### Computational design as an enabler of better human design

This does not mean that we should replace designers. Instead, we should use computational design to provide a defensible and quantifiable spatial development framework to guide detailed human-led design. Instead of doing feasibility analysis and concept design, human designers are able to focus on creative decision-making associated to experience design, while relying on data-driven feasibility and project resilience.



# Driving into the future of Real Estate

## The impact of autonomous vehicles on Real Estate and infrastructure

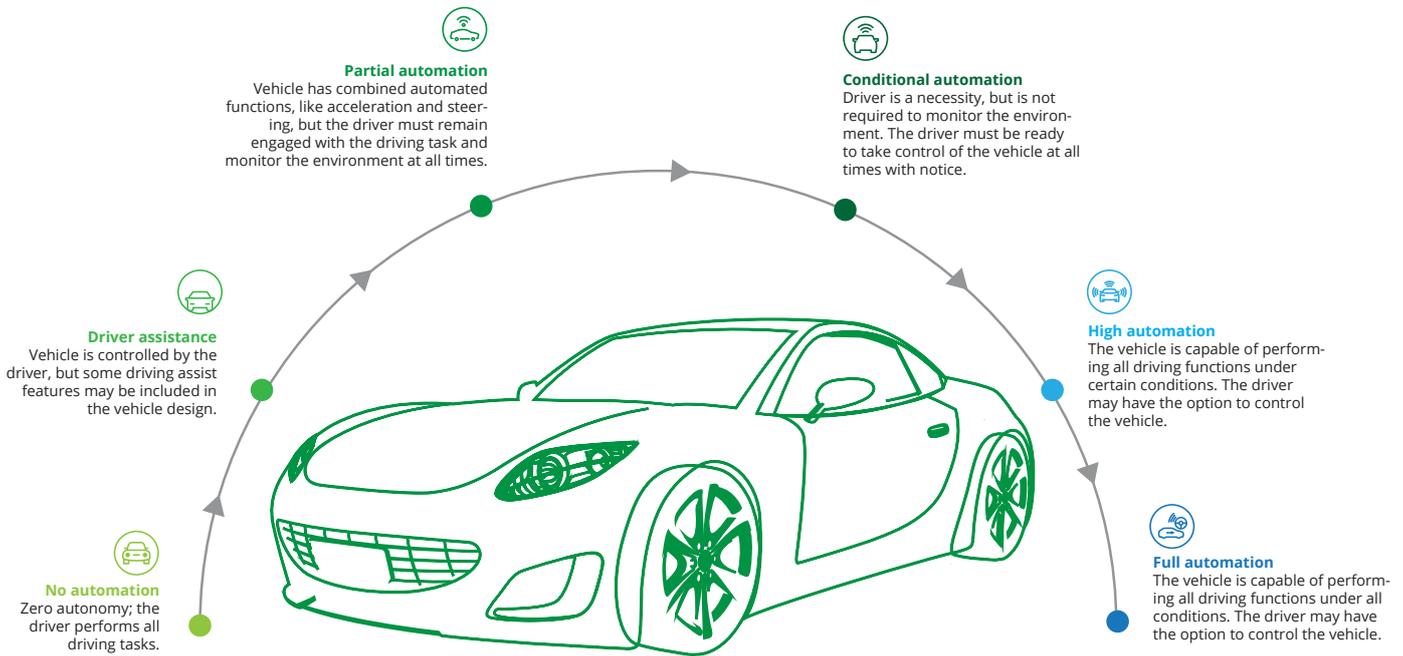
The rise of Autonomous Vehicles (AVs) and ridesharing technology is likely to revolutionize urban transportation. Also, the impact on Real Estate is likely to be profound and far-reaching. What is going to happen during the coming revolution and what could be the effects on urban spaces and Real Estate?

### The coming urban transportation revolution Autonomous vehicles

In addition to electrification, the majority of large vehicle manufacturers are also heavily investing in autonomous driving

technology<sup>1</sup>. However, even though there has been talk of driverless cars for several years, the actual implementation to date on our roads has been limited. This will likely change in the near future, with manufacturers rapidly progressing their

vehicles towards full self-driving capability. In fact, the highest levels of progressive automation are now being tested in locations across the world<sup>2</sup>.



When automated vehicle technology is proven, and governments sanction its roll-out, the level of change and impact on society will be exponential and profound.

Predictions vary, but autonomous vehicles could account for as much as 40% of personal mileage in Europe alone by 2030<sup>3</sup>.

If full automation is indeed coming in the following decade, obstacles around safety and legislation can be successfully navigated<sup>4</sup>.

1 Some of the largest technology firms based largely in the Silicon Valley are spending heavily on automation and ridesharing with around \$23 billion in total funding in the last 20 years (Goldman Sachs). It is estimated to grow well beyond \$96 billion by 2025 and to \$290 billion by 2035. This investment would mean that global market capitalization would total an estimated 17%, and approximately 27% of vehicle miles travelled will be done in AV by 2035 (Cushman & Wakefield).

2 We can already see nations from almost every continent investing in this technology and preparing their roads for the introduction of AV within the next decade (the Verge 2020).

3 PWC, Five trends transforming the Automotive, 2017.

4 Troy Baltic, A. C., Russell Hensley, And Nathan Pfaff. How sharing the road is likely to transform American mobility, 2019.

### **Ridesharing is omnipresent**

Over the past few years, ridesharing has become omnipresent across global urban centers. Companies like Uber and Lyft are now household names, and considered as genuine alternatives to other forms of transport, including personal vehicle ownership and public transport. Because of their long-term strategies, they are considered highly valuable by shareholders. These companies are continuously collecting and analyzing data on how to optimize vehicle usage and customer service. Ultimately, their goal is to leverage the full potential of Autonomous Vehicles (AVs) by eliminating the need for their largest overhead—the driver<sup>5</sup>.

### **More space, lower costs**

The benefits of full vehicle automation, in conjunction with ridesharing, will mark the biggest change in urban transportation since the invention of the internal combustion engine. Some of these changes will include the elimination of congestion of our roads when substantial automation is achieved. Vehicle size and required driving space will reduce as they will be able to “communicate” and therefore travel at closer distances. This will reduce road sizes in urban areas, providing new space that is no longer required for vehicles<sup>6,7</sup>.

The shift to full automation will probably almost immediately impact consumer costs for AV travel. This in turn will increase AV utilization, and decrease the usage of public and private transport services<sup>8</sup>. A continued knock-on effect would take place within other service industries such as delivery, logistics and distribution sectors.

The changes in cost will increase accessibility and convenience, which will prove an attractive alternative to public transport and personal vehicles. To access the service, users will only require a pick-up/drop-off location before moving on to collect the next user. With fewer vehicles on the road, physical resource waste, including CO<sub>2</sub> emissions<sup>9</sup>, will drop dramatically. As electric vehicles only offer a marginal improvement in the whole life carbon emission over internal combustion engines (ICE), there would still be concerning levels of emissions and raw material damage from the metal production and energy required to make and run vehicles for personal use<sup>10</sup>.

Increased productivity from AV will likely play a determining factor in the rapid expansion of driverless vehicles in major cities. As we begin spending our future commute with the aid of AV and ridesharing, we could be significantly more productive and have more time to focus on other tasks. Across an entire population, this will have a direct effect on a country's economy. For example, in the US, with an average yearly time spent commuting estimated at a total of 9 days, leading to a vast waste of time across an entire working population<sup>11</sup>.

### **Implications for Real Estate**

The desire to live in central locations could decrease as commuting times drop and proximity loses value. As the urban sprawl continues, the opportunity to change the excess land—available because of AV—will become increasingly important. We will need to make decisions on how

we design parks and green spaces, and manage housing, services, production, and the logistics of a wide combination of our everyday needs.

### **Consequence of AV on property & land use**

To understand the impact of AV we must look at the coming changes in the development and redevelopment of buildings and their surrounding spaces. As the need for parking spaces diminishes, what will we choose to do with those spaces? It is estimated that London alone would gain an area equivalent to 5 Hyde Parks (approx. 7.1km<sup>2</sup>) from developing all its car-parking space, although some of this space would be needed for pick-up and drop-off points<sup>12</sup>.

All this new space as well as the simplification of roads would allow for new developments, expansion of established buildings, and the creation of more green and public-use spaces. Lastly, this shift to AV would enable governments to provide more affordable homes, drive down the inequalities between owners and renters, and provide solutions to issues like the current housing crisis in many countries<sup>13</sup>.

### **Real Estate future value**

In other words, the introduction of AV will impact the value of property and the importance of where individuals choose to live. As the connection time to key amenities and the workplace drops, being close to central locations loses significance. Properties located within proximity to public transport will inevitably lose their competitive advantage and market value.

5 Uber's self-driving cars are a key to its path to profitability, 2020

6 Shetty, S, The new economy, Cars take up way too much space in cities, 2021.

7 Stokes, N. Can today's car parks become tomorrow's housing developments?, 2017

8 Transport & Environment, Does sharing cars really reduce car use?, 2017

9 Privately owned cars are not in use for 95% of their life cycle (World Economic Forum) highlighting a profound inefficiency in the way cars are used and interacted with.

10 Transport & Environment, Batteries, 2021.

11 The Washington Post, Average commute time reached a new record last year, 2019.

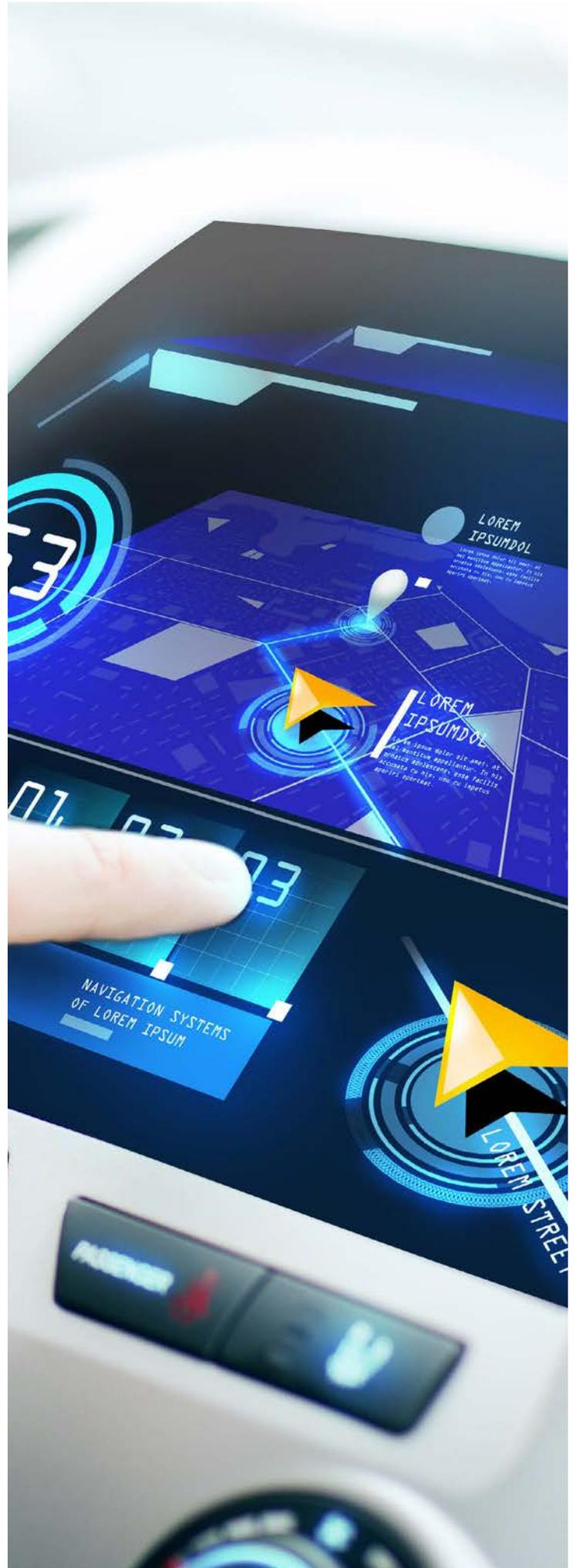
12 Sidders and Shankleman, A Driverless Future Threatens the Laws of Real Estate, 2018.

13 Breach, Planning for the future: How flexible zoning will end the housing crisis. Centre for Cities, 2020.

It is predicted that this will encourage urban areas to take use of new unused parking spaces. This will transform residential areas, increase the ability to create greener spaces, expand current and new properties and drive commercial development<sup>14</sup>. As AV evolves and becomes fully operational, property values will naturally fluctuate again—unused spaces will become more attractive to investors and re-development will take place. Central locations will again have a new lease of life as they become a hub for new opportunities, and the demand for property and services will increase.

#### Requirements for successful change

All these developments will need careful planning and management, with sufficient consideration for socio-economic needs. Governments must play a role to prevent vast privatization of new available land, as well as consider the infrastructure required to manage this change. If the correct measures are put in place, we will likely be able to manage employment, and improve our general well-being and our surrounding environment.



<sup>14</sup> Planners Press, Chicago, Shoup, 'The high cost of free parking', 2005.



# Incorporating ESG: Living Up to Stakeholder Expectations and Business Opportunities

## Five Steps to Make a Tangible Impact

Environmental, Social, and Governance (ESG) issues have emerged as a top focus, and companies need to respond to meet growing investor, tenant, and employee expectations. According to 60% of Real Estate respondents of the **2022 Deloitte Center for Financial Services Outlook Survey**, ESG initiatives are driving new business opportunities for their organization, and half of them think that these initiatives are giving them a competitive edge. What can you do to prepare for the new market realities?

### Be an Industry Leader at the Frontline on Addressing Climate Risk?

The CRE sector has a huge role to play in helping combat climate change. According to Architecture 2030<sup>1</sup>, a non-profit environmental advocacy group, buildings are responsible for nearly 40% of annual global carbon dioxide emissions. Of these, 28% are caused by building operations, and the remaining 11% by building materials and construction (embodied carbon). As the world transitions into a lower-carbon economy, Real Estate leaders can make an impact: first by collecting and assessing data on the environmental impacts of building operations, then by investigating and implementing resource efficiencies, and finally by partnering with developers who use sustainable practices and materials.

### Green Leasing Offers Upside

By "green leasing" we mean that tenants either commit to or benefit from embracing sustainable practices, such as waste reduction. More and more organizations are focusing on green leasing. Half of respondents of the 2021 RICS Sustainability report claimed that green

leases command premium rents, and 30% state that brown buildings (those without sustainability features) offer reduced rents to compensate tenants.

### Align Social Initiatives with Business Opportunities

In our 2022 Deloitte Center for Financial Services Outlook Survey, ESG is a key topic. Turning to the "S" in ESG, only 50% of respondents believe their organization is making strategic investments to improve affordability and quality-of-life issues in communities in which they operate. Less than half of them say their institution is taking steps to increase diversity in the tenant-mix to reflect community demographics. Industry leaders should recognize that stakeholders increasingly expect improvements in these areas. Developer DL3 Realty is now on a mission to revive communities by redeveloping properties in disadvantaged neighborhoods. They have converted a vacated Target store into a Blue Cross Blue Shield customer care center, creating access to health care for neighborhood residents. Another property was repurposed into a call center for

Discover Financial Services. This provides employment opportunities for local workers.

### Prepare for More Stringent Regulatory Requirements

As regulators step up ESG reporting demands, firms will soon have to prioritize these efforts. In September, the US Securities and Exchange Commission released a sample letter that requests additional information from companies concerning their efforts to address climate change. Recent disclosure rules in the European Union's Corporate Sustainability Reporting Directive and the China Securities Regulatory Commission will also require companies to identify, track, and report on key performance indicators, such as carbon emissions and human capital metrics.

Our survey showed that for smaller firms, quantifying climate risks in their business and portfolio, as well as quantifying DE&I initiatives and social equity across different geographies, was particularly challenging.

<sup>1</sup> Architecture 2030, "Why the building sector?," accessed October 8, 2021, <https://architecture2030.org/why-the-building-sector/>

### Five Action Steps:

For CRE firms who are aiming to improve ESG governance and impact, we recommend the following actions:

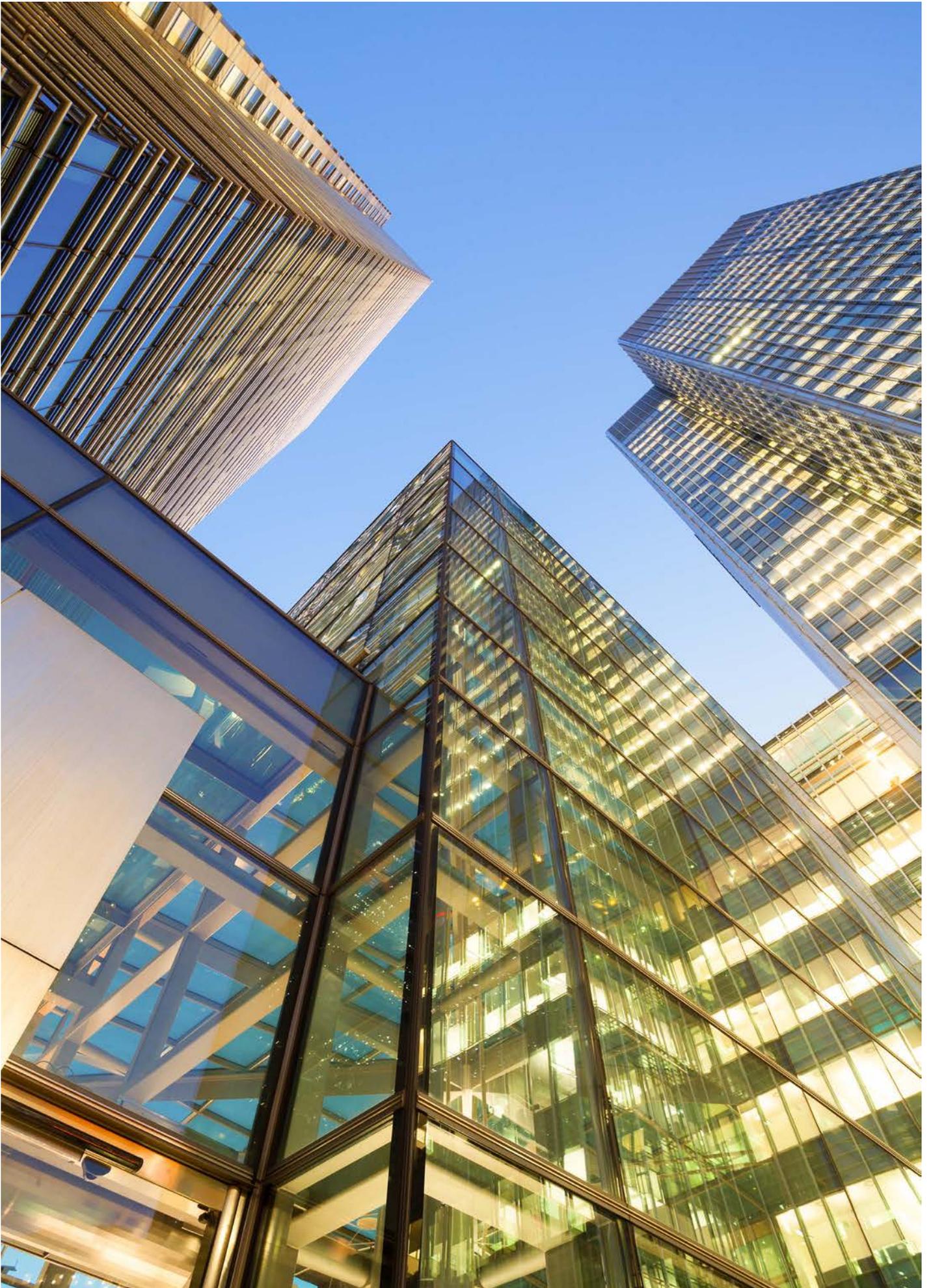
- Design and implement processes to record progress and hold leaders accountable for achieving target metrics. This would improve reporting as regulators increase disclosure expectations.
- Create a road map that establishes and documents ESG strategy as part of the broader business strategy. Effective governance and long-term value creation requires a strong focus on priorities and clear, actionable, and measurable goals. Share this road map with stakeholders and key decision-makers to help assess risk and move initiatives forward.
- Intentionally incorporate ESG into the business from the start of a project to how it is managed daily, post-

construction. This involves everything from raw materials to the use of data analytics to help existing tenants reduce their carbon footprint.

- Communicate the firm's ESG vision and plans to investors and employees alike. Sustainable investing is a growing area of capital formation. CRE companies can take advantage of this new wave if they are transparent about how they incorporate ESG into the mission of their company.
- Conduct a robust climate risk assessment to mitigate overall risk and inform strategies.

In the 2022 Deloitte Center for Financial Services Outlook Survey, the responses of more than 400 global Real Estate firms are discussed in detail. As Environmental, Social, and Governance (ESG) have become a key factor to meet growing investor, tenant, and employee expectations, and

are driving new business opportunities, it is time to act. Firms that take a proactive role in the field of ESG and value planet and people as much as profits, will definitely create a competitive edge. We hope our survey and five action steps will help you embrace the new market realities.



# How AI can enhance urban planning, asset management and investments

## Advanced analytics for the cities of the future

Customized AI tools can support a review of large files for Real Estate research, quality checking data and providing insights into the driving factors behind trends. Scenario simulation and an evaluation of their impact can be used to enhance key decisions on investing, budgeting and planning. In this article, which includes a case study, we discuss how to harness the exponential power of AI for urban planning, asset management and investment decision-making for the cities of the future.

### Understanding current and future supply-demand dynamics

Urban planning, asset management and investment decision-making are key factors for the cities of the future. They require a clear understanding of the current and future supply-demand dynamics and underlying macro-economic factors. Currently, this is a challenge. The Real Estate market data that is required for city and master plans, including supply, transactions, price and rent information, typically comes in disparate source formats. Also, the correlation of economic metrics, such as Gross Domestic Product (GDP), oil price, and construction financing, is often not clearly articulated. This

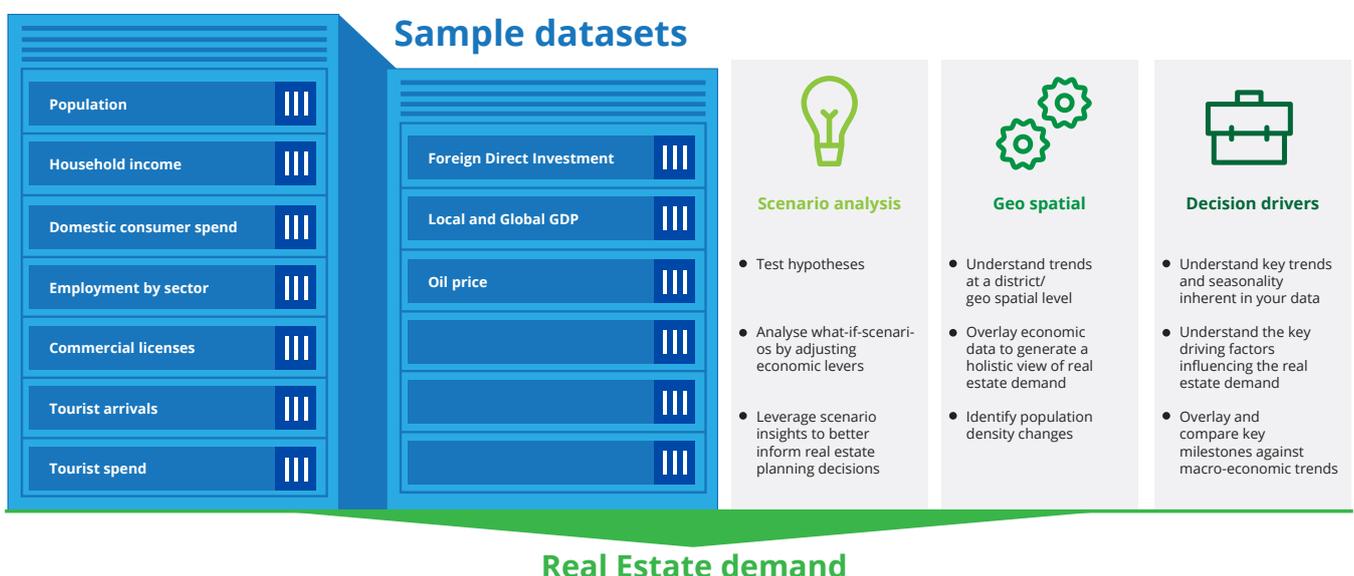
complicates the study of their true impact on Real Estate demand.

This is where machine learning and AI tools come in. Existing historical data can readily be incorporated into such a tool or algorithm in a structured and standardized way. Next, relevant information can be reproduced by means of a consistent standard Extract, Transform and Load (ETL) Process.

Scenario analysis based on enriched data sets is helpful as well, as it can show the impact of future trends. These data sets incorporate asset-level information, macro-economic data and public opinion.

This analysis can be augmented by linking, where possible, future Building Information Modelling (BIM) and smart city data. Ultimately this will enable asset managers to interact with these customized and highly interactive analytics, made available in easily digested formats. Wherever and whenever. The solution can assist property owners and asset management companies, in addition to providing planning departments and developers with the information needed to support demand-driven decision-making.

Figure 1: Real Estate data framework



**Defining the data framework**

The starting point for building a customized forecasting tool is the review of a range of variables and interlinkages driving Real Estate demand. In order to define the framework for the forecasting analysis, historic data can be assessed to find a potential correlation of factors.

The above framework can be delineated further into sector level demand drivers, including:

- **Residential:** Scenarios
  - Net additional demand for residential units can be overlaid with information on household income, pricing/rents and occupancy by district.
  - Transaction data for residential units, which reflects investor and occupier demand, can be factored into the analysis to derive a demand-supply gap analysis for the sector.
- **Retail:** An assessment of consumer spend, retail asset transactions, occupancy by district and Gross Leasable Area (GLA) per capita to review supply gap, if any.
- **Hospitality:** Tourism indicators and information on multiple occupancy factors and the average length of stay to estimate the total demand in the number of room nights.

- **Offices:** Information on employment by sector and the GDP growth forecasts to estimate demand for offices, i.e. GLA.

- **Industrial:** Assessment of industrial sector employment, trade and e-commerce activity.

Customized tools can support a review of large files for Real Estate research, quality checking data and providing insights into the driving factors behind trends. Scenario simulation and an evaluation of their impact will then enhance key decisions on investing, budgeting and planning.

**Case study: The use of Deloitte’s Intuition accelerator to build a forecasting tool for a city planning department in the GCC**

Deloitte has developed an integrated decision-making framework for a city planning department in the Gulf Cooperation Council (GCC). The tool was created to study the historic trends within the residential, retail, office, hospitality and industrial sectors, along with relevant macro-economic indicators to provide forecasting for key metrics using Deloitte’s time series accelerator, *Intuition*.

*Intuition* is a bespoke forecasting engine that automates the process of identifying unique and complex trends within a data set by passing the data through different algorithms, to pair the most predictive algorithm with the provided data. The

final solution also enabled a sophisticated scenario modeling component where the users can plan for certain cases, identify potential key drivers and ultimately ensure that better planning takes place for large or small scale events in the future.

A fully customizable consumption layer was built as a web-based and mobile-friendly interface for key stakeholders in the Real Estate development lifecycle to access the outputs and forecasts. This included macro-economic and sector-specific forecasts, the ability to run scenarios for changes in low, medium and high impact drivers, and to use the tool to gain a full view of the Real Estate landscape. The solution also enables key stakeholders to interact with the tool in different ways through an easy-to-use interface, further driving adoption in the business.

Forecasting is split into two different stages. The training step facilitates the creation of the models while the second step is the deployment of the models into the solution.

Figure 2: Forecasting overview



The training step takes the raw data and transforms it into training data for the machine learning model. These models are validated for accuracy and are then incorporated into the solution to make forecasts.

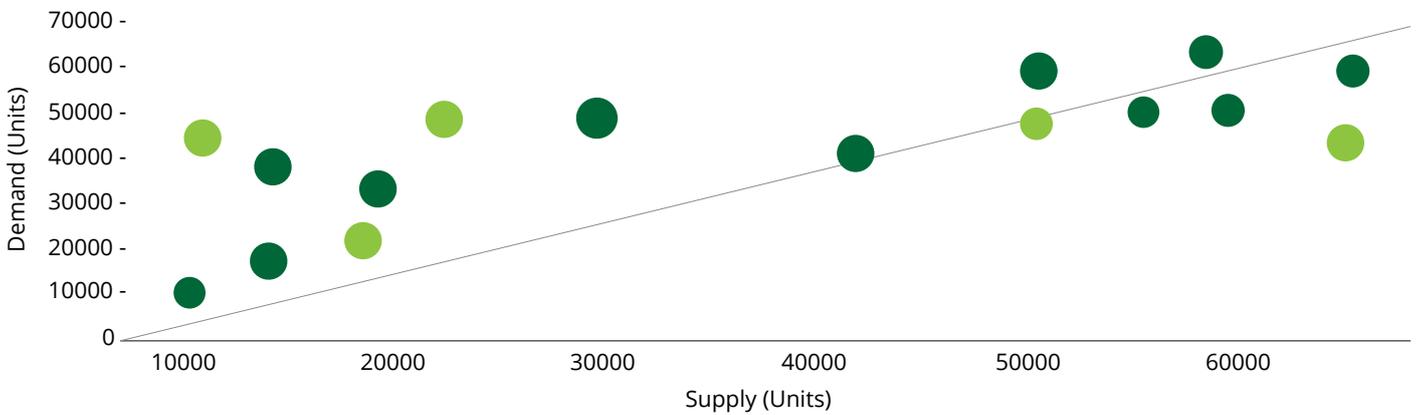
Models deployed within the solution run quarterly, using data from the uploaded data template. The **data template** is the fully categorized information for each Real Estate sector that supplies both the forecasting model and the performance indicators dashboard.

Once the data is uploaded, it is transformed for ingestion into the model, checked for stability and baseline forecasts are produced and stored. The baseline forecasts are validated and, along with the model, used for the scenario analysis.

Figure 3: Scenario analysis extract

**Residential Sector Scenario Impact Comparison**

A comparison of scenarios in the residential sector indicating whether the demand has been met or if there is an undersupply or oversupply of units



Source: Deloitte

**Harnessing the power of AI**

As the above case study demonstrates, to thrive in a disruptive economy, key decision makers can harness the exponential power of AI to drive real, tangible outcomes. This will help them to greatly improve the urban planning, asset management and investment decision-making that is needed for the cities of the future.



# CSRD: Booster for a sustainable Real Estate industry

## The EU's new sustainability directive as a game changer for Real Estate

The Corporate Sustainability Reporting Directive (CSRD) will radically improve the scope and existing reporting requirements of the EU's Non-Financial Reporting Directive (NFRD). This ambitious package will make it mandatory for many Real Estate organizations to report on all relevant inward and outward Environmental, Social and Governance (ESG) issues and will have a significant impact in the short term. The proposed regulations will be in effect from 2023, and therefore, it is essential to be prepared. To comply with the requirements of the CSRD, it is crucial to do a materiality analysis and baseline assessment, set your ESG goals within a long-term ESG strategy and prepare your management systems and internal controls. The time to start is now.

### Purpose and background

The EU Green Deal aims to turn an urgent challenge into a unique opportunity by cutting 55% of CO2 emissions by 2030 and achieving climate neutrality in 2050. As part of this effort, the EU introduced an action plan to finance the transition to carbon neutrality. Also, it introduced several regulations to support the achievement of this goal, including the Sustainable Financial Disclosure Regulation (SFDR), the EU Taxonomy, and the proposed Corporate Sustainability Reporting Directive (CSRD) as the successor of the EU's Non-Financial Reporting Directive (NFRD).

The purpose of the CSRD is to strengthen the foundations of sustainable investments in the EU's transition to a fully sustainable and inclusive economic and financial system, in accordance with the European Green Deal and the UN Sustainable Development Goals. The proposed CSRD

aims to radically improve the existing NFRD reporting requirements to increase transparency of corporate progress in terms of sustainability, and to align sustainability reporting with financial reporting. Companies will have to report on how ESG issues affect their business as well as on the impact of their activities on the environment and on society.

### Why is the CSRD affecting the Real Estate industry?

The Real Estate industry is responsible for approximately 40% of CO2 emissions and greatly impacts our daily lives. To meet the EU's climate and energy targets for 2030 and reach the objectives of the European Green Deal, more and more Real Estate organizations commit themselves to sustainable climate targets such as zero emissions, and keeping global warming below 1.5 celsius. However, with the new CSRD reporting requirements, merely

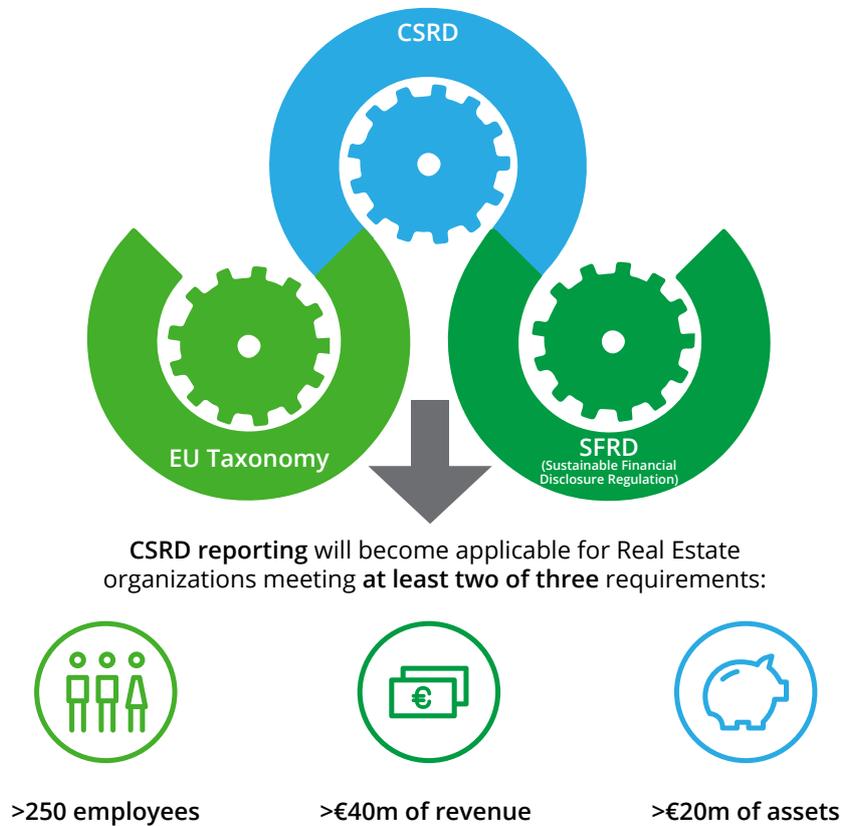
commitment and ambition aren't enough for Real Estate organizations to achieve their sustainability objectives.

The CSRD extends the EU's sustainability reporting requirements. Also, it applies to all listed companies and large companies on EU-regulated markets that meet any two of the following three criteria:

- ≥ 250 employees
- ≥ €20mIn of assets on balance sheet
- ≥ €40mIn of net revenue.

The widening of the scope is expected to come into effect as of 2023. It will have a significant impact on more than 50,000 companies in the EU and over 1,700 within the Netherlands, many of which are Real Estate organizations. This is due to the nature of the sector with its fairly high net revenues and balance sheet totals.

Figure 1: Relevance of the CSRD



**What is going to change for the Real Estate industry?**

Because of the CSRD, Real Estate organizations can no longer report on their financial status without mentioning their environmental and social impact. In order to do so, it is essential to follow the materiality concept when determining which ESG topics you should report. Materiality is the concept that defines why and how specific issues are significant for a company. By introducing the concept of "double materiality", organizations need to consider both the impact of climate-related risk and opportunities on the company's value ("financial materiality" or "inward impact"), and the external impacts of the company's activities on the environment ("environmental and social materiality" or "outward impact").

In addition to mandatory requirements, we do believe that the CSRD will be a major game changer for the industry in terms of transparency and insight into sustainability risks and opportunities. Also, it will help Real Estate organizations with a strong ESG performance attract capital.

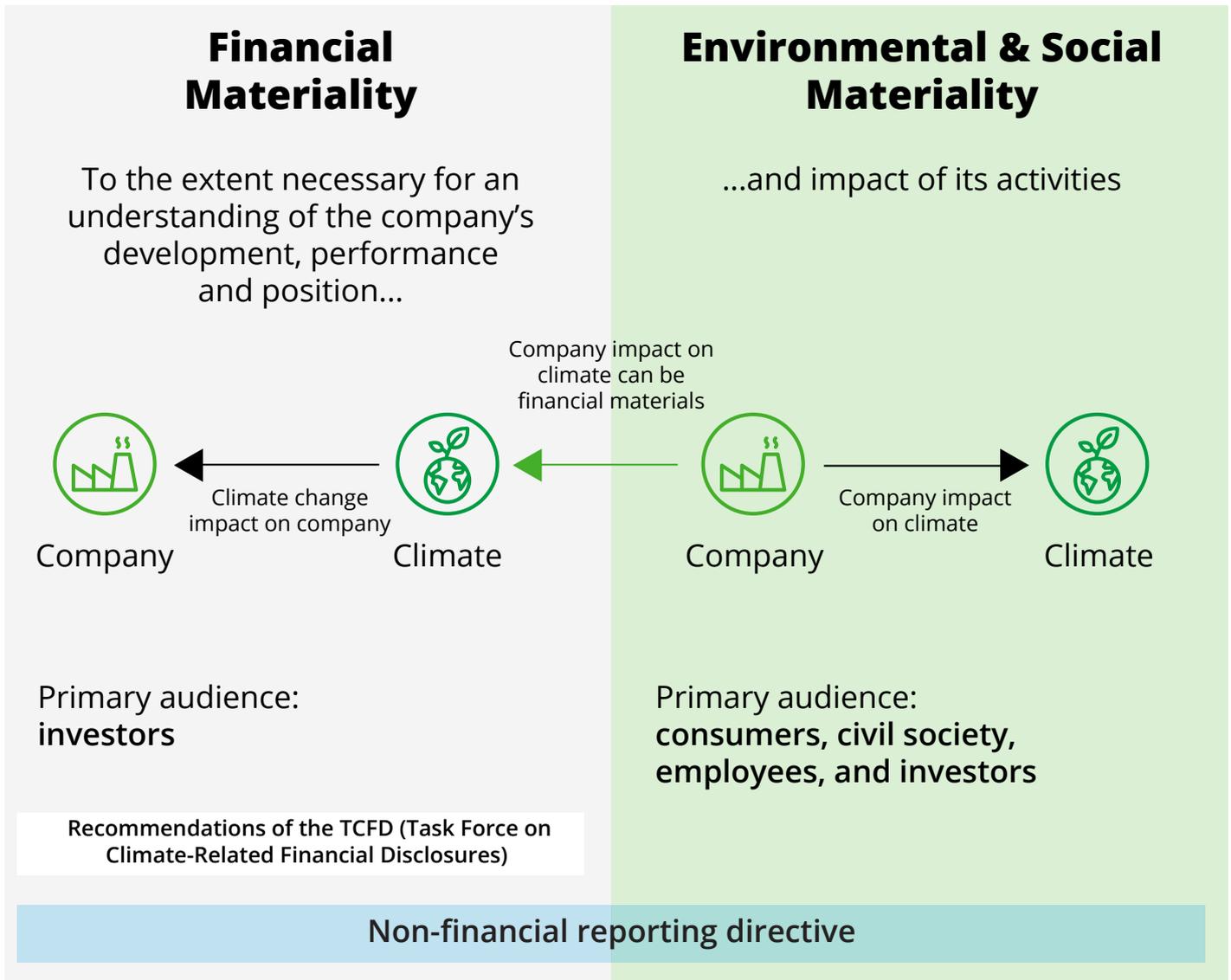
in order to comply with the CSRD, Real Estate organizations must have a long-term sustainability strategy and extend sustainability management to include both inward and outward sustainability risks and opportunities. Because the Real Estate market is stimulated by financing and investments from a wide range of investors, understanding sustainability performance, strategy and sustainability risks and opportunities will become increasingly important for attracting capital, gaining a competitive advantage and achieving your sustainability goals.

**What can you do now?**

The CSRD will be a major game changer in corporate ESG reporting with far-reaching implications for the Real Estate industry. Real Estate organizations, investors, regulators, auditors and other stakeholders will all need to devote significant time and resources to prepare for the implications of the CSRD. Given the significance of the CSRD and the time required to be prepared in 2023, these are the key topics you should start considering now:

- Perform a double materiality assessment to determine which ESG issues are material for your organization from both an inward and outward perspective.
- Perform an ESG baseline assessment for your material ESG issues to determine your starting point.
- Set measurable ESG goals in line with the EU Green Deal and UN Sustainable Development Goals.
- Develop a future-proof ESG strategy that includes, among other things, your purpose, vision, objectives, performance indicators, a strategic roadmap and policies required to comply with EU legislation and mandatory third party limited assurance as of 2023.
- Set up reporting and monitoring procedures in order to keep track of your ESG goals over time and reassess material ESG issues.

Figure 2: The double materiality perspective in the context of reporting climate-related information





# The future of the housing business

## Future requirements for the property management of multi-dwelling units

Inadequate management of ageing multi-dwelling units has become a social issue. Digital transformation can help property management companies to address concerns in this field, so they can benefit from the opportunities of an increasing demand.

### The challenges of existing housing stock

For a long period after World War II, Japanese governments aspired to increase the housing supply and raise its quality. This changed when the population started declining in the 2000s. Policy switched towards using existing housing stock. However, one of the problems in utilizing stock is the inadequate management of ageing multi-dwelling units. The owners, or those who inherit a used property in a multi-dwelling unit, often do not understand the value of such a property that has been left vacant. They fail to sell or lease it to others, or do not participate in the consensus-forming for repair or rebuilding the property.

This problem is not limited to Japan - it is a social issue shared by countries all over the world. Management systems for multiple-dwelling complexes in major countries in Europe and the US are similar to those in Japan. The framework details differ, but the complexes in these countries also have management associations composed of all unit owners, with decisions made at a general meeting. Sometimes, management is outsourced to a management company. In Japan, for example, the tasks outsourced to management companies include support for general meetings and association management, accounting, caretaker duties, cleaning, and maintenance and inspection of buildings and facilities.

Digital transformation can help property management companies to address concerns about inadequate management,

so they can benefit from the opportunities of an increasing demand. This requires four measures: (1) digitalization of property management, (2) division of property management specifications into standard and optional, (3) support for self-management of multi-dwelling units, and (4) collaboration between players in the industry.

### Digitalization of property management

Property management services today include participation in and running of general and board meetings and other face-to-face duties, and duties that require human labour such as cleaning, inspection, and patrols. Because of the personal nature of the services, digitalization has not progressed in the industry as a whole. As the problem of labour shortages becomes increasingly severe, property management firms seeking to shore up their top-line revenues will need to improve efficiency in order to increase the number of condominium units handled and managed per employee. The digitalization of property management will improve efficiency in three specific ways.

First, simply as a replacement of labour, by means of e.g. cleaning robots, IoT technology for inspections and patrols, and chatbots for handling complaints. All of these will help keep down personnel costs. Human employees can then focus on added value areas where the human touch is preferable. Moreover, the personnel freed up by these measures can be used to increase the managed unit capacity.

Second, by improving the existing inefficient workflow. Examples are online distribution and storage of general and board meeting materials, conducting resident surveys online, digitalizing inspection and maintenance records, and introducing an accounting system. In particular, the distribution and collection of paper materials is inefficient and expensive in terms of labour as well as distribution costs (postal, transportation, and storage costs). Additionally, switching to online exchanges between the head office and managed properties will reduce the number of site visits by head office staff, freeing up time for them to make door-to-door on-site visits.

Lastly, the data accumulated in these digital operations can be used to improve the quality of services - and resident satisfaction. By introducing IoT equipment, for example, the air conditioning and lighting environment in common areas can be optimized, and upkeep and predictive maintenance can be performed based on the state of wear and tear of equipment and devices in order to fulfill residents' needs.

It is likely that new digitalized services will continue to be introduced for various aspects of property management. But even before that, the introduction of a number of services that already exist is expected to proceed. Whether or not property management is digitalized is a key factor for competitiveness.

### Division of property management specifications into standard and optional

The second measure is to classify property management specifications as standard and optional: defining the provided property management services based on factors such as the multi-dwelling unit grade, resident demands, and management and outsourcing costs (see Figure. 1 below). Currently, the quality of property management, and especially resident satisfaction, greatly depends on the quality of the representatives and management staff. This means that even if the property management agreement itself does not change, and there is no difference in the provided services, the skill in handling the duties by staff will likely impact resident satisfaction. By clearly articulating in writing the kinds of services to be received, it is easier to meet the expectations of residents.

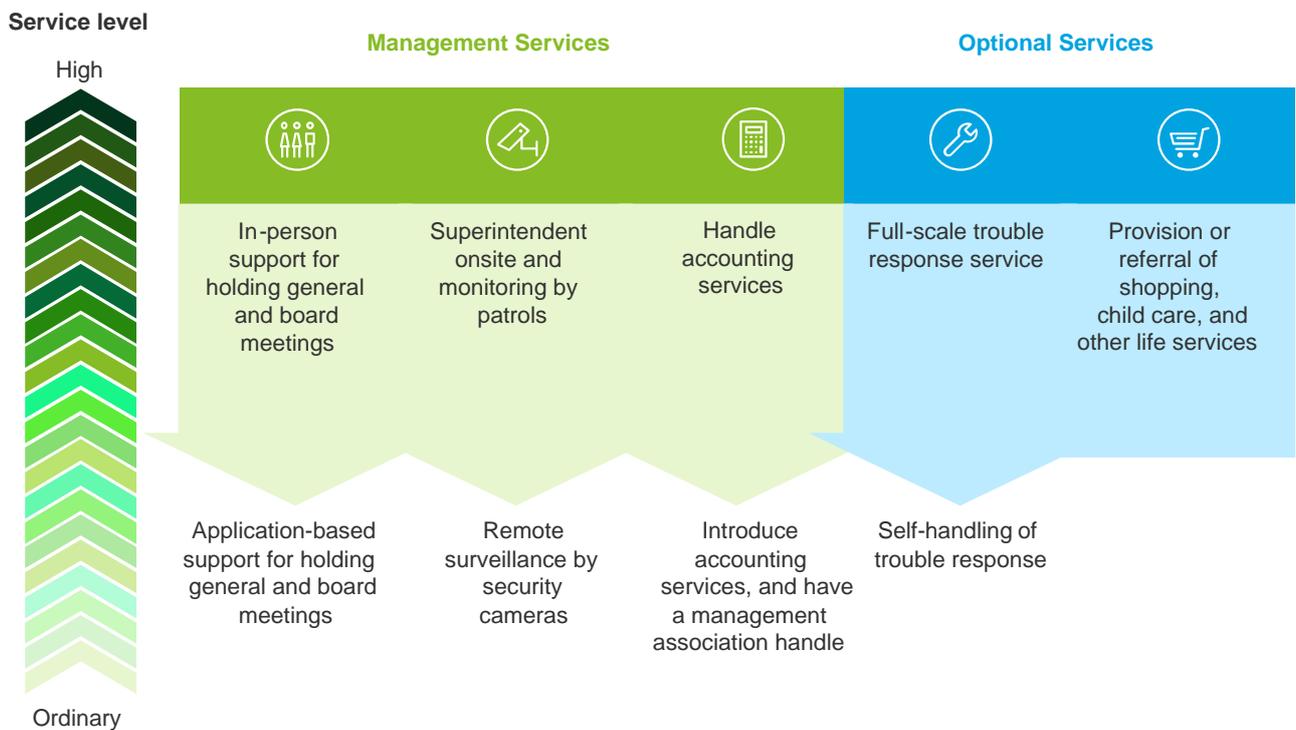
In the case of a high-grade multiple-dwelling complex, the emphasis will be on face-to-face communication, with a building superintendent on permanent duty as in the past. Some of the digitalization initiatives introduced in (1) may be incorporated. Optional services can be added relating to the frequency of inspections and patrols, the extent of assistance with running management association general and board meetings, and the promptness of response to emergencies such as loss of keys or water leaks. Other possibilities are the provision or introduction of services such as housework and house cleaning.

In the case of a middle-grade multiple-dwelling complex, digitalization could take the place of face-to-face communication. This will reduce management costs. For instance, by introducing robots and sensors, online notifications and announcements to residents.

Depending on the kinds of services demanded by the management association and the upper limit on management and outsourcing costs, it might be interesting to consider the possibility of switching to self-management.

Looking at the future of property management, the services provided by the management company will likely match the services expected by residents. Communication with residents will be key to determine the level of property management needed and how much residents are willing to pay for this.

Figure 1: Example of standard and optional multi-dwelling unit management services



### Support for self-management of multi-dwelling units

The trend of rising multi-dwelling unit management fees may well lead more management associations to look closely at the third option: self-management. Rather than distancing from those associations that choose this option, we can expect demands for providing support for self-management, making use of the digitalization of property management introduced in (1) and of the division of management specifications into standard and optional as discussed in (2).

Possible ways of supporting self-management include provision of support applications and other software. Even if the management association lacks specialized knowledge and experience in property management, the costs and trouble of management can be reduced if the association can provide one-stop assistance for tasks such as keeping track of contracts with service providers and of orders, organizing occupant and owner information, and managing repair reserve fund income and outgo. Leading management firms have released self-management support applications in recent years. Also, companies offering similar services have appeared among Real Estate tech companies, so it is likely that competition will heat up for self-management support applications.

Even in highly specialized areas such as drawing up long-term or large-scale repair plans, there are expectations for advice and consulting from third-party standpoints. By leaving basic property management up to the management association and providing only highly specialized services as options, it should be possible to provide high added value and high unit price support.

Although self-management support itself may not lead directly to big profits, actively engaging in such support is important for maintaining good relations with management associations performing self-management. Group companies will reap profits when future large-scale refurbishments or rebuildings are being carried out.

### Collaboration between players in the industry

Another important measure is to strengthen collaboration between "competitors". Companies that insist on providing services on their own may increasingly find themselves coming up short on resources and costs. They could outsource them to other companies in the industry by classifying property management services into standard and optional, and carving out a portion of these services. At the same time, a company might take on certain management

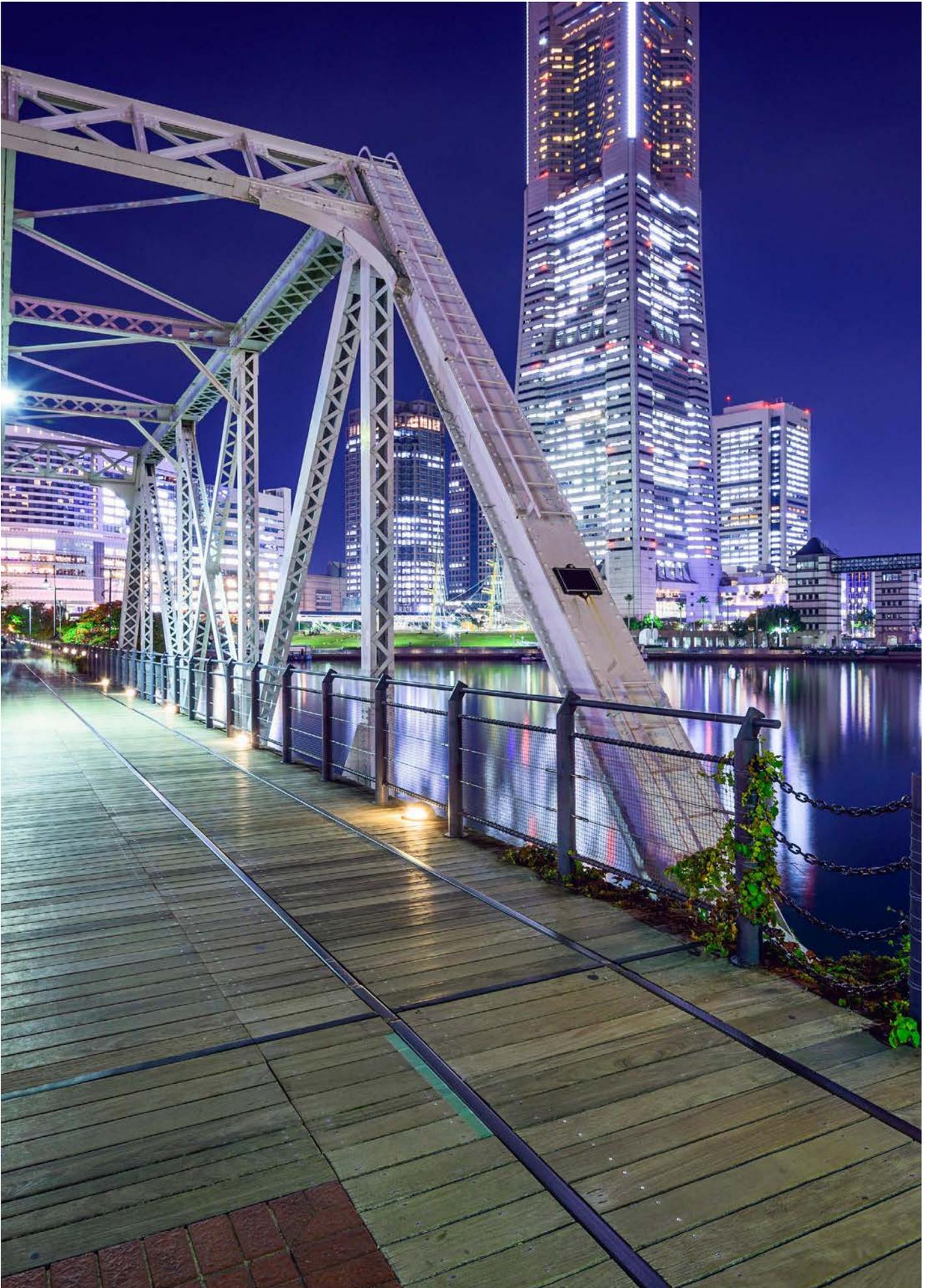
services on a BPO basis for the managed properties of other firms, in service areas or locations where it has an advantage. By focusing its own resources on its strengths, it will be able to manage operations efficiently.

Such collaborative relations are also possible from the viewpoint of digitalization of property management discussed in (2). Companies that develop digitalization tools, could introduce their own tools to other companies, obtaining rental or usage fees, and reducing their maintenance costs through scale. The tool users, meanwhile, can keep down system development costs and reduce their management costs.

There are limits to what a company can do on its own in the face of the severe problems of labour shortages and rising personnel costs. By actively pursuing collaboration with "the competition" while making the most of a company's own areas of specialty, the multi-dwelling units management industry as a whole benefits and develops.

This paper is an excerpt from the report "The Future of the Housing Business—Prescriptions for real estate companies during the housing transformation era" presented in June, 2021.

<https://www2.deloitte.com/jp/en/pages/real-estate/articles/re/future-of-housing.html>



# Mobility hubs, the enabler of healthy urbanization?

## Transitioning towards transport modes with a smaller physical footprint

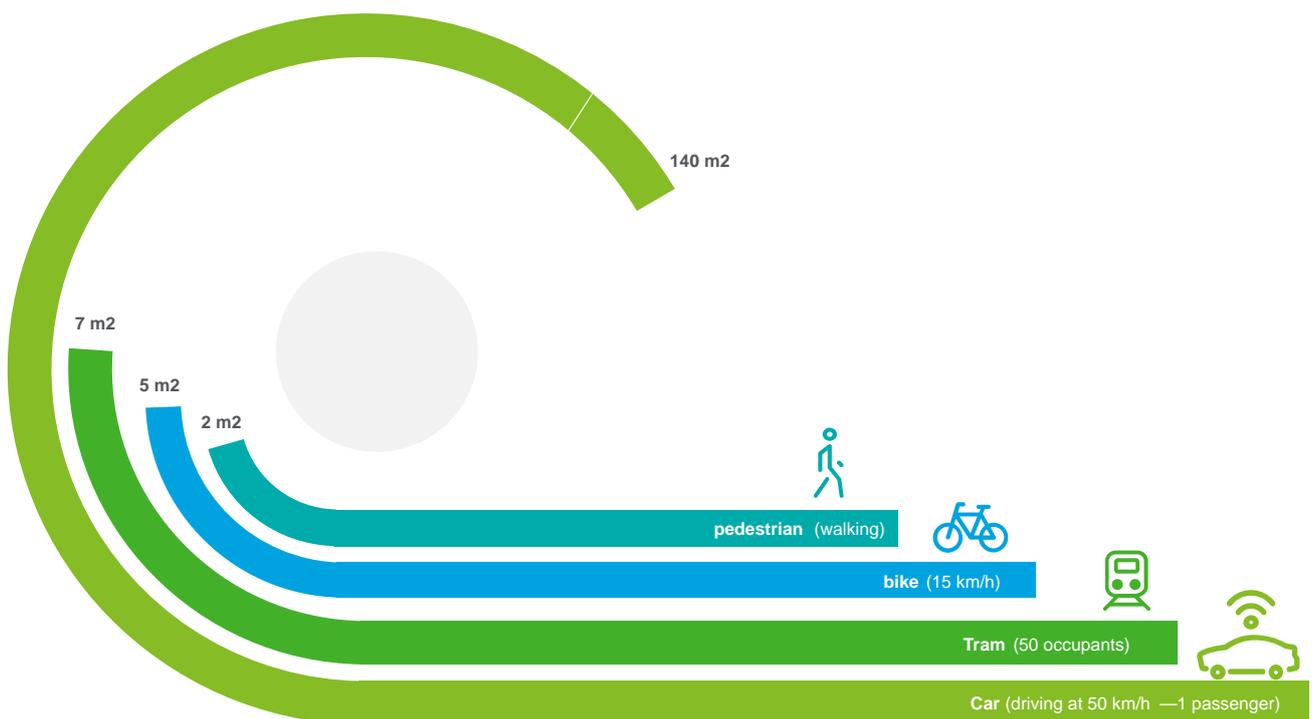
A major challenge in many cities across Europe is the (growing) housing shortage. To solve this, new residential developments are needed. Most municipalities plan these within the city borders to keep the surrounding areas green. Additionally, many municipalities aim to free up the scarce city space that is currently used by (parked) cars. This will make the inner city greener, healthier and more livable. However, it also raises a challenge: how can cities accommodate a growing number of citizens within their borders when they are reducing the amount of space that these citizens can use to travel from A to B? Mobility hubs are coined as the key solution for the transition to a more space-efficient transport system. Yet, only a few of them have been realized. So what can be expected of this trend?

### The challenge: conflicting claims for scarce city space

Individually, we want our trip from A to B to be fast, cheap, and comfortable. Therefore, for many citizens, the car is their preferred

mode of transport. Yet, from a collective point of view, we want safe, livable, and sustainable cities with a high quality of public space. Comparing the "footprint" of different transport modes reveals

the solution to the "space challenge". A transition from car-dominated travel to less space-intensive modalities such as public transport or bicycles is necessary to free up space.



### The way forward: a “carrot and stick approach”

To realize the before-mentioned transition, a change in urban development and policy-making is needed. This should preferably be aimed at:

1. Enhancing “space-extensive” (i.e. public transport and shared vehicles) and sustainable transport modes (“the carrot approach”).
2. Discouraging “space-intensive” (privately owned cars) and sustainable transport modes (“the stick approach”).

The stick approach initiatives are typically about providing less space for cars and/or pricing car parking or car use. Generally speaking these measures are politically sensitive and unpopular with the general public. An important condition for public support for these measures is the availability of alternatives for car-use and car-ownership. Hence, the importance of the “carrot”.

### The mobility hub: the most promising carrot approach?

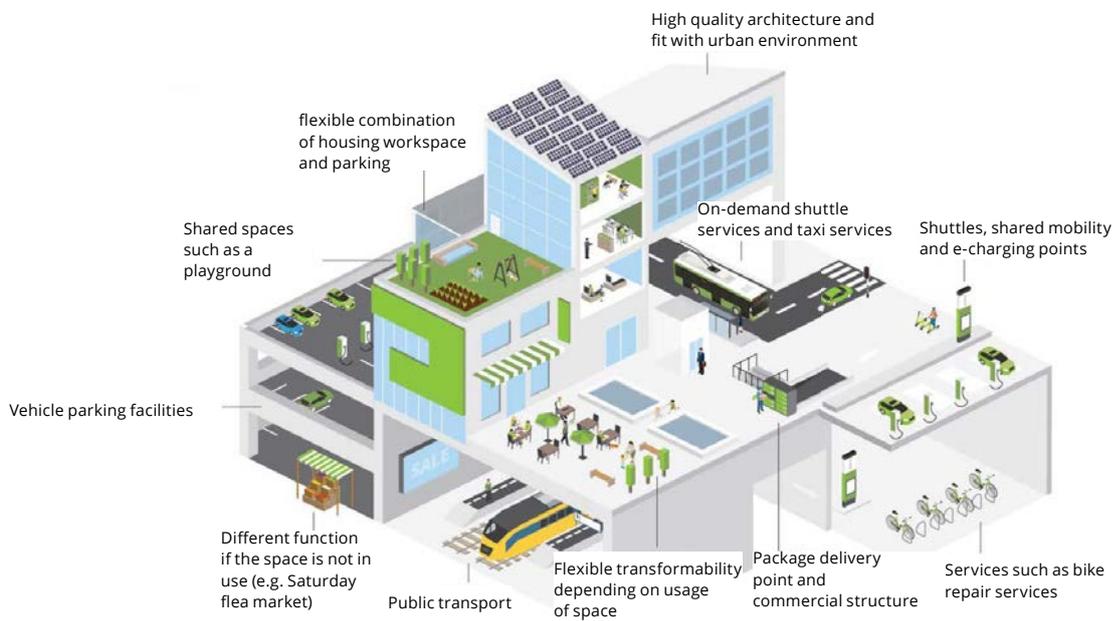
Carrot approach initiatives include measures to provide for better cycling and walking infrastructure and to stimulate shared mobility initiatives. Most attention is paid to the “mobility hub”, which has become a real buzzword. So what is a mobility hub? And what can we expect?

### Examples of stick approach initiatives

 <b>Reducing parking capacity</b>	Paris aims to eliminate 72% of its on-street parking spaces by 2024.
 <b>Reducing parking requirements of new Real Estate development</b>	Many Dutch cities, such as Amsterdam and The Hague, are allowing for new Real Estate development without parking capacity; even imposing maximum parking requirements to cap car ownership.
 <b>Car-free zones</b>	Other European cities, such as Milan and Madrid, impose bans on cars in city center areas.
 <b>Road-pricing</b>	London has implemented the congestion zone to discourage car drivers from entering the city center.

A mobility hub is a place with a high concentration of seamlessly integrated modes of transport (i.e. shared vehicles) and facilities (i.e. charging stations) in an attractive urban design. It provides a safe and convenient place to transfer between modes of transport, thus increasing the traveler experience. As it stimulates citizens to opt for less space-intensive modes of

transport, it also reduces the burden on the public space and contributes to wider city ambitions regarding sustainability and healthy urbanization.

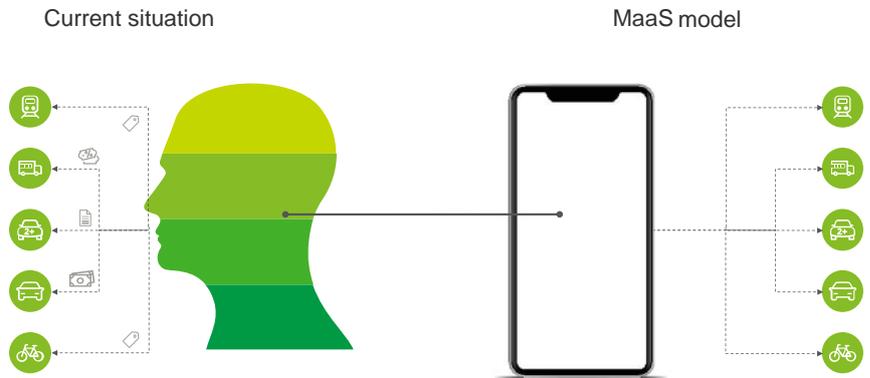


### Mobility-as-a-Service

On the digital side, the travel experience of shared mobility services is also increased by the rise of Mobility-as-a-Service (MaaS).

MaaS allows citizens to plan trips that involve multiple transport modes with one single application and payment mode.

The different services offered at the mobility hub can be reserved by one digital mobility app that allows citizens to plan and pay for their trips.

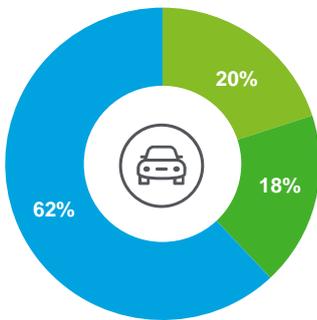


### The current status of mobility hubs in the Netherlands

So what is the current status of the mobility hub development? We surveyed approximately 50 Dutch municipalities on their mobility hub plans. At the moment, less than a quarter of the municipalities already has mobility hubs, but half of

the municipalities plan to realize these in the near future. Furthermore, the majority of municipalities is reducing parking requirements in new residential developments and allows for an additional reduction if car-sharing services are offered to new residents. Our observations confirm the trend that municipalities

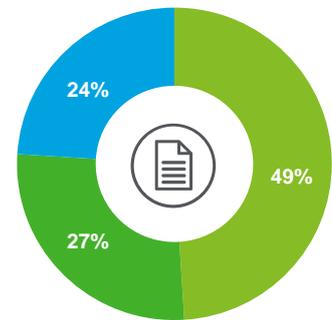
increasingly discourage car-ownership in new residential developments (“stick approach”), and encourage the provision of shared mobility services and hubs (“carrot approach”).



1. Reducing parking requirements



2. Allowing for additional parking requirements in exchange for car sharing services



3. Allowing for reduction in additional parking requirements in exchange for mobility hub services

● No intention to develop policy yet    ● Intention to develop policy    ● Current policy



#### 1. Reducing parking requirements

Multiple studies have concluded that parking requirements result in an oversupply of parking in new residential developments. A recent analysis<sup>1</sup> of the parking supply of a housing association shows that parking requirements dictate the provision of 10 parking spots for 5 social housing apartments when 5 parking spots would have been more than enough to meet demand for parking.

Multiple studies<sup>2</sup> also show that parking requirements affect the feasibility of new residential developments because the cost of providing for parking capacity is generally higher than what residents are willing to pay. This is especially true for underground parking garages.

As a result, many municipalities are reducing parking requirements, especially in inner city areas with good access to public transport.

<sup>1</sup> 'Veel vrije parkeerplaatsen bij sociale huurwoningen' | Mobiliteitsplatform (2020)

<sup>2</sup> Provincie Zuid Holland: Parkeren en verstedelijking (2020)



## 2. Parking requirement reduction in exchange for car-sharing

Many Dutch municipalities reduce the parking requirement with 5 parking spots if a Real Estate developer offers 1 shared car, resulting in a net discount of 4 parking spots. Assuming that one underground parking spot costs €40,000 to build, this provides the Real Estate developer a cost saving of €160,000. This saving could partly be used to pay for the provision of shared mobility services.



## 3. Shared mobility hub subscription to Real Estate tenants

More and more Real Estate developers and investors, in cooperation with shared mobility providers, provide their tenants with shared mobility services. Some offer a subscription service. This can be provided on top of other services offered by Real Estate operators (i.e. fitness subscriptions or co-working subscriptions).

A subscription model commonly used in practice works like this: a tenant pays a fixed amount of €20 per month and a variable amount of €5 per rental hour and €0.10 per kilometer.

### How to scale the mobility hub development?

Almost every surveyed municipality indicated that they are struggling with developing mobility hubs because this requires reaching agreements with multiple stakeholders, each with their own interests, including providers of mobility (hub) services and Real Estate developers and investors. In these agreements municipalities can stipulate service level requirements for the shared (hub) service, to safeguard that the shared mobility hubs, supplied by providing parties, serve the public interest.

At the same time, municipalities should also offer room for private parties to gradually improve their mobility service offering. After all, mobility services are evolving rapidly over time and new modes (such

as kick scooters) are being introduced.

Additionally, consumer preferences are constantly changing and both Real Estate developers and mobility providers should innovate to meet these changing preferences.

### Examples of service level agreements from municipalities

- I.e. 95% guarantee that a shared vehicle is available at the requested time.
- I.e. minimum shared mobility service period of 10 years.
- I.e. shared mobility is also affordable for lower incomes.
- I.e. shared mobility services are integrated in multiple MaaS-solutions.

### The way forward

Close collaboration between municipalities, mobility providers and Real Estate developers is key to scale shared mobility hubs in the Netherlands. This requires new types of public-private collaboration and support from third parties to shape these partnerships, and to ensure the promise of realizing mobility hubs in practice.



# The value of green buildings

## How technology is pushing the Real Estate industry to become more sustainable

Buildings and construction processes need to become “greener” and more environmentally friendly. This is a cross-industry challenge for all stakeholders. What is happening in the field of regulation, how are start-ups stepping in, and how can all stakeholders prepare for a greener future?

Technology is playing an increasingly central role in the Construction and Real Estate industries as they usher in a new era, opening themselves to new types of methods, business models, and disruptive

processes. More specifically, enterprises and investors are increasingly interested in disruptive technologies and innovations in the ConTech and PropTech domains. The technology adoption trend in the

Construction and Real Estate industries has also been accelerated by the COVID-19 pandemic.

### ConTech

or Construction Technology - is 'the application of technology before and during the construction of the property, in any of its facets, at any of its moments but always within the temporality of the construction phase' (e.g. Building Information Modelling— Virtual models used in building construction).

### PropTech

or Property Technology - is 'the application of technology to the property when it is already built and can be marketed' for sale or lease. It was defined by Forbes as 'Businesses using technology to disrupt and improve the way we buy, rent, sell, design, construct, and manage residential and commercial property.' Although a relatively young field, PropTech start-ups have already raised over \$43 billion in funding worldwide since 2012.

### Significant shifts in the use of Real Estate

In recent years, the Construction and Real Estate industries have faced a variety of challenges. Some challenges are long-standing, arising from the very nature of the industries, whereas others are a byproduct of overall macro-level developments in the economy and market-wide trends appearing and impacting across industries.

All these challenges encourage the increased use of technology and are some of the main catalysts for development of ConTech and PropTech technologies and innovations. One of the hot topics is sustainability. Due to the increased demand for sustainability that the construction industry is facing, one of the

solutions is building “greener” and more sustainable buildings. In order to create green, environmentally friendly buildings, the construction process should be transformed to include new operational and process methods. Also, it should be able to incorporate new demands in the operational phase. A green building is 'a building that, in its design, construction, or operation, reduces or eliminates negative impacts and can create positive impacts on our climate and natural environment. Green buildings preserve precious, natural resources and improve the occupants' quality of life.'

### Green construction

“Green construction”, i.e. the need for buildings and construction processes to become more environmentally friendly

and 'green', can be viewed as a cross-industry challenge in the Construction and Real Estate sectors concerning all the stakeholders, with a strong link to the overall green sustainability trend impacting various sectors of the economy (e.g. manufacturing, energy, consumer goods and more).

Its primary goal is to reduce the industry's impact on the environment by using renewable and recyclable materials as well as limit energy consumption and waste reduction within the construction process. Sustainability here goes beyond the end of the construction phase and the building's completion, since the building will have a reduced impact on the environment over its lifespan.

### Regulation

Regulators are also stepping in - European countries are tightening regulation and demanding higher standards from developers and property owners. All European countries are now following a path to tighter regulation and more demanding standards. In Germany, the European Energy Performance of Buildings Directive (GebäudeEnergieGesetz) will be introducing numerous building efficiency regulations to combat the impact of the Construction industry on the environment.

### Consumer and investor preferences

In addition to growing regulatory demands requiring industries to reduce their environmental footprint, this shift is also driven by consumer and investor preferences. More specifically, millennials want to "go green" and are incorporating this factor into their buying and investment decisions. A 2021 survey by the American National Association of Homebuilders found that most buyers prefer "green" when given the option. On average, buyers are willing to pay a premium for green features that can save future utility costs and for homes certified for health and

wellness. These trends are also emerging in commercial Real Estate segments and amongst asset managers, with many property firms pledging that all new buildings will be net-zero carbon.

### Start-ups and greener solutions

In response to these developments, start-ups are stepping in to offer greener solutions. There are a number of start-ups in the ecosystem that offer technological resolutions in this field. Some examples are:

- Sustainable and Environmentally Friendly Architecture
- 3D Printing (Construction 4.0/ Additive Manufacturing)
- Increasing Use of Automation and Robotics
- Industrialized Construction- Prefabricated and Modular
- Advanced Building Methods - Digital Twin and Building Information Modeling (BIM)
- AI, Data, and Advanced Analytics in Project Management and On-site

### Preparing for a greener future

How to prepare for a greener future? Construction and Real Estate stakeholders must review their operations, processes and supply chains, adapt to operating models, and increase their R&D investments. They need to recruit, hire, and train for new positions such as environmental or energy engineers and carbon specialists. These types of positions are required to meet new and evolving regulatory demands and the different engineering and planning requirements of greener buildings. These changes will require new ways of working, collaboration with additional external partners and successfully leveraging technology to ensure fluidity, traceability, and accountability.

To read more on upcoming trends and technologies in Real Estate and Construction follow the [link](#): "Shaping the Future of Real Estate and Construction".



# Building a sustainable future together

## Real Estate on a mission to net zero

In today's corporate world, sustainability is a key concept. It improves the quality of our lives and ensures harmony between humans and nature. It is well known that the Construction and Real Estate industry can play a significant role in the development of a more sustainable society. But it is also one of the sectors with a lot of unreleased potential. The advancement of sustainability in Real Estate provides a solid opportunity to tackle climate change's origins and consequences. How can the industry reduce its footprint?

An increasing focus on sustainability has affected and is currently disrupting the Real Estate industry. The regulatory landscape is in constant movement, and the branch itself has moved towards sustainable solutions, on the one hand by joint efforts through proptech communities, and on the other hand by in-house innovation measures. Here's a short overview of some of the key guidelines. The overview shows how the European Real Estate industry in general, and that of the Nordics in particular, are currently adapting to such guidelines.

### European Green Deal

Through the 2015 [Paris Climate Agreement](#), the international community has committed to limiting global warming by the end of the 21st century to less than 2°C, and if possible, to less than 1.5°C. This will require a tremendous effort of various stakeholders. To meet this overarching aim, the European Commission has adopted a set of policy initiatives known as the [European Green Deal](#). The goal of the European Green Deal is to ensure that Europe will be the first climate-neutral continent by 2050, with a 55% reduction in 2030. To achieve this ambitious goal, [the plan](#) will mobilize investments of at least €1 trillion over the next decade, while other new instruments will also be initiated.

### Real Estate and the EU Taxonomy

In this transition, Real Estate is recognized as a core industry across Europe. According to research by the [EU Commission](#), buildings are responsible for about 40% of the EU's energy consumption and 36% of greenhouse gas emissions from energy. To ensure that the industry is headed in the right direction, we need a common language and a clear definition of "sustainability". As a result, the EU has designed a common classification system for sustainable economic activities called "[EU Taxonomy](#)". The Taxonomy defines various criteria for activities such as constructing, renovating, acquiring, or owning buildings to be classified as "green". Although new buildings are often more energy-efficient than old buildings, the benefits of renovating existing buildings often outweigh those of new energy-efficient developments, in terms of costs. With major renovations, a building's final energy demand for heating can be reduced by [50 to 80%](#).

### Renovation wave in Europe

There are various solutions to increase green activities in Real Estate, such as promoting the use of renewable energy in buildings, or improving their energy efficiency. Since the EU expects that 85 to 95% of today's buildings will still be in use in 2050, renovating buildings and making

them as energy-efficient as possible is key in the fight against climate change. For example, Denmark and Sweden have one of the [highest shares of residential buildings](#) built before 1980. Accordingly, investing in the improvement of energy efficiency can significantly reduce the CO2 emissions of the properties. However, this means that renovation rates across Europe have to double in the next ten years.

The Nordic countries are experienced in reducing greenhouse gasses and they are willing to share their experiences with other countries. We have included some examples below.

### Norwegians are renovation champions

Typically, people in the Nordics spend a lot of time indoors due to the cold and dark winters. Norwegians have even invented a word for a cosy atmosphere at home: "koselig". Additionally, they have a lot of experience adapting to the cold climate in winter and being as resource-efficient as possible. This means that a lot of time is spent on renovating the house into a pleasant and energy-efficient apartment. Moreover, there are initiatives such as the [Nordic Energy Efficiency Hub](#) that promote energy-efficient renovations across the Nordics. Combining high renovation rates with energy efficiency is key in the transformation ahead.

### Renewable energy in the Nordics

The source of energy production is equally important as energy efficiency. As opposed to energy generated from fossil fuels, energy from renewable sources doesn't produce any greenhouse gas emissions. [Statistics for renewable energy in Europe](#) show that the Nordic countries are leading the change. Renewable energy is often cheaper to produce than fossil fuel power, and the use of renewable energy offers the direct benefit of reducing greenhouse gas emissions linked to the buildings. Players in the Real Estate industry should actively look for opportunities to add [renewable energy](#) technology to properties undergoing redevelopment or expansion.

### Key instruments for a sustainable future

The transformation of our economy towards a greener future is an enormous challenge that requires tremendous efforts from all stakeholders. The Real Estate industry plays a vital role in promoting a green transition. People are faced with the triggered changes in Real Estate every day. We have a long journey ahead of us, a marathon towards climate neutrality to achieve a sustainable future. The renovation of buildings and renewable energy use will be key instruments in this transformation.



# The future of smart buildings

## Six market insights on how to match expectations between occupiers and owners

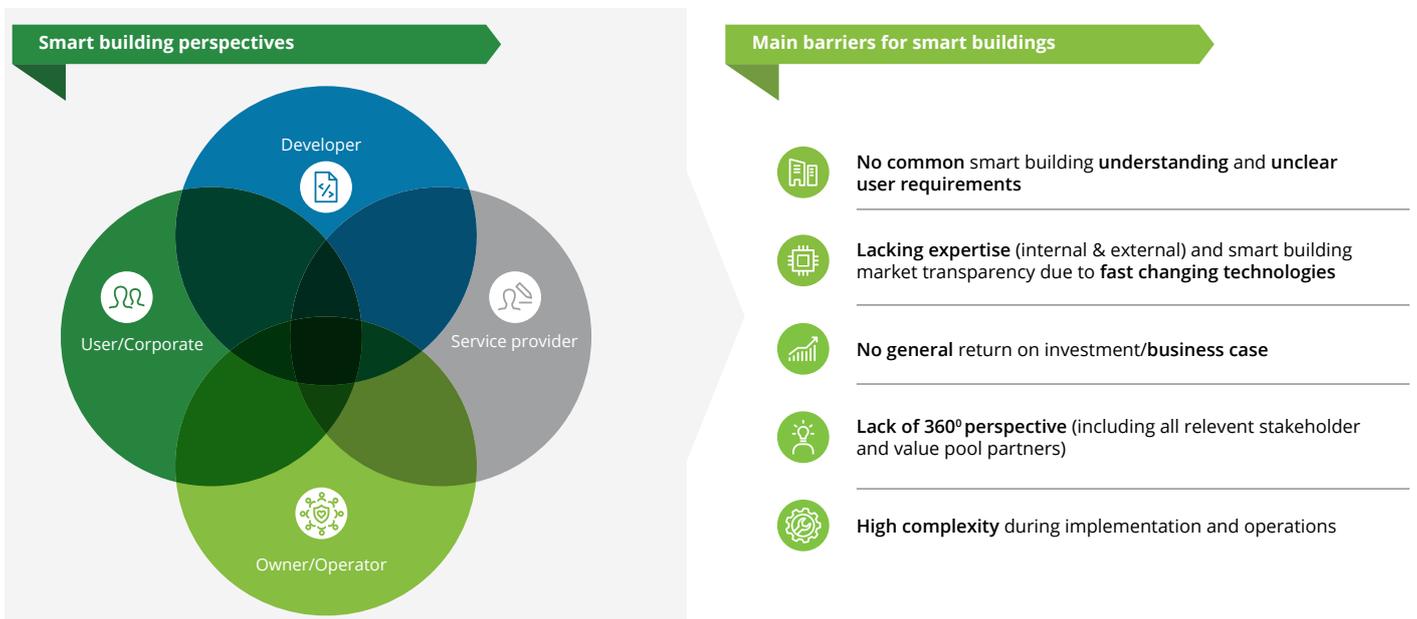
In 2020, 75% of Real Estate executives anticipated that smart buildings would become the norm within five years<sup>1</sup>. Despite an increasing number of smart building lighthouse projects, this expectation has not yet been fulfilled. Market participants are still facing a lot of uncertainty around this topic. This article provides an overview of current barriers as well as drivers of the future of smart buildings, based on a set of interviews with different market participants from both the owner/developer and the user side.

In 2016, the Deloitte office in Amsterdam “The Edge” opened. At the time, it was the “smartest building in the world”<sup>2</sup>. Since then we have observed an increasing

interest and various smart building lighthouse projects in the market. However, market participants are still struggling to incorporate smart buildings into their

corporate strategy in order to implement and operate them on a large scale. What are their actual thoughts on smart buildings and what needs to be done?

### Smart Building Challenges of Market Participants



The actual “smartness” of a building not only depends on the implemented smart building technologies but also on the participation of each relevant stakeholder group during planning, implementation and operation. This is necessary in order

to reduce implementation complexity and technology adoption during operation.

To better understand the different views on and challenges of smart buildings, and provide a 360° perspective on what will

drive smart buildings in the future, we have conducted a series of interviews with market participants. They represent the owners/operators and developers as well as the users/corporates.

**Sources:**

<sup>1</sup> Deloitte; Commercial Real Estate Outlook 2020,

<sup>2</sup> [Bloomberg.com](https://www.bloomberg.com); The Edge the worlds greenest building

### What users think about smart buildings

Recent smart building projects are often driven by technology rather than the actual user or operator demand. Very often, this leads to a lower degree of acceptance of implemented smart building features during a building's life cycle. Therefore, it is key to understand the demand and the underlying drivers for smart building functionalities from an end-user perspective.

### Future of Work

The world of work is fundamentally changing across several dimensions (work, workforce, and workplace) and Covid-19 has further accelerated these changes. However, the pandemic has also shown that complex and creative activities as well as social interaction is still more effective in a face-to-face situation. As a result, organizations are questioning the purpose of their offices and their respective workplace strategies. There is a trend towards a hybrid working environment (on-site and remote working) with the office developing into a user-centric and activity-based place for ideas, creativity and personal interaction. This requires a higher flexibility and creates an increasing demand for certain smart building features. Hence, corporates are looking for smart building features that create an attractive working environment and support their employees throughout the working day, including room and desk booking, seamless wireless connection, and keyless entry, in order to pull their workforce back into the offices and foster collaboration.

### ESG

Increasing efforts to reduce carbon emissions, sustainability is seen as one of the major drivers for smart building features from a user perspective. Therefore, a granular and automatic provision and analysis of energy consumption data by means of smart meters and an energy management system will be a standard requirement. Even though the focus is clearly on supporting the environmental (E) aspects, corporates

also see an increasing demand for smart building features to support the "S" (social) and the "G" (governance), for example through the monitoring and optimization of workplace conditions (air quality, lighting, temperature) or the clear user-centric interaction between the (smart) building and its users.

### Smart building operations (facility management)

The optimization of operating costs through more intelligent and data-driven operations is often quoted as an important value proposition of smart buildings. However, today's facility management models, including sourcing criteria for supplier selection, service level descriptions, processes, data provision and CAFM integration, are preventing practical examples for operating cost reduction through intelligent operations. Hence, corporates are demanding a certain "smart building readiness" - an IoT-ready building infrastructure and open system interfaces. This will enable them to upgrade certain smart building features (e.g. preventive/predictive maintenance, cleaning on demand) in the future and drive smart and future-oriented facility management models.

### What owners and developers think about smart buildings

Talking to Real Estate developers as well as asset and investment managers, we see a clear market segmentation with only a few innovators and early adopters that have produced different lighthouse projects compared to most market players that have no experience with smart buildings yet. However, both sides have in common that they are currently looking for the right strategy on how to approach smart buildings and exploit their potential.

### Higher expected returns for smart and sustainable buildings

The owners and developers that we interviewed, expect higher returns for smart buildings, mainly driven by ESG. On the one hand, tenants are expected to pay higher rents for more sustainable buildings

and the possibility to reduce operating costs in the long run. On the other hand, smart buildings that provide relevant data required for ESG ratings are expected to receive a mark-up on the capitalization rate, resulting in an increase in market value.

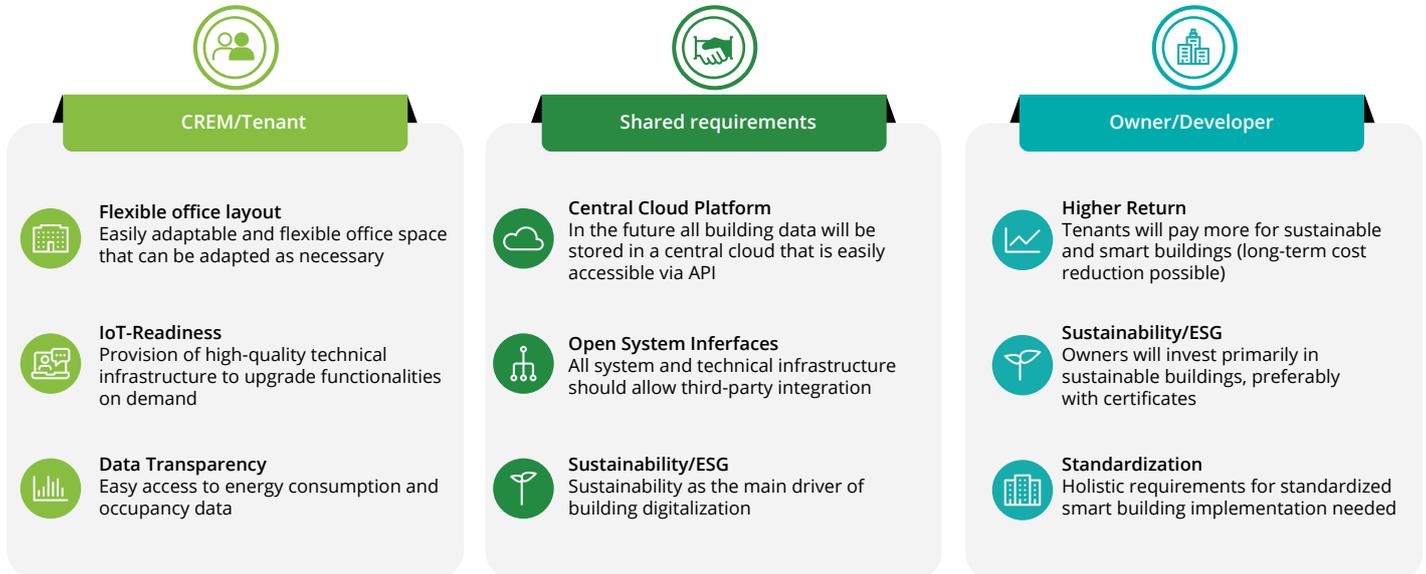
### Overarching data and KPI framework required

In addition to better meet the demand of tenants with respect to their future office and workplace strategy, the optimization of asset and facility management activities based on data analytics is quoted as another value proposition of smart buildings in the future. However, recent smart building projects have shown that this requires a clear strategy. Owners need to start with defining an overarching data and KPI structure. Next, they need to incorporate this into the company's performance management system. This serves as the basis to define relevant smart building technologies to support the data provision in a second step.

### Smart building standard (and certifications) needed

The absence of a clear market standard for smart buildings is currently seen as one of the main barriers for smart buildings. Hence, owners and developers are looking for standardization of data, technologies, interfaces, and implementation processes. Some of the participants expect such a smart building standard from the introduction of certificates (e.g. SmartScore) similar to sustainability certificates such as LEED or BREEAM. However, the market for smart building technologies is changing fast. This makes it hard to create a standardized market label for smart building technologies to be applied on a larger scale.

## Overview of key findings from Interviews



### What actually can be done

Users/corporates need to identify relevant smart building use cases based on the overall workplace and ESG or Sustainability goals to ensure the best cost/benefit ratio from smart building technology adoption. Technology should not be implemented for the sake of technology but rather be driven by a clear business need and underlying business case.

As there is currently no official smart building market standard and clear value proposition for owners and developers, the individual smart building strategy must be derived from the overall business strategy. To increase long-term rental growth the future smart building standard needs to be tailored to the future tenant/market demand.

There is still a way to go to bridge the gap between occupiers, owners, developers, and service providers. The goals from the different perspectives need to be aligned to create win-win situations with smart buildings. However, the interviews have enabled us to get one step closer to a common smart building understanding and to defining the office of the future. Let's proceed from here.



# The rise of digitalization

## How real estate funds need to automate investor tax reporting now

The Real Estate industry is growing rapidly. Investments are expanding to new countries with investors from different countries seeking alternative opportunities. Manual tax reporting solutions no longer meet the requirements, and poor quality and delayed deliveries can trigger compliance breaches at fund level. It is now necessary to adopt a more streamlined and digitalized approach. What are the options? And is there such a thing as a “one-stop shop” with automated solutions for tax reporting?

The adoption of digital and automated processes in Real Estate funds is low. Tax reporting remains mostly manual. However, poor quality and delayed deliveries can trigger compliance breaches at fund level. A more streamlined and digitalized approach is key. What are the options?

The actual “smartness” of a building not only depends on the implemented smart building technologies but also on the participation of each relevant stakeholder group during planning, implementation and operation. This is necessary in order to reduce implementation complexity and technology adoption during operation.

To better understand the different view on smart buildings, its challenges, and to provide a 360° perspective on what will drive smart buildings in the future, we have conducted a series of interviews with market participants. They represent the owners/operators and developers as well as the users/corporates.

### Tailored tax reporting

Providing tailored tax reporting to investors makes all the difference in successfully promoting alternative investment funds (AIFs) on the international market. However, concise reporting requires deep knowledge of the complex tax rules of each jurisdiction, familiarity with the area's

industry, and an ability to process data from multiple stakeholders for each vehicle and asset. This is particularly important for Real Estate funds where targets and investments are made increasingly difficult by ongoing compliance requirements and diverse data formats. So far, the adoption of digital and automated processes is low and tax reporting remains mostly manual.

### A more streamlined and digitalized approach

However, the Real Estate industry is growing rapidly and investments are expanding to new countries with investors from different countries seeking alternative opportunities. This combination leaves the fund provider with the challenge of understanding the tax situation in the target investment countries as well as preparing tax reporting that is appropriate for investors. Therefore, manual tax reporting solutions no longer meet these requirements, and poor quality and delayed deliveries can trigger compliance breaches at fund level. It is now necessary to adopt a more streamlined and digitalized approach.

### Maturing into a digital age

Today's Luxembourg fund industry has already been shaped by the digital transformation and commonly offers digital solutions such as robo-advisors.

The Grand Duchy can help the wider Real Estate industry to mature into a digital age. Large Real Estate funds, which are under ever-increasing competitive pressure, require appropriate answers to adapt their work processes to the new needs of big data treatment. Processes must be increasingly automated and standardized, but also rethought and questioned, while employees must be retrained and prepared. Central to this is the reduction of repetitive work processes through the use of innovative solutions. This is seen especially when processing the increasing amounts of data that have so far been requested from a large number of actors and, due to the different data formats, must be processed and evaluated in a very complex manner.

### Agile software solutions: game changer?

Agile software solutions that adapt flexibly to these different requirements have the potential of being a game changer. The example of tax reporting for investors of Real Estate funds shows what these agile software solutions are capable of. Here, investors from a wide variety of countries usually need ad-hoc tax reporting from their funds, which must be prepared according to country-specific tax regulations (e.g. Form K-1 reporting in the USA or the uniform and separate

determination of profits in Germany). A Real Estate fund, which is usually committed to providing this tax reporting, cannot fulfil this obligation today without external help. The risk of misinterpreting a tax law is high, and the preparation and compilation of the required data is time-consuming and costly. Regulatory bodies such as the Luxembourg CSSF have issued circulars to pass on a certain responsibility of tax reporting to the fund managers (e.g. Circular 17/650).

Agile software solutions show their added value here, in particular by enabling the fully automatic processing of the entire tax compliance across countries. At the same time, they can serve as a virtual communication platform for investors. Agile software solutions work without a detailed “specification booklet”, which is usually created at the beginning of new software development.

### **One-stop shop**

Many Luxembourg funds and tax advisors are already using agile software solutions and combine a well-established tradition of innovation with a broad range of investment vehicles with different legal

forms, fund regimes, tax qualifications, and regulatory frameworks. While it has historically provided traditional structures, it continually innovates to meet the needs of the market. This innovation can be seen, for example, in its massive investment in the expansion of IT environments and the digitalization of the fund industry. With the progress of digitalization, the vision of a “one-stop shop” with automated solutions for tax reporting has also become a reality for the Real Estate industry.

### **Final thoughts on the reality of the digital age**

Today’s technology is altering the constraints of space and time, changing the way we work, think, and communicate. The rapid evolution of technology is creating not only new opportunities but challenges as well; institutions of every kind are trying to change and adapt to new standards. The reality of the digital age is making corporations restructure their standardized processes. Now, it is a matter of recognizing these different needs and coordinating existing processes accordingly — and the AIF industry must be a part of that.



# Responsible Real Estate

## Real Estate and Corporate Social Responsibility

Corporate Social Responsibility (CSR) is the concept that an organization has a responsibility to the society, environment and economy in which it operates. Organizations can use Corporate Social Responsibility reports, also called CSR Reports, to communicate their CSR strategy. Over the past decade, CSR Reports have become more common. In fact, 92% of companies on the S&P 500 Index publish a CSR Report. In an increasing amount of countries, it is even mandatory to publish CSR reports annually<sup>1</sup>. CSR has the potential to change the future of Real Estate, and more importantly; to increase the value in servicing the needs of planet, people and prosperity. But how can you integrate Real Estate as a theme into your CSR Report?

### CSR in a nutshell

CSR is a self-regulating business model that helps organizations to be socially accountable to itself, its stakeholders and society. By practicing CSR, organizations can be conscious of the kind of impact they have on all aspects of society, including social, environmental and economic aspects.

### Four types of CSR

CSR is traditionally broken into four categories: environmental, ethical, social, and economic responsibility.

### Environmental Responsibility

This category refers to the belief that organizations should behave as environmentally friendly as possible. There is a critical need for the Real Estate community to drastically reduce their environmental footprint. The Real Estate industry consumes approximately 40% of all raw materials globally, 40% of the world's energy, and is responsible for more than 30% of carbon dioxide emissions.<sup>2</sup>

We identify the following examples to reduce the environmental impact of Real

Estate activities and to make environmental quality a lever of tangible performance improvement:

- Building 'first time right', by using Building Information Technology.
- Constructing circular, modular or climate-adaptive buildings.
- Investing in engineering technologies, like Variable Refrigerant Flow Systems, Prefabricated Constructions, Carbon Cure Concrete and Bio Based Building Materials.
- Using ESG Data to optimize using Real Estate.
- Striving for sustainability certifications, like BREEAM and WELL Building Standard.

### Ethical Responsibility

This category is about operating in a fair and ethical manner. While laws governing Real Estate transactions and legal advice are well defined, some rules can be ambiguous. In an increasingly litigious society, it is easy to convey a perception of wrongdoing. Adopting a healthy culture of ethics can help build a solid relationship

with stakeholders and grow a business with an excellent reputation.

An increasing amount of organizations familiarize their employees and clients with rules of conduct, like:

- Duty and loyalty, by protecting and promoting client's best interests. This principle includes details about clients, properties as well as any information regarding financing.
- Knowledge and expertise, by practicing honesty, demonstrating competency and adhering to qualities of fairness.
- Diversity and inclusion, by respecting the rights of others and treating others with courtesy.
- Lawful practices, by customer identification to fight against financial crime and money laundering, and by checking that supply chains do not involve modern slavery or other abuses of workforce.

### Social Responsibility

This category refers to the societal impact on and commitment to people. This

<sup>1</sup> Carrots & Sticks, 'Sustainability Reporting Policy: Global trends in disclosure as the ESG agenda goes mainstream, published in July 2020. Carrots & Sticks, 'Sustainability Reporting Policy: Global trends in disclosure as the ESG agenda goes mainstream, published in July 2020.

<sup>2</sup> World Economic Forum, 'Environmental Sustainability Principles for the Real Estate Industry', published in January 2018.

includes employees, families, customers suppliers and communities. As a real estate organization you could support Social Responsibility ambitions by:

- Building green, smart and healthy workplaces which improve employee well-being.
- Crowdsourcing placemaking and community building with local stakeholders to foster a sense of community and source construction jobs locally whenever feasible.
- Search for co-design and -creation with stakeholders within the Real Estate sector to come up with innovative ideas and enhance customer experience by using the newest technologies (like Augmented Reality, Virtual Reality and 3D simulations).
- Contributing to healthy cities to improve physical and social environments for communities.
- Work together with the public sector to build resilient and clear long-term visions that reflect the mutual benefits of inclusive prosperity.

### Economic Responsibility

This category concerns the practice of an organization backing all its financial decisions in its commitment to do good in the aforementioned categories. This includes creating employment, generating innovation and creating prosperity.

By offering Real Estate services, along with your clients and partners, you can aim on:

- Collaborating with Real Estate startups in PropTech, RealTech, CREtech, RealEsTech and ConTech to cover technological and digital innovations in your daily business, work more efficiently, and develop new business models.
- Accelerating the adoption of big data and artificial intelligence to unlock proprietary strategies for direct and indirect investments across Real Estate markets and businesses in adapting to changing sources of competitive advantage and market power.
- Funding and mentoring Real Estate programs to support early-stage technologies to ensure that ideas with potential can ultimately evolve to viable business propositions which generate economic value.
- Generating economic value by facing and solving problems that intersect with the Real Estate business, like housing refugees and homeless people.

### Final remarks

CSR has the potential to change the future of Real Estate, and more importantly, to increase the value of people, planet and prosperity. It can lead to innovative and groundbreaking solutions that help organizations act in a socially responsible way. The CSR Report is your platform to express your CSR Strategy. Since we expect that organizations will be obliged to publish an annual CSR Report in the (near) future, we suggest that you consider the impact you could make and how Real Estate can contribute to that aspiration. Now is the time to act!



# Digital transformation

## A new Real Estate era

The pandemic has had a significant impact on many industries, including Real Estate, and will continue to do so. More citizens will continue to work from home, more companies will use online channels to reach customers, and remotely operated processes will increase significantly. However, the Real Estate industry is still in the early stages of digitalization. What new technologies are key for the industry, what does the focus on data mean in terms of investor profile and performance indicators, and what are the biggest challenges?

The Real Estate industry is in the early stages of digitalization, so there is still considerable room for improvement. Now that the sector is becoming increasingly data-driven, what does this mean in terms of investor profile and performance indicators? What new technologies are key, and what are the biggest challenges?

### The impact of the pandemic on Real Estate

The COVID19 pandemic has had a significant impact on the economy, society and Real Estate industry – and it will continue to do so. Especially in those where digital technologies were already playing an important role. More citizens will continue to work from home, more companies will use online channels to reach customers, and remotely operated processes will increase significantly. By 2035, circa 70% of all companies worldwide will directly or indirectly use AI or Big Data technologies. The Real Estate market is not immune to this trend. In the last decade, the PropTech ecosystem has boomed under the umbrella of the Industrial Revolution 4.0, affecting all steps in the value chain. The PropTech sector has grown by 1,120% over the last 5 years, and current investment volume stands at approximately €32 bln at the end of 2021. For example, investment and property management will need to

turn into AI and Big Data, development management into DevTech, financial institutions into Fintech, and brokerage services into Big Data, virtual marketplaces and visual solutions.

### Reshaping investor profile

Despite the overall size of the Real Estate market, big technology companies have shown little interest in the past. However, this is changing rapidly now that Facebook starts building homes, Apple starts partnering with Lifenest in the private rented sector, Google is entering Sidewalk in smart cities, and Amazon starts competing with Alexa in the smart home niche, and partnering with Realogy.

The Unicorn<sup>1</sup> era is emerging at a rapid pace as we estimate start-ups will double by 2030 (from 1,850 at the end of 2021). The fastest growing ecosystems are located in the US and in Asia – Pacific, while Europe is now beginning to grow, inspired by the UK.

### If it cannot be measured it cannot be managed

Aligned with the Industrial Revolution 4.0, Real Estate is transforming rapidly from a property sector to an operating sector where bricks and mortar cannot be separated from management. Properties

need to be digitalized in order to deliver real-time performance indicators, since bricks and mortar are no longer the only indicators to assess the property performance.

Although venture capital has fueled the PropTech ecosystem in the past decade (given their natural connectivity with start-ups), traditional investors will soon be entering this market. They are interested in enhancing their decision-making process with data that will provide them with more insight into their property returns.

### The Transformation

Technology is not only affecting the Real Estate business. Disruptive business models are creating digitally integrated cities and reshaping the delivery of urban services. Technology seems to be the key driver for creating the cities of the future, which will be local, smart, sustainable and amenity-driven. For example, the city of Dubai is using Augmented Reality, drone fly-overs and live feeds to enhance and enrich the user experience.

In a wider context, the most disruptive technological transformation trends affecting the Real Estate industry are AI and Big Data, Internet of Things, Virtual and Augmented Reality, and 5G. All

<sup>1</sup> A unicorn is a privately held start-up company with a value of approx. \$1 bln.

these relatively recent innovations are improving productivity and sustainability and increasing the efficiency of resources and energy effectiveness. They are the driving forces behind the surge of i-buying platforms, specialized Big Data analytics players, peer-to-peer market places, visual start-ups, Propfin tech providers and smart home management companies, as well as other new technology-oriented Real Estate players.

An additional area of strong improvement is sustainability. The ability to record building data such as water consumption and/or electricity, enables managers to react and implement smart technology in order to reduce consumptions and interact with property occupiers. This will increase sustainability and reduce costs.

### **The Challenges: Data availability, Regulation and Implementation costs**

#### **Data availability**

While access to data has been quite extensive in other sectors, the Real Estate industry has always been opaque. AI and machine learning algorithms can be easily constructed, but models are data-intensive because algorithms need to be fed and trained with data, which is frequently not available. Although many PropTech companies are trying to implement complex machine learning algorithms, dealing with small datasets often complicates the implementation.

#### **Regulation**

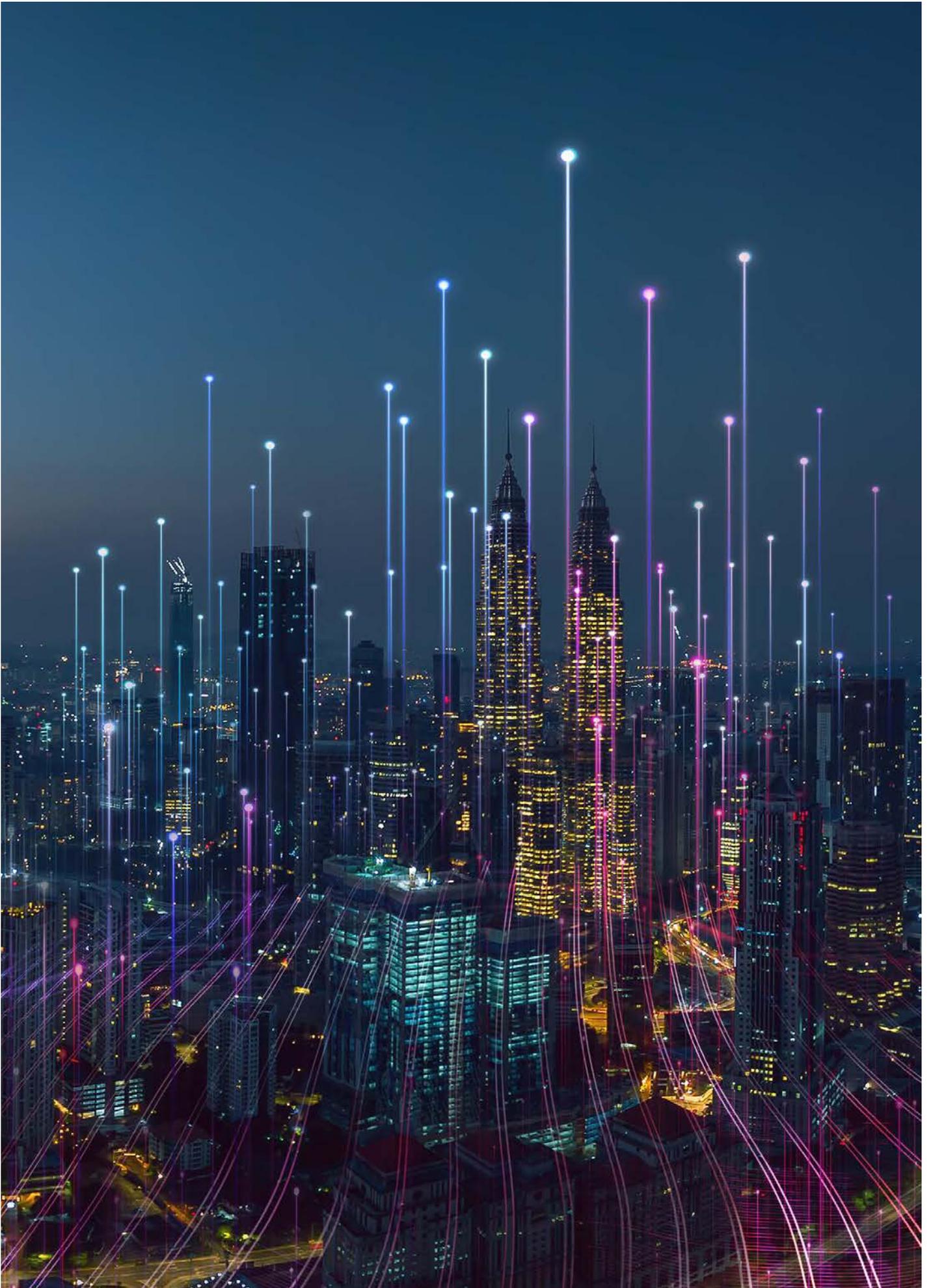
The PropTech sector is relying on significant amounts of data. This creates issues related to data protection, intellectual property, dealing with the appropriate jurisdiction and other regulatory issues affecting technology.

#### **Implementation costs**

Many PropTech companies are experiencing strong growth levels which need to be supported by robust operational processes. The complexity of PropTech implementation is huge, requiring a meticulous digital transformation framework to avoid and mitigate operating risks.

#### **Advice for the future**

The Real Estate industry is in the early stages of the digitalization path, so there is room for improvement now that the sector is becoming increasingly data-driven. As Real Estate turns from property to operations under the umbrella of the Industrial Revolution 4.0, technology will become critical. However, this requires a careful approach. The sector fears that democratization of the data (i.e. providing easy access to data without barriers) and hyper-automation processes will impact employment. This must be counterbalanced by user multi-experience and by a more professional attitude of the sector.



# Authors

## Prediction 1 - Creating smarter urban environments

### Marco Macagnano

Digital Real Estate Leader | Financial Advisory |  
Deloitte Canada  
[mamacagnano@deloitte.ca](mailto:mamacagnano@deloitte.ca)

## Prediction 2 - Driving into the future of Real Estate

### Andrew Carey

Partner | Financial Advisory |  
Deloitte United Kingdom  
[ancarey@deloitte.co.uk](mailto:ancarey@deloitte.co.uk)

### Scott Crawford

Assistant Manager | Financial Advisory |  
Deloitte United Kingdom  
[srcrawford@deloitte.co.uk](mailto:srcrawford@deloitte.co.uk)

### Scott Dudley

Director | Financial Advisory |  
Deloitte United Kingdom  
[sdudley@deloitte.co.uk](mailto:sdudley@deloitte.co.uk)

## Prediction 3 - Incorporating ESG: Living up to stakeholder expectations and business opportunities

### Jeffrey Smith

National Real Estate Leader | Audit |  
Deloitte United States  
[jefsmith@deloitte.com](mailto:jefsmith@deloitte.com)

### Kathy Feucht

Global Real Estate Sector Leader | Audit |  
Deloitte United States  
[kfeucht@deloitte.com](mailto:kfeucht@deloitte.com)

### Sally Ann Flood

Global Real Estate Audit Leader | Audit |  
Deloitte United States  
[sflood@deloitte.com](mailto:sflood@deloitte.com)

## Prediction 4 - How AI can enhance urban planning, asset management and investments

### Oliver Morgan

Director | Head of Real Estate Development |  
Deloitte Middle East  
[omorgan@deloitte.com](mailto:omorgan@deloitte.com)

### Wessel Oosthuizen

Associate Director |  
Cognitive Advantage | Deloitte Analytics |  
Deloitte South Africa  
[weoosthuizen@deloitte.co.za](mailto:weoosthuizen@deloitte.co.za)

### Manika Dhama

Assistant Director | Real Estate Development |  
Deloitte Middle East  
[mdhama@deloitte.com](mailto:mdhama@deloitte.com)

## Prediction 5 - CSRD: booster for a sustainable Real Estate industry

### Gijsbert Duijzer

Director | Financial Advisory |  
Deloitte The Netherlands  
[gduijzer@deloitte.nl](mailto:gduijzer@deloitte.nl)

### Gerben Sinke

Senior Consultant | Financial Advisory |  
Deloitte The Netherlands  
[gsinke@deloitte.nl](mailto:gsinke@deloitte.nl)

### Mathijs Pott

Business Analyst | Financial Advisory |  
Deloitte The Netherlands  
[mpott@deloitte.nl](mailto:mpott@deloitte.nl)

## Prediction 6 - The Future of the Housing Business

### Takaumi Tamura

Partner | Consulting | Investment Management & Real Estate |  
Deloitte Japan  
[tatamura@tohmatsumsu.co.jp](mailto:tatamura@tohmatsumsu.co.jp)

## Prediction 7 - Mobility hubs, the enabler of healthy urbanization?

### Lennert Middelkoop

Partner | Real Estate |  
Deloitte The Netherlands  
[lmiddelkoop@deloitte.nl](mailto:lmiddelkoop@deloitte.nl)

### Wouter de Wit

Manager | Financial Advisory |  
Deloitte The Netherlands  
[wdewit@deloitte.nl](mailto:wdewit@deloitte.nl)

**Rob Lemmen**

Senior Consultant | Financial Advisory | Real Estate |  
Deloitte The Netherlands  
[rolemmen@deloitte.nl](mailto:rolemmen@deloitte.nl)

**Prediction 8 - The Value of green buildings?**

**Doron Gibor**

Partner | Head of Real Estate Industry  
[dgibor@deloitte.co.il](mailto:dgibor@deloitte.co.il)

**Amit Harel**

Partner Services to MNCs, Co-Leader | Deloitte Catalyst |  
Deloitte Israel  
[aharel@deloitte.co.il](mailto:aharel@deloitte.co.il)

**Omri Bitan**

Director | Monitor Deloitte Real Estate Sector Consulting Leader |  
Deloitte Israel  
[obitan@deloitte.co.il](mailto:obitan@deloitte.co.il)

**Maya Trajtenberg Madar**

Senior Consultant | PropTech Specialist Deloitte Catalyst |  
Deloitte Israel  
[mtrajtenbergmadar@deloitte.co.il](mailto:mtrajtenbergmadar@deloitte.co.il)

**Prediction 9 - Building a sustainable future together**

**Christine Haugstvedt Downing**

Partner | Tax and Legal |  
Deloitte Norway  
[chdowning@deloitte.no](mailto:chdowning@deloitte.no)

**Jonathan Krakow**

Senior Consultant | Climate and Sustainability |  
Deloitte Norway  
[jkrakow@deloitte.no](mailto:jkrakow@deloitte.no)

**Thorvald Nyquist**

Senior Consultant | Climate and Sustainability |  
Deloitte Norway  
[tnyquist@deloitte.no](mailto:tnyquist@deloitte.no)

**Prediction 10 - The future of smart buildings**

**Steffen Skopp**

Director | Real Estate Consulting |  
Deloitte Germany  
[sskopp@deloitte.de](mailto:sskopp@deloitte.de)

**Tobias Linzmaier**

Manager | Real Estate Consulting |  
Deloitte Germany  
[tlinzmaier@deloitte.de](mailto:tlinzmaier@deloitte.de)

**Tobias Neumann**

Senior Consultant | Real Estate Consulting |  
Deloitte Germany  
[toneumann@deloitte.de](mailto:toneumann@deloitte.de)

**Lara Lumbe**

Consultant | Real Estate Consulting |  
Deloitte Germany  
[llumbe@deloitte.de](mailto:llumbe@deloitte.de)

**Prediction 11 - The rise of digitalization**

**Christian Bednarczyk**

Partner | Tax & Legal |  
Deloitte Luxembourg  
[cbednarczyk@deloitte.lu](mailto:cbednarczyk@deloitte.lu)

**Thibault Chollet**

Partner | Private Markets Business & Technology  
Transformation | Deloitte Luxembourg  
[tchollet@deloitte.lu](mailto:tchollet@deloitte.lu)

**Jonathan Streicher**

Director | Tax & Legal |  
Deloitte Luxembourg  
[jstreicher@deloitte.lu](mailto:jstreicher@deloitte.lu)

**Simion Furdui**

Junior | Tax & Legal |  
Deloitte Luxembourg  
[sfurdui@deloitte.lu](mailto:sfurdui@deloitte.lu)

**Prediction 12 - Responsible Real Estate**

**Jouke van Campenhout**

Consultant | Financial Advisory | Real Estate |  
The Netherlands  
[jovancampenhout@deloitte.nl](mailto:jovancampenhout@deloitte.nl)

**Lennert Middelkoop**

Partner | Financial Advisory | Real Estate |  
Deloitte The Netherlands  
[lmiddelkoop@deloitte.nl](mailto:lmiddelkoop@deloitte.nl)

**Mark Platier**

Director | Financial Advisory | Real Estate |  
Deloitte The Netherlands  
[mplatier@deloitte.nl](mailto:mplatier@deloitte.nl)

**Prediction 13 - Digital transformation**

**Joaquin Linares**

Partner | Financial Advisory | Real Estate |  
Deloitte Spain  
[jlinares@deloitte.es](mailto:jlinares@deloitte.es)

# Contacts

## NL

### Wilfrid Donkers

Director | Financial Advisory |  
The Netherlands  
[wdonkers@deloitte.nl](mailto:wdonkers@deloitte.nl)

## ES

### Alberto Valls

Partner | European Real Estate Leader |  
Spain  
[avalls@deloitte.es](mailto:avalls@deloitte.es)

## COUNTRY

## CA

### Marco Macagnano

Digital Real Estate Leader |  
Financial Advisory |  
Canada  
[mamacagnano@deloitte.ca](mailto:mamacagnano@deloitte.ca)

## UK

### Nigel Shilton

Partner | Financial Advisory |  
United Kingdom  
[nshilton@deloitte.co.uk](mailto:nshilton@deloitte.co.uk)

## NL

### Jef Holland

Partner | Audit & Assurance |  
The Netherlands  
[jholland@deloitte.nl](mailto:jholland@deloitte.nl)

## JP

### Takaumi Tamura

Partner | Consulting | Investment  
Management & Real Estate |  
Japan  
[tamura@tohmtsu.co.jp](mailto:tamura@tohmtsu.co.jp)

## NO

### Christine Haugstvedt Downing

Partner | Tax and Legal |  
Norway  
[chdowning@deloitte.no](mailto:chdowning@deloitte.no)

## LU

### Francisco Da Cunha

Partner | Tax M&A |  
Luxembourg  
[fdacunha@deloitte.lu](mailto:fdacunha@deloitte.lu)

## US

### Kathy Feucht

Partner | Global Real Estate Leader |  
Global  
[kfeucht@deloitte.com](mailto:kfeucht@deloitte.com)

## US

### Sally Ann Flood

Global Real Estate Audit Leader | Audit |  
United States  
[sflood@deloitte.com](mailto:sflood@deloitte.com)

## ES

### Joaquín Linares

Partner | Real Estate |  
Spain  
[jlinares@deloitte.es](mailto:jlinares@deloitte.es)

## US

### Jeffrey Smith

National Real Estate Leader | Audit |  
United States  
[jefsmith@deloitte.com](mailto:jefsmith@deloitte.com)

## UK

### Siobhan Godley

Partner | Tax |  
United Kingdom  
[sgodley@deloitte.co.uk](mailto:sgodley@deloitte.co.uk)

## NL

### Jurriën Veldhuizen

Partner | Financial Advisory |  
The Netherlands  
[jveldhuizen@deloitte.nl](mailto:jveldhuizen@deloitte.nl)

## IL

### Doron Gibor

Partner | Head of Real Estate Industry |  
Israel  
[dgibor@deloitte.co.il](mailto:dgibor@deloitte.co.il)

## DK

### Tinus Bang Christensen

Partner | Financial Advisory |  
Denmark  
[tbchristensen@deloitte.dk](mailto:tbchristensen@deloitte.dk)

## LU

### Lize Griffiths

Partner | Audit and Assurance |  
Luxembourg  
[lizgriffiths@deloitte.lu](mailto:lizgriffiths@deloitte.lu)

## UK

### Andrew Carey

Partner | Financial Advisory |  
United Kingdom  
[ancarey@deloitte.co.uk](mailto:ancarey@deloitte.co.uk)

## UAE

### Manika Dhama

Assistant Director | Real Estate | Dubai  
[mdhama@deloitte.com](mailto:mdhama@deloitte.com)

## NL

### Lennert Middelkoop

Partner | Financial Advisory |  
The Netherlands  
[lmiddelkoop@deloitte.nl](mailto:lmiddelkoop@deloitte.nl)

## IL

### Amit Harel

Partner Services to MNCs, Co-Leader |  
Deloitte Catalyst |  
Tel-Aviv  
[aharel@deloitte.co.il](mailto:aharel@deloitte.co.il)

## DE

### Joerg von Ditzfurth

Partner | Real Estate Consulting |  
Germany  
[jvonditfurth@deloitte.de](mailto:jvonditfurth@deloitte.de)

## ES

### Javier Parada

Socio Responsable Coordination A&A |  
Risk Advisory |  
Spain  
[japarada@deloitte.es](mailto:japarada@deloitte.es)

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