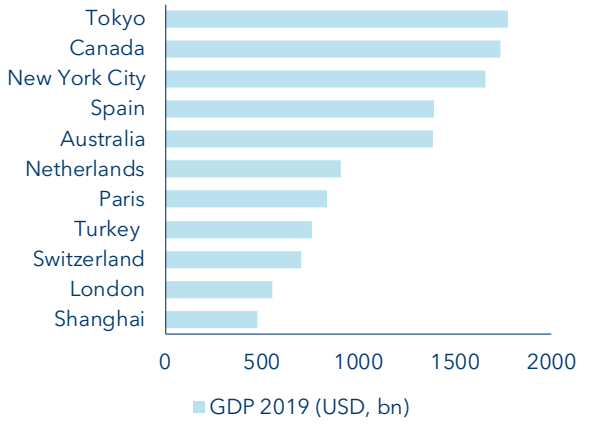
Green City

Investment theme – Opportunities from sustainable urbanisation

TODAY, MORE THAN HALF OF THE WORLD'S POPULATION LIVES IN CITIES AND THE PROPORTION CONTINUES TO RISE. IN ORDER TO COPE WITH THIS INCREASE WITHOUT COMPROMISING THE QUALITY OF LIFE, CITIES NEED TO RETHINK THEIR STRATEGIES. NOT ONLY ECOLOGICAL SUSTAINABILITY AND RESOURCE MANAGEMENT, BUT ALSO DIGITALISATION, ARE PIVOTAL ASPECTS OF FUTURE URBAN DEVELOPMENT.

Mumbai, Delhi, Dhaka: According to an extrapolation by the Global Cities Institute, these three cities in India and Bangladesh will be the largest in the world by 2050. Each of them will have over 35 million inhabitants, a population almost as large as all of Canada or Poland today. Urbanisation is not a new phenomenon, but the trend is unrelenting. The United Nations reports that more than 4.2 billion people already live in cities and suburban areas. By mid-century, that number is expected to rise dramatically, increasing from a 55% proportion of the world's population to more than two thirds of the total.

Enormous economic significance of metropolitan regions



Sources: Oxford Economics, VP Bank

More than 90% of this growth in the urban population will take place in developing countries, mainly in Africa and Asia. Whilst the amount of constructed urban space is growing noticeably in the emerging nations, pre-existing structures in the industrialised world need to be used more efficiently. The challenges facing city administrations therefore vary greatly from country to country.
In 2050, the number of urbanites will have increased by some 50%. UN forecasts predict that this development will cause the urban sprawl to more than double over the next 30 years to some 2.7 million square kilometres. This will not only put an extreme strain on resource procurement, but also make its distribution a Herculean task. The related environmental and ecological burdens will require a total rethink in terms of resource management. According to UN Environmental Programme (UNEP) calculations, cities are accountable for three-quarters of the world's consumption of raw materials and 70% of global CO_2 emissions. Moreover, a World Bank evaluation reveals that air and water pollution in Chinese cities takes a 6% toll on the country's annual gross domestic product (GDP). Environmental aspects, together with social challenges, limit the growth potential of cities. For modern metropolises, environmental sustainability and resource efficiency go hand in hand with digital transformation, which helps to improve urban management.
Digitalisation is the driving force behind the "Smart City" concept, on which many cities are already working intensively. The aim is, to digitalise all aspects of urban life – from traffic monitoring and control, to energy supply, healthcare and security. Rapid, trouble-free data transmission and networking across all aspects of the needs of a city and its inhabitants are a basic prerequisite for future concepts pertaining to work, education and mobility, as well as to security and water/power supply.

Economic factor: cities

Cities are enormously important for society and its development – not only as cultural and economic centres, but also as centres of innovation. Measured in terms of gross domestic product, cities are responsible for 85% of global economic output. Tokyo alone generates greater value added, i.e. GDP, than Canada as a whole (see chart at left). Moreover, nowhere else do so many technological trends emerge. In the past ten years alone, groundbreaking business models have been invented that are particularly useful in large cities, such as sharing services, delivery services for online orders, and electric motorised micro-mobility.

This economic significance, in combination with the enormous growth of the urban population will vastly change metropolitan regions. In the course of this evolution, the following four strategic theme facets are of particular importance and thus interesting from an investor standpoint:

Digital Transformation is the catalyst and source of concepts for modern urban development. However, this requires comprehensive, seamlessly networked data communication, the storage of enormous amounts of data and intelligent information evaluation. Consulting firm PWC estimates that the development of "smart" applications alone has growth potential of around 20% per year through 2025.

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Summary

The growth of the world population, environmental challenges, and the increasing scarcity of crucial resources are forcing businesses and politicians to reorient their strategies for the future. This applies in particular to urban areas. The complexities and resulting tensions can be clearly seen against the backdrop of the current health crisis. The COVID-19 pandemic has not only drawn a great deal of attention and financial support to the healthcare system, it also adds momentum to the digital transformation trend. Digitalisation is the key to solving the challenges tomorrow's cities will face, even as it represents promising investment opportunities for sustainability-oriented investors.

Participate via the VP Bank Green City Basket

Based on the abovementioned four themes, which are discussed in greater depth on pages 3 through 6, VP Bank has developed an investment solution in the form of an equity certificate that allows investors to participate in the trend towards modern, sustainable cities and urban regions.

We have identified promising companies for each of these four technological and environmentally sustainable trends. The activities of each company in the portfolio support fulfilment of specific sustainable-development goals (SDGs) as defined by the United Nations. The portfolio consists of 35 to 50 stocks/ companies that have been selected according to their relevance, profitability, sustainability and the solidity of their business. The certificate is actively managed, i.e. the portfolio composition changes over time to take advantage of shifts in the market.

VP Bank Green City Basket	
ISIN (USD non hedged)	CH0547926177
ISIN (EUR non hedged)	CH0547926110
ISIN (CHF non hedged)	CH0547926128
Manager	Harald Brandl, Marcello Musio
Benchmark	MSCI World TR (USD)
Subscription / Redemption*	Daily
Cost of certificate (p.a.)**	0.75%
Subscription Periode	13.10.2020 - 28.10.2020
Initual Fixing	29.10.2020
Price at issuance	100
Maturity	7 Years
Certificate provider	UBS AG Switzerland (S&P: A+)
Distribution type	accumulating
Public Distribution	CH, FL, LU, AT, DE

* On subscription/redemption cost of +/- 10 basis points are deducted from the NAV

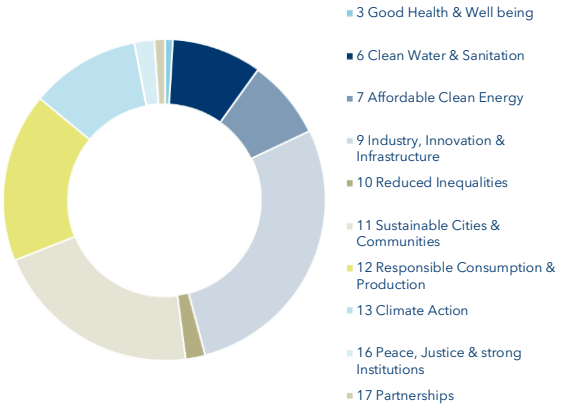
**Exclusive rebalancing cost

VP Bank Sustainabilityscore				
Excellent	4	5	5	5

Total score, ESG Rating, ESG-Momentum, Business practices and activities

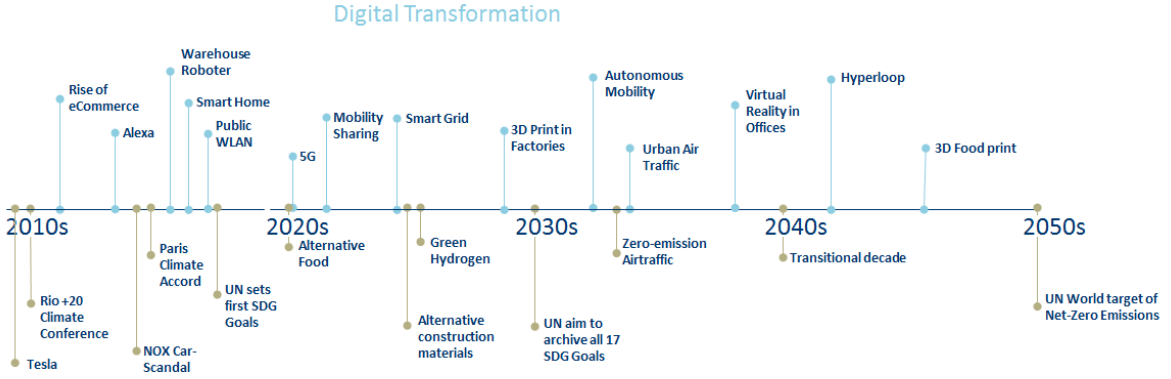
More information: https://www.vpbank.com/en/vp-bank-sustainability-score

Portfolio exposure according to UN Sustainability Targets (SDG)



Relevant trends for the cities of the future

Source: VP Bank



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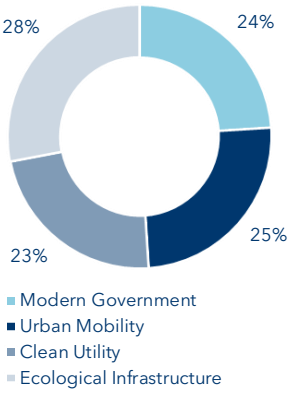
Theme facet 1: Modern government

FOR TOO LONG, URBAN DEVELOPMENT HAS KEYED ON OPTIMISING THE FLOW OF TRAFFIC AND CREATING RESIDENTIAL AREAS. HOWEVER, THE ECONOMIC CLOUT OF CERTAIN METROPOLISES IS INCREASING TO THE EXTENT THAT IT HAS BECOME A PIVOTAL FACTOR FOR THE ENTIRE NATION. A RE-EVALUATION OF THE MATTER, AND THIS WITH A CLEAR FOCUS ON THE CHANGING ECONOMIC AND SOCIAL RESPONSIBILITY ASPECTS, IS EMERGING.

By taking advantage of digitalisation and so-called "smart-city applications", many metropolises are already on the path to modern urban management. Mobile communication infrastructure and urban mobility have received a great deal of attention so far. However, being smart is not just a matter of improving the amenities at the disposal of residents or latching on to the latest technological trends. Rather, the benefits of digitisation must be available to the entire population and serve the needs of the citizenry and local industry.
City administrators have become aware of this, as reflected in the direction Smart City projects are taking these days: the efforts are currently distributed almost equally across four priority areas (basis: 900 projects in 400 cities, see diagram). The term "modern government" covers not only the tasks of local civil authorities, but also security, healthcare (incl. medical centres and hospitals) and education facilities.

Smart City project orientation



Sources: VP Bank, IHS Markit

Making a city fit for the future takes many years, but social and technological developments are already triggering a change in urban administrators' thinking. Today more than ever, forward-looking, modern urban planning is decisive for a large city's economic attractiveness and quality of life. To employ dedicated specialists, being responsible for technology and sustainability is a consequence. Cities like Amsterdam, New York, Tokyo and Copenhagen established competence centres of this nature quite some time ago. They are headed by so-called Chief Technology Officers (CTOs), i.e. people responsible for planning a holistic, vertically integrative digitalisation strategy. Vertically integrative in this regard means that applications must be digitalised in their entirety, for example, from the family doctor, to nursing homes, through to health insurance providers. It also extends to public utilities and security, as well as to the areas of education and general health. In 2014, Singapore introduced a "Centre for Innovative Cities" chair at its university, with the objective of providing urban planning impulses for this city-state.
More than 70% of 1300 Smart City projects examined by market research firm IHS Markit are financed in partnership with private entities. Hence, the latter must have sufficient knowledge of the complexities involved in urban planning. Amazon Web Service (AWS), the tech division of online retailer Amazon, has actually hired four former Technology Heads of major US cities. Their "insider knowledge" of administrative procedures, urban planning and the decision-making processes involved in the award of local government contracts is of enormous importance. Tyler Technologies, for example, was able this way to become a leading partner for US cities and broader urban regions. Its expertise covers all facets of the public sector, including even service offerings for courts and public safety authorities. Since 2002, the company has recorded an average annual 20% increase in its after-tax profit and, on balance, an annual increase in revenue of 13%. Those growth rates have been rising sharply since 2015.
Education, healthcare, online commerce, as well as digital security are all important issues when it comes to urban management. These aspects are pivotal for the digital transformation phenomenon, which is why we have devoted separate studies to them within the scope of that particular investment theme (see text box).

Series: "Digital Transformation"
The future is smart and networked. Digitalisation is changing our own lives as well as the business models of companies. The series "Digital Transformation - The path to the future" zeros-in on five drivers to explain how digitalisation is totally revamping earlier business models and how investors can participate in this (r)evolution. Read more at:
https://www.vpbank.com/en/news/2019/digital-transformation-path-future

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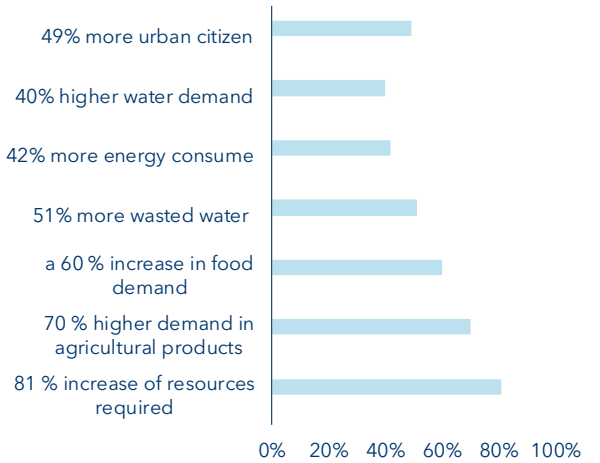
Theme facet 2: Clean utility

RESOURCE EFFICIENCY, RECYCLING AND ENVIRONMENTAL SUSTAINABILITY WILL SHAPE URBAN DEVELOPMENT IN THE COMING DECADES. THIS APPLIES TO ALL ASPECTS OF POWER AND WATER SUPPLY. ALTERNATIVE ENERGY SOURCES, THE USE OF URBAN GREEN SPACES FOR ADDITIONAL FOOD SUPPLY, AND THE PRESERVATION OF BIODIVERSITY ARE ALREADY CENTRAL TOPICS FOR INNOVATIVE URBAN PLANNERS.

But by far the most important issue in the public utility area is water supply. If demographic expectations prove out, the world population will rise to 9 billion people by 2030. Assuming a current average daily water consumption of 160 litres per person, this extrapolates an increase in water demand of 40% according to the "Water Resources Group", an adjunct of the World Bank. In the USA, the average per capita H_2O consumption is 500 litres; in Los Angeles alone, it is as much as 770 litres. If this remains the case, the water reserves of the American megacity will dry up in about 50 years. Los Angeles is still in a relatively good starting point, but 14 of the world's largest cities are already struggling with supply bottlenecks and drastic water pollution. This situation is made even more difficult by the fact that, on average, one-fifth of the world's potable water seeps away during the transmission process.

Accelerated urbanisation through the year 2050 means:



Sources: VP Bank, Uno, World Bank, Irena

A city that fails to come up with a solution for its water supply cannot grow sustainably. The inevitable consequences are worrisome for manufacturing companies and other industrial groups as they account for the lion's share of demand (70+%) for fresh water. US consumer goods company Procter & Gamble therefore initiated the industry-wide ""50-Litre-Home Coalition", which is striving to reduce the daily per capita water need to 50 litres. In this regard, technical solutions are just as important as things like information campaigns, water treatment methods and the reuse of water in the home. US-based Advanced Drainage Systems, for example, offers innovative solutions in the field of water supply, such as highly efficient water pipes, drainage solutions and water storage systems. On top of such measures, digitalisation also offers a helping hand here. One technique that has emerged thanks to digital transformation is smart metering, i.e. the digital measurement and analysis of water consumption. This is an important element in the effort to efficiently accommodate increasing demand for water and detect leaky water pipes. Depending on the given city, the existing conduits are simply too old, as in London, or extremely long, as in Tokyo, where a 26,613 km long water supply network provides the city-dwellers with water.

Another focal point is quality analysis. Through the use of mobile sensors, greywater can be monitored and the resulting realtime data stored in the Cloud for further analysis. Depending on the condition of the water, it can be redirected to the various consumption groups. The current coronavirus pandemic in particular has brought to light the strengths of systematic water analysis. Already days before an outbreak or renewed increase of COVID-19 infections, it has been possible to detect the virus in wastewater. This accelerates the localisation of the outbreak as well as shortens the response time for necessary measures.

This is just one example of how diverse the approaches are for supplying a city more efficiently and sustainably with the basic utilities its inhabitants need.

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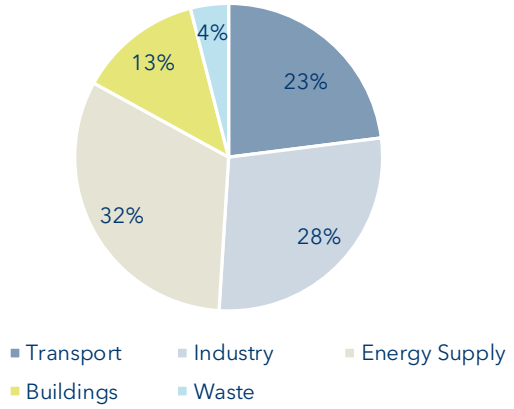
Theme facet 3: Ecologically sustainable infrastructure

DUE TO THEIR SIZE AND PERSISTENT GROWTH, METROPOLISES ARE RESOURCE GLUTTONS AND MAJOR EMITTERS OF CARBON DIOXIDE (CO_2) AS WELL AS OTHER ENVIRONMENTAL POLLUTANTS. ONLY CLEVER PLANNING CAN PREVENT AN ULTIMATE CALAMITY.

The challenge is enormous. Ever-expanding cities must ensure not only that their inhabitants can continue to organise their daily routine efficiently, but also that the quality of life is maintained and the living environment is protected. Especially in terms of the latter, some cities are more vulnerable than others due to their topography. But ultimately, none of them is served unless they can generate a positive energy/environment balance. This is easier said than done: simply take look at any construction site. As a consequence of relentless population growth, the Organisation for Economic Cooperation and Development (OECD) projects that global demand for raw materials will double to 167 gigatonnes per year, whereby the construction industry alone, with its need for basic materials like sand, gravel and limestone, will account for more than half of that amount. Annual demand for sand is expected to total more than 20 billion tonnes already in 2030. Since sand from rivers and the seabed is the only material suitable for construction purposes, the ecological damage to underwater flora and fauna is and will remain dramatic.

Proportion of CO_2 emissions by urban infrastructures



Sources: VP Bank, HSBC, U-Habitat

Going forward, awareness of this problem should have an influence on the way infrastructures of any kind are planned and built, as well and on their specific use, energy efficiency and environmental neutrality. A study by Schneider Electric found that 40% of all energy consumption in urban buildings is wasted. The European Union has also recognised the inefficiency of ageing urban structures. It therefore comes as no surprise that the recently agreed "European Green Deal" addresses this issue. The renovation of public buildings will receive the highest budgetary allotment (EUR 90 billion). A further EUR 50 billion will be made available in the form of attractively priced mortgage loans for ecologically sustainable buildings in the private sector. On the other side of the Atlantic, Democratic presidential candidate Joe Biden is frequently talking about a "climate and green recovery plan" in his campaign speeches and wants to mobilise huge sums of money for this purpose.

By taking the entrepreneurial approach, TopBuild has become the leading provider of insulation and sustainable housing in the USA. With its broad network and array of services, the company is already a supplier for close to 40% of all new buildings. It also participates in major projects such as the newly constructed "Freedom Tower" (on the site of the former World Trade Center) and the major airport in Orlando, Florida. Canadian company Stantec is the leader in the North American urban utility infrastructure segment, and also enjoys a fine reputation in other English-speaking countries. It has won awards for the design of ecologically sustainable education facilities and is a leader in recycling and water infrastructure.
The iron will to modernise electric power generation is most evident in Germany. The Energy feed-in act (EEG), which initially took effect in 2000, has been particularised several times and today devotes enormous sums to alternative energy production. A large part of this funding comes from the energy surcharge, which is mainly borne by private households, with private partnerships providing added financial backing. Germany-based Encavis is pursuing the latter route with its business model. The company's 85 wind farms and 191 solar parks are spread across Germany, France, Spain and Denmark. In total, they will generate some 2.5 gigawatts (GW) of green electricity by the end of 2020, whereas only 1.7 of that total is attributable to facilities owned outright by the company. Encavis' in-house asset management subsidiary administers the other 0.8 GW on behalf of institutional investors. This enables Encavis to tap more renewable energy sources than would be possible with its own operating business (NB: by 2025, Encavis' share is expected to increase to 3 GW). A new version of the Act, which supplants the original EEG that alternative energy operators depend on so much, shifts the focus from wind farms to solar power, energy efficiency and thus a further reduction of noxious emissions. Today, 70% of the energy required in urban areas comes from fossil fuels. Heating systems in inner-city buildings contribute more to air pollution than do diesel vehicles, which are often claimed to be the biggest sinners.
Hence, the sustainable construction, maintenance and operation of urban infrastructure constitute a colossal undertaking that requires enormous investments.

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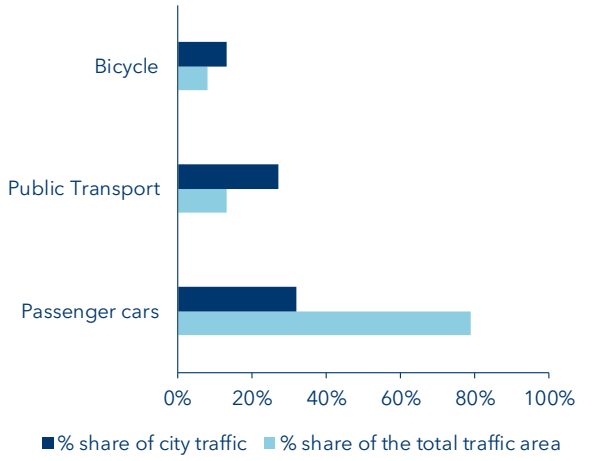
Theme facet 4: Urban mobility

MOBILITY IS THE LIFEBLOOD OF CITIES – NOT JUST FOR ITS ECONOMY, BUT ALSO FOR THE QUALITY OF LIFE IT OFFERS. THEREFORE, A FLEXIBLE AND AFFORDABLE RANGE OF MOBILITY OPTIONS IS INDISPENSABLE FOR ANY MAJOR METROPOLITAN AREA.

The various means of urban transport are certainly not cheap. In the European Union alone, they are the source of more than EUR 230 billion in damages each year, and this on top of their basic operating costs. The cause: air pollution, noise, congestion, accidents and CO_2 emissions. Moreover, the conditions for mobility and the requisite space are getting totally out of hand. In Europe's city centres, more than 40% of personal mobility is accomplished by automobile, 30% by walking or cycling, and roughly 28% by public transport.

Traffic area use in Berlin



Sources: VP Bank, Transformative Urban Mobility Initiative

The circumstances in Berlin illustrate a drastic imbalance between the use of public/private transport and the amount of land necessary for doing so. At 79%, cars monopolise a traffic area in Berlin that is 2.5 times more than their use for personal transport justifies. This corresponds to 4,738 hectares, or more than 6,635 football fields worth of territory in of one of the largest cities in Europe. Aside from the necessary streets, private transport also requires a sizeable amount of space simply for parking those cars. The estimated 300 million parking spaces in Western Europe (EU 15) cause recurring operating and maintenance costs of EUR 195 billion annually, only a quarter of which can be recouped through parking fees – the remainder is borne by the general public and reduces the city's budget. Likewise, a car is parked more than 95% of the day, making it a very inefficient means of urban transport. All of this underscores the fact that privately used automobiles are becoming a problem for cities and city-dwellers in many ways. Viewed as a whole, urban mobility displays its true virtues when the benefits accrue to the broad populace, not just a certain demographic.

Here, too, digital transformation opens us a wide variety of solutions. The implementation of a digital infrastructure management system allows holistic traffic control, which in turn increases energy efficiency and the use of public transport. The focal points will shift depending on the status of technological innovations: currently, the intent is to promote electromobility. For example, this past August online retailer Amazon ordered 1,800 electric delivery vans from Daimler AG for use in Germany and England. The majority of these vans will be delivered already by the end of 2020. Compared to the 100,000 battery-powered vehicles that Amazon has already ordered from its own subsidiary Rivian Automotive, this seems like a drop in the ocean. Nevertheless, it shows that Daimler has entered the age of electromobility. And quite obviously, vans like this help to reduce CO_2 emissions and noise pollution.

Other important areas of development include so-called "sharing services" and autonomous, i.e. driverless, car control. Here as well, car sharing would reduce traffic congestion and air pollution. But the sharing-services business models will only add true value when the vehicles can be operated autonomously in metropolitan centres. This would make it possible to offer seamless mobility packages, i.e. subscriptions tailored to the specific needs and preferences of urbanites that offer those commuters not only the use of public transport, but also a utilisation quota for all forms of micro-mobility. Such a development holds enormous potential in terms of managing the urban sprawl, as well as opens up new growth opportunities for car manufacturers. Here, the related profits are less dependent on the absolute number of vehicles sold than on the distance travelled or the way they are used. Some automakers are already testing business models of this nature. For example, last year Daimler and BMW combined their sharing solutions in a joint venture called "Share Now". Together, they already serve 60 million customers. Swedish car company Volvo is trying a different approach with a long-term rental and round-the-clock mobility guarantee. With its "Care by Volvo" subscription plan, it currently offers three types of vehicle, whereby the customer only has to pay for the fuel consumption – all other services, such as insurance, tyres, service and vehicle tax are included in the monthly fee. These business models are still quite a rarity, but the trend towards mobility concepts is no longer stoppable, especially in larger metropolitan areas.

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Opportunities from sustainable urbanisation

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Important legal information