

Investing in Urbanisation: From the Apartment to the Water Network — How Investors Can Take Part in the Third Megatrend

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Abstract

By 2050, the United Nations projects that just over two-thirds of the world's population will live in cities — with almost one billion urban dwellers added along the way. At the same time, the UN changed its counting method in 2025 and thereby redrew the map of the world's cities: under the new, satellite-based delineation, the largest city in the world is no longer Tokyo but Jakarta. This paper — the third of six on the great megatrends — places urbanisation in its economic context: from the agglomeration advantages that make cities more productive than their hinterland, through the housing shortage of the rich world, to the infrastructure gap that consultancies put at more than 100 trillion US dollars through 2040.

The paper covers six fields of action of the megatrend: densification and intelligent housing, the green and resilient city, smart cities and digital connectivity, new urban mobility, the demographic change of the ageing city, and the tension between growing metropolises and shrinking regions. Empirically, a twofold picture emerges: the large cities of the rich world face historic scarcity — Germany alone is short of roughly 1.4 million homes and vacancy in its metropolises is close to zero — while at the same time half of Europe's municipalities are shrinking and a third of the world's shrinking cities are in China.

For investors, the paper translates the megatrend into listed companies along the entire urban value chain — exclusively large- and mid-cap names, each with its

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business idea and trading venues — and into an ETF selection based on a fixed checklist: physical replication, fund volume of at least 0.2 billion euros, costs, the currency question, issuer, UCITS status and exchange tradability. One central finding: an ETF that covers the megatrend of urbanisation as a whole does not yet exist in Europe — investors have to assemble it themselves from infrastructure, water, real estate and smart city funds.

Keywords: Urbanisation · megacities · agglomeration economics · housing shortage · infrastructure · sponge city · 15-minute city · REITs · thematic ETFs.

JEL codes: G11, R11, R21, R31, L74.

Non-Technical Summary

Every week the world's cities grow by roughly 1.4 million people — as if a new Munich were added every seven days. In 1950 three out of ten people lived in cities; today it is almost six, and by 2050 the United Nations expects almost seven out of ten. Cities generate the bulk of the world's economic output, consume 78 per cent of its energy and emit more than 60 per cent of its greenhouse gases. Anyone who wants to understand where capital will flow in the coming decades has to look at the cities.

This paper — the third in a series of six on the great megatrends — first explains why cities keep growing despite rents, congestion and heat: they make people and firms measurably more productive, because knowledge, workers and suppliers sit close together. It then describes the six great work sites of the megatrend: affordable housing, the climate-proof green city, the digitally connected city, the new mobility of short distances, the ageing of the urban population, and the widening gap between booming metropolises and shrinking regions.

For investors, things become concrete where scarcity meets willingness to pay: housing in large cities is scarcer than it has been for decades — Germany alone lacks roughly 1.4 million homes —, more than 100 trillion US dollars will have to flow into infrastructure by 2040, and behind every high-rise, every water pipe and every lift stand listed companies. The paper names around fifty large- and mid-cap stocks along this chain — from the world's largest healthcare property group to the world market leader in excavators — and screens nine exchange-traded funds against a fixed checklist. The honest result: the one urbanisation ETF does not exist; whoever wants to map the trend combines infrastructure, water, real estate and smart city funds.

The most important warning comes last: a megatrend is a direction, not a timetable. Even those who rightly bet on urban growth in 1970 could lose a great deal of money on Japanese property in 1990 or on American mortgage lenders in 2008. Urbanisation rewards patience and diversification — across regions, across sectors and across time — and punishes the attempt to turn a century-long movement into a quick profit.

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1 Introduction

On 18 August 2026, the merger of the two largest American residential landlords, AvalonBay Communities and Equity Residential, created a new group named Vivmark Residential — at roughly 50 billion US dollars of market value by far the largest apartment landlord in the United States. A few months earlier, the Swiss cement group Holcim had listed its North American business as a separate company, Amrize — justified by a decade of expected construction demand from housing shortages and infrastructure programmes. When the largest companies of an industry reorganise themselves to profit from a development, that development deserves a close look. It carries an unwieldy name: urbanisation.²

Urbanisation is the slowest of the great megatrends — and perhaps for that very reason the most reliable. The share of the world's population living in cities has been rising almost without interruption for more than a century; wars, pandemics and economic crises have delayed the movement but never reversed it. In 1950, 29.6 per cent of humanity lived in cities; in 2025 it is around 58 per cent; and for 2050 the United Nations expects 68.4 per cent. Behind the percentages stand absolute magnitudes that dwarf any private investment decision: according to the UN's latest projection, close to one billion urban dwellers will be added by 2050, and two-thirds of all world population growth will take place in cities.³

For investors, urbanisation is an unusual megatrend: it has no flagship stock. The future of mobility can be pinned to Tesla or BYD, artificial intelligence to NVIDIA — but the city is not a product; it is a web of homes, pipes, rails, building technology, waste management and software. Precisely therein lies the opportunity: the urban value chain is fully represented on stock exchanges, from housing companies through building materials and lift manufacturers to water utilities and planning software, and it is far less affected by valuation euphoria than the technology sector. This paper — the third in a series of six on the great megatrends, after the future of mobility (Rupprechter, 2026g) and artificial intelligence (Rupprechter, 2026h) — maps this chain systematically.⁴

The paper is written for investors and pursues three goals. First, to understand why cities grow — the economics of agglomeration advantages, studied since Marshall (1890), which explains why firms and people voluntarily pay the highest rents in the world. Second, to examine where the megatrend concretely demands capital: in housing construction, climate adaptation, water and energy networks, building technology, mobility, and the care of an ageing urban population. Third, to translate how these fields can be captured through

² Vivmark Residential (NYSE: VMRK): completion of the merger of AvalonBay Communities and Equity Residential on 18 August 2026, market capitalisation roughly 50.5 billion US dollars; Amrize (NYSE/SIX: AMRZ): spin-off from Holcim, first trading June 2025.

³ United Nations (2019) for the historical series; UN DESA (2025), World Urbanization Prospects 2025: 986 million additional city dwellers by 2050.

⁴ Rupprechter (2026g) on mobility; Rupprechter (2026h) on artificial intelligence; both published in this working paper programme.

individual stocks and exchange-traded funds — with names, business ideas and trading venues, but expressly without any buy or sell recommendation.

The structure follows this logic. Chapter 1 serves as an introduction. Chapter 2 draws the numerical picture of urbanisation, including a remarkable novelty: in 2025 the United Nations changed its counting method, and the ranking of the world's largest cities has looked different ever since. Chapter 3 deals with housing, chapter 4 with the green and resilient city, chapter 5 with smart cities, buildings and the infrastructure gap, chapter 6 with new urban mobility, chapter 7 with demographic change, and chapter 8 with the tension between city and countryside. Chapter 9 presents individual stocks along the value chain, chapter 10 screens the ETF selection, chapter 11 gathers the lessons for investors, and chapter 12 closes with conclusions and an outlook.

2 The Urbanising World: Numbers, a New Count and the Economics of Cities

2.1 Six decades of urbanisation — and no end in sight

The basic movement is quickly told and summarised in Figure 1: in 1950, 29.6 per cent of the world's population lived in cities; in 1970 it was 36.6 per cent, in 1990 43.0 per cent, in 2010 for the first time more than half (51.7 per cent), in 2025 around 58 per cent — and for 2050 the United Nations expects 68.4 per cent. The historical turning point came around 2007, when for the first time more people lived in cities than in the countryside. What is remarkable is less the speed than the steadiness: in three quarters of a century the series shows not a single reversal — no world economic crisis, no pandemic has ever made the urban share fall.⁵

⁵ United Nations (2019), World Urbanization Prospects: The 2018 Revision; World Bank series: 57.7 per cent urban population in 2024.

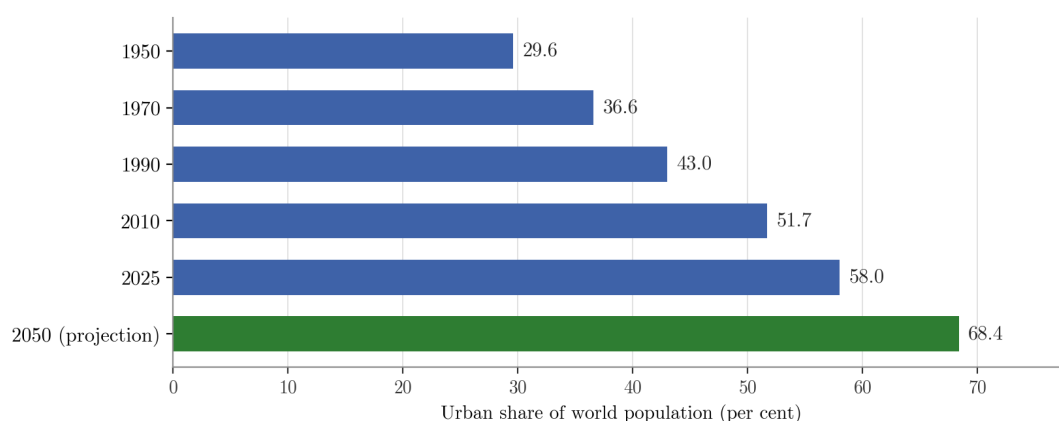


Figure 1: Urban share of the world's population, 1950 to 2050 (projection), in per cent, under the classic UN delineation (national definitions). Source: United Nations (2019); 2025 value based on the World Bank series; own presentation.

The growth is distributed highly unevenly. According to the UN's latest projection, more than half of the urban population increase to 2050 falls on just seven countries: India, Nigeria, Pakistan, the Democratic Republic of the Congo, Egypt, Bangladesh and Ethiopia. Just as striking is who is missing: China, for three decades the greatest city-builder in history, is no longer among the growth drivers — on the contrary, a third of all shrinking cities in the world are now in China, and another sixth in India. The megatrend of urbanisation is thus not a single current but splits into an African and South Asian growth wave and an emerging landscape of shrinkage in East Asia and Eastern Europe — a distinction of immediate relevance to investors, to which chapter 8 returns.⁶

2.2 The new count: when Jakarta is suddenly the largest city in the world

Whoever counts cities must first define what a city is — and precisely here something fundamental changed in 2025. For decades, the UN figures rested on the national definitions of member states: what Denmark called a city from 200 inhabitants, Japan counted only from 50,000 — and both entered the world statistics unadjusted. With the World Urbanization Prospects 2025, the United Nations switched for the first time to a uniform, satellite-based delineation — the “Degree of Urbanisation”, which classifies settlements by population density and contiguous built-up area into cities (over 50,000 inhabitants), towns and semi-dense areas, and rural areas. By this count, 45 per cent of humanity lived in cities in 2025, another 36 per cent in towns and semi-dense areas, and

⁶ UN DESA (2025): seven countries account for over 50 per cent of the increase of 986 million; one-third of shrinking cities in China, 17 per cent in India.

only 19 per cent rurally — taken together, four out of five people already live in urban settings.⁷

The switch is more than statistical housekeeping, for it reorders the ranking of megacities. Under the classic delineation of agglomerations, Tokyo leads with 37.2 million inhabitants, ahead of Delhi and Shanghai (Figure 2). Under the new method, however, Jakarta is the largest city in the world with almost 42 million inhabitants, followed by Dhaka — Tokyo slips to third place. The reason: the satellite delineation merges contiguously built-up areas that are administratively separate provinces. Table 1 compares the two counts. For investors, the lesson is of a fundamental nature: even the seemingly hardest numbers of a megatrend hang on definitions — whoever reads market sizes, city rankings or growth forecasts should always ask how the counting was done.⁸

Table 1: Two ways of counting urbanisation compared

Indicator	Classic (national definitions)	New (Degree of Urbanisation, 2025)
Urban population share 2025	around 58 per cent	45 per cent cities + 36 per cent towns
Projection 2050	68.4 per cent	+986 million city dwellers by 2050
Largest city in the world	Tokyo (37.2 m)	Jakarta (41.9 m)
Second-largest city	Delhi (around 34.7 m)	Dhaka (36.6 m)
Number of megacities (over 10 m)	33 (2018), 43 expected (2030)	33 (2025), 37 expected (2050)
Urban threshold	200 to 50,000 inhabitants by country	uniform from 50,000 inhabitants

Sources: United Nations (2019); UN DESA (2025); own compilation.

Notes: The two counts are not directly comparable; the new method additionally reports 36 per cent in towns and semi-dense areas.

⁷ UN DESA (2025), World Urbanization Prospects 2025: first edition based on the Degree-of-Urbanisation method (cities 45 per cent, towns and semi-dense areas 36 per cent, rural 19 per cent, world population 8.2 billion).

⁸ UN DESA (2025): Jakarta 41.9 million, Dhaka 36.6, Tokyo 33.4, Delhi 30.2, Shanghai 29.6 under the Degree of Urbanisation; classic agglomeration values after United Nations (2019), updated to 2025 — the comparison table in UN DESA (2025) gives around 37 million for Tokyo and around 35 million for Delhi; number of megacities on the classic delineation 33 (2018), 43 expected (2030).

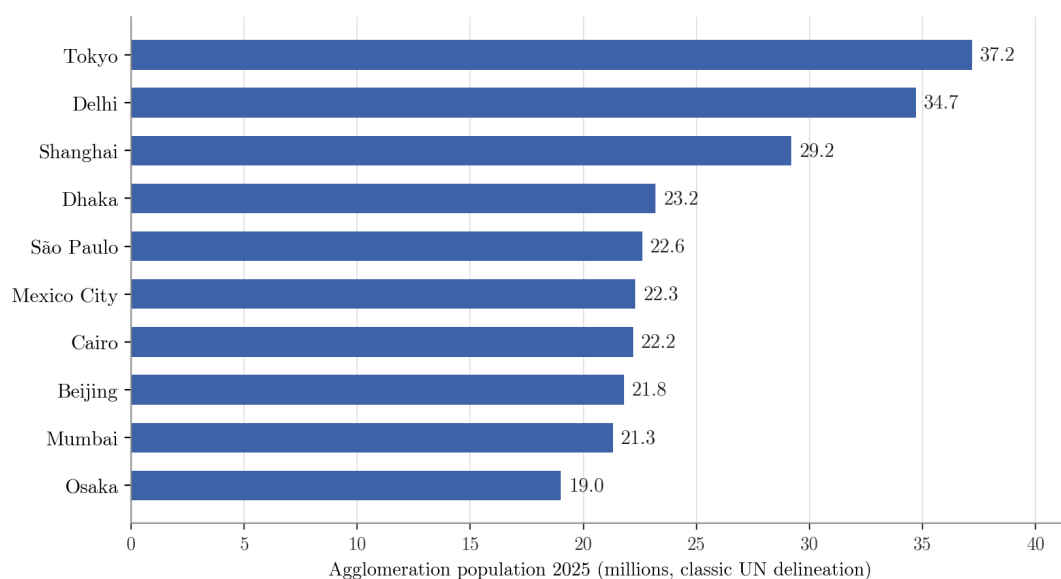


Figure 2: The ten largest urban agglomerations in 2025 under the classic UN delineation, population in millions. Under the new Degree-of-Urbanisation method, Jakarta (41.9 million) leads ahead of Dhaka and Tokyo. Source: United Nations (2019), updated; UN DESA (2025); own presentation.

Whichever count one prefers, the cities are the economic core of the planet. They consume 78 per cent of the world's energy and cause more than 60 per cent of its greenhouse gas emissions — on a small fraction of its land area. Roughly 1.1 billion people live in slums or slum-like conditions, most of them in South and Southeast Asia and sub-Saharan Africa; their number grows with the urbanisation of the poorest countries. The megatrend thus has two faces: in the metropolises of the rich world the city is a scarce good with record rents, while in the growing cities of the South everything is in short supply — housing, water, sewerage, power and transport. Both create investment demand, but along very different routes.⁹

2.3 Why cities grow: the economics of agglomeration

That people and firms voluntarily pay the highest rents in the world demands an explanation — and economics has been supplying it for more than a century. Marshall (1890) already described the three sources of agglomeration advantages: shared labour markets, in which specialists and specialised tasks find each other; shared suppliers and infrastructure, which only pay off above a certain density; and knowledge exchange — ideas that, as Marshall wrote, are “in the air”. Krugman (1991) turned this into the New Economic Geography: economies of scale and transport costs explain why economic activity concentrates, self-reinforcingly, in a few places. Duranton and Puga (2004) systematised

⁹ United Nations (un.org, urbanisation topic page): 78 per cent of energy consumption, over 60 per cent of emissions; UN-Habitat (2026): roughly 1.1 billion slum dwellers.

the mechanisms as sharing, matching and learning, and the empirical literature robustly finds higher productivity in larger cities.¹⁰

How regularly these advantages grow with city size was shown by Bettencourt, Lobo, Helbing, Kühnert and West (2007) in a much-cited study: economic output, wages, patents and even walking speed rise more than proportionally with population — a doubling of city size brings on average around 15 per cent more output per head — while infrastructure needs per head fall, because pipes, roads and networks are shared among more users. Cities are, in this sense, the most efficient settlement form humanity knows. Ahlfeldt, Redding, Sturm and Wolf (2015) delivered perhaps the cleanest evidence for the power of density using the data of divided and reunified Berlin: division devalued the locations along the Wall, reunification revalued them within a few years — proximity to people and jobs is measurable economic value.¹¹

The counterforces are just as real: land prices, congestion, noise, pollution and contagion risks all grow with density. What matters economically is that land rent — the central explanatory mechanism as early as von Thünen (1826) and later in Alonso's (1964) urban model — absorbs the agglomeration advantages: where productivity and willingness to pay rise, rents and land values rise until advantage and cost balance. For investors this is perhaps the most important theoretical insight of this paper: the value of the urbanisation megatrend materialises to a considerable extent in land and in everything firmly attached to it — in housing, commercial space, networks and infrastructure. Whoever wants to earn from the city must hold a share of its scarcity, not of its romance.¹²

Glaeser (2011) translated this research into the memorable thesis that the city is “our species' greatest invention”: cities make people richer, healthier and — measured by consumption per head — greener, because dense living requires less land, fewer journeys and less heating energy per resident. The intellectual counter-position comes from Jacobs (1961), whose defence of the small-grained, mixed, lively street against car-oriented slum clearance still sets the guard rails of every urban planning debate — and whose emphasis on diversity as a source of innovation anticipated modern agglomeration research. Florida (2002) added the observation that the knowledge economy moves to where qualified and creative people want to live — quality of life thus becomes a hard location factor. Moretti (2012) finally showed that every new knowledge-economy job in a city brings up to five additional local service jobs in its wake — cities multiply employment.¹³

¹⁰ Marshall (1890), *Principles of Economics*, Book IV, Chapter X; Krugman (1991); Duranton and Puga (2004).

¹¹ Bettencourt, Lobo, Helbing, Kühnert and West (2007); Ahlfeldt, Redding, Sturm and Wolf (2015).

¹² von Thünen (1826); Alonso (1964); on weighing agglomeration advantages and costs, Duranton and Puga (2004).

¹³ Glaeser (2011); Jacobs (1961); Florida (2002); Moretti (2012), *The New Geography of Jobs*: local multiplier of up to five jobs per high-tech job.

2.4 Six fields of action of the megatrend

Trend research institutes divide the megatrend of urbanisation into fields of action; this paper follows a division into six fields as proposed, among others, by the Zukunftsinstitut, and assigns to them the chapters of this paper as well as — anticipating chapters 9 and 10 — the investable industries (Table 2). The fields naturally overlap: the 15-minute city is at once a mobility and a climate topic, the ageing city at once a housing and a healthcare topic. For investors the division is nevertheless useful, because it breaks the diffuse concept of urbanisation into concrete streams of demand.¹⁴

Table 2: Six fields of action of urbanisation and their investable industries

Field of action	Core topics	Investable industries (examples)
Densification and intelligent housing	Housing shortage, rents, micro-apartments, modular construction, gentrification	Residential REITs, construction, building materials, planning software
The empathic city and green transformation	Climate adaptation, sponge city, greening, circular economy	Water utilities, waste and recycling, building technology
Smart cities and digital connectivity	Sensors, data platforms, shortened production and delivery routes	Grid equipment, logistics property, software, communication towers
New urban mobility	Moving away from the private car, 15-minute city, public transport	Rail technology, transport operators, infrastructure concessions
Demographic change	Accessibility, care, the city as living space rather than workplace	Healthcare property, lift manufacturers, senior housing
The city-countryside tension	Commuter interdependence, shrinking regions, vacancy	Grid operators, rail infrastructure, selective regional choice

Sources: Fields of action after Zukunftsinstitut, megatrend urbanisation; industry assignment own presentation.

Notes: No buy or sell recommendation; chapters 3 to 8 treat the six fields in turn.

3 Housing: the Most Expensive Scarcity in the World

3.1 A global housing crisis

For the first time, the United Nations devoted its 2026 World Cities Report entirely to a single topic — the global housing crisis. The magnitudes: roughly 3.4 billion people, a good 40 per cent of humanity, live without adequate, secure or affordable housing; the global housing gap is put at 288 million missing units and has grown since 2010 despite all building programmes. As early as 2014, McKinsey had estimated in a much-cited study that by 2025 around 440 million urban households would fail to find adequate and affordable housing — a forecast that has proved, if anything, too cautious. Housing is thus no niche

¹⁴ Zukunftsinstitut, megatrend urbanisation (fields of action); own assignment of industries.

problem of poor countries: the crisis stretches from the slums of Lagos through the overcrowded flats of Mumbai to the rental markets of Munich, London and New York.¹⁵

That the gap keeps widening although the world is building more than ever has a simple core: housing appears too slowly where demand moves. Rural exodus fills the cities faster than land can be serviced, permits granted and buildings erected; at the same time households are shrinking — more one- and two-person households require more dwellings per thousand inhabitants than before. Financing adds to this: rising interest rates caused new construction to slump in many countries from 2022, while pent-up demand remained. The result is a paradoxical market that investors need to understand: historically high rents and prices on one side, falling completions on the other — scarcity foretold.

3.2 Germany: 1.4 million missing homes

Germany supplies the rich world's object lesson. According to the Pestel Institute, the country was short of roughly 1.4 million dwellings at the beginning of 2026; without a change of course, the gap threatens to grow towards 2.4 million by 2030. New construction is running the wrong way: 251,900 dwellings were completed in 2024, 14.4 per cent fewer than the year before, and in 2025 only around 206,600 — the lowest level since 2012 and almost half the political target of 400,000 dwellings a year. A first glimmer of hope are building permits, which in 2025 rose for the first time since 2021, to 238,500 (plus 10.8 per cent) — but between permit and move-in lie, on average, more than two years.¹⁶

Scarcity has prices: asking rents in the German large cities have risen by a good 43 per cent within ten years — by 69 per cent in Berlin, 67 in Leipzig, 42 in Hamburg — and new lettings in Munich now average more than 21 euros per square metre. On the cost side, construction prices for residential buildings have climbed by roughly 89 per cent since 2010, most recently at about five per cent a year — materials, energy, wages and rising technical requirements all work together. For holders of large housing portfolios — in Germany, for instance, Vonovia or LEG — this scissors of growing demand and stalling supply means plannable income; for developers without standing assets it was existential in 2023-2025, as a series of prominent insolvencies showed.¹⁷

¹⁵ UN-Habitat (2026), World Cities Report 2026: The Global Housing Crisis: 3.4 billion people, gap of 288 million units (2023; 2010: 251 million); McKinsey Global Institute (2014): 440 million households by 2025.

¹⁶ Pestel Institute (2026): gap of roughly 1.4 million dwellings; Destatis (2026): completions 2024 251,900 (minus 14.4 per cent), 2025 around 206,600; building permits 2025: 238,500 (plus 10.8 per cent).

¹⁷ Asking rents 2016-2025: plus 43 per cent on average across 14 large cities (analyses by JLL and empirica); Destatis construction price index for residential buildings: plus roughly 89 per cent since 2010, most recently plus 5.0 per cent; on the developer insolvencies also Rupprechter (2026a).

3.3 Why supply does not follow

Economic research is unusually united on the cause of housing scarcity in rich countries: supply is artificially inelastic precisely where demand is greatest. Glaeser and Gyourko (2018) show for the United States that prices in the coastal metropolises sit far above construction costs — the difference is, at its core, the shadow price of building restrictions, zoning and lengthy permit procedures. Saiz (2010) added the geographical side: where sea, mountains and protected areas limit buildable land, prices react particularly sharply to demand shocks — his measurement of the supply elasticity of American metropolises is among the most cited works of real estate economics.¹⁸

The macroeconomic consequences are substantial: Hsieh and Moretti (2019) argue that housing restrictions in the most productive US cities — notably the San Francisco Bay Area and New York — prevent workers from moving to where they would be most productive, and that this misallocation has noticeably dampened American economic growth over decades. Housing policy, on this reading, is not social policy alone but growth policy. For investors, a sober forecast follows: as long as the political economy of building — owners who want appreciation blocking the new supply that would dampen it — remains unchanged, scarcity in the metropolises of the rich world is likely to persist for decades rather than years.¹⁹

3.4 Densification, modular construction, co-living — and the social question

The industry's answers to scarcity are at the same time the investment themes of the densification field. First, infill development: adding storeys, closing gaps and converting office and department store space creates housing without new land — multifunctional buildings mixing ground-floor retail, offices and apartments are becoming the standard of inner-city planning. Second, serial and modular construction: room modules and wall panels prefabricated in factories cut construction times by up to half and dampen costs; providers of industrial construction methods and their suppliers — from insulation makers such as Kingspan to sanitary specialists such as Geberit — profit regardless of which developer ultimately wins. Third, the new housing formats: micro-apartments and co-living concepts translate the growing number of urban one-person households into manageable products with shared spaces and services.²⁰

¹⁸ Glaeser and Gyourko (2018); Saiz (2010): supply elasticities from satellite data on developable land.

¹⁹ Hsieh and Moretti (2019). The magnitude of the growth effect originally reported there has been the subject of a professional controversy since 2026: Greaney (2026) documents coding errors in the same journal and arrives at an effect smaller by orders of magnitude. The qualitative core message — housing scarcity in productive cities costs aggregate growth — is unaffected.

²⁰ On the shortening of construction times through modular methods, McKinsey Global Institute (2014) and industry reports; company information Kingspan, Geberit.

The social flip side of densification is called gentrification: upgrading displaces lower-income households from sought-after districts, and segregation — the spatial sorting by income — is measurably increasing in many European cities. For investors this is not only an ethical but a hard risk question: where displacement becomes a political scandal, rent caps, protection statutes and expropriation debates follow — Berlin voted in 2021 on the socialisation of large housing companies. Regulatory risk is, in the housing sector, the price of the scarcity premium; whoever invests in housing stocks should follow the rent legislation of each market as closely as the yield curve.²¹

4 The Green and Resilient City

4.1 Heat, cloudbursts and the cost of adaptation

Cities are climate amplifiers: concrete and asphalt store heat, dense construction traps it, and waste heat from traffic and buildings adds to it. The urban heat island effect — described in its foundations by Oke (1982) — makes cities up to four degrees warmer than their surroundings by day and one to three degrees by night; in heat waves this difference decides over excess mortality, working capacity and hospital load. Grimm, Faeth, Golubiewski, Redman, Wu, Bai and Briggs (2008) pointed out early that urbanisation not only drives global environmental change but also experiences its consequences in concentrated form — cities are perpetrator and victim at once, and precisely from this arises their investment demand.²²

The costs of adaptation have been credibly quantified for the first time. The European Environment Agency estimates the EU's adaptation needs at 53 to 137 billion euros per year through 2050 — of which only 15 to 16 billion are so far committed. The gap is expensively bought: weather- and climate-related damage recently cost the EU an average of 40 to 50 billion euros a year, and a cumulative more than 820 billion since 1980. Precaution, meanwhile, pays unusually well: for coastal protection the EU's Joint Research Centre found a benefit-cost ratio of about six to one. Globally, UN-Habitat puts the climate finance needs of cities at 4.5 to 5.4 trillion US dollars a year through 2030 — with roughly 831 billion mobilised, of which only just over one per cent flows into adaptation. Between need and reality thus yawns perhaps the largest financing gap of the entire megatrend.²³

²¹ Berlin referendum “Expropriate Deutsche Wohnen & Co.”, September 2021: 59.1 per cent in favour (not legally binding).

²² Oke (1982): theory of the urban heat island; US EPA: difference 0.5 to 4 degrees Celsius by day, 1 to 3 degrees by night; Grimm, Faeth, Golubiewski, Redman, Wu, Bai and Briggs (2008).

²³ EEA (2026): needs 53-137 billion euros a year, committed 15-16; damage on average 40-50 billion euros a year 2021-2024, cumulative over 820 billion since 1980; JRC: benefit-cost ratio of coastal protection around 6:1; UN-Habitat (2024): 4.5-5.4 trillion US dollars needed, 831 billion mobilised.

4.2 The sponge city

The most striking model of the climate-proof city comes from China: the sponge city. Instead of forcing rainwater into pipes as quickly as possible, the city is to absorb it like a sponge — store it, let it seep away and evaporate — through unsealed surfaces, green roofs, swales, infiltration trenches, urban ponds and parks that serve as retention spaces during cloudbursts. China has trialled the concept in 30 pilot cities since 2015 and set the goal of rebuilding 80 per cent of urban areas by 2030 so that 70 per cent of rainwater is absorbed locally; specialist studies attest measurable progress but also considerable implementation gaps — devastating floods in pilot cities such as Zhengzhou in 2021 showed the limits. European cities from Copenhagen to Vienna pursue the same principles under the heading of water-sensitive urban development.²⁴

For investors the sponge city is less a product than an order programme: it demands civil engineering, landscaping, pipe rehabilitation, pumping stations, measurement technology and planning software. The beneficiaries are construction and infrastructure groups with municipal business — in Europe, for instance, Vinci, ACS, Strabag or Eiffage —, water technology providers such as Xylem, and the makers of construction and environmental technology. Urban gardening — from the community garden to the professional rooftop farm — also belongs to this field; it remains economically small, but it is an indicator of cities' willingness to pay for green amenity, which is capitalised into land values: real estate economics finds stable price premia for proximity to parks and water.²⁵

4.3 Water: the underrated network

No urban system is at once as vital and as neglected as water. Worldwide, according to the standard estimate of Liemberger and Wyatt (2019), roughly 126 billion cubic metres of treated drinking water are lost every year before they ever reach a meter — through pipe bursts, leaks and illegal connections; that is roughly a third of the water fed in, and an economic value of about 39 billion US dollars year after year. In the United States, the engineering association ASCE grades drinking water infrastructure C minus and puts the ten-year financing gap at 309 billion US dollars for drinking water supply alone and a further 690 billion for wastewater and stormwater management — together around one trillion. Ageing networks, stricter limit values — for instance for the so-called forever chemicals — and climate adaptation act as three simultaneous demand drivers.²⁶

²⁴ Sponge city programme: 30 pilot cities from 2015, goal of 80 per cent of urban area by 2030 with 70 per cent rainwater absorption; review studies with a mixed implementation record.

²⁵ On the capitalisation of green amenities into land values, fundamentally von Thünen (1826) and Alonso (1964); empirical premia for park proximity in numerous hedonic price studies.

²⁶ Liemberger and Wyatt (2019): roughly 346 million cubic metres lost daily, about 126 billion cubic metres a year, value roughly 39 billion US dollars; ASCE (2025), Report Card: grade C minus for drinking water

The listed water industry falls into three groups. First, regulated utilities such as American Water Works in the United States or United Utilities and Severn Trent in England: they earn a regulated return on their network investments — the greater the refurbishment need, the greater the regulated asset base — giving them a bond-like but growing business model. Second, technology providers such as Xylem — with roughly nine billion US dollars of revenue the world's largest pure water technology group — whose pumps, meters and analytics find the leaks that cost networks billions. Third, mixed groups such as Veolia, the largest private water and environmental services company, combining operations, treatment and the circular economy. Chapters 9 and 10 take up all three groups; a dedicated water ETF passes the checklist of chapter 10.²⁷

4.4 The circular economy: the city as a mine

The third facet of the green transformation is the circular economy. Cities are the largest raw material stores in the world — buildings, pipes and devices hold metals and minerals in quantities that exceed natural deposits; the catchphrase “urban mining” describes recovering these materials during demolition. What is economically viable today is above all the classic disposal and recycling industry: in North America, Waste Management, Republic Services and Waste Connections have established themselves with a combined market value of more than 200 billion US dollars, and their landfills are in effect licences that cannot be multiplied — new sites are hardly permissible, which grants pricing power to existing ones. In Europe, Veolia combines waste, water and energy into full municipal offerings. It is one of the quiet ironies of the megatrend that refuse collection, of all things, ranks among its most reliable sources of return.²⁸

5 Smart Cities, Buildings and the Trillion-Dollar Infrastructure Gap

5.1 The digitally connected city — claims and numbers

Hardly any field of the megatrend is advertised with bigger numbers than the smart city — and hardly any demands more scepticism towards those very numbers. Depending on the research house, the world market for smart city offerings in 2025 is estimated at anywhere from 700 billion to over one trillion US dollars, and the forecasts for 2030 diverge by more than a factor of ten — a warning this paper deliberately documents rather than

(wastewater D plus, stormwater D); financing gaps 2024-2033 per ASCE, Bridging the Gap: drinking water 309, wastewater and stormwater together 690 billion US dollars.

²⁷ Xylem: revenue 2025 roughly 9.0 billion US dollars (company information); Veolia: largest private environmental services provider (company information).

²⁸ Market capitalisations end of August 2026: Waste Management roughly 90, Republic Services 67, Waste Connections 44 billion US dollars.

citing the largest available figure. More reliable is the physical base: the number of connected devices grew by 14 per cent in 2025 to 21.1 billion, a growing share of them in urban infrastructure — meters, traffic lights, parking sensors, cameras, environmental monitoring stations. Batty (2013) pointed out early that the data-fed city is less an engineering than a science project: only when data streams feed models of urban dynamics does sensing become planning knowledge.²⁹

Artificial intelligence — the subject of the second paper in this series (Rupprechter, 2026h) — gives the smart city its computational logic: traffic management that learns light phasing from camera data, predictive maintenance that detects pipe bursts from pressure patterns, and energy grids that balance generation and consumption in real time. This layer is investable through grid and electrical equipment groups — Schneider Electric, Siemens, Legrand, Honeywell and Johnson Controls are among the most-cited beneficiaries of growing building and grid intelligence —, through tower companies such as American Tower and Cellnex, whose masts carry the urban data load, and through data centre REITs such as Equinix, whose sites are the nodes of the urban data economy.³⁰

A second, often overlooked aspect of digital connectivity is shortened production and delivery routes. Online retail has pulled logistics back into the city: same-day delivery demands warehouses close to town, and so-called urban logistics properties — small distribution centres on the edge of town and in commercial courtyards — have become the scarcest property class of many metropolises. The world market leader Prologis manages logistics space through which, by its own account, goods worth a substantial share of world trade flow; the return of small-series production to the city through 3D printing — urban manufacturing — supports this demand for space as well. For investors, urban logistics is the quietest but one of the most solid components of the megatrend.³¹

5.2 Buildings: the biggest lever of the energy transition

Buildings consume roughly 30 per cent of the world's final energy and cause 26 per cent of energy-related emissions — more than a third if the production of cement, steel and building materials is added. In the EU, buildings even account for about 40 per cent of energy consumption, and three-quarters of the stock is considered energetically inadequate; yet only about one per cent of the stock is renovated each year — the EU wants at least to double that rate. The difference between obligation and reality is one of the largest

²⁹ Range of market estimates for 2025: roughly 0.7 to over 1.0 trillion US dollars (among others Mordor, MarketsandMarkets, Grand View Research); IoT Analytics: 21.1 billion connected devices in 2025 (plus 14 per cent); Batty (2013).

³⁰ Rupprechter (2026h), chapter 5 there on data centres; assignment of equipment makers from annual reports.

³¹ Prologis: largest industrial and logistics REIT in the world, market capitalisation roughly 136 billion US dollars end of August 2026.

recurring order volumes in the world economy: insulation, windows, heating technology, building management and metering, year after year, for decades.³²

Two waves of technology add momentum. The first is the heating transition: in Germany, heat pump sales grew by 55 per cent in the first half of 2025, putting them ahead of gas boilers for the first time; across Europe the market returned to growth of a good tenth after two weak years. The second is the cooling wave: the International Energy Agency expects the number of air conditioners worldwide to rise from 1.6 billion to 5.6 billion by 2050 — this cooling load will become the largest single driver of electricity demand in the hot megacities of Asia and Africa. Both waves feed the large climate and building technology groups — Daikin as world market leader in air conditioning, Trane Technologies, Carrier, Johnson Controls, Lennox — whose service business grows with every installed unit.³³

5.3 The vertical city: a case study in lifts

Densification means height, and height means lifts — hardly any industry embodies the economics of the megatrend as purely as the lift industry. Around 23 million lift installations are in operation worldwide, and roughly 60 per cent of new installations fall on China, where the construction crisis has dampened demand markedly since 2021. Four groups — Otis, KONE, Schindler and TK Elevator — account for roughly 60 per cent of world revenue. The real business, however, begins after installation: lifts require maintenance, and maintenance is immune to the cycle — servicing continues in a recession.³⁴

Table 3 dissects the numbers of the world market leader Otis for fiscal year 2025 — and reveals one of the most instructive business models of the entire megatrend. The new equipment business earned 240 million US dollars on revenue of 4.99 billion — a margin of barely five per cent. The service business earned 2.37 billion on revenue of 9.44 billion — a margin of a good 25 per cent and roughly 91 per cent of total segment profit. New construction is, economically speaking, customer acquisition for a maintenance subscription running for decades, with more than two million units under contract. For investors this is the blueprint for valuing urban business models: what matters is not who builds, but who manages the installed base.³⁵

³² IEA: roughly 30 per cent of final energy, 26 per cent of energy-related emissions (37 per cent including construction and materials); European Commission: roughly 40 per cent of energy consumption, renovation rate around one per cent.

³³ German Heat Pump Association: plus 55 per cent in the first half of 2025, ahead of gas heating for the first time; EHPA: Europe plus roughly 11 per cent in 2025; IEA (2018), *The Future of Cooling*: 1.6 to 5.6 billion units by 2050.

³⁴ Stock of over 20 million installations, China roughly 60 per cent of new installations, big four roughly 60 per cent of revenue: industry and company information (Otis, KONE annual reports).

³⁵ Otis (2026), *Annual Report 2025*: Service revenue 9.44 billion US dollars and 2.374 billion segment profit (margin 25.1 per cent); New Equipment revenue 4.99 billion and 0.24 billion segment profit (margin 4.8 per cent).

Table 3: Case study in lift economics: Otis in fiscal year 2025

Segment	Revenue (USD bn)	Segment profit (USD bn)	Margin
New Equipment	4.99	0.24	4.8 %
Maintenance and modernisation (Service)	9.44	2.37	25.1 %
Service share of segment profit	—	—	ca. 91 %

Sources: Otis Worldwide, Annual Report 2025; own calculation.

Notes: Rounded; segment profit before corporate items. No buy or sell recommendation.

5.4 The trillion-dollar gap

Above all the individual fields stands one number that sums up the investment character of the megatrend: McKinsey puts global infrastructure needs through 2040 at roughly 106 trillion US dollars — 36 trillion for transport, 23 for energy, 19 for digital networks, 16 for social infrastructure such as schools and hospitals, and a good 6 for water and waste. The older Global Infrastructure Outlook arrived at 94 to 97 trillion through 2040 and estimated the gap between needs and actual spending at roughly 18 trillion. The public budgets of ageing industrial countries visibly cannot shoulder these sums alone — which makes private capital, by design, a co-financier of the city: through utility shares, concession models, infrastructure funds and the bonds of network operators.³⁶

The concession model deserves particular attention because it converts the trillion-dollar gap into exchange-listed cash flows: private consortia build and operate motorways, airports or water networks for decades in return for tolls or fees, after which the asset reverts to the public hand. The European groups Vinci and Ferrovial and Spain's ACS are among the largest concession holders in the world — Ferrovial moved its domicile to the Netherlands in 2023 and has since also been listed on Nasdaq to tap US infrastructure capital; the Australian toll road operator Transurban and the Spanish airport group Aena show the same model in its purest form. Such names combine construction cyclicity with utility-like income from standing assets — and are thus the listed answer to the question of who pays for tomorrow's city.³⁷

6 New Urban Mobility and the 15-Minute City

The mobility of tomorrow's city was the subject of the first paper in this series (Rupprechter, 2026g); here we turn to its urban-planning side — the move away from the private car as the yardstick of planning. A car stands still for more than 23 hours a day,

³⁶ McKinsey (2025): 106 trillion US dollars cumulative through 2040; Global Infrastructure Hub (2018), Global Infrastructure Outlook: 94-97 trillion, gap roughly 18 trillion.

³⁷ Ferrovial: redomiciliation and Nasdaq listing 2023; market capitalisations end of August 2026: Vinci roughly 77, Ferrovial 42, ACS 33, Aena 48, Transurban 31 billion US dollars (converted).

occupying public space that in dense cities is the scarcest factor of production. More and more metropolises are repricing that space — through managed parking, congestion charges as in London, Stockholm and, since 2025, New York, low-emission zones, and the conversion of traffic lanes into cycle and bus lanes. Road space is being rededicated from through-traffic to places to linger — with immediate consequences for land values, retail and residential locations.³⁸

The planning model of this movement is the 15-minute city, worked out systematically by Moreno, Allam, Chabaud, Gall and Pratlong (2021): all basic functions of daily life — living, working, shopping, education, health, culture — should be reachable within fifteen minutes on foot or by bicycle. Paris has become the shop window of the concept: the city has expanded its network of cycle facilities to roughly 1,600 kilometres, opened more than 200 schoolyards as green “oases” and turned riverside roads into promenades; counts suggest that on central axes more people now travel by bicycle than by car. The criticism — that the concept works only in dense, affluent inner cities and threatens to lock out suburban residents — is justified, and it recalls that the 15-minute city is a densification programme: it presupposes exactly the mixture of uses that Jacobs (1961) defended against the functionally separated city.³⁹

For investors, new urban mobility has three listed faces. First, rail: train technology groups such as Alstom and the suppliers Knorr-Bremse and Wabtec live on metro, tram and signalling orders whose municipal clients plan in decades. In Germany, roughly 11.5 billion passengers used public transport in 2025 — a good two per cent fewer than in 2019, while passenger kilometres already exceed the pre-pandemic level. Second, the operator and concession models of chapter 5.4 — toll roads, airports, tunnels such as the Eurotunnel operator Getlink. Third, perhaps the most elegant model of all: Hong Kong's MTR, which builds metro lines and develops the land above the stations — the appreciation of the land that the railway opens up finances the railway. This “rail plus property” model is the entrepreneurial pure form of the insight from chapter 2.3 that the value of the city materialises in land.⁴⁰

7 Demographic Change: the Ageing City

The city of the rich world is growing old. In Germany, 23 per cent of the population is now 65 or older — 19.3 million people, up from 15 per cent in the early 1990s — and the baby boomers are only now entering retirement. For urban planning this means a double

³⁸ Rupprechter (2026g), chapter 2 there on the changing modal split; New York congestion pricing since January 2025.

³⁹ Moreno, Allam, Chabaud, Gall and Pratlong (2021); City of Paris: roughly 1,600 kilometres of cycle facilities at the end of 2025 (physically protected lanes are a subset of these), over 200 oasis schoolyards; counts of cycling shares by, among others, Institut Paris Région.

⁴⁰ Destatis: 11.5 billion public transport passengers in 2025, around 2 per cent below 2019, passenger kilometres around 7 per cent above 2019; MTR Corporation: rail plus property model (company information).

conversion task: homes and public space must become barrier-free, and the city is changing from a place of work into a place of living — those who no longer commute revalue local supply, healthcare, green space and short distances. The gap is quantified: roughly 2.2 million age-appropriate dwellings are missing in Germany today, and by 2040 the need grows to more than three million; only a small fraction of the stock is wheelchair-accessible.⁴¹

How closely demography and property returns are intertwined is shown by the American senior housing market. After the financial crisis it was overbuilt for years; since 2021 the picture has turned: occupancy of senior residences has risen for nineteen consecutive quarters, reaching 89.5 per cent in early 2026, while new construction has fallen to its lowest level since 2012 — supply is growing by less than half a per cent a year, boomer demand by a multiple of that. The large healthcare REITs have specialised in precisely this scissors: Welltower, at roughly 171 billion US dollars of market value, has risen to become the largest listed property company in the world — ahead of every office, residential and logistics group —, with Ventas following at 48 billion. That the world's most valuable property company today manages senior residences rather than skyscrapers is perhaps the clearest single message the megatrend sends investors.⁴²

The ageing city creates demand far beyond housing: lifts and ramps in existing buildings — a core market of the modernisation units of KONE, Schindler and Otis —, telemedicine and neighbourhood care centres, age-friendly transport with low-floor vehicles, and care staff, whose scarcity has become the binding constraint of the whole sector. At the same time, demographic change is reshaping the inner cities: where office demand falls through remote work and retail migrates online, conversions into apartments, medical practices and education become the city's largest land reserve — the conversion of empty offices into housing is already a distinct development business in American downtowns.⁴³

8 City and Countryside: the Tension

The megatrend of urbanisation has a flip side that is already reality in Europe: the shrinking region. According to analyses by the EU's Joint Research Centre, roughly half of Europe's about 100,000 municipalities today lie below their population level of 1961; one in five rural municipalities has lost more than half its inhabitants since then. In eastern Germany, 88 per cent of municipalities have shrunk since 1991, in the west 26 per cent. The projections extend the split: urban areas keep growing, remote rural areas lose close

⁴¹ Destatis: 23 per cent aged 65 and over (19.3 million); Pestel Institute (2023): 2.2 million missing age-appropriate dwellings, need of roughly 3.3 million by 2040.

⁴² NIC MAP: occupancy 89.5 per cent in the first quarter of 2026, 19th consecutive quarterly increase, construction starts at their lowest since 2012; market capitalisations end of August 2026: Welltower roughly 171, Ventas roughly 48 billion US dollars.

⁴³ On office conversion: CBRE and Brookings, reports 2024-2026 on office-to-residential conversions in US downtowns.

to half a per cent of population per year. Christaller (1933) explained with central place theory how supply functions arrange themselves hierarchically across space — shrinkage reverses this logic: when demand falls below the viability threshold, school, doctor and shop close, which accelerates the exodus.⁴⁴

At the same time, city and countryside are not separate worlds but functionally interwoven: in Germany, 20.6 million employees commute across municipal boundaries to work — 17 kilometres on average, and 2.4 million of them more than a hundred — and the growth fringes of the metropolises reach deep into their hinterland. The city-country divide shows most harshly in vacancy, which Table 4 sets side by side: in the large cities the market-active vacancy rate is 1.2 per cent — in Munich and Frankfurt practically zero — while in shrinking regions it is 6.9 per cent. An empty flat in a declining town is no offer to a flat-hunter in Munich; the national average of 2.2 per cent is therefore close to meaningless for investors.⁴⁵

Table 4: The city-country divide in Germany in key figures

Indicator	Large cities / growing areas	Shrinking regions
Market-active housing vacancy 2024	1.2 % (Munich, Frankfurt ca. 0.1-0.2 %)	6.9 %
Municipalities losing population since 1991	West: 26 %	East: 88 %
Population projection (EU, per year)	urban: around +0.2 %	remote rural: around −0.5 %
Asking rents since 2016	+43 % nationwide, Berlin +69 %	stagnant in many places
Commuter interdependence	20.6 m commuting across boundaries	avg. 17.2 km, 2.4 m over 100 km

Sources: CBRE-empirica vacancy index 2024; JRC (2026); BBSR (2025); Destatis; own compilation.

Notes: Rounded; “market-active” denotes vacancy lettable at once or at short notice.

Two lessons follow for investors. First: location beats country — property and housing stocks are only as good as the regional composition of their portfolios, and a portfolio in growing metropolitan regions is a different asset from one in shrinking mid-sized towns, even if both are labelled “German residential property”. Second: shrinkage, too, creates demand — for demolition, for conversion, for digital services of general provision such as telemedicine, and for the networks that supply dispersed settlements; grid operators such as E.ON or National Grid earn on area, not density, because their regulated remuneration grows with network length and investment need. The city-country divide is thus no side issue of the megatrend but its distributional conflict — and the regional policy of the coming decades one of its greatest uncertainties.

⁴⁴ JRC (2026): half of EU municipalities below their 1961 level; eastern Germany 88 per cent, western Germany 26 per cent shrinking municipalities since 1991; Christaller (1933).

⁴⁵ BBSR (2025): 20.59 million commuters, average distance 17.2 kilometres; CBRE-empirica vacancy index 2024: large cities 1.2 per cent, shrinking regions 6.9 per cent, nationwide 2.2 per cent.

9 Individual Stocks along the Urban Value Chain

9.1 Selection principles

The following overviews name listed companies whose business hangs substantially on the megatrend of urbanisation — grouped in three sets: housing, logistics and healthcare property (Table 5); construction, building materials and building technology (Table 6); and water, circular economy, networks, mobility and software (Table 7). Only large- and mid-cap names are included; small caps are deliberately not named, because thin liquidity and analyst coverage create particular risks there. The mention is expressly no buy or sell recommendation but an ordered map. As a reminder of the base statistics: Bessembinder (2018) showed that four out of every seven stocks — around 57 per cent — underperform government bills over their lifetime and that the entire excess return of the equity market stems from roughly four per cent of names — stock selection within a megatrend does not replace diversification; it complements it.⁴⁶

9.2 Housing, logistics, data centres and healthcare property

The first group manages the city's scarcest raw material: space with security of tenure. What stands out is how far the weights inside the property world have shifted — at the top are no longer office or retail landlords but the operators of senior residences (Welltower), logistics space (Prologis), data centres (Equinix) and communication towers (American Tower): the infrastructure of the ageing, ordering and data-driven city. Vivmark Residential, created in August 2026 from AvalonBay and Equity Residential, bundles more than 184,000 apartments in American growth metropolises; in Europe, Vonovia and LEG stand for the regulated German counterpart, and in Asia, Sun Hung Kai, Mitsubishi Estate and Mitsui Fudosan for the high-rise city.⁴⁷

⁴⁶ Bessembinder (2018): four out of every seven US stocks with a lower lifetime return than one-month Treasury bills; 4 per cent of US stocks generated the entire wealth creation over Treasury bills, 1926-2016.

⁴⁷ Vivmark Residential: merger completed 18 August 2026; portfolio figures from the company announcement (together more than 184,000 units).

Table 5: Housing, logistics, data centres and healthcare property — large- and mid-cap names

Company	USD bn	Business idea in the megatrend	Traded on
Welltower	171	Senior residences and healthcare property; world's largest listed property company	NYSE
Prologis	136	Urban logistics space for online retail and same-day delivery	NYSE
Equinix	103	Data centres as nodes of the urban data economy	Nasdaq
American Tower	82	Communication towers and antenna sites for the connected city	NYSE
Public Storage	62	Self-storage — space as an answer to small city flats	NYSE
Vivmark Residential	50	Largest US apartment landlord (2026 merger of AvalonBay/Equity Residential)	NYSE
Ventas	48	Senior housing, medical and research buildings	NYSE
Sun Hung Kai Properties	45	High-rise residential and commercial development in Hong Kong	Hong Kong
Mitsubishi Estate	27	Office and district development in Tokyo (Marunouchi)	Tokyo
Mitsui Fudosan	26	Japanese district and mixed-use development	Tokyo
Vonovia	20	Largest European residential portfolio (roughly 530,000 flats)	Xetra
Invitation Homes	18	Single-family rentals in US growth regions	NYSE
Segro	18	Urban logistics and business parks in Europe	London
CapitaLand Integrated	15	Mixed-use Singapore property — retail, office, integrated districts	Singapore
Gecina	6	Paris office and residential property (mid cap)	Euronext Paris
LEG Immobilien	5	Residential portfolio North Rhine-Westphalia (mid cap)	Xetra

Sources: Market capitalisations (rounded) end of August 2026; own compilation.

Notes: No buy or sell recommendation; selection without claim to completeness.

9.3 Construction, building materials and building technology

The second group builds and equips the city. It ranges from the excavator world market leader Caterpillar through the European construction and concession groups to the makers of cement, insulation, climate technology and lifts. Two observations deserve emphasis. First, the America bet: the Holcim spin-off Amrise and the Irish building materials group CRH — which moved its primary listing to New York in 2023 — are betting that housing shortage and infrastructure programmes will carry the North American construction market for a decade. Second, the rental economy: equipment renters such as United Rentals

and Ashtead grow structurally because construction firms shy away from tying up capital — building itself is migrating from ownership to subscription.⁴⁸

⁴⁸ CRH: move of the primary listing to the NYSE in September 2023; United Rentals and Ashtead: largest construction equipment renters in North America.

Table 6: Construction, building materials and building technology — large- and mid-cap names

Company	USD bn	Business idea in the megatrend	Traded on
Caterpillar	373	Construction and mining machinery; every building site in the world	NYSE
Trane Technologies	99	Climate and cooling technology for buildings	NYSE
Johnson Controls	85	Building technology, fire protection, building management	NYSE
Vinci	77	Construction and concessions — motorways, airports, energy	Euronext Paris
United Rentals	65	World's largest construction equipment renter	NYSE
CRH	64	Building materials with a North American focus	NYSE
Holcim	52	Cement and sustainable building materials (after the Amrize spin-off)	SIX Zurich
Carrier Global	52	Air conditioning, refrigeration and heat pump technology	NYSE
Saint-Gobain	46	Light construction, insulation, glass — energy renovation	Euronext Paris
Ferrovial	42	Transport concessions — toll roads and airports	Nasdaq/Amsterdam
Komatsu	42	World number two in construction machinery	Tokyo
Legrand	42	Electrical installation and building infrastructure up to data centres	Euronext Paris
Assa Abloy	41	Locks and access technology — security of the dense city	Stockholm
Sika	38	Construction chemicals for concrete, bonding, sealing	SIX Zurich
Daikin	37	World market leader in air conditioning	Tokyo
Heidelberg Materials	35	Cement and concrete, low-carbon product lines	Xetra
Schindler	34	Lifts and escalators	SIX Zurich
ACS	33	Spanish construction and concessions group (incl. Hochtief)	Madrid
KONE	32	Lifts and escalators; strong in China	Helsinki
Otis	28	World market leader in lifts; service model (chapter 5.3)	NYSE
Amrize	25	North American cement and materials business (Holcim spin-off 2025)	NYSE/SIX
Geberit	24	Sanitary technology and installation systems	SIX Zurich
Kingspan	21	High-performance insulation for new build and renovation	Dublin/London
Strabag	13	Austria's largest construction group; central European infrastructure	Vienna

Sources: Market capitalisations (rounded) end of August 2026; own compilation.

Notes: No buy or sell recommendation; selection without claim to completeness.

9.4 Water, circular economy, networks, mobility and software

The third group keeps the city running — and with its regulated utilities it contains the most defensive names of the whole megatrend: grid operators such as Iberdrola, Enel, National Grid and E.ON earn regulated returns on growing network investment, water utilities such as American Water Works on decades of plannable renewal programmes. To these add the waste groups with their effectively unmultipliable landfills, the rail technology names, the operator models — and an often overlooked software layer: Autodesk, Bentley Systems, Nemetschek and Trimble digitise planning and construction; their programs are where tomorrow's city first takes shape.

Table 7: Water, circular economy, networks, mobility and software — large- and mid-cap names

Company	USD bn	Business idea in the megatrend	Traded on
Iberdrola	157	Power grids and renewable generation	Madrid
Enel	109	Grids and generation in Europe and Latin America	Milan
Waste Management	90	Largest North American waste group; landfills as licence assets	NYSE
National Grid	80	Transmission grids in Britain and the US Northeast	London
Ecolab	79	Water treatment and hygiene for businesses	NYSE
Republic Services	67	Waste and recycling North America	NYSE
E.ON	54	One of Europe's largest distribution grid operators	Xetra
Autodesk	54	Planning and construction software (incl. Revit, BIM)	Nasdaq
Wabtec	49	Rail technology and train components	NYSE
Aena	48	World's largest airport operator by passengers	Madrid
Waste Connections	44	Waste services in secondary North American markets	NYSE/Toronto
Transurban	31	Urban toll roads Australia/USA	ASX Sydney
Veolia	28	Water, waste, energy — full municipal services	Euronext Paris
American Water Works	27	Largest listed US water utility	NYSE
Xylem	27	Water technology — pumps, meters, analytics	NYSE
MTR Corporation	26	Hong Kong metro plus property development above stations	Hong Kong
Cellnex	20	European tower infrastructure	Madrid
Knorr-Bremse	20	Braking systems for rail and commercial vehicles	Xetra
Trimble	14	Positioning and digital construction site technology	Nasdaq
United Utilities	14	Water utility North West England	London
Severn Trent	13	Water utility English Midlands	London
Getlink	12	Operator of the Eurotunnel	Euronext Paris
Bentley Systems	12	Software for infrastructure planning and digital twins	Nasdaq
Nemetschek	9	European construction and planning software (mid cap)	Xetra
Alstom	9	Trains, metros, signalling (mid cap)	Euronext Paris

Sources: Market capitalisations (rounded) end of August 2026; own compilation.

Notes: No buy or sell recommendation; selection without claim to completeness.

Across all three tables, what is missing stands out: the one dominant urbanisation company. Unlike artificial intelligence, where a few platforms bundle the value creation, urban value creation is spread across dozens of specialists with cycles of their own: residential REITs hang on interest rates and rent regulation, construction technology on

the building cycle, utilities on regulatory periods, software on licence models. Precisely this heterogeneity is valuable to investors — it allows diversification within the megatrend — and it explains at the same time why the fund industry struggles to build a single product, as the next chapter shows.

10 ETFs for the Megatrend: Selection by Checklist

10.1 The honest result first

Whoever types “urbanisation ETF” into a fund database learns something useful: it does not exist. Unlike robotics, hydrogen or artificial intelligence, Europe's fund industry offers no dedicated UCITS product for the oldest and most reliable megatrend — presumably precisely because of its breadth: an index that sensibly weights residential REITs, cement makers, water utilities, lift manufacturers and rail technology is hard to build and harder to market. Earlier attempts on neighbouring themes were closed for lack of volume. Investors who want to map the megatrend through funds therefore have to assemble it from parts: global infrastructure, water, real estate and smart city — the four families this chapter screens against a fixed checklist.⁴⁹

10.2 The checklist

The criteria match those of the two preceding papers in this series. First, the replication method: physical — the fund actually holds the index stocks — is preferable to synthetic replication via swap contracts, because counterparty risk falls away. Second, fund volume: at least 0.2 billion euros, so that the fund is economically viable and does not get closed. Third, running costs (management fee and total expense ratio). Fourth, the currency question: whether foreign currency risks are hedged — for globally invested equity funds the unhedged variant is common and usually harmless in the long run, but whoever wants the hedge finds it here, exceptionally: the iShares property fund offers a dedicated euro-hedged share class. Fifth, the issuer and its size. Sixth, the UCITS framework with its investor protections. Seventh, tradability on the secondary market, that is, on exchanges such as Xetra, London or SIX.⁵⁰

Table 8 shows the nine funds that meet the criteria or — in the case of the synthetic Xtrackers product — are listed as an instructive exception. All are UCITS funds, all continuously tradable on European exchanges, all above the volume threshold. The distribution policy stands out: unlike technology themes, distributing share classes

⁴⁹ Own database analysis (justETF, extraETF), end of August 2026; a liquidated global infrastructure ETF of a large provider illustrates the closure risk of small thematic products.

⁵⁰ Euro-hedged share class: iShares Developed Markets Property Yield EUR Hedged Acc (ISIN IE00BDZVHD04); a GBP-hedged class of the infrastructure fund is also available.

dominate here — infrastructure and property funds collect dividend-rich stocks, and many investors buy them precisely for the running income. Whoever prefers accumulating variants finds them as separate share classes of several of the funds named.

Table 8: ETF comparison for the urbanisation megatrend (UCITS, volume of at least 0.2 billion euros)

ETF (short name)	Volume (EUR m)	Fee p. a.	Replication	SFDR	0.2 bn met?
iShares Global Infrastructure	ca. 2,445	0.65 %	physical	Art. 6	yes
iShares Global Water	ca. 1,850	0.65 %	physical	Art. 8	yes
iShares DM Property Yield	ca. 1,423	0.59 %	physical	Art. 6	yes
SPDR Multi-Asset Global Infrastructure	ca. 933	0.40 %	physical	Art. 6	yes
L&G Clean Water	ca. 668	0.49 %	physical	Art. 9	yes
Global X U.S. Infrastructure Dev. (PAVE)	ca. 650	0.47 %	physical	Art. 6	yes
Xtrackers S&P Global Infrastructure Swap	ca. 606	0.60 %	synthetic	Art. 6	yes
VanEck Global Real Estate	ca. 445	0.25 %	physical	Art. 8	yes
iShares Smart City Infrastructure	ca. 346	0.40 %	physical	Art. 8	yes

Sources: Provider information and fund databases (justETF, extraETF), end of August 2026; volumes rounded.

Notes: No buy or sell recommendation. Distributing: iShares Global Infrastructure, Global Water, DM Property Yield, SPDR Multi-Asset, VanEck; accumulating: L&G, PAVE, iShares Smart City. DM Property Yield also available as a euro-hedged class (IE00BDZVHD04).

10.3 What the table teaches

Four observations. First: the largest fund of the selection — iShares Global Infrastructure at roughly 2.4 billion euros — holds utilities, railways and toll roads from around the world; its largest positions are the power group NextEra Energy, the railway Union Pacific and the pipeline operator Enbridge. That is urbanisation as an income theme: regulated, dividend-rich businesses built on standing assets. Second: the iShares water fund — at almost 1.9 billion euros the largest of its kind — is led by American Water Works and Xylem, covering exactly the renewal economics described in chapter 4.3; the smaller L&G Clean Water adds technology and analytics firms. Third: the SPDR fund is a special case — it mixes in infrastructure bonds at half weight and is thus more defensive than all the others. Fourth: the Xtrackers fund meets every criterion except the replication method — it tracks its index synthetically via swap contracts, showing why the checklist queries each

criterion separately: even a large, cheap, established fund can fall out of the grid on a single point.⁵¹

For thematic funds as a whole, the warning of Ben-David, Franzoni, Kim and Moussawi (2023) applies here too: specialised thematic ETFs arrive, on average, too late — they are launched when a theme is popular and expensive, and they disappoint risk-adjusted in the years after. The urbanisation families are less affected than fashion themes, because infrastructure, water and property indices rest on established, profitable business models rather than hopeful stories — but the ground rule stands: the thematic fund complements the broad world portfolio (Markowitz, 1952); it does not replace it. Whoever already holds a world index owns utilities, property and industrials pro rata; every thematic fund is a deliberate overweight.⁵²

11 What Investors Can Learn from All This

First lesson: the megatrend is real, but it is slow — and that is its strength. Urbanisation has known no reversal in 75 years, its projections have proved unusually reliable, and its demand — housing, water, networks, lifts, care — is inelastic to cycles and fashions. Whoever invests in urbanisation is not buying a bet on a breakthrough but a claim on cash flows born of scarcity. The price is patience: the returns come from rents, fees, dividends and regulated capital remuneration, not from tenfold price rises.

Second lesson: the value of the city materialises in land and in the installed base — so invest where the installed base is managed. The lift economics of chapter 5.3 — five per cent margin on new equipment, twenty-five on service — is the pattern of the whole megatrend: maintenance contracts beat construction orders, landfills beat refuse trucks, network fees beat power plant construction, rents beat development. Wherever a balance sheet is to be judged, the question pays: how much of the profit stems from recurring business with standing assets, how much from cyclical new business?

Third lesson: in the urban field, regulation is not a footnote but half the return — in both directions. Regulated utilities owe their plannable growth to the same state that can hand housing companies rent caps and expropriation debates. Before any investment, the regulatory position of the market in question belongs on the checklist: how are network returns set, how are rents limited, how are concessions extended? The answer decides investor returns more often than management quality does.

Fourth lesson: location beats country, selection beats average. The city-country divide of chapter 8 — vacancy of 1.2 against 6.9 per cent, growing against shrinking municipalities

⁵¹ Top positions iShares Global Infrastructure: NextEra Energy 5.5, Union Pacific 5.2, Enbridge 3.6 per cent; iShares Global Water: American Water Works 8.0, Xylem 7.8, Sabesp 7.6 per cent (provider information, end of August 2026).

⁵² Ben-David, Franzoni, Kim and Moussawi (2023): thematic ETFs lose roughly 30 per cent risk-adjusted over the five years after launch; Markowitz (1952).

— runs through every asset class of the megatrend: the same industry can be a scarcity business in a growing metropolis and a value trap in a shrinking region. National averages deserve suspicion; for property and utility stocks, the regional portfolio structure is required reading.

Fifth lesson: the one urbanisation champion does not exist — diversification here is not a virtue but simply the only way to hold the megatrend. Value creation is spread across dozens of specialists with different cycles, and the fund market offers no all-in-one product. In practice that means: either a self-assembled basket from the four ETF families of chapter 10 — infrastructure, water, real estate, smart city — or a manageable number of individual names across the three tables of chapter 9, but never concentration on a single segment.

Sixth lesson: even the most reliable trend does not protect against the price paid for it. Japanese urban property in 1990 expressed the same megatrend as today's — and needed decades to work off its valuation bubble; American mortgage lenders stood at the centre of the global financial crisis in 2008 even though demand for housing never went away. Bessembinder (2018) holds in the solidest sector too: most single names disappoint, few carry the return. Valuation discipline — price-earnings ratios, asset values, leverage, interest rate sensitivity — remains as indispensable in the slowest megatrend as in the fastest.⁵³

Seventh lesson: the megatrend rewards being read together with its neighbours. Urbanisation, mobility (Rupprechter, 2026g) and artificial intelligence (Rupprechter, 2026h) overlap in practice — data centres are urban property, robotaxis are urban transport, intelligent grids are AI applications. Whoever plans megatrend positions should know the overlaps to avoid unintended double weights: an infrastructure ETF, a property ETF and an AI ETF may together hold the same tower and data centre stocks three times over.

12 Conclusion and Outlook

Urbanisation is the least spectacular of the great megatrends — no product launch, no breakthrough moment, no flagship stock. Precisely for that reason it serves as the foundation of a megatrend strategy: its demand is as certain as anything in economics — people move to cities, cities age, networks wear out, the climate demands rebuilding — and its cash flows are contractually underpinned by rents, fees, maintenance contracts and regulated returns. The paper has shown where these flows arise: in the scarce housing of the metropolises, in climate adaptation, in water, in building technology, in rail, in the ageing city — and how they can be captured through roughly fifty large- and mid-cap stocks and four ETF families.

⁵³ Bessembinder (2018); on the Japanese property bubble and its aftermath also Rupprechter (2026e).

The outlook: three developments deserve particular attention in the coming years. First, the interest rate turn in the property world — the repricing of REITs and the recovery of housing construction will decide when today's scarcity turns into supply again; Germany's building permits, rising in 2025 for the first time in years, are an early signal. Second, adaptation finance: between the needs of the cities and the funds mobilised yawns a gap of trillions — whether it is closed through municipal bonds, concessions or new fund vehicles will define the next great product field of the financial industry. Third, the shrinkage question: when a third of the world's shrinking cities lie in China and half of Europe's municipalities are losing residents, dealing with decline — economically and politically — becomes the megatrend's second face, so far barely investable.⁵⁴

The series on the great megatrends continues. After future mobility (Rupprechter, 2026g), artificial intelligence (Rupprechter, 2026h) and the present paper on urbanisation, three more fields follow. The insight that connects them all, this paper has shown most clearly: megatrends are not price lists but streams of demand — and the investor's art consists in finding the companies where those streams arrive as recurring, contractually secured and sensibly priced earnings. The city that will stand in 2050 is being created in today's order books.

⁵⁴ Building permits 2025: Destatis (2026); adaptation gap: EEA (2026) and UN-Habitat (2024); shrinkage: UN DESA (2025) and JRC (2026).

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