logix INITIATIVE LOGISTIKIMMOBILIEN



MULTILEVEL LOGISTICS PROPERTIES

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ZUKUNFT BAU FORSCHUNGSFÖRDERUNG

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PREFACE





**Dr. Malte-Maria Münchow,
Spokesperson of the Initiative
Logistikimmobilien (Logix)**

**Dirk Landrock,
Board Member of the Initiative
Logistikimmobilien (Logix) and
Owner, Phase 5**

With its studies and publications, the Initiative Logistikimmobilien (Logix) contributes research on the development of logistics real estate with practical relevance for business, society and policymakers. In this work, Logix combines academic perspectives with industry expertise and practical experience. This 14th publication focuses on the growing scarcity of land in metropolitan areas.

The logistics real estate market is currently seeing renewed momentum. In addition to retail, logistics and e-commerce, international companies as well as the defence and armaments sectors are becoming increasingly important sources of demand. Companies from China and the United States are expanding their activities in Germany and Europe, creating additional demand for warehousing, distribution and production space. This growing demand for space in metropolitan areas coincides with increasing land scarcity, particularly in major metropolitan regions. This calls for a rethink of where and how logistics real estate is developed. In the long term, conventional single-storey logistics properties will need to be complemented by multi-storey concepts, i.e. multilevel logistics properties, to make more efficient use of available land.

Against this backdrop, a systematic academic examination of multilevel logistics properties is needed. This first part of the study was produced under the direction of Dr.-Ing. Roland Busch of the University of Wuppertal and examines the potential of multilevel logistics properties for the space-efficient development of locations, the obstacles preventing their wider adoption and how these obstacles can be overcome.

By creating greater market transparency and providing a basis for the development of construction standards, this study can help unlock the potential of space-efficient multilevel logistics properties in Germany's metropolitan areas.

We would like to extend our particular thanks to Dr.-Ing. Roland Busch and his team for their academic work and the good cooperation. We would also like to thank the sponsors of the study, who, together with the German Federal Ministry for Housing, Urban Development and Building, helped make this publication possible. We thank everyone involved for their support and contribution to the success of this study.

Weiterstadt, September 2026

Dirk Landrock and Dr. Malte-Maria Münchow



FUNDERS



Stefanie Sauer-Grunwald,
Product Specialist,
BayernLB

Multilevel logistics properties are undoubtedly specialised properties whose potential can be particularly well harnessed in urban areas. Germany currently has only a small number of examples, but those that do exist are very good. At the same time, land for all types of new logistics projects is becoming increasingly scarce in Germany, particularly in locations close to city centres. In addition, land as a resource needs to be reassessed in the context of climate change. Brownfield sites, with all their familiar challenges and higher costs, are therefore increasingly coming into focus. Against this backdrop, examining the specialised multilevel logistics asset class is particularly timely.

The current Logix study examines the opportunities and challenges of multilevel logistics properties in the context of land scarcity, urbanisation and modern supply chains. It analyses location requirements, economic and urban planning conditions as well as planning and utilisation concepts, and provides recommendations for investors, developers, banks, municipalities and occupiers. Only on the basis of robust data and a careful assessment of both challenges and opportunities can appropriate standards be developed, for example to meet the high requirements regarding alternative user potential. The study therefore provides all interested parties with a valuable opportunity to engage more intensively with multilevel logistics properties and ultimately facilitate their financing.

At BayernLB, we see the study as an important contribution to the further development of logistics real estate and a key building block for more future-oriented financing solutions for multilevel logistics properties.



Marcel Grundel,
Manager Business Development Logistics Real Estate,
WISAG Facility Management Logistik GmbH & Co. KG.

Multilevel logistics properties offer an opportunity to make better use of scarce land in metropolitan areas and bring logistics closer to customers, production facilities and urban centres. However, whether such a building is successful over the long term is not determined solely during planning and construction. It must also be capable of being operated safely, efficiently and economically for decades.

From a facility services perspective, future operations therefore need to be considered from the outset. Traffic and access routes, fire protection, technical systems, maintenance access, energy supply and operational processes have a direct impact on the performance and economic efficiency of a property. This is particularly true of complex multi-storey buildings. Issues that are not adequately addressed during planning can lead to permanently higher costs, make maintenance more difficult or restrict use.

The Logix study makes an important contribution in this respect. It systematically compares different building types and previous experience. From a facility services perspective, it can also provide a basis for developing standards for efficient building operations, for example in terms of technical concepts, ease of maintenance, clear operator processes and adaptation to changing occupier requirements.

When planning, construction and facility services work together from the outset, logistics properties can emerge that not only break new ground but also remain efficient over the long term. This lifecycle perspective can help develop multilevel logistics from a pioneering concept into an established and economically viable building type.



Dany Brodhag,
Managing Director,
GSE Deutschland

The future of commercial buildings is increasingly vertical. Multilevel is becoming an urban building block. A vibrant district for retail, industry, logistics, offices and mobility. Organised vertically, with extensive greenery and equipped for a high quality of use, multilevel buildings today form the foundation for forward-looking location and utilisation concepts.

Looking upward also makes one thing clear: there is no single multilevel blueprint that covers every aspect of design and construction. There is no standard general contractor's manual for the new multifunctionality of construction. From highly automated e-commerce platforms and multilevel logistics for luxury goods to business parks with rooftop terraces, the multilevel category has long since ceased to follow a uniform building concept, including in logistics.

At the same time, sustainability is becoming integral to building design. Photovoltaics, green landscaping, rainwater management, geothermal energy, biodiversity and the development of brownfields are not add-ons but elements of an integrated concept.

The growing integration of buildings and logistics processes is particularly noteworthy. Ramps, loading yards on several levels, high-performance lifts and automated warehouse technology are changing not only processes but also architecture.

I am convinced that logistics and commercial real estate are evolving beyond the simple provision of space towards vertically organised structures. In future, the decisive factor will no longer simply be how much space a plot can provide, but which functions can be combined intelligently and economically on it.



Martin Birkert,
Chief Country Officer Germany,
MLP Group

The logistics real estate industry faces the fundamental challenge of reconciling growing demand for space with increasingly limited supply and rising land prices. Against this backdrop, multilevel concepts are gaining importance. They enable more intensive use, particularly where land is especially scarce.

At MLP Group, we are not only addressing this topic in theory but are also gaining practical experience through the development of a project with a two-storey utilisation concept in the Munich area. This experience highlights how important a reliable database and a shared understanding of requirements are for the industry as a whole. Only when developers, investors and municipalities work from a shared information base can standards be established that create planning certainty and improve the overall economic viability of multilevel projects.

For us, the study's value lies in bringing together existing knowledge and practical experience, structuring it systematically and making it accessible to the industry. For the first time, it systematically classifies projects already implemented in Europe, identifies the specific challenges facing the German market and thus creates a basis for discussion for all stakeholders. This can ultimately help increase the acceptance and spread of multilevel concepts and develop today's pioneering projects into practical solutions for a space-efficient and high-performance logistics location in Germany.



SUMMARY

SUMMARY

Multilevel logistics properties are becoming increasingly important but have received little scientific attention as a building type up to now. In the first of two Logix studies on multilevel logistics properties, an initial definitional framework was therefore developed. A broad definition of multilevel logistics properties was chosen, encompassing not only multi-storey properties accessed via ramps but also rampless logistics properties with multiple levels.

The subsequent review of multilevel logistics property projects already realised in Europe demonstrated that numerous multilevel logistics properties have been developed in recent years. The realised projects reveal a high degree of functional and structural diversity, allowing European multilevel logistics properties to be classified into six distinct basic types.

In Germany, however, very few multilevel logistics properties with ramp access to the upper floor have been realised to date. The survey of experts revealed that considerable market potential is indeed seen for multilevel logistics properties, and multilevel construction is regarded as an important component towards more sustainable, land-efficient logistics properties. Developers and investors are nevertheless deterred from implementing such projects primarily by high construction and approval costs resulting from complex requirements relating to structural design, vertical access, and fire protection, as well as by the absence of established con-struction standards.

Creating transparency and developing construction standards as part of this study can help better harness the potential of land-efficient, multilevel logistics properties in German metropolitan areas in the future.



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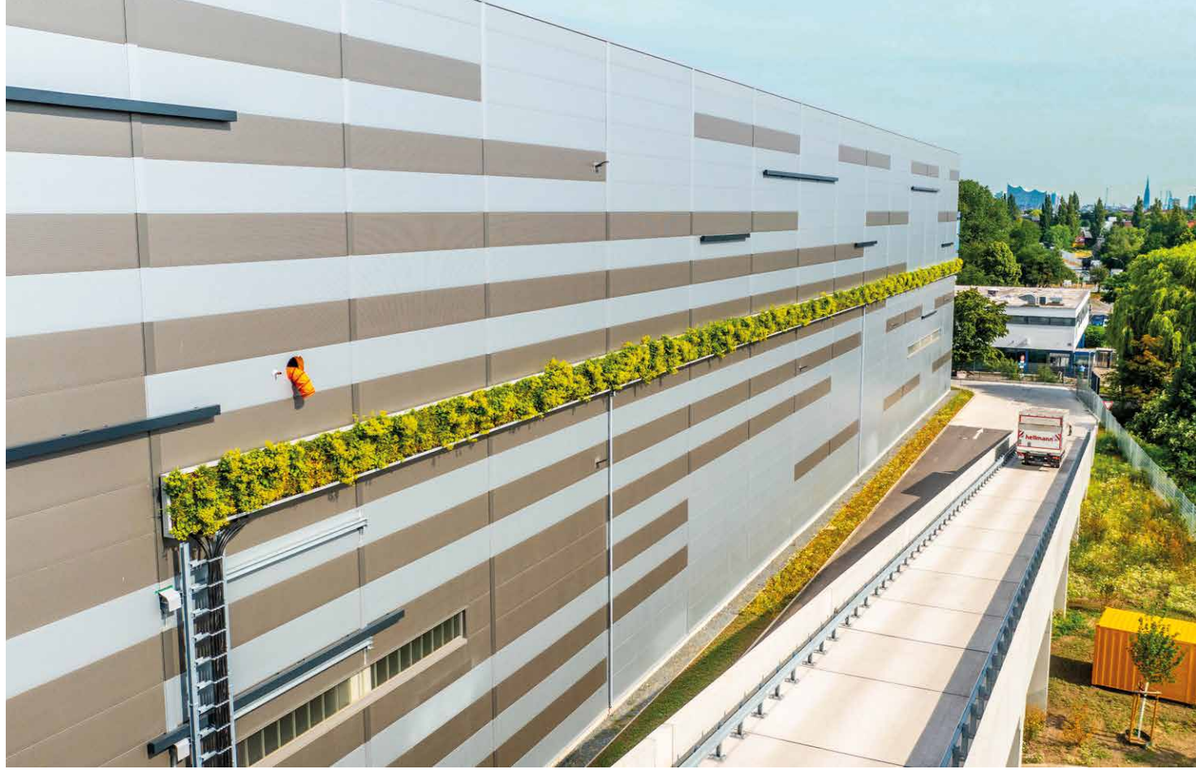
INTRODUCTION

1.
INTRODUCTION



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For decades, single-storey warehouses were regarded as the standard for warehouse and transshipment properties in Germany. They were easy to plan, inexpensive to construct and flexible to use. However, this model is increasingly being pushed to its limits, particularly in metropolitan areas and major urban centres. For several years, multilevel logistics properties have therefore attracted growing attention in Germany, at the latest since the completion of Mach2 in Hamburg as a first major example.

This development is being driven by the increasing scarcity of land and rising land prices in metropolitan areas and major urban centres. Multilevel construction allows land to be used more efficiently and therefore makes logistics more competitive with other uses when acquiring sites. At the same time, the continued growth of online retail is fundamentally changing the requirements for the distribution of goods. Short delivery times and a growing number of individual orders require easily accessible locations in metropolitan areas, precisely where land is particularly scarce and expensive.

Multilevel construction also offers clear advantages from an urban and regional planning perspective. Logistics requires large amounts of commercial land, meaning that more efficient use of land by logistics properties could make a significant contribution to reducing new land take. Experience in East Asia shows that multilevel construction can significantly reduce the amount of land occupied by the site itself.

Why, then, are there still so few multilevel logistics projects in Germany? Developers, building owners, investors and occupiers in Germany have so far shown considerable reluctance towards multilevel solutions. This is attributable, among other factors, to technical construction challenges and limited experience with construction, real estate valuation and use, as well as to regulatory and planning assessments relating to buildings. To date, no systematic assessment has been undertaken of the requirements of demand groups for logistics space in metropolitan areas or of the structural options and variants for creating multilevel buildings. There are also very few recommendations for developers and planning and approval authorities regarding how building regulations should be handled in multilevel logistics projects.

The project “Multilevel Logistics”, supported by the Initiative Logistikimmobilien (Logix) and the "Zukunft Bau" Innovation Programme of the Federal Ministry for Housing, Urban Development and Building (BMWSB), examines the potential of space-efficient multilevel construction in logistics real estate. Particular attention is given to technical implementation, building law assessment and economic viability. In addition, the potential for route optimisation and, above all, for reducing land take is to be analysed. The objective is to identify current barriers to implementation and show how they can be overcome.

Ahead of the publication of the final results of the surveys, workshops and impact analysis in 2028, this first report aims to define the term multilevel logistics property and provide an overview of multilevel projects already implemented in Europe. Based on this, the building types found in Europe are classified and characterised. The results of an online survey of experts regarding market potential, obstacles and requirements for multilevel logistics concepts are also presented.



BACKGROUND

2.1
THE HISTORY OF MULTILEVEL LOGISTICS – FROM STANDARD TO EXCEPTION – AND BACK?

The multi-storey storage of goods has a long history. Warehouses with several floors (horrea) already existed in the Roman Empire (Rickman 1971). Multilevel warehousing became significantly more important during the expansion of global trade in the colonial era. From the 17th century onwards, numerous new multilevel warehouse buildings were constructed in trading cities, often shaping the cityscape. An outstanding example is the four-storey warehouse of the Dutch East India Company in Amsterdam, the Oost-Indisch Zeemagazijn, which at the time was the largest building in the city (van Hell and van Melle 2019).



Figure 1: Oost-Indisch Zeemagazijn in Amsterdam, engraving by Joseph Mulder, 1726. Source: Engraving by Joseph Mulder, 1726 (public domain)

With industrialisation in the 19th century, demand for efficient storage capacity grew considerably as urbanisation accelerated and production and trade expanded rapidly. Multilevel construction became the standard, particularly close to trans-shipment points in port cities and industrial metropolitan areas, where building land was scarce and expensive. Four to six upper floors with floor heights of 2.8 to 3 metres were typical. These floor heights were sufficient at the time because manually stacking goods above two metres was extremely laborious (Dommann 2023: 47).

Structural innovations, such as the increased use of cast-iron and later steel structures, enabled larger spans and higher load-bearing capacities for floor slabs. In parallel, technological developments such as lifts and improved conveyor technology enabled more efficient vertical movement of goods within buildings. Multilevel warehouses therefore became a central component of the emerging industrial infrastructure.



Figure 2: Speicherstadt Hamburg, built at the end of the 19th century. Source: Adobe Stock



Figure 3: Entrepôt Ney, built in Paris in 1976. Source: Jacques Mossot/ Structurae

During the 20th century, the requirements placed on warehouse properties changed fundamentally. The containerisation of global trade and the widespread adoption of the automobile, and especially truck transport, prompted a fundamental shift in location and building concepts. Central locations in ports and at freight railway stations lost importance (see Kujath 2003), while access to the motorway network became decisive. At the same time, material flow concepts became established in which the pure storage function increasingly gave way to distribution and trans-shipment functions. These developments favoured single-storey halls with generous ground-level servicing areas. In Europe, single-storey logistics properties with wide-span halls, high floor loading capacities and efficient transshipment zones consequently became established as the cost-effective and functional standard. Technical innovations such as standardised pallets, forklifts and mechanised racking systems reinforced this development by favouring a space-intensive, horizontal organisation of warehouse processes (Dommann 2023: 71).

Even so, several multilevel logistics facilities were built, particularly during the 1960s and 1970s, testing new architectural and functional possibilities. Examples include the four-storey Entrepôt Ney complex in Paris and the two-storey TIR Logistics Centre in Brussels.

Both facilities are still in use today and have ramp systems that also allow trucks to access the upper floors. In addition, highly specialised rampless multilevel solutions were developed in sectors such as textile logistics, for example the H&M distribution centre in Hamburg, and mail-order retail, such as the Neckermann warehouse in Frankfurt. Goods were generally transported to the upper floors using lifts and conveyor systems.

Nevertheless, multilevel construction remained an exception in Europe for a long time. Only recently has it returned to the spotlight, driven by land scarcity in urban centres, rising land prices and the growing importance of online retail and the associated need for logistics close to customers.



Figure 4: The seven-storey EŞBAH İPEKYOLU logistics property in Istanbul with truck access to every floor. Source: EŞBAH Yapı Yatırım A.Ş.



Figure 5: Front view of the EŞBAH İPEKYOLU logistics property in Istanbul. Source: EŞBAH Yapı Yatırım A.Ş.

This development reflects a trend that began much earlier in many Asian metropolises. Since the 1980s, multilevel logistics properties with generous, often spiral-shaped ramp systems allowing truck access to high floors have been built in Hong Kong. Four- to eight-storey facilities are now also widespread in Tokyo, Seoul and Singapore. In recent years, interest in multilevel solutions has also increased significantly in China, many Southeast Asian countries, Australia, Turkey and several US metropolitan areas, where many projects have been implemented (Buldeo Rai et al. 2022; CBRE 2023).

The current debate around multilevel logistics properties in Germany and else-where in Europe therefore forms part of a broader global development that is gaining momentum, particularly in densely populated metropolitan regions.

2.2 EAST ASIA – THE MAJOR PIONEER IN MULTILEVEL LOGISTICS

In major East Asian cities such as Hong Kong, Tokyo and Seoul, multilevel construction has long been regarded as an efficient solution for urban distribution. The reasons include high land prices, small plot sizes and a limited supply of industrial and commercial land alongside dynamic economic growth. In addition, there is a very high population density in highly concentrated urban districts, resulting from strongly vertically oriented urban planning (BNP Paribas Real Estate 2024, Gerrity 2016).

Modern multilevel logistics properties with truck-accessible ramps to upper floors emerged in East Asia as early as the second half of the 20th century. In Hong Kong, for example, the ATL Logistics Centre was built in the 1980s with eleven logistics floors accessible via two-lane ramps. It remains the world's largest multilevel logistics property (ATL Logistics Centre Hong Kong Limited 2026, Cheung et al. 2003). The boom in multilevel logistics properties in Japanese metropolitan areas began in the early 2000s (CBRE 2023). While 10- to 20-storey logistics properties are not uncommon in Hong Kong, four- to eight-storey properties are particularly prevalent in major South Korean and Japanese cities. Increasing numbers of multilevel logistics properties are also being built in Chinese metropolitan areas despite significantly lower land and construction costs.

Given this long history, multilevel construction is not unusual or particularly challenging for developers and occupiers in East Asia but represents a standard solution. Construction variants and building standards have emerged that can be found in similar forms in many locations throughout the region. For example, floor loading capacities of 1.5–2 t/m² in upper floors, relatively low by European standards, and floor heights of between 5.5 and 8 m are common. Upper floors are very frequently accessed via spiral ramps, often also via ramps running along the façade. Material lifts and spiral conveyor systems are also used.

In addition, the logistics real estate market in East Asian metropolitan areas is also highly segmented. Of particular importance is the segment of urban e-commerce logistics centres, or e-fulfilment centres, which have emerged particularly in China and South Korea because of the great importance of online retail. For online distribution, with its small individual shipments, floor loading capacity is less important, for example, meaning that such operations are very well suited to upper floors of logistics properties.

Especially in South Korea, where online grocery delivery is widespread, urban multilevel logistics properties show a clear segmentation into refrigerated and dry storage space. In some cases, underground floors are constructed and used for refrigerated storage.

In contrast to Europe, East Asian logistics properties much more frequently integrate additional functions. Small retail units, for example convenience stores, and gastronomy outlets are very often located within these properties, either to provide services for employees or to enliven façades facing major roads. Residential uses are also much more common in East Asia, sometimes in the form of company housing for employees, in the immediate vicinity of logistics properties. The two project profiles presented here demonstrate the enormous range of approaches, from urban integration as in MFLP Logifront Itabashi in Tokyo to the structural extreme represented by Goodman Interlink in Hong Kong. The range is enormous, including in comparison with European flagship projects presented in Chapter 6.

MFLP LOGIFRONT ITABASHI

Tokyo, Japan · Big box · Year built 2024



Project photo: MFLP Logifront Itabashi, © Bergische Universität Wuppertal



6 levels

260,000 m²
Total usable area

90,000 m²
Site area

PROPERTY & LEASING			
Location	Tokyo, Japan	**Year built**	2024
Type	Big box	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Mitsui Fudosan
BUILDING & LOCATION			
Upper-floor access	2 spiral ramps	**Location**	Outer district

KEY FEATURES

MFLP Logifront Itabashi stacks six full-scale logistics floors, each accessed by a spiral ramp for inbound and outbound traffic and connected on every floor by a wide truck passage. The project is integrated into the surrounding neighbourhood on the site of a former Nippon Steel plant, including a public park with a playground and sports facilities, a pedestrian ramp leading to a small supermarket in the building, and a rooftop photovoltaic installation that also supplies neighbouring schools with electricity. The property is primarily occupied by companies using it as an urban fulfilment centre.

Address: Itabashi District, Tokyo, Japan · 35°47'34.1"N 139°40'33.8"E

GOODMAN INTERLINK

Hong Kong · Hybrid · Year built 2011



Project photo: Goodman Interlink, © Goodman Asia Limited



23 levels

225,000 m²
Total usable area

approx. 20,000 m²
Site area

PROPERTY & LEASING			
Location	Hong Kong	**Year built**	2011
Type	Hybrid	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Goodman Group
BUILDING & LOCATION			
Upper-floor access	Spiral ramp, material lifts	**Location**	Port

KEY FEATURES

The more than 150-metre-high logistics property is in the port area of Hong Kong and has 23 floors for logistics use. The ground and two upper ground floors primarily serve as parking spaces, loading and unloading zones and smaller warehouse space. The 13 logistics floors above them can be accessed directly by trucks via a two-lane spiral ramp, while seven additional storage floors are accessible via large material lifts. Above the logistics floors there is an office floor, level 24. The property also includes a café and areas for preparing and consuming food.

Address: Kwai Tsing District, Hong Kong · 22°19'55.6"N 114°06'32.3"E



© Jurgen De Witte / DPD

FRAMEWORK CONDITIONS

3.1
LAND SHORTAGES IN METROPOLITAN AREAS: THE LOGISTICS INDUSTRY'S STRUGGLE FOR LOCATIONS



© Jurgen De Witte / DPD

Although demand pressure in the logistics space market has eased somewhat from its pandemic-era highs amid the current weakness in the wider economy, the limited supply of suitable sites for new-build projects remains a central problem, particularly in economically strong metropolitan regions (ZIA 2026). Prime rents for logistics space have risen significantly since 2020, partly because of land shortages in Germany's major cities, in many cases by more than 50% (JLL 2026).

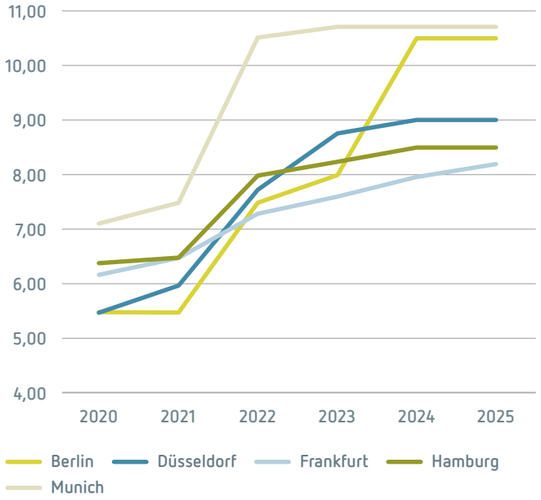

Figure 6: Development of prime rents for warehouse space ≥ 5,000 m² in €/m²/month. Source: Bergische Universität Wuppertal, based on JLL data (2026)

High land prices and intense competition for land with residential construction and other commercial uses, including data centres, are severely restricting options for logistics developments. In addition, modern logistics properties often require larger contiguous sites with specific requirements regarding transport and energy infra-structure as well as site robustness, which are increasingly difficult to find in densely populated regions.

At the same time, the logistics industry remains highly dependent on locations in core regions, and this need is likely to increase further in the future. Online retail has fundamentally changed requirements for space availability in metropolitan areas. Last-mile delivery, i.e. small-scale, time-critical deliveries to end customers and commercial businesses, is driving growing demand for logistics locations near centres of consumption (Buldeo Rai et al. 2022). Although the growth momentum in online retail declined in Germany after the Covid boom, growth picked up again in 2026, particularly in online food retail (HDE 2026).

The availability of labour is another argument in favour of locations in metropolitan regions. Logistics companies depend on a broad range of employees and benefit from the large and diverse labour markets found in metropolitan areas. In addition, many investors and developers have recently been placing greater emphasis again on established core logistics regions (ZIA 2026). Locations in these regions generally offer greater alternative user potential and therefore greater rental and value stability. Banks and institutional investors also prefer projects in established locations, resulting in greater willingness to finance projects and more favourable financing conditions. Partial or fully speculative developments therefore remain feasible in sought-after core regions, while less central locations face significantly more restrictive requirements (ibid.).

Against this backdrop, it is highly likely that the shortage of land for logistics developments will persist in most metropolitan regions and, in some cases, even intensify.

3.2
EXTENSIVE LAND TAKE CAUSED BY LOGISTICS DEVELOPMENTS

Land shortages in major cities also have a structural dimension: logistics is highly unpopular with many municipalities. Noise as well as high volumes of traffic from trucks and delivery vehicles make logistics developments unattractive from a local political perspective. In addition, logistics developments are often expected to generate only limited business tax revenues, a low density of jobs on large sites and relatively few highly qualified and well-paid jobs. The classic “Not in my backyard” problem reinforces this negative attitude: residents and politicians frequently oppose logistics-intensive uses in their immediate surroundings, even when there is a general recognition of the underlying need.

As a result, logistics properties are often developed on former agricultural land at peripheral locations on the edge of or outside metropolitan areas. This phenomenon is referred to as “logistics sprawl”, meaning the increasing spatial dispersion of logistics developments across the wider hinterland of metropolitan areas, which can be observed worldwide and in many regions of Germany (Kretzschmar et al. 2021, Bulwiengesa 2023). This is associated with economically and ecologically suboptimal transport systems and, in most cases, inefficient logistics supply to metropolitan areas due to longer travel distances (ARL 2025).

Above all, however, logistics is by far the largest commercial consumer of land in many German regions due to the extensive development of previously unsealed agricultural land (Kretzschmar et al. 2021). This is also evident from construction statistics: according to the German building completion statistics, 26% of the usable floor area completed in 2024 was accounted for by logistics properties (ware-house buildings). Given that these buildings are generally single-storey, this also implies a high level of land consumption.

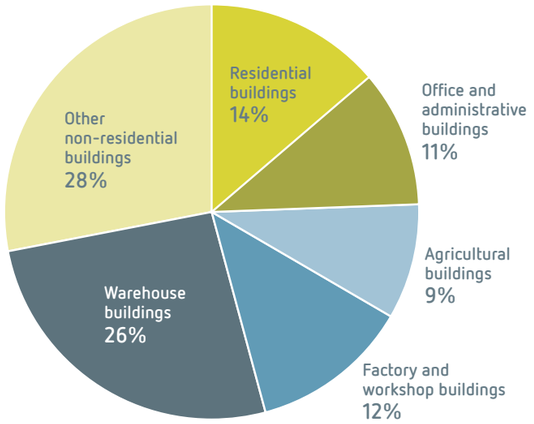

Figure 7: Building completions in 2024 by usable floor area in m² (Construction of new buildings and construction measures on existing buildings). Source: German Federal Statistical Office, own analysis

Against this backdrop, finding ways to reduce new land take by logistics properties is a key approach to achieving the objectives of Germany's Sustainable Development Strategy. The German government has set itself the target of reducing the daily increase in settlement and transport areas in Germany from around 51 hectares per day today to less than 30 hectares per day by 2030. By 2050, net land take is to be reduced to zero as part of a circular land-use economy (Die Bundesregierung 2025). Without a radical rethink of how logistics properties are constructed, this target will not be achievable.



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3.3
LAND-USE EFFICIENCY AS THE KEY TO URBAN LOGISTICS DEVELOPMENT

The shortage of available land in metropolitan areas is forcing the logistics industry to rethink its approach: Instead of space-intensive use of the few remaining greenfield sites, concepts are coming to the fore that make more efficient use of the available land. Several approaches offer promising prospects – ranging from the revitalization of brownfield sites to innovative construction and operational concepts.

01 BROWNFIELD DEVELOPMENT: POTENTIAL WITH LIMITATIONS

Revitalising former commercial and industrial brownfield sites is the most obvious way of integrating logistics uses into urban areas without sealing additional land. In German metropolitan regions, a significant and growing proportion of new-build projects are now being realised on brownfield sites (Hüppe 2026). However, contaminated sites, complex ownership structures and extensive renovation requirements increase both costs and project timelines. In addition, the supply of suitable brownfield sites, particularly large sites that can be used for single-storey logistics properties, is becoming increasingly scarce in some regions, making the search for suitable brownfield land for logistics uses more difficult (Garbe 2021).

02 HIGHER HALLS AND MODERN STORAGE TECHNOLOGY

Where footprints are constrained, the obvious opportunity is to build vertically. The trend towards taller warehouse buildings is clear in the industry (Savills 2018, Bulwiengesa 2024). While warehouse heights of ten to twelve metres to the underside of the roof were standard for a long time, heights of twelve to 15 metres and more are now not uncommon. This development is being driven using modern, automated storage systems. 3D shuttle systems, for example, enable highly compact storage across numerous levels and make much more effective use of the available cubic metres of a building than conventional manually operated racking systems. The higher investment in technology and building structure is offset by increased storage capacity per square metre, making locations economically viable that would not be profitable to operate under conventional conditions. This does not apply to all logistics sectors, however. In contract logistics, high investments in technology generally do not pay off because contracts tend to have short terms.

03 LAND-USE EFFICIENCY ON THE SITE

Open areas within logistics sites also offer scope for improving land-use efficiency. Conventional ground-level parking areas often occupy a large proportion of the site. Parking pallets and parking decks, including solutions combined with construction over loading zones, make it possible to stack parking spaces vertically and use the freed-up ground area for logistics purposes or reduce the overall site area. Such solutions are more complex to implement but are particularly viable where land prices are high and land reserves are limited.

04 MULTILEVEL LOGISTICS AND MIXED USE

The most comprehensive approach to reducing land consumption is the vertical stacking of logistics space across several floors. Multilevel logistics buildings allow a significant intensification of use on a small footprint. In most cases, logistics is stacked on logistics, but in some cases, logistics is combined with complementary uses such as offices, crafts and production, or even retail and residential uses. The latter can also help increase local political acceptance by creating a more visible and diversified mix of uses that promises a higher density of jobs and additional tax revenues.

The online survey conducted as part of this study (see Chapter 7) shows that, in the opinion of the experts, the severe shortage of land will lead above all to an increase in brownfield developments and greater importance being attached to multilevel construction.

The approach of stacking logistics space is discussed in greater detail in the following chapters.

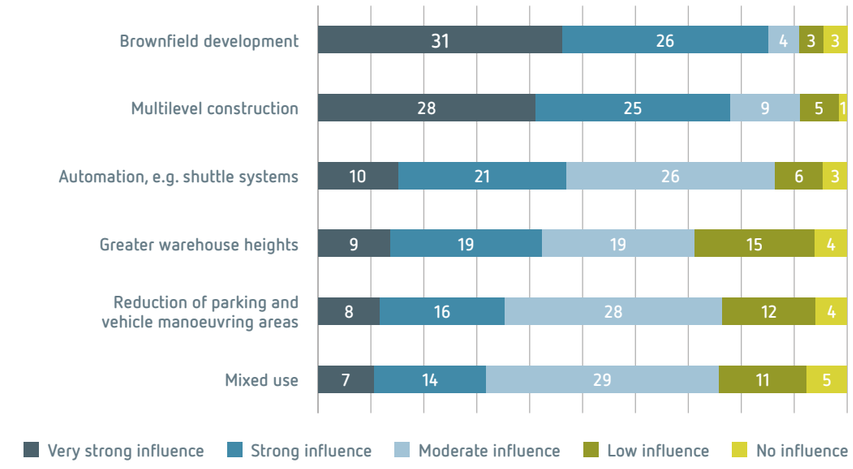

Figure 8: Expert survey: To what extent does land scarcity influence the following construc-tion developments? (N=68). Source: IRI – Institute for Spatial Research & Real Estate Economics



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DEFINITION OF MULTILEVEL LOGISTICS PROPERTIES

4.
DEFINITION OF MULTILEVEL LOGISTICS PROPERTIES

EXISTING DEFINITIONS ARE PARTLY CONTRADICTORY

To date, no clear definition has emerged of logistics properties with more than one floor, either in Germany or internationally. The term “multi-storey” is internationally often used to describe logistics properties with one or more upper floors that can be accessed directly by ramps (see, for example, CBRE 2023, Prologis 2021).

Logistics properties with several floors that are not accessed directly by ramps but by intralogistics systems such as goods lifts or conveyors, on the other hand, are often referred to as “multi-level” logistics properties (CBRE 2024). A characteristic feature of such “multi-level” properties is also single tenant use, while “multi-storey” logistics properties accordingly accommodate several users in a multi-tenant concept (Kivlehan 2021).

Hüppe (2024), in turn, defines multi-level logistics properties as multi-storey logistics facilities with ramp access, distinguishing them – through the concept of “multi-storey” design – from properties where access to the upper floors is provided via elevators. Other authors use the term “multilevel” both for logistics properties with several floors, where the upper floors are accessed via ramps as well as via intralogistics systems such as elevators (BNP Paribas 2024).

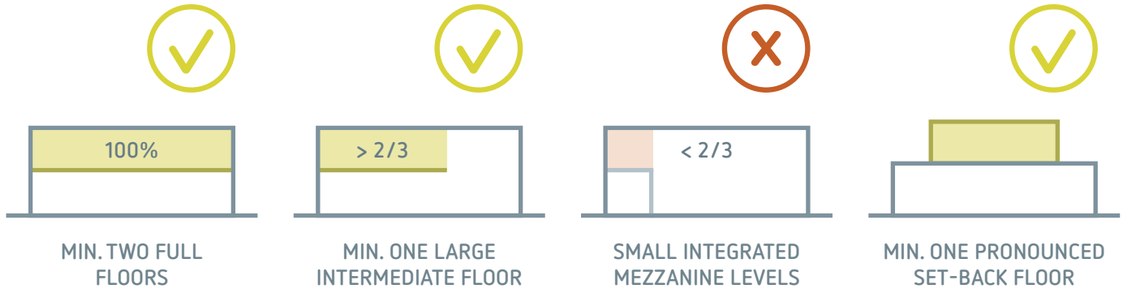

Figure 9: Examples illustrating the definition of multilevel logistics. Source: Bergische Universität Wuppertal

DELIMITING THE TERM ‘MULTILEVEL LOGISTICS PROPERTY’

For the purposes of this study, the classification of multilevel logistics properties is based on a broad definition that includes not only multi-storey properties with access to the floors via ramps but also rampless logistics properties with several floors.

Multilevel logistics properties are therefore defined as buildings with at least two superimposed floors that are accessed by ramps or intralogistics systems, such as goods lifts or conveyors. The floors must be suitable for logistics processes, particularly storage, transshipment or order picking. If they are intermediate floors, they must extend across at least two thirds and therefore a substantial part of the building footprint.[1]

Properties in which an intermediate floor is designed merely as a mezzanine level extending over only a small part of the building footprint, such as technical levels or isolated storage platforms, are therefore not considered as multilevel logistics properties under this definition. Such areas do not constitute an independent logistics level but merely supplement the ground-floor space in a subordinate way.

Properties with a set-back or stepped upper floor are also considered as multilevel logistics properties if the upper floor is accessed for truck servicing via the roof of the floor below, provided that the upper floor itself contains a substantial, contiguous area suitable for logistics use that justifies classifying the building as multilevel.

In summary, multilevel logistics properties can be defined as follows:

DEFINITION

Multilevel logistics properties are buildings with at least two superimposed floors used for logistics purposes, with access provided by ramps or intralogistics systems. Intermediate floors constitute multilevel construction only if they extend across at least two thirds of the building footprint.

1 The two-thirds rule is based on provisions contained in many German state building regulations for the definition of full storeys.

FURTHER DEFINITIONS

01 INCLUSION OF BUSINESS PARK PROPERTIES

Properties are generally classified as logistics properties when the share of logistics space exceeds 50%. In business parks, however, the logistics share is often difficult to determine. The halls are used for warehousing and transshipment as well as for production, service and retail space. In line with the logistics property typology developed by the Logix Initiative (Veres-Homm et al. 2024), modern multilevel business parks that supply urban areas with products or services (Urban Supply Centres) are included among multilevel logistics properties according to the definition adopted in this study. Older business parks in converted properties are excluded here.

02 RAMP-BASED BUILDING ACCESS

Ramp-based building access means that the upper floors are accessed by a ramp, whereby the ramp must be accessible to trucks or at least to light commercial vehicles. A special case is represented by logistics properties where access to a floor is enabled by the natural topography of the site. If a difference in elevation in the surrounding terrain is used to provide access to a floor, this access route is also classified as a ramp. Access routes to basement floors for logistics use are likewise considered ramp-based building access.

03 MIXED USE

The study also considers properties with logistics uses in which the multilevel configuration results from stacking logistics and other uses, such as offices, retail, public uses or residential space. According to the definition, however, such properties are only classified as multilevel logistics properties if the logistics use extends across at least two floors.



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5

MULTILEVEL LOGISTICS

IN EUROPE

5.1
TYPOLOGY OF MULTILEVEL CONSTRUCTION IN EUROPE – GREAT DIVERSITY BUT CLEARLY DISTINGUISHABLE BASIC TYPES

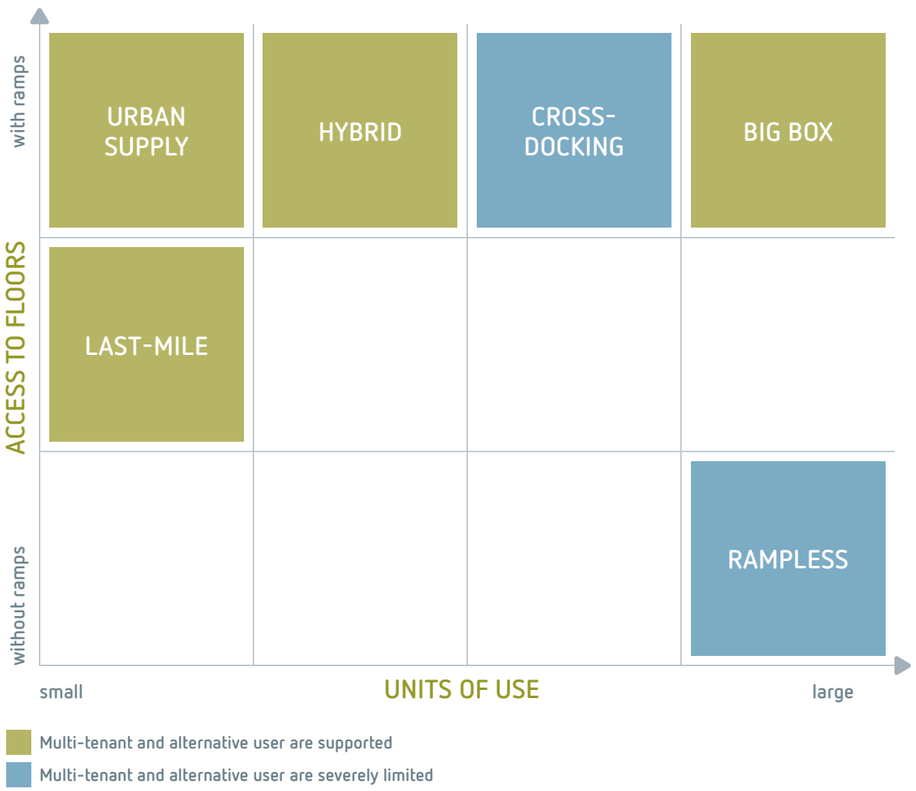

Figure 10: Classification of multilevel logistics types. Source: Bergische Universität Wuppertal



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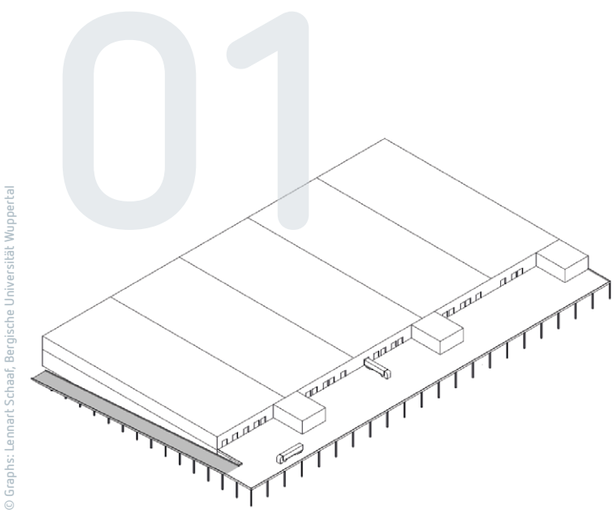

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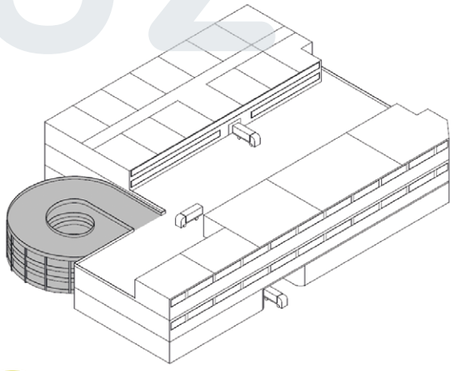
01 BIG BOXES

Multilevel properties across Europe differ significantly in terms of both construction and functional orientation. The most important distinguishing features are the size and robustness of the units, multi-tenant capability and alternative user potential, and above all the way in which the upper floors are accessed for transport and logistics purposes.

Six basic types can be distinguished:

Big box multilevel logistics properties are characterised by large hall units and robust construction that allows a wide range of logistics uses on both the ground and upper floors. The aim is to maximise alternative user potential, achieved through high standards for ceiling height, column spacing and floor loading capacity as well as the ability to subdivide the overall area into several hall units. In Europe, big box properties have so far generally been two-storey and have truck-capable, and therefore usually straight and wide, ramps providing access to the upper floor.

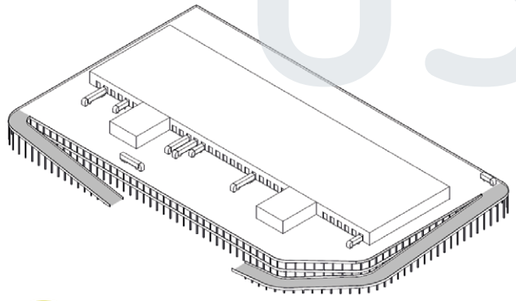
These properties are the multi-storey equivalent of conventional single-storey standard logistics properties. In Europe, they are used both as multi-tenant and single tenant properties. They are generally developed at well-connected locations on the outskirts of metropolitan areas or near ports. The target group comprises companies that want to conduct their logistics operations at well-connected locations within metropolitan areas, offering good access to end customers, production facilities or transport hubs.



02 URBAN SUPPLY

Numerous multilevel business park concepts have been realised in recent years. These multi-tenant properties consist of many small hall units. They are particularly suitable for smaller CEP service providers as well as companies in e-commerce and temperature-controlled logistics. The target group also includes all other users requiring small or medium-sized hall areas, such as manufacturing and craft businesses. In many cases, these non-logistics uses dominate. The requirements for ceiling height and floor loading capacity are lower than in big box properties, and the ramps are generally accessible only to small and medium-sized trucks. Curved or spiral ramps are therefore frequently used instead of straight ramps.

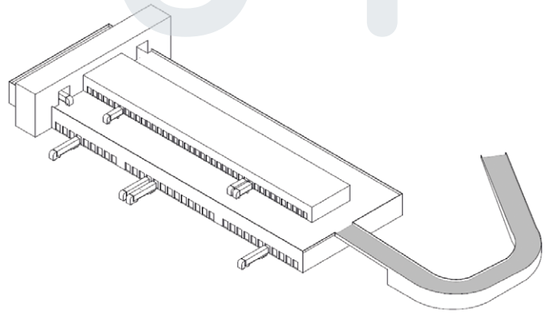
Multilevel urban supply centres are particularly suitable for major cities with high land prices, where businesses are often being displaced from central locations. While multilevel business parks built in Germany have so far focused mainly on crafts and manufacturing, with logistics uses generally excluded, several multilevel urban supply centres with an explicit focus on urban logistics have been developed in Paris and London in recent years.



03 HYBRID

Several projects currently in planning combine elements of the two types described above. These properties contain large hall units for conventional logistics uses on the ground floor, while the upper floor can only be accessed by smaller trucks or light commercial vehicles via ramps. It is therefore particularly suitable for cross-docking or urban supply uses. The restricted usability also reduces requirements for floor loading capacity and ceiling height on the upper floor. Since larger parts of the ground floor roof are used for parking and vehicle manoeuvring, the hall areas on the upper floor are significantly smaller than those on the ground floor.

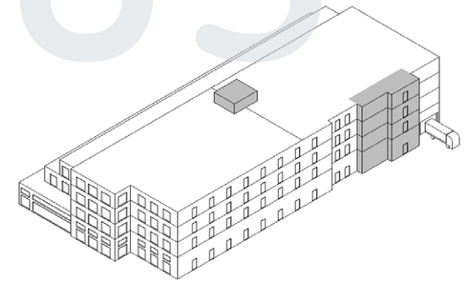
Hybrid concepts can offer advantages during the approval process because small-scale business park concepts are strongly demanded by local businesses in many places and are also welcomed by municipalities. Hybrid concepts can therefore help secure attractive locations for logistics uses.



04 CROSS-DOCKING

Multilevel construction is also possible for cross-docking properties used by the CEP sector. While numerous multilevel cross-docking terminals already exist in East Asia, Europe's first multilevel parcel centre was not opened until 2022 by DPD near Brussels. In 2023, La Poste opened another multilevel cross-docking property near Paris, while a third project is currently being developed in Barcelona. The DPD property near Brussels consists of two stacked units. The ground floor contains a larger hub location, while the upper floor contains a local transshipment depot. While the ground floor is accessible to large trucks, access to the upper floor is restricted to light commercial vehicles. This reduces the requirements for floor loading capacity on the upper floor and on the ramp. This is possible because parcels arriving by truck on the main haul can be transported to the upper floor via conveyors, where they are loaded onto light commercial vehicles for final distribution.

Multilevel solutions are also being discussed for general cargo freight terminals, but so far, no such project has been physically implemented in Germany.

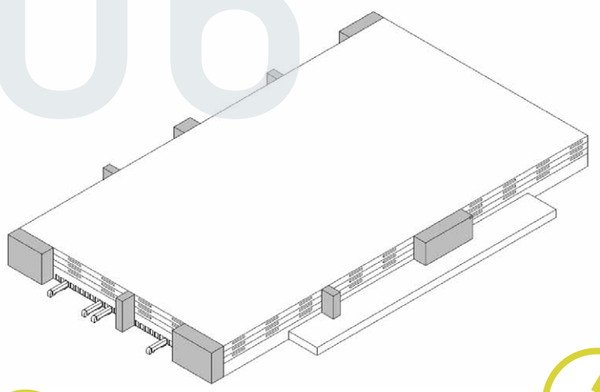


05 LAST-MILE

Last-mile multilevel properties target similar user groups to urban supply and cross-docking properties but are found in significantly more central locations. Due to their sensitive urban environment, the completed last-mile multilevel properties vary greatly in terms of architectural and structural design. Because of high land prices resulting from their locations, intensive use of the site is necessary. This is achieved either through many logistics floors or through the spatial stacking of logistics and other uses. Upper floors may be accessed via ramps or solely via material lifts or conveyors. Even rampless properties place strong emphasis on multi-tenant capability. Integration into the urban environment is achieved using underground floors, extensive landscaping, mixed use or adaptation to the surrounding urban fabric through stepped floors.

Several examples can be found of last-mile multilevel properties in Paris and London. No such project has yet been implemented in Germany.

06



06 RAMPLESS

Rampless multilevel properties are now the most common type of multilevel logistics property in Europe. Their defining feature is that there are no ramps leading to the upper floors. Goods are transported to the upper floors exclusively using intralogistics solutions such as conveyors and material lifts. Such solutions have long been used in areas including production, textile and art logistics, but are increasingly also being used in e-commerce. In Amazon Robotic Fulfilment Centres, the upper floors are almost entirely unmanned and are used only by robots. Because vehicles do not have to drive on the upper floors and there is no high level of conventional storage there, the requirements for floor loading capacity and floor height are lower than for the other property types.

Several single-storey logistics properties are currently being converted into multilevel robotic fulfilment centres by subsequently installing an intermediate floor. This can offer an economic advantage compared with new-build projects.

MIXED USE

The vertical combination of logistics with other uses has long been discussed, but so far only a small number of examples have been realised in Europe, even though this approach could provide particularly efficient use of expensive sites in urban locations. The combination of logistics and office space located above it is relatively common, for example at CTPark Amsterdam, as is the use of logistics hall roof areas to create parking spaces.

The SEGRO Centre Paris Les Gobelins, developed in a former underground railway station, shows that logistics floors can also be vertically integrated with residential and commercial buildings. The Hôtel Logistique La Chapelle in Paris illustrates how far such mixed-use concepts can be taken. In addition to logistics space, this mixed-use property contains a data centre, office space, retail, a school, sports fields and greenhouses on the roof. The greenhouse concept is also taken up by the Agrotopia project in Belgium, where a large greenhouse was constructed across the entire roof of a logistics hall.

In Germany, however, building and planning regulations frequently restrict or even prevent mixed use concepts.

5.2 MULTILEVEL CONSTRUCTION IN EUROPE – MULTILEVEL LOGISTICS GROWS OUT OF ITS NICHE

Since 2000, more than 35 multilevel logistics and urban supply properties with ramp access have been built in Europe, with another seven currently under construction. In addition, numerous rampless multilevel logistics properties have been developed during this period. A total of 66 buildings of this type has been recorded, although the inventory does not claim to be complete. This type of property is considerably less conspicuous from the outside and is reported on less frequently. The existing stock is therefore likely to be substantially under-recorded.

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DEVELOPMENT OF SPATIAL DISTRIBUTION

While only isolated multilevel logistics properties were built in Europe during the 2000s and 2010s, planning and construction activity has increased significantly in the 2020s. More than 70% of the recorded multilevel logistics properties, both with and without ramps, have been completed only in recent years, since 2020.

The hotspots for multilevel construction in Europe are the two metropolitan areas of London and Paris. More than 15 multilevel logistics properties with ramp access can now be found in the greater Paris area alone. Further properties of this type are in Western European cities such as Amsterdam, Brussels, Basel, Venlo, Lille, Liège and Lyon. Several multilevel logistics properties with ramp access have also been developed in Barcelona in recent years. In Germany, the completion of the Mach2 logistics property in Hamburg in 2022 attracted considerable attention. Several years earlier, a two-storey logistics property with ramp access had already been built in Munich. Another multilevel property of this type is scheduled to be completed in Munich by 2028. In Eastern Europe, the first multilevel logistics property with a ramp system is currently being developed in Brno, Czech Republic.

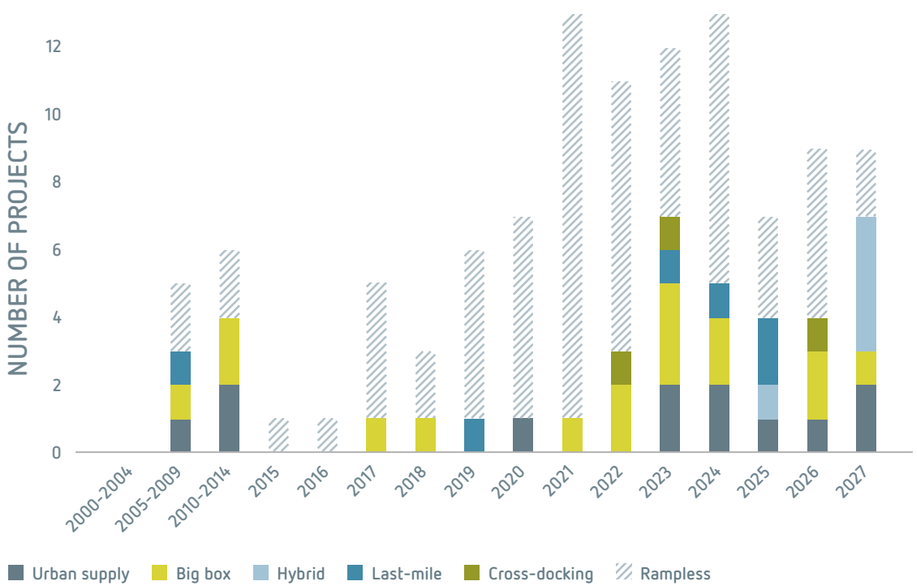


Figure 11: Multilevel logistics properties completed in Europe since 2000 by year. Source: Bergische Universität Wuppertal

Although rampless logistics properties have a long tradition, they too experienced a boom at the beginning of the 2020s, driven by the significant expansion and robotisation of Amazon's logistics network. Since then, a large proportion of Amazon's e-fulfilment centres have been built as multilevel Amazon Robotic Fulfilment Centres (ARFCs). Other online retailers are also moving towards multilevel logistics solutions. Unlike multilevel properties with ramps, rampless e-fulfilment centres are more frequently found on the outskirts or in peripheral but well-connected locations outside metropolitan areas.

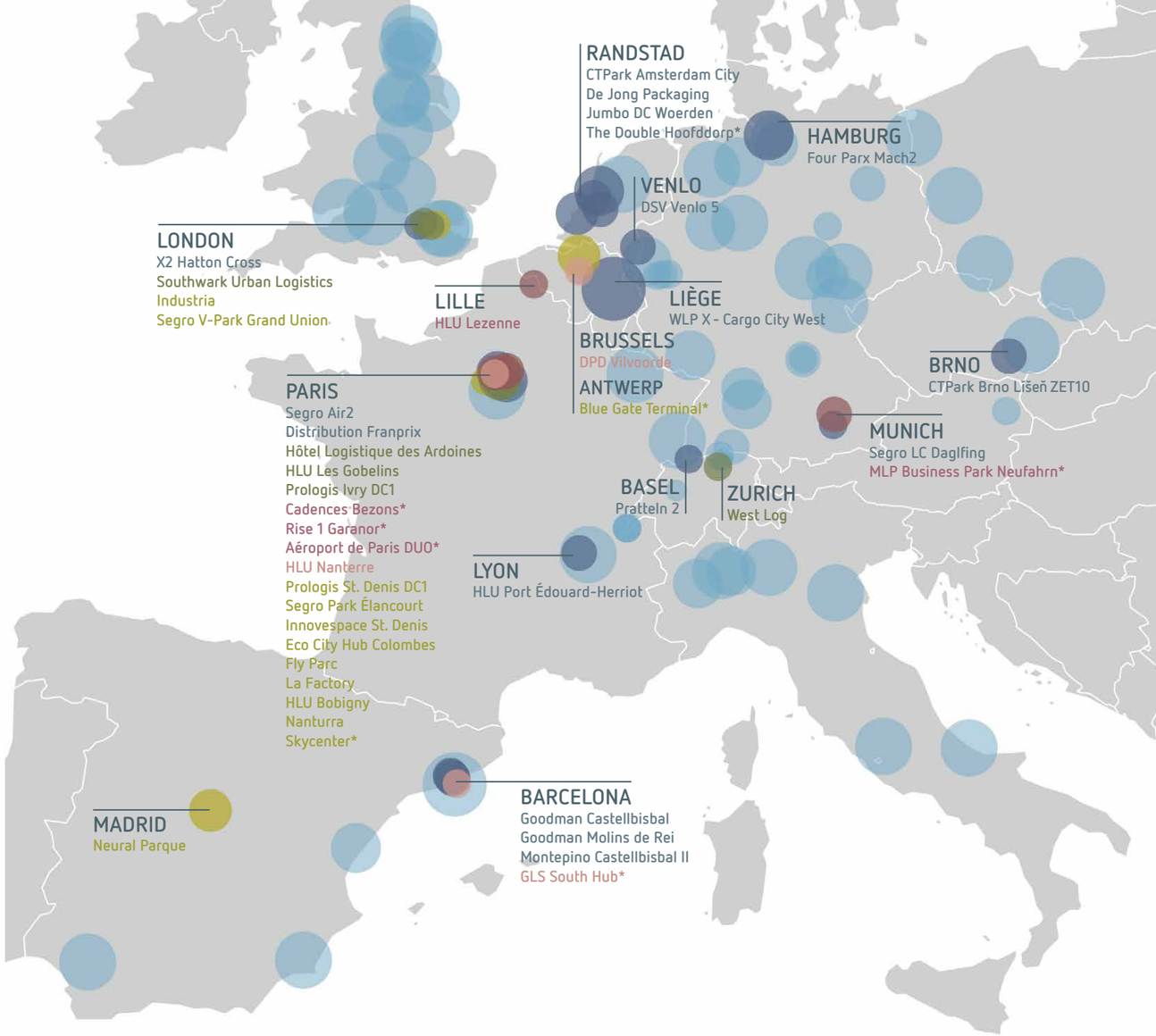
There is also a significantly broader spatial distribution across Europe. Rampless multilevel logistics centres are found not only in Central Europe but also to a considerable extent in Eastern Europe, particularly Poland and the Czech Republic, and in Southern Europe, particularly Italy and Spain.

DIMENSION OF THE EXISTING STOCK

In total, more than 1.7 million m² of usable floor area has been created in Europe since the turn of the millennium in multilevel logistics properties belonging to the categories big box, urban supply, hybrid, cross-docking and last-mile, including projects currently under construction. Almost 1.1 million m² of this total is accounted for by big box multilevel logistics properties.

In rampless multilevel logistics properties, 8.4 million m² of usable floor area was created during the same period, and the actual figure is likely to be considerably higher.

By far the largest properties are the rampless multilevel logistics properties, with an average usable floor area of approximately 128,000 m². This high figure is primarily driven by the large Amazon Robotic Fulfilment sites. Properties occupied by other users are generally considerably smaller. Big box multilevel logistics properties have an average size of 63,000 m², with usable floor areas ranging from 15,000 to 230,000 m². Urban supply multilevel logistics properties are considerably smaller, averaging approximately 21,000 m², with a range from 4,500 to 80,000 m². Cross-docking multilevel logistics properties are of a similar size, with an average usable floor area of just under 15,000 m². The three properties completed to date are of a similar scale. Last-mile and hybrid multilevel logistics properties are somewhat larger on average, at 25,000 m² and just under 36,500 m² respectively.



LOCATIONS OF MULTILEVEL LOGISTICS PROPERTIES BUILT IN EUROPE SINCE 2000

LOGISTICS SPACE

- < 9,999 m²
- 10,000 m² - 24,999 m²
- 25,000 m² - 49,999 m²
- 50,000 m² - 99,999 m²
- 100,000 m² - 149,999 m²
- 150,000 m² - 199,999 m²
- > 200,000 m²

BUILDING TYPE

- Cross-docking
- Hybrid
- Last-mile
- Urban supply
- Big box
- Rampless

*during the implementation phase

Figure 12: Locations of multilevel logistics properties built in Europe since 2000. Source: Bergische Universität Wuppertal

As of September 2026

TYPE	NUMBER	USABLE FLOOR AREA	MULTI-TENANT SHARE	AVERAGE SIZE
Big box	17	1,067,913	35%	62,818
Hybrid	5	182,051	100%	36,410
Urban supply	12	256,966	100%	21,414
Last-mile	6	152,308	83%	25,385
Cross-docking	3	43,689	0%	14,563
Rampless	66	8,430,530	6%	127,735

Table 1: Results of the inventory survey by building type. Source: Bergische Universität Wuppertal

MULTILEVEL CONSTRUCTION IN THE ISTANBUL AREA

The investigations initially excluded a hotspot for multilevel construction on the edge of Europe: the numerous multilevel logistics properties developed in the greater Istanbul area are not included in the analyses or maps. Nevertheless, multilevel logistics properties are now very widespread in Turkish metropolitan areas (C&W 2022).

A large proportion of the multilevel properties in Istanbul are in the Asian part of the city, particularly Tuzla and Gebze. In recent years, however, many new multilevel logistics properties have also been built in the European part of the city, particularly in the Esenyurt district.

Big box, urban supply, hybrid and last-mile multilevel logistics properties can all be found. They frequently have four to seven floors. Floor heights vary between 7 and 10 m, while floor loading capacity is often 1.5 or 2.5 t/m². A particular feature is the extensive use of topography to provide floor access. In some cases, up to seven floors are accessed through changes in terrain elevation. Another characteristic of urban supply properties is the frequent integration of retail space, particularly on the side of the building facing the main road.

It is reasonable to assume that, in addition to multilevel logistics properties with ramp access, many rampless multilevel logistics properties also exist in the Istanbul area. However, detailed information from studies or statistics is not yet available.

TYPE OF PROJECT DEVELOPMENT

Hybrid and urban supply properties, as well as almost all last-mile multilevel logis-tics properties, are predominantly speculative multi-tenant developments.

Big box multilevel logistics properties, by contrast, are only around one third multi-tenant properties. However, single-tenant properties are generally also designed in such a way that individual sections of the building can be used separately by several tenants. Around 41% of big box multilevel logistics properties were developed speculatively and just under 30% were built by developers as customer-specific, built-to-suit projects. Another almost 30% were commissioned directly by occupiers.

Cross-docking and rampless multilevel logistics properties are almost exclusively single tenant properties. In both cases, a large proportion were built as built-to-suit projects, around 67% for cross-docking multilevel logistics properties and around 56% for rampless multilevel logistics properties. Almost all the remaining properties were developed for owner-occupiers. Only in Switzerland have a small number of rampless multilevel logistics properties been developed speculatively as multi-tenant properties in recent years.

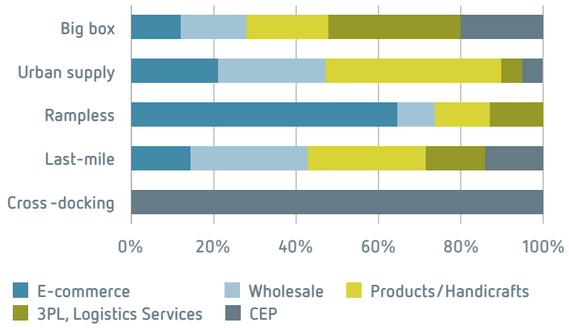


Figure 13: User structure by type.
Source: Bergische Universität Wuppertal

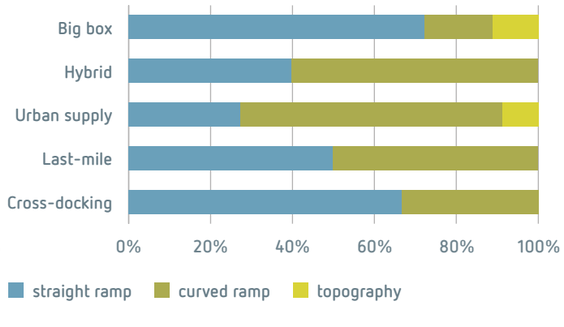


Figure 14: Type of ramp access to upper floors.
Source: Bergische Universität Wuppertal

USER STRUCTURE

Urban supply multilevel logistics properties frequently accommodate companies from manufacturing sectors and crafts. Specialised wholesalers, such as suppliers of building materials, and smaller e-commerce retailers are also often represented.

The user structure in big box multilevel logistics properties is similarly diverse. Contract logistics providers and logistics service providers are frequent occupiers, although less often in multi-tenant properties and more commonly as sole occupiers. Unlike in urban supply properties, manufacturing companies in big box properties are primarily large companies that organise functions such as spare-parts logistics or distribution from these locations. Retail companies from both online and stationary retail are also represented, as are CEP service providers in some cases.

As expected, cross-docking multilevel logistics properties are used exclusively by CEP service providers, while the e-commerce sector dominates among the recorded rampless multilevel logistics properties. However, the information on occupiers should be treated with caution because the inventory is incomplete. It is reasonable to assume that there are still larger stocks of such properties in production and retail logistics that have not yet been identified.

The information currently available on the user structure of last-mile multilevel logistics properties indicates a broad mix of industries. The user structure of hybrid multilevel logistics properties could not be analysed due to the small number of properties already completed and occupied.

ACCESS

For access to upper floors, straight ramps are predominantly used for big box multilevel logistics properties. Straight ramps facilitate access for large trucks and can generally be positioned effectively on the site or along the side façades of properties of this size. Where curved ramps are used, highly curved configurations are generally avoided.

Straight ramps are also commonly used for cross-docking multilevel logistics properties. Hybrid, last-mile and urban supply multilevel logistics properties more frequently use curved ramp configurations. Spiral ramps, which are widespread in Asia, are also used.

In some cases, sloping sites have been used to provide access to floors without constructing an additional ramp system.

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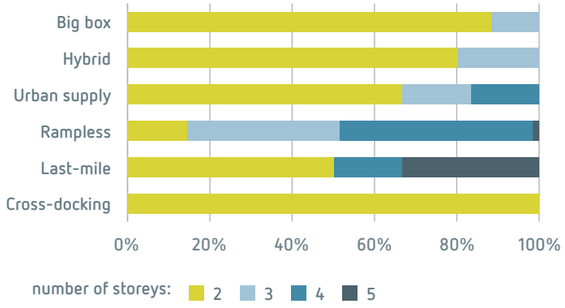


Figure 15: Distribution of the number of storeys by type. Source: Bergische Universität Wuppertal

NUMBER OF STOREYS

Big box, hybrid and cross-docking multilevel logistics properties in Europe have so far been predominantly two-storey structures, although in the case of big box and hybrid multilevel logistics properties, there are also a few three-storey properties that either already exist or are under construction.

Urban supply multilevel logistics properties have already been built with three or even four storeys in several cases, though two-storey properties also make up the majority of the stock here.

The largest number of storeys in Europe is found in the last-mile and rampless multilevel logistics property segments. Whilst rampless multilevel logistics properties have frequently been built with three or four storeys, in the last-mile segment the proportion of properties with five-storey designs is above average.

FLOOR HEIGHT (UKB)

In big box multilevel logistics properties, the most common floor height, both on the ground floor and on the upper floors, is 10.5 m. However, some properties – particularly on the upper floors – also have lower ceiling heights of between 5 and 7 m.

In urban supply multilevel logistics properties, lower ceiling heights are found – particularly on the upper storey. Ceiling heights of 6.5 or 6.9 m are widespread on the upper storey. On the ground floor, ceiling heights of 7 and 8 m are most common.

Hybrid multilevel logistics properties have ceiling heights on the upper storey of 6 to 8 metres and on the ground floor of between 7.5 and 10.5 metres.

In last-mile multilevel logistics properties, the ceiling heights are significantly lower. On the upper floors, ceiling heights of 4 to 5 metres are common, whilst on the ground floor ceiling heights of 6 to 7 metres are standard.

Even in rampless multilevel logistics properties, particularly robotic fulfilment centres, the upper floors often require no more than 4 to 5 m in ceiling height, whilst the ground floor is usually slightly higher (7 to 9 m). In the case of traditional rampless multilevel logistics properties with goods lifts, however, highly varied floor-to-ceiling heights are to be expected.

For cross-docking logistics properties, no data on floor-to-ceiling heights is available.

FLOOR LOAD-BEARING CAPACITY

With regard to the floor load-bearing capacity on the upper storeys, big box multilevel logistics properties vary considerably. The figures range between 1.5 and 5 T/m², with 3 T/m² being the most common value. On the ground floor, however, 5 T/m² is the established standard.

In urban supply multilevel logistics properties, the floor load-bearing capacity on the upper storeys varies between 1 T/m² and 2 T/m². The most common values are 1 T/m² or 1.5 T/m². On the ground floor, 3 T/m² is by far the most common value.

Surprisingly, the average floor load-bearing capacities for last-mile multilevel logistics properties are slightly higher than those for urban supply multilevel logistics properties. This is due to a specific case: At the SEGRO Centre Paris Les Gobelins, underground logistics floors were created, the floor slabs of which are characterised by high floor load-bearing capacity.

In the case of rampless multilevel logistics properties, the low floor load-bearing capacity of the upper storeys is striking in many robotic fulfilment centres. Here, floor load-bearing capacities of 600 to 800 kg/m² are often sufficient.

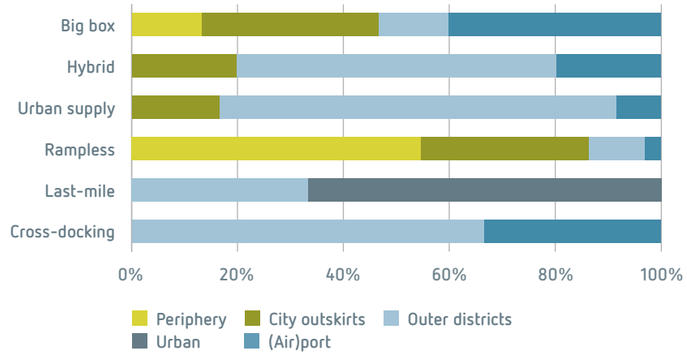


Figure 16: Location within the urban context. Source: Bergische Universität Wuppertal

COLUMN GRID

In big box multilevel logistics properties the standard market practice of a 12 m spacing between the load-bearing hall columns is adhered to in all cases examined. Whilst a column grid of 12 x 24 m is frequently found in traditional single-storey logistics properties, multi-storey properties are, in most cases, constructed with a 12 x 12 m column grid. The combination of a 12 x 12 m column grid on the ground floor and a 12 x 24 m grid on the upper floor is also found.

In urban supply or last-mile multilevel logistics properties with very small-scale subdivision of the units, there is also a frequent deviation from the 12-metre standard and, alternatively, an 8 x 8-metre column grid is used, for example.



© AREP / Sandrine Riviere

LOCATION

Big box multilevel logistics properties are primarily located on the outskirts of major cities in locations with excellent transport links – often also near ports and airports. The immediate surroundings are generally characterised by a strong commercial presence.

The locations of urban supply, hybrid and cross-docking multilevel logistics properties, by contrast, are more strongly integrated into the urban fabric, for example in existing commercial areas in the outer districts of cities. Very often, these are revitalised industrial or commercial brownfield sites (brownfield sites). Peripheral locations are rather rare.

Last-mile multilevel logistics properties are characterised by even more centrally integrated locations, often with residential use in the surrounding area. For cross-docking multilevel logistics properties, proximity to transhipment infrastructure can also be important.

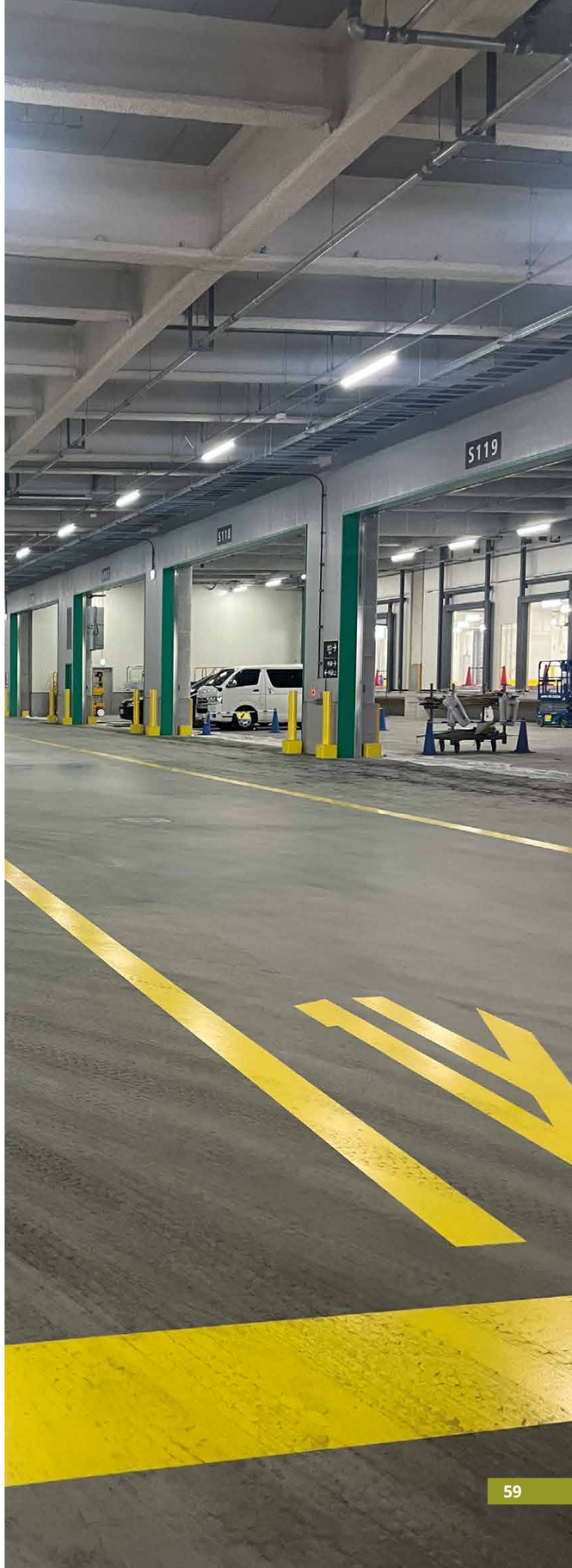
Rampless multilevel logistics properties are frequently found in peripheral locations. Despite being situated on the outer fringes or outside conurbations, these sites are characterised by good connections to the motorway network. They are often greenfield sites in newly developed industrial estates. Amazon's robotic fulfilment centres tend to be situated in more peripheral locations. Properties used by other operators are more commonly found on the outskirts of towns and cities.

5.3
OVERVIEW OF TYPE CHARACTERISTICS

	01 BIG BOX	02 URBAN SUPPLY	03 HYBRID	04 CROSS-DOCKING	05 LAST-MILE	06 RAMPLESS
USABLE FLOOR AREA, AVERAGE AND RANGE	63,000 m² (15,000–230,000 m²)	21,000 m² (4,500–80,000 m²)	36,500 m² (18,000–47,000 m²)	15,000 m² (13,000–16,000 m²)	25,000 m² (12,000–50,000 m²)	128,000 m² (4,000–265,000 m²)
TYPICAL NUMBER OF FLOORS	2	2 or 3	2	2	2 to 5	3 to 4
SIZE OF UNITS	2,500–10,000 m²	100–2,500 m²	250–10,000 m²	No subdivision	100–2,500 m²	No subdivision
GROUND-FLOOR HALL HEIGHT, AVERAGE AND RANGE	9.4 m (6–12 m)	7.4 m (5–10.5 m)	9.3 m (7.5–10.5 m)	n/a	5.7 m (3.8–7 m)	n/a
UPPER-FLOOR HALL HEIGHT, AVERAGE AND RANGE	8.4 m (5–10.5 m)	6.2 m (5–7 m)	7 m (6–8 m)	n/a	5 m (2.9–6 m)	n/a
GROUND-FLOOR LOADING CAPACITY, AVERAGE AND RANGE	4.5 t/m² (3–5 t/m²)	3 t/m² (1–5 t/m²)	n/a	n/a	3.6 t/m² (3–5 t/m²)	n/a
UPPER-FLOOR LOADING CAPACITY, AVERAGE AND RANGE	3 t/m² (1–5 t/m²)	1.4 t/m² (1–2 t/m²)	n/a	n/a	1.5 t/m² (0.5–3 t/m²)	n/a
FREQUENT COLUMN GRIDS	12 × 12 m	8 × 8 m	12 × 12 m	n/a	n/a	n/a
UPPER-FLOOR ACCESS, MOST COMMON VARIANT	straight ramp	curved ramp	curved or straight ramp	straight ramp	curved ramp or rampless	rampless
TENANCY	Single/Multi	Multi	Multi	Single	Multi	Single
PROJECT DEVELOPMENT TYPE	Speculative, built-to-suit, owner-occupier	Speculative	Speculative	Built-to-suit, owner-occupier	Speculative	Built-to-suit, owner-occupier
TYPICAL USER SECTORS	Logistics service providers, manufacturing, retail, e-commerce	CEP, wholesale, e-commerce, crafts	Logistics service providers, manufacturing, CEP	Crafts	CEP, wholesale, e-commerce, crafts	E-commerce, manufacturing
LOCATION	Edge of metropolitan area, near ports	Commercial areas in metropolitan areas	Commercial areas in metropolitan areas	Commercial areas in metropolitan areas	Central, mixed-use locations	Periphery, edge of metropolitan areas
LOCATIONS OF REALISED PROJECTS	European major cities, ports, industrial cities	Paris, London, Madrid	Paris, Lille, Munich	Paris, Brussels, Barcelona	Paris, London	Broad distribution across Europe

Table 2: Overview of type characteristics. Source: Bergische Universität Wuppertal

For the figures relating to floor area, height and floor loading capacity, the upper figure represents the average value based on the properties recorded in Europe. The figures in brackets below indicate the minimum and maximum values.



© Bergische Universität Wuppertal



6

MULTILEVEL FLAGSHIP-PROJEKTE

IN EUROPA

6.
MULTILEVEL FLAGSHIP PROJECTS IN EUROPE

Europe is still at an early stage in the development of multilevel logistics properties. Projects completed to date vary considerably in terms of size, location, building concept, users and architectural design. The following 15 profiles illustrate this diversity through a selection of flagship projects, from the 265,000 m² rampless logistics property to the four-storey urban supply multilevel logistics property with 8,600 m² of usable floor area in an outer district of Paris. The selection comprises projects from six countries and covers all six basic types. The projects presented were or are being completed between 2020 and 2026. In the following overview, each circle represents one project, with the area of the circle shown proportionally to the respective usable floor area.

01
Erfurt A – The Grand
Erfurt · Rampless · 265,000 m² · 4 levels · 2024

02
WLP X – Cargo City West
Liège · Big box · 230,000 m² · 2 levels · 2026

03
Bestseller Logistics Center West
Lelystad · Rampless · 155,000 m² · 3 levels · 2026

04
Mach2
Hamburg · Big box · 123,000 m² · 2 levels · 2022

05
CTPark Amsterdam City
Amsterdam · Big box · 120,000 m² · 2 levels · 2023

06
DSV Venlo 5
Venlo · Big box · 63,000 m² · 2 levels · 2023

07
Hôtel Logistique des Ardoines
Paris · Last-mile · 30,000 m² · 2 levels · 2023

08
HLU Port Édouard-Herriot
Lyon · Big box · 29,000 m² · 2 levels · 2024

EUROPEAN MULTILEVEL FLAGSHIP PROJECTS BY SIZE



Figure 17: European multilevel flagship projects compared by size.
Source: Bergische Universität Wuppertal

09
Goodman Castellbisbal LC
Barcelona · Big box · 26,000 m² · 2 levels · 2022

10
Fly Parc
Paris · Urban supply · 20,000 m² · 2 levels · 2024

11
HLU Lezenne
Lille · Hybrid · 18,000 m² · 2 levels · 2025

12
Southwark Urban Logistics
London · Last-mile · 16,000 m² · 4 levels · 2025

13
DPD Vilvoorde
Brussels · Cross-docking · 15,000 m² · 2 levels · 2022

14
Industria
London · Urban supply · 11,500 m² · 3 levels · 2023

15
Colombes Eco City Hub
Paris · Urban supply · 8,600 m² · 4 levels · 2020

ERFURT A - THE GRAND

Erfurt, Germany · Rampless · Year built 2024



Project photo: Erfurt A – The Grand, © ATMIRA Gruppe München-Oberhaching

3rd floor
2nd floor
1st floor
Ground floor

4 levels

265,000 m²
Total usable area

158,428 m²
Site area

PROPERTY & LEASING			
Location	Erfurt, Germany	**Year built**	2024
Type	Rampless	**Leasing**	Single tenant
Development	Built-to-suit	**Developer**	ATMIRA
BUILDING & LOCATION			
Upper-floor access	intralogistics/conveyor systems	**Location**	outskirts of the city

KEY FEATURES

Erfurt A – The Grand, developed by ATMIRA, is an example of a modern, multilevel e-fulfilment centre in which the upper floors are accessed exclusively through intralogistics solutions. Amazon has built a larger number of such properties in recent years. The property in Erfurt, one of the largest multilevel logistics properties in Europe, is also used by Amazon as a robotic fulfilment centre.

Address: Erfurter Landstraße 53, 99095 Erfurt

WLP X – CARGO CITY WEST

Liège, Belgium · Big box · Year built 2026



Project photo: WLP X - Cargo City West, © Montea

1st floor
Ground floor

2 levels

230,000 m²
Total usable area

370,000 m²
Site area

PROPERTY & LEASING			
Location	Liège, Belgium	**Year built**	2026
Type	Big box	**Leasing**	Single tenant
Development	Built-to-suit	**Developer**	Weerts Group, Montea
BUILDING & LOCATION			
Upper-floor access	straight ramp	**Location**	near airport

KEY FEATURES

With 230,000 m² of usable floor area, Cargo City West is Belgium's largest single tenant property. The property was developed on a long-term leasehold site in the immediate vicinity of Liège Airport, an important European air freight hub. The project consists partly of two storeys and comprises five large units. The upper floor can be accessed by trucks via large ramp facilities. The property is used by the US footwear manufacturer Skechers as its European distribution centre.

Address: Rue de Fontaine, 4460 Grâce-Hollogne, Belgium

BESTSELLER LOGISTICS CENTER WEST

Lelystad, Netherlands · Rampless · Year built 2026



Project photo: Bestseller Logistics Center West, © Jacqueline Knudsen, Het Houtblad / Architektur: Henning Larsen

2nd floor
1st floor
Ground floor
3 levels

155,000 m²
Total usable area

approx. 287,000 m²
Site area

PROPERTY & LEASING			
Location	Lelystad, Netherlands	**Year built**	2026
Type	Rampless	**Leasing**	Single tenant
Development	Built-to-suit	**Developer**	AAA United
BUILDING & LOCATION			
Upper-floor access	intralogistics	**Location**	peripheral location

KEY FEATURES

In Lelystad, Netherlands, Danish fashion group Bestseller is building Europe's largest logistics centre constructed using timber, the Logistics Centre West (LCW). Completion is planned for the end of 2026. Logistics processes take place across three stacked floors. Goods are transported between floors using conveyor belts and specialised conveyor systems for apparel. The building was designed by renowned architecture firm Henning Larsen. A total of 25,600 m³ of timber was used in the logistics property. The combination of multilevel construction and timber construction implemented here clearly demonstrates the sustainability potential of logistics property construction.

Address: Buitenhavenweg 54, 8221 RJ Lelystad, Netherlands

MACH2

Hamburg, Germany · Big box · Year built 2022



Project photo: Mach2, © GSE

1st floor
Ground floor
2 levels

123,000 m²
Total usable area

115,000 m²
Site area

PROPERTY & LEASING			
Location	Hamburg, Germany	**Year built**	2022
Type	Big box	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Four Parx
BUILDING & LOCATION			
Upper-floor access	straight ramp	**Location**	port location

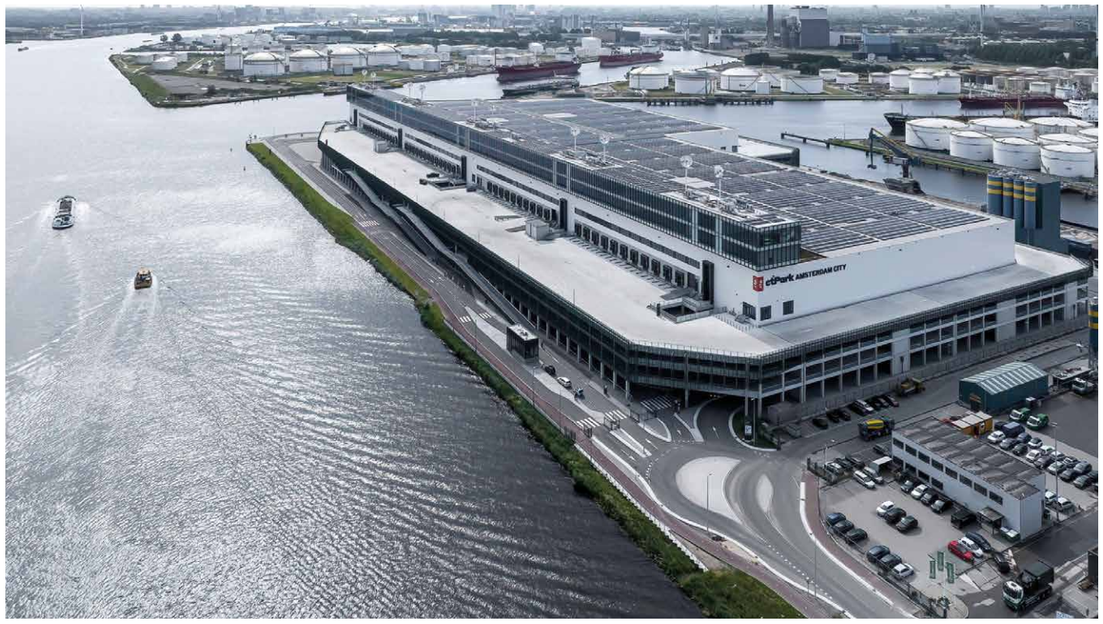
KEY FEATURES

Mach2 marks a milestone for the German logistics property market. As Germany's first large-scale speculative multilevel project, it transfers the established big box principle to two logistics levels that can both be accessed fully by truck. The multi-tenant concept is particularly relevant because the multilevel approach was developed not as a user-specific solution, but as a property product suitable for the market. The upper loading yard is accessed via two heated ramps that can be used by trucks with a gross vehicle weight of up to 45 tonnes. The property is fully let and is used by Airbus, Bechtle, Jysk and Picnic. In 2023, the project received the Logix Award special prize "Leuchtturmprojekt".

Address: Reiherstieg-Hauptdeich 39, 21107 Hamburg

CTPARK AMSTERDAM CITY

Amsterdam, Netherlands · Big box · Year built 2023



Project photo: CTPark Amsterdam City, © CTP

1st floor
Ground floor
2 levels

120,000 m²
Total usable area

119,000 m²
Site area

PROPERTY & LEASING			
Location	Amsterdam, Netherlands	**Year built**	2023
Type	Big box	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	CTP Group
BUILDING & LOCATION			
Upper-floor access	straight ramp, lift	**Location**	port location

KEY FEATURES

CTPark Amsterdam City is a large-scale, two-storey logistics property with multi-modal connections. It is located directly on the North Sea Canal in the Port of Amsterdam and is also well connected to Amsterdam city centre. The target group primarily comprises companies involved in urban logistics or urban production. Tenants include online grocery retailer Crisp, e-commerce logistics service provider Cirro Parcel, a vertical farming company, companies from the technology and manufacturing sectors, and brewery Heineken, which supplies bars and restaurants in Amsterdam from this location.

Address: Ankerweg 18, 1041 AT Amsterdam

DSV VENLO 5

Venlo, Netherlands · Big box · Year built 2023



Project photo: DSV Venlo 5, © Unibau Gewerbebau GmbH

1st floor
Ground floor
2 levels

63,000 m²
Total usable area

42,000 m²
Site area

PROPERTY & LEASING			
Location	Venlo, Netherlands	**Year built**	2023
Type	Big box	**Leasing**	Single tenant
Development	Owner-occupier development	**Developer**	Unibouw
BUILDING & LOCATION			
Upper-floor access	straight ramp	**Location**	outskirts of the city

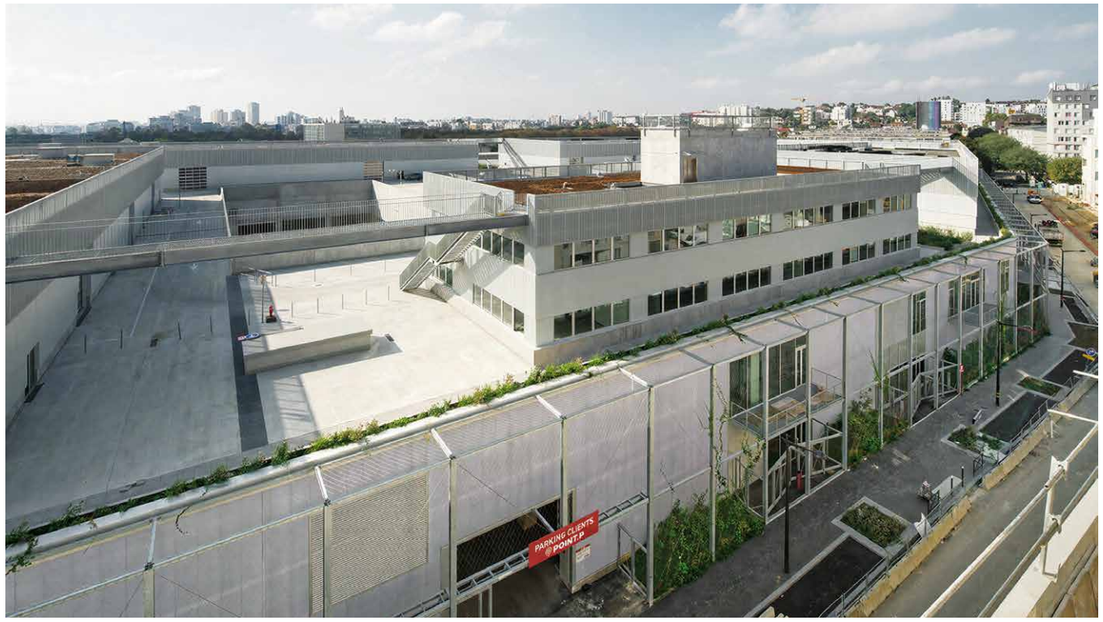
KEY FEATURES

The two-storey Venlo 5 property was built for transport and logistics company DSV at Trade Park Noord in Venlo. This enabled DSV to create additional storage and handling capacity at its existing company location in Venlo. A large, straight truck ramp provides access to the upper floor. The project is an example of how multilevel logistics properties can also be realised outside major metropolitan areas in strategically well-connected locations.

Address: Malcom McLeanstraat 2, Venlo

HÔTEL LOGISTIQUE DES ARDOINES

Paris, France · Last-mile · Year built 2023



Project photo: Hôtel Logistique des Ardoines, © Takuji Shimmura / Architektur: ChartierDalix

1st floor
Ground floor
2 levels

30,000 m²
Total usable area

27,000 m²
Site area

PROPERTY & LEASING			
Location	Paris, France	**Year built**	2023
Type	Last-mile	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Sogaris
BUILDING & LOCATION			
Upper-floor access	internal ramp	**Location**	outer district

KEY FEATURES

The Hôtel Logistique des Ardoines is a logistics property integrated into the urban environment of Paris. The building layout is aligned with the different activities in its surroundings. The offices and their terraces face the neighbouring residential buildings, while access routes to the logistics yard and parking area are located on the side adjoining existing industrial operations. Integration into the surrounding area is achieved primarily through a green strip equipped with climbing supports and by making the roof area available for urban agriculture. The roof areas are connected by walkable footbridges. The building is currently used by CEP service provider UPS, building materials and sanitary wholesalers, and a school for horticulture and landscape design.

Address: 75 Rue Léon Geffroy, 94400 Vitry-sur-Seine

HLU PORT ÉDOUARD-HERRIOT

Lyon, France · Big box · Year built 2024



Project photo: HLU Lyon-Gerland, © QUARTUS Logistique, SAS HLU Port de Lyon / Architektur: AREP

1st floor
Ground floor
2 levels

29,000 m²
Total usable area

approx. 50,000 m²
Site area

PROPERTY & LEASING			
Location	Lyon, France	**Year built**	2024
Type	Big box	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Quartus Logistique
BUILDING & LOCATION			
Upper-floor access	straight ramp	**Location**	port location

KEY FEATURES

The Hôtel Logistique Urbain (HLU) Port Édouard-Herriot was developed as a two-storey multi-tenant property in the port area of Lyon. The users of the property, designed by AREP Group, are diverse. Renault Trucks and e-cargo bike manufacturer Kleuster operate vehicle maintenance workshops here, while DPD France, the largest tenant, uses the site for last-mile handling and supplying Lyon city centre. The upper floor is accessed via a straight ramp running between the two building sections.

Address: Rue de Dole, 69007 Lyon-Gerland

GOODMAN CASTELLBISBAL LC

Barcelona, Spain · Big box · Year built 2022



Project photo: Castellbisbal LC, © Goodman

1st floor
Ground floor
2 levels

26,000 m²
Total usable area

26,000 m²
Site area

PROPERTY & LEASING			
Location	Barcelona, Spain	**Year built**	2022
Type	Big box	**Leasing**	Single tenant
Development	Speculative	**Developer**	Goodman
BUILDING & LOCATION			
Upper-floor access	straight ramp	**Location**	outskirts of the city

KEY FEATURES

The two-storey Castellbisbal Logistics Centre is the second multilevel logistics property developed by Goodman Group in Spain. It was built in a strategically well-connected location on the outskirts of Barcelona, a city with very limited land availability. The upper floor is accessed via a wide, straight ramp. The property was planned as a multi-tenant building with two units, but after completion it was fully leased to Spanish logistics service provider ESBO Logistics Systems.

Address: Carrer Ferralla, 24, Castellbisbal

FLY PARC

Paris, France · Urban supply · Year built 2024



Project photo: Fly Parc, © Nicolas Grosmond / Architektur: Auer Weber und DVVD Architectes

1st floor
Ground floor
2 levels

20,000 m²
Total usable area

23,000 m²
Site area

PROPERTY & LEASING			
Location	Paris, France	**Year built**	2024
Type	Urban supply	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Grand Paris Aménagement, GSE
BUILDING & LOCATION			
Upper-floor access	straight ramp, lift	**Location**	outskirts of the city

KEY FEATURES

Fly Parc in Tremblay-en-France on the outskirts of Paris is an example of an architecturally appealing two-storey business park concept. The building wings arranged around an inner courtyard contain a total of 19 units. The ground floor contains larger units that are better suited to logistics uses, while the upper floor provides smaller units for a range of commercial uses. The upper floor is accessible via a straight ramp that can be used by small and medium-sized trucks with a permissible weight of up to 19 tonnes.

Address: 23 Rue du Sausset, 93290 Tremblay-en-France, France

HLU LEZENNE

Lille, France · Hybrid · Year built 2025



Project photo: HLU Lezenne, © GSE / Architektur: Anne Démians

1st floor
Ground floor
2 levels

18,000 m²
Total usable area

50,000 m²
Site area

PROPERTY & LEASING			
Location	Lille, France	**Year built**	2025
Type	Hybrid	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	La Poste Immobilier
BUILDING & LOCATION			
Upper-floor access	loop ramp	**Location**	outer district

KEY FEATURES

The Hôtel Logistique Urbain (HLU) Lezenne in Lille was the first hybrid multilevel logistics property in Europe. The ground floor is used extensively as a handling facility by French CEP service provider La Poste, while the upper floor contains twelve small units, each measuring 500 m², for small-scale commercial uses. The upper floor is accessed via a curved ramp that can be used by smaller trucks with a permissible weight of up to 12 tonnes.

Address: 16 Rue Paul Langevin ZI du Hellu, Lezennes, Hauts-de-France

SOUTHWARK URBAN LOGISTICS

London, United Kingdom · Last-mile · Year built 2025



Project photo: Southwark Urban Logistics, © British Land / Architektur: The Harris Partnership

3rd floor
2nd floor
1st floor
Ground floor
4 levels

16,000 m²
Total usable area

8,000 m²
Site area

PROPERTY & LEASING			
Location	London, United Kingdom	**Year built**	2025
Type	Last-mile	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	British Land
BUILDING & LOCATION			
Upper-floor access	lift	**Location**	urban

KEY FEATURES

The building is a multilevel urban logistics centre in a central London location. The project completely dispenses with truck-ramp access to the upper floors. Instead, the vertical movement of goods is handled exclusively via freight lifts. This makes it possible to stack four logistics levels on a very small urban site and achieve exceptionally high land-use efficiency. The project therefore demonstrates an alternative development approach for multilevel logistics in particularly land-constrained inner-city locations.

Address: 25 Mandela Way, London SE1 5SZ

DPD VILVOORDE

Brussels, Belgium · Cross-docking · Year built 2022



Project photo: DPD Vilvoorde, © Jurgen De Witte, DPD

1st floor
Ground floor
2 levels

15,000 m²
Total usable area

60,000 m²
Site area

PROPERTY & LEASING			
Location	Brussels, Belgium	**Year built**	2022
Type	Cross-docking	**Leasing**	Single tenant
Development	Built-to-suit	**Developer**	Montea
BUILDING & LOCATION			
Upper-floor access	loop ramp	**Location**	outer district

KEY FEATURES

The DPD parcel centre in Vilvoorde northeast of Brussels demonstrates that CEP service providers' handling properties can also be developed as multilevel buildings. The ground floor contains a regional hub, while the first floor contains a smaller depot serving the Brussels region, which can be accessed separately via a ramp. The Built-to-suit property was developed by Montea and leased to DPD.

Address: Indringingsweg 2, 1800 Vilvoorde

INDUSTRIA

London, United Kingdom · Urban supply · Year built 2023



Project photo: Industria, © Fred Howarth / Architektur: Haworth Tompkins

2nd floor
1st floor
Ground floor
3 levels

11,500 m²
Total usable area

8,000 m²
Site area

PROPERTY & LEASING			
Location	London, United Kingdom	**Year built**	2023
Type	Urban supply	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	BeFirst
BUILDING & LOCATION			
Upper-floor access	spiral ramp, lift	**Location**	outer district

KEY FEATURES

Industria is an architecturally compelling three-storey commercial property in London. A compact spiral ramp provides access to the three levels, achieving a high degree of land-use efficiency. Freight lifts are also available. The tenants of the 45 units include companies from the logistics, distribution, online retail, food production, fashion and cleaning services sectors. The ground floor includes a café with a co-working lounge.

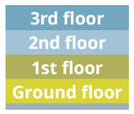
Address: Long Reach Rd, Barking IG11 0JH

COLOMBES ECO CITY HUB

Paris, France · Urban supply · Year built 2020



Project photo: Colombes Eco City Hub, © Thomas Garcia / Architektur: MW Architecture



4 levels

approx. 8,600 m²
Total usable area

6,000 m²
Site area

PROPERTY & LEASING			
Location	Paris, France	**Year built**	2020
Type	Urban supply	**Leasing**	Multi-tenant
Development	Speculative	**Developer**	Private
BUILDING & LOCATION			
Upper-floor access	straight ramp	**Location**	outer district

KEY FEATURES

The Eco City Hub in Colombes near Paris demonstrates that multilevel business park and urban logistics concepts can also be implemented with a high degree of land-use efficiency across four floors. A ramp system allows light commercial vehicles and vans weighing up to 3.5 tonnes to access the third upper floor. The property consists of numerous small hall and office units that can be combined within the individual floors and are used by commercial tenants from different sectors.

Address: 32–36 Rue de Seine, 92700 Colombes, France



PERSPECTIVES

ON MULTILEVEL LOGISTICS

7. PERSPECTIVES ON MULTILEVEL LOGISTICS



© Four Parx GmbH

An online survey was conducted in April and May 2026, with 103 experts taking part.[2] Almost half of the participants (46%) came from the field of real estate development. Other participants had professional backgrounds in real estate consulting (18%), construction (11%) and investment & financing (6%). Eleven percent represented companies that operate as occupiers of logistics properties, including logistics service providers, retailers, manufacturers and CEP companies. Other participants had professional backgrounds in research and public administration, including planning, permitting and economic development. Almost 90% of respondents had already dealt with the issue of multilevel logistics properties.

MARKET POTENTIALS FOR MULTILEVEL LOGISTICS PROPERTIES

Half of respondents see high or very high market potential for multilevel logistics properties in the coming years.

"Which market potential do you attribute to the segment of multilevel logistics properties in the coming years?"

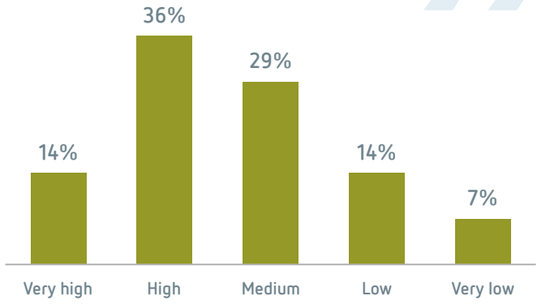


Figure 18: Market potential of multilevel logistics properties (N=70). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

2 It should be noted that not all questions were asked of all experts. Depending on the respondents' professional background, certain subject areas were the focus of the survey. The number of participants (N) therefore varies between questions.

According to the experts surveyed, numerous multilevel logistics properties could be built in Germany by 2035. The greatest market potential is attributed to urban supply and last-mile multilevel logistics properties. If the mean values of the estimates for the number of projects expected to be completed by 2035 are added up across all property types, the result is a total of 126 multilevel projects that respondents expect to be realised by 2035.

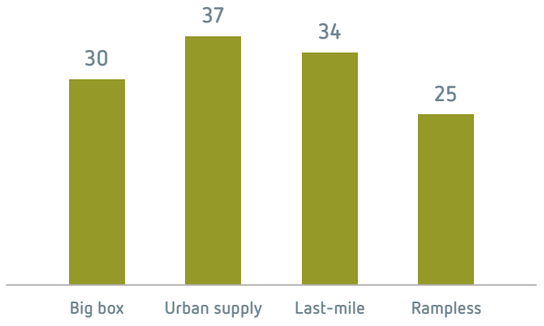


Figure 19: Type-specific forecasts for the scale of new construction of multilevel logistics properties in Germany by 2035. The figures shown are the mean values of the numerical responses (N=88). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

"Which market potential do you see for the following types of multilevel logistics properties by 2035? How many properties could be built in Germany by 2035?"

"Which user groups are the different property types suitable for?"

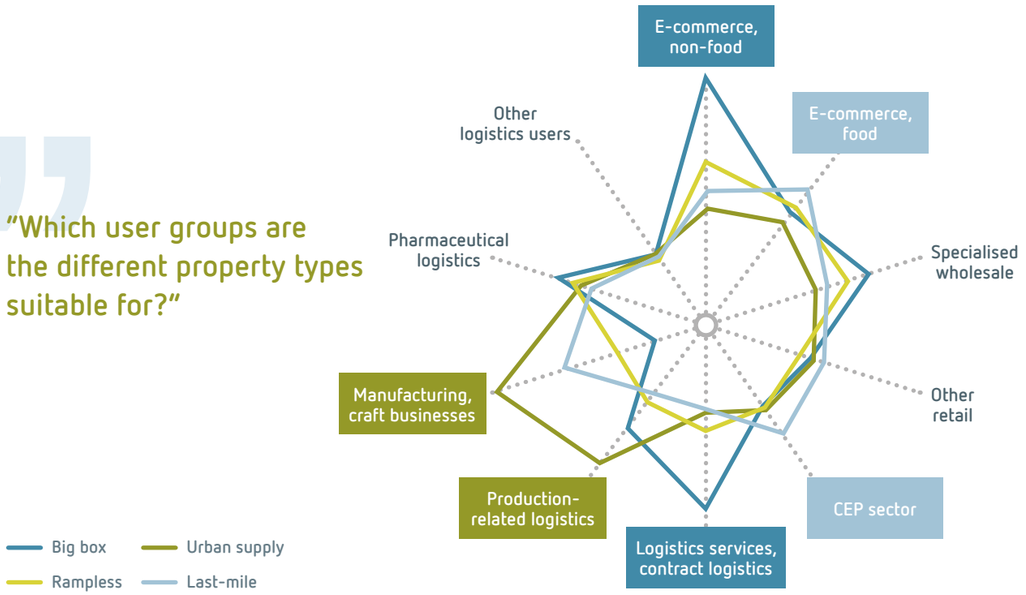


Figure 20: Radar chart showing the suitability of different multilevel logistics property types for user groups. Each axis represents a user group. The farther the intersection with the axes is from the centre, the better the property type is considered suitable for the respective user group (N=62). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

STAKEHOLDER ACCEPTANCE AND USER GROUPS

Real estate developers are regarded as the driving force behind the development of multilevel projects. In many cases, they have already developed a wide range of concepts for multilevel logistics properties. Construction companies also tend to view the concept positively. Users and municipal planners assess the issue very differently, while a sceptical attitude is widespread among permitting authorities and, even more so, among investors and financiers.

According to the respondents, the greatest degree of rejection and scepticism can be found among neighbours and the public.

Online retail, both non-food and food, as well as specialised wholesale are seen as important user groups for multilevel logistics properties. Looking at the different multilevel types separately reveals a particular suitability of big box multilevel properties for companies in non-food online retail, logistics services/contract logistics and specialised wholesale.

For urban supply multilevel properties, manufacturing and craft businesses, production-related logistics and food online retail are considered the most important target groups. Rampless multilevel properties, by contrast, have a clear focus on retail companies. They appear particularly suitable for non-food and food online retail as well as specialised wholesale. Last-mile multilevel logistics properties are primarily of interest to manufacturing and craft businesses as well as online retailers in both the food and non-food sectors.

"Which level of acceptance of multilevel logistics properties do you expect from the following stakeholder groups?"

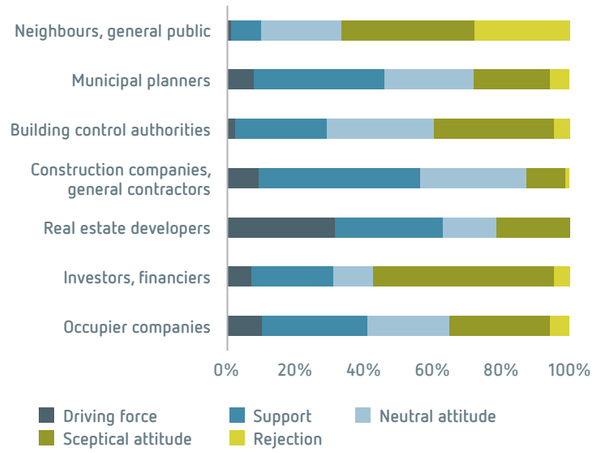


Figure 21: Stakeholder acceptance of multilevel logistics projects (N=90). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft



BUILDING STANDARDS FOR MULTILEVEL LOGISTICS PROPERTIES

The online survey also addressed key building standards relating to the number of floors, floor height and floor loading capacity for the most important types of multilevel logistics properties.

The values shown in blue represent the mean of the individual responses. The area highlighted in green illustrates the range of responses, bounded by the minimum value on the left and the maximum value on the right.

There was broad agreement on the appropriate number of floors for big box multilevel logistics properties. Almost all respondents consider two storeys to be ideal.

For urban supply multilevel logistics properties, two as well as three or four storeys were frequently considered appropriate. In individual cases, six to seven storeys were also considered suitable. For last-mile and rampless multilevel logistics properties, the assessments varied even more widely. Three or four storeys were most frequently considered ideal.

For the appropriate upper-floor height in big box multilevel logistics properties, 10 m and 10.5 m were frequently cited. However, since lower values such as 6 m or 8 m were also mentioned several times, the mean is 9.8 m.

Significantly lower ceiling heights are expected in urban supply, rampless and, in particular, last-mile multilevel logistics properties. The responses vary particularly widely for rampless multilevel logistics properties.

"Which number of storeys do you consider appropriate?"

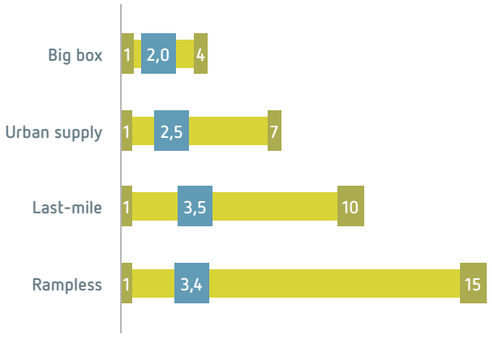


Figure 22: Assessments of the ideal number of storeys in multilevel logistics properties (N= 66). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

"Which floor height, in meters to the underside of the roof girder, do you consider appropriate for the upper floors?"

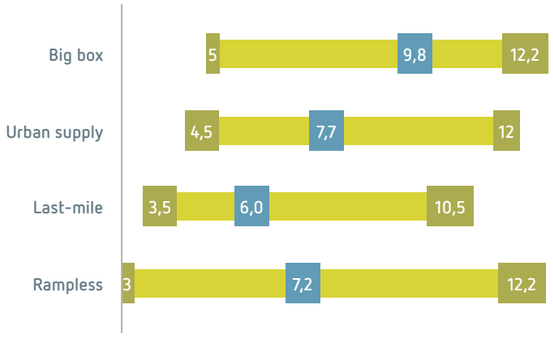


Figure 23: Assessments of appropriate floor heights in multilevel logistics properties (N=56). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

For the required floor loading capacity in big box multilevel logistics properties, 5 t/m² is by far the most frequently stated value. In some cases, an even higher floor loading capacity is considered necessary, but lower values are mentioned more frequently. The second most frequently stated value is 3 t/m².

For urban supply, rampless and last-mile multilevel logistics properties, 2 t/m² or 3 t/m² are more frequently cited as necessary or sufficient. For several experts, floor loading capacities of 1 t/m² or even slightly less are also considered sufficient. Overall, the mean values for the required floor loading capacity are significantly higher than the values found in actual multilevel properties in Europe.

Overall, the assessments of the respondents broadly correspond to the property information collected on existing multilevel logistics properties in Europe. However, experts generally consider a higher level of requirements to be appropriate and necessary than has been implemented in Europe to date. This is particularly apparent in the responses concerning the required floor loading capacity.

"Which floor loading capacity, in t/m², is required for operations on the upper floors?"

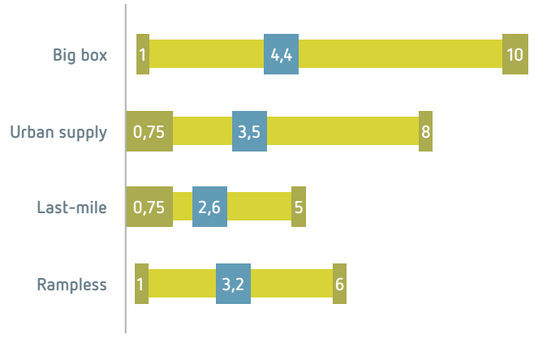


Figure 24: Assessments of the required floor loading capacity in multilevel logistics properties (N=49). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft



"In your opinion, what factors support the development of multilevel logistics properties?"

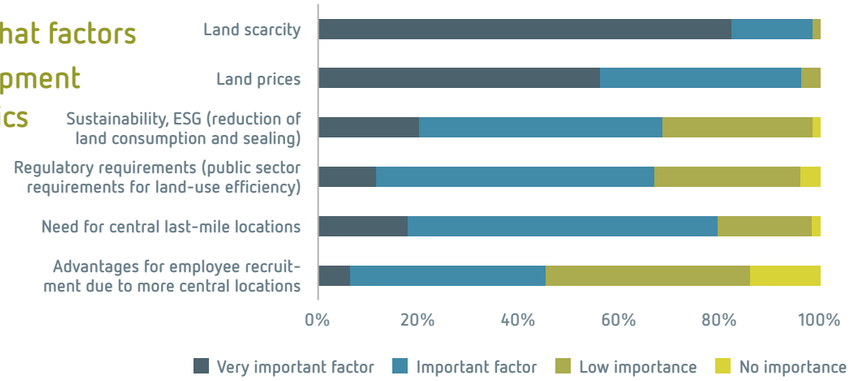


Figure 25: Assessment of factors supporting multilevel construction (N=80). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft



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DRIVERS AND BARRIERS TO MULTILEVEL CONSTRUCTION

The most important drivers for constructing multilevel logistics properties are increasing land scarcity and high land prices in metropolitan areas. A large majority of the experts surveyed agree that multilevel construction allows logistics uses to be located on centrally located sites that would be too expensive for single-storey construction. In attractive metropolitan locations, only small sites are often available, if any, meaning that vertical construction is frequently the only way to maintain a presence in desirable locations. In attractive locations, multilevel properties can also replace older existing properties that are no longer competitive and thereby contribute to more efficient use and densification of existing sites.

Around 80% of respondents also consider the growing need for central last-mile locations to be an important factor in the development of multilevel logistics properties. For some occupiers, a good metropolitan location is indispensable because their customers or partners, who are often located there, depend on geographical proximity and fast delivery. As already mentioned, the growth of online retail has generally increased demand for locations in metropolitan areas.

Regulatory requirements can also support the construction of multilevel logistics properties. This is particularly the case when municipalities require a higher level of building density as part of commercial area development. From a municipal perspective, such requirements make sense above all because multilevel concepts enable significantly more efficient and therefore more sustainable use of scarce land resources. In addition, vertical stacking offers potential for a higher density of jobs and higher business tax revenues.

However, multilevel construction is not inherently advantageous for individual occupiers. The benefits only arise if the locational advantages of the property outweigh the disadvantages associated with multilevel construction.

The main arguments against developing multilevel logistics properties are the high costs resulting from structural challenges and the resulting lower profitability of projects. There is still a lack of established standards and sufficient technical know-how, which is also reflected in complicated and largely non-routine administrative procedures.

The structural complexity arises primarily from structural engineering and construction issues, but also from access to the individual floors, fire protection and traffic management, which should not be underestimated. Requirements relating to sound insulation, smoke extraction and load transfer add further complexity. Traffic movements on the upper floors place greater stress on the building structure than in single-storey construction and can also result in higher maintenance requirements.

"What are the biggest technical and design challenges involved in the construction of multilevel logistics properties?"



Figure 26: Ranking of the greatest technical and conceptual challenges in the construction of multilevel logistics properties. Source: IRI – Institut für Raumforschung & Immobilienwirtschaft



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High construction and permitting costs lead in practice to rent levels that significantly limit the potential occupier base and mean that such projects can only be realised at certain locations.

From an investor perspective, the turnaround in interest rates has also increasingly reduced the availability of capital for projects of this scale. At the same time, a significant concentration risk arises for portfolios when investments are concentrated in a small number of highly capital-intensive properties such as multilevel buildings.

However, the limited interest and reservations among investors and financiers also result from a lack of experience with this type of building. Banks, investors and property valuers therefore often apply significant risk discounts, particularly because there is still a lack of reliable user experience that could serve as a basis for assessment.

"Which factors, in your opinion, speak against multilevel logistics properties?"

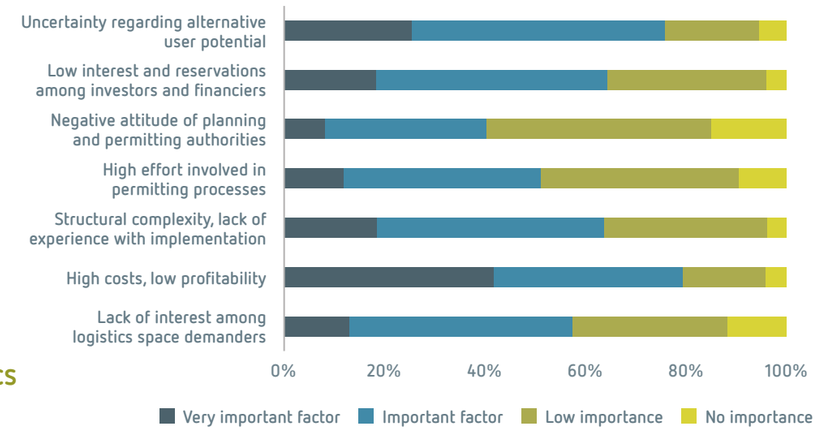

Figure 27: Assessment of factors opposing multilevel construction (N=80). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

"How do you assess the alternative user potential of the different multilevel property types?"

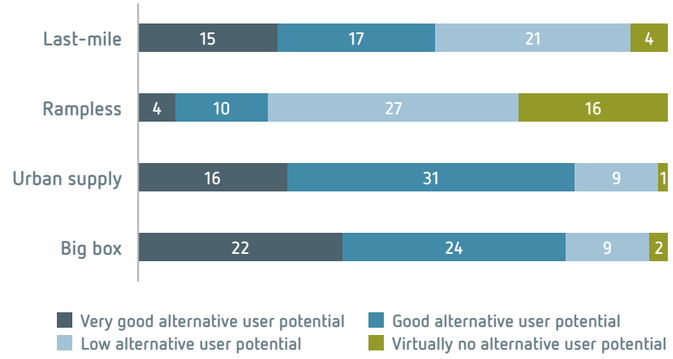

Figure 28: Assessment of alternative user potential by property type (N=57). Source: IRI – Institut für Raumforschung & Immobilienwirtschaft

USER, INVESTOR AND PUBLIC POLICY PERSPECTIVES

From an occupier perspective, a further criticism is that logistics processes do not always run smoothly in multilevel buildings. Ramps can restrict operational processes, while at the same time taking up a great deal of space, meaning that the land-use efficiency gains on the site can be significantly reduced. Some users also consider the lower floor loading capacity on upper floors and the relatively tight column grid on the ground floor unattractive. In general, many operational concepts are designed for ground-level use, which often leads to scepticism towards multilevel solutions.

The scepticism of some occupiers is compounded by considerable uncertainty among developers and, above all, investors and financiers regarding the alternative user potential of multilevel logistics properties. The survey nevertheless shows major differences between building types. While a large proportion of respondents consider big box and urban supply multilevel properties to have good alternative user potential, the alternative user potential of last-mile and, above all, rampless multilevel properties is considered very low.

Social and political acceptance also plays a role. Tall buildings and the additional traffic associated with them often receive little support from residents and politicians. This is compounded by the often difficult integration into the urban landscape and regular restrictions imposed by development plans, for example regarding permissible building heights or traffic routing.



CONCLUSION

8.1
WHAT WOULD HAVE TO CHANGE FOR MULTILEVEL LOGISTICS PROPERTIES TO BE IMPLEMENTED MORE FREQUENTLY IN GERMANY?

The survey on the potential and barriers to constructing multilevel logistics properties highlights not only framework conditions that are difficult to influence, such as interest rates, the economic situation, demand for space and general construction costs, but also areas in which greater transparency, the establishment of standards, the identification of effective processes and the removal of barriers could significantly improve the feasibility of multilevel logistics properties.

A key factor is economic viability. Construction costs for multilevel concepts are very high, there is a lack of cost certainty, and the rents that can be achieved often do not yet sufficiently cover the additional costs compared with conventional ground-level halls. The concept will only become more attractive for developers and operators once the relationship between construction costs and rent levels improves. However, in attractive metropolitan locations with high rents and scarce land, particularly Munich, Hamburg, Frankfurt and Stuttgart, the conditions for the economically viable implementation of multilevel concepts are already in place today.

The development of the pioneering Mach2 project in Hamburg and the construction of other multilevel logistics properties in neighbouring countries have enabled European construction companies, specialist planning firms and developers to gain experience in recent years and optimise construction processes and methods. This has already improved cost efficiency.

Nevertheless, multilevel properties in Germany are still unique projects, and the benefits of standardisation have not yet been utilised. There is still a lack of specialist planning know-how and experience, particularly regarding the necessary technical building requirements of occupiers. Highlighting best-practice examples, together with the European inventory presented in this study and the typology developed, could create greater transparency and facilitate the definition of type-specific building standards.

This could also help increase acceptance among investors and financiers. Multilevel logistics properties are still not well established in the capital market. There are insufficient investment comparables and, above all, insufficient confidence in the alternative user potential and fungibility of these properties. As a result, multilevel properties are often valued more conservatively than conventional logistics properties.

There is also a considerable need for regulatory action. Building regulations, development plans, as well as fire-protection and industrial-building guidelines are not yet designed for multilevel logistics uses and would need to be adapted accordingly. Here too, it could help to document and make transparent the experience gained and procedures used in permitting and review processes. This would provide an important basis for optimising and standardising these processes in the future.

There is also a compelling reason why simpler permitting procedures are in the interests of municipal administrations: the sustainability of multilevel construction. Multilevel logistics properties can make a significant contribution to reducing new land take, increasing the efficiency of commercial area use and, by enabling more central locations, potentially optimising freight traffic in metropolitan areas.

These benefits of multilevel construction have so far received too little attention both in urban planning and in sustainability certification. More information on the potential for saving land and on the traffic impacts of multilevel logistics properties could help counteract this.

If the German municipalities take the goal of reducing nationwide land consumption to less than 30 hectares per day by 2030 seriously, they should support the implementation of multilevel logistics properties through appropriate land-use planning requirements and by securing suitable sites.

The example of Paris demonstrates the positive influence urban planning can have on the development of multilevel logistics properties. In Paris, multilevel logistics projects are supported by a municipal urban logistics concept, which has already led to many innovative projects being realised or currently planned (Raimbault et al. 2018).

OUTLOOK

This study represents a first step towards greater transparency regarding building types and their distribution, structural parameters, user requirements and current barriers to project implementation through an inventory, typology and online survey.

The research will be continued as part of the "Zukunft Bau" project and supplemented by in-depth impact analyses. In addition, expert interviews and workshops will be used to develop approaches for more efficient construction and permitting processes as well as general standards for the construction of multilevel logistics properties.



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9

LITERATURE AND SOURCES

LITERATURE AND SOURCES

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Dr. Roland Busch has been conducting research at the University of Wuppertal for many years in the field of Economics of Planning and Construction, focusing on regional economic and real estate issues. Logistics properties are a particular focus of his work. For example, his doctoral thesis examined the spatial structures of logistics in Germany, and in 2007 he was already involved in a research project addressing the relationship between logistics and urban planning.

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Florian Göhn conducts research at the University of Wuppertal on multilevel logistics properties, including the classification of reference projects. His professional background combines structural building construction with real estate economics. From 2022 to 2026, he taught structural engineering, structural analysis, building physics and technical building services. He subsequently worked in project management and development.

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ABOUT LOGIX

The Initiative Logistikimmobilien (Logix) is the central platform for the logistics and industrial real estate sector in Germany. Logix brings together the interests of its stakeholders, addresses relevant topics at an early stage and promotes research, communication and dialogue among all market participants, from municipal representatives and economic development agencies to developers and construction companies as well as occupiers and investors.

With the expertise of its members and external specialists, Logix conducts studies and publication projects relating to logistics and industrial real estate. Through its work, Logix contributes to ensuring that logistics, industry, retail and commerce have access to the space they urgently need in Germany for the storage and processing of goods. In doing so, it makes an essential contribution to the functioning of a modern economy and to societal prosperity.

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