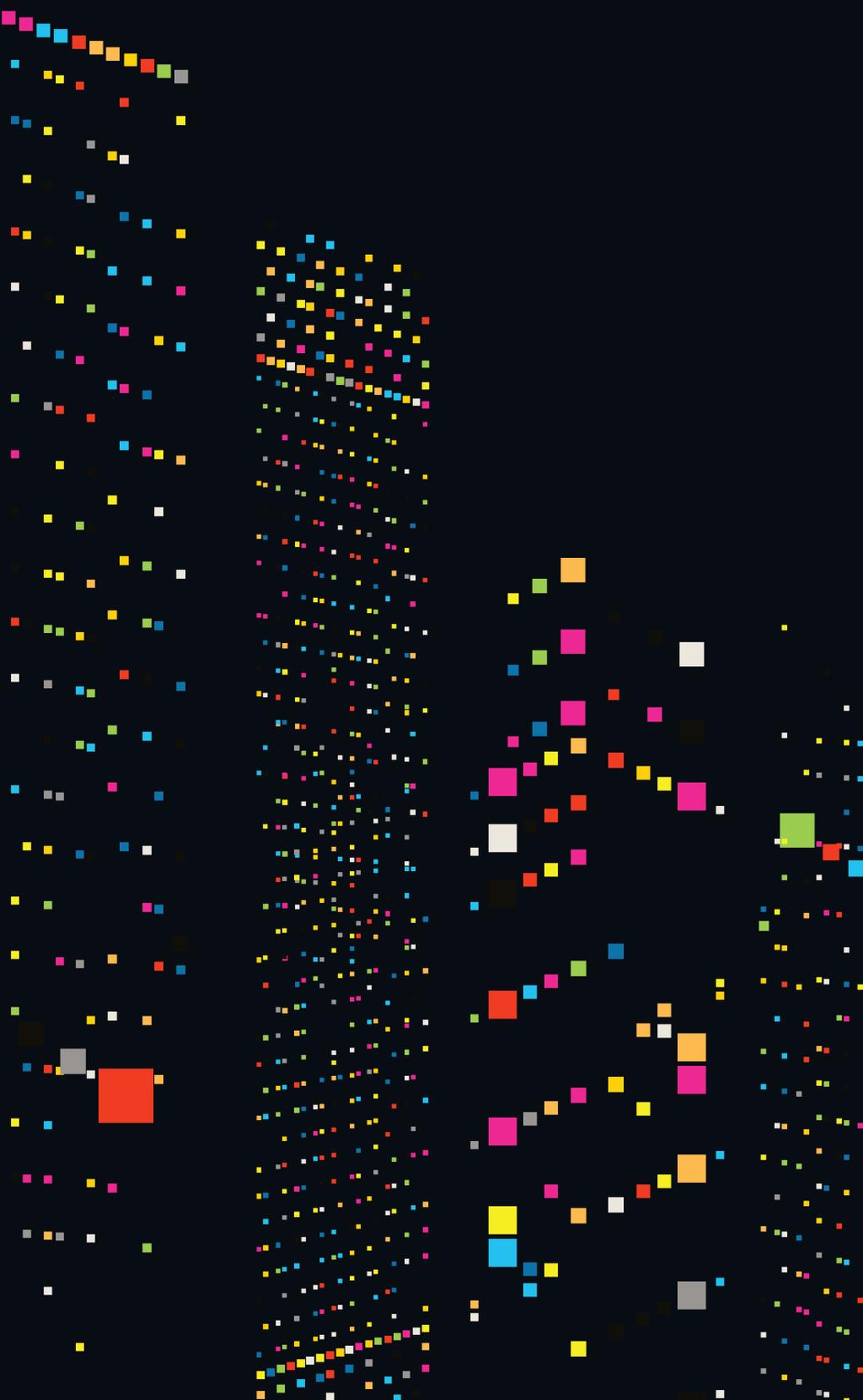


**Smart Cities:
The new
mega-market
for utilities.**

**Why mid-sized
cities promise
big-time
opportunities**

Roland
Berger





Cities are more important than ever before

More than 55% of the world's population currently live in cities (1980: 39%). In Europe, the figure is even higher – about 75% of the continent's population are city dwellers. And cities are not only popular places to live. They are also economic powerhouses, logistics hubs, administrative centers, drivers of innovation, forerunners of trends and attractive destinations for talent.

Smart City strategies offer solutions to cities' problems

Their popularity means cities face many challenges: traffic jams, pollution, high energy demand, a large volume of waste, pressure on green areas to create space for buildings and streets, etc. There is no miracle cure for all of these problems, but the growing reach of digitalization offers a powerful solution: the Smart City. This integrated approach combines and coordinates a broad range of digital solutions, from urban planning to mobility and environmental services.

Mid-sized cities are ripe for Smart City solutions

Numerous studies exist on the Smart City approaches of big cities. But those of smaller cities have been largely neglected. Yet turning the focus on these cities is particularly interesting. In the EU, mid-sized cities, defined as urban areas with 100,000 to 500,000 inhabitants, are home

to one third of the EU population living in any city with more than 50,000 residents. Mid-sized cities often lack the strategy, planning and financial resources that are available to large cities and critical to develop and implement Smart City solutions. In addition, mid-sized cities face the challenge of dealing with a large number of different infrastructures, stemming from their interconnection with their rural surroundings or neighboring cities.

Utilities are "natural" partners to support mid-sized cities with Smart City strategies

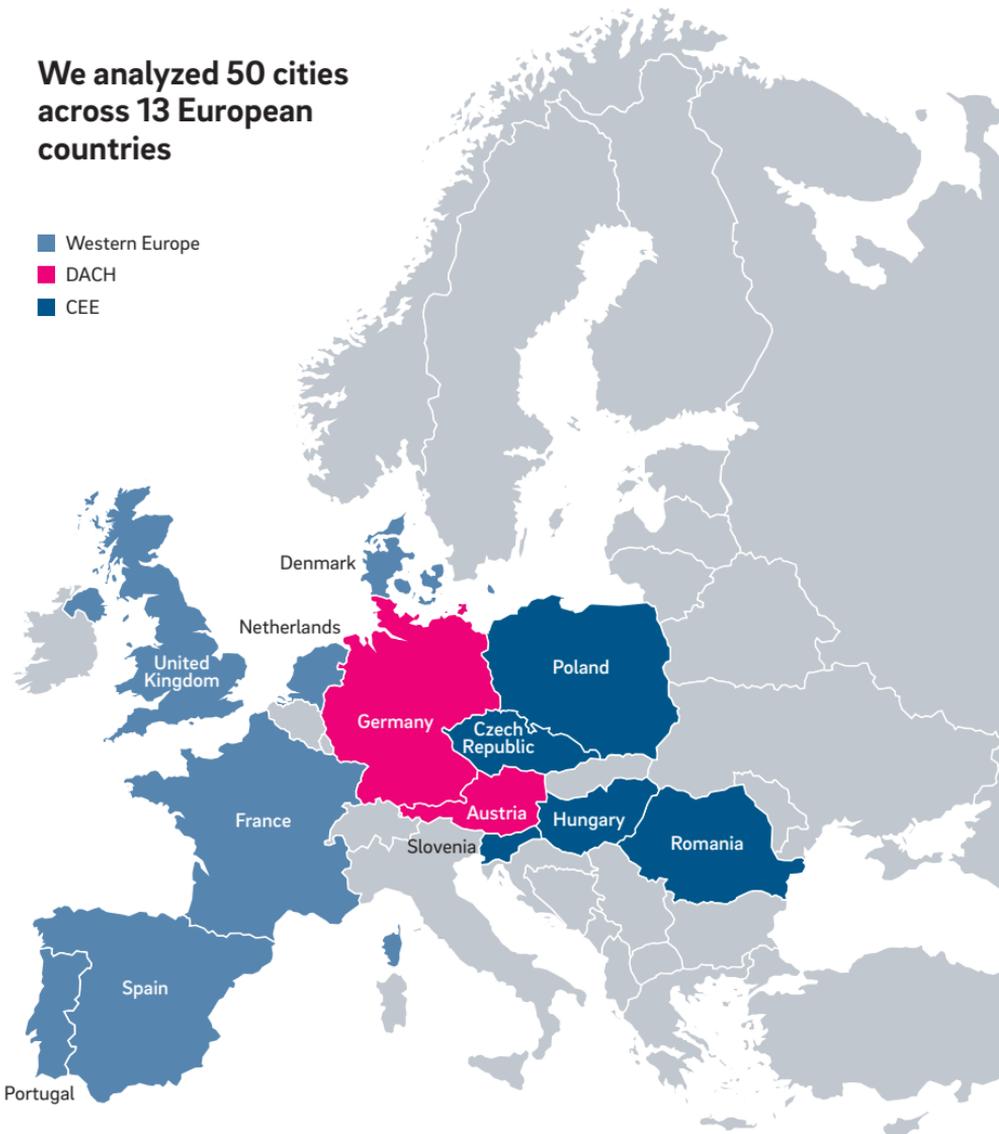
Utilities have all the know-how and capabilities to plan and implement an integrated approach, comprising smart energy supply, smart mobility, smart communication and smart buildings. In addition, they can provide financial resources, have experience of coordinating different stakeholders and can ensure that Smart City projects will be profitable.

This study sheds light on Smart City strategies of mid-sized cities in the EU. It looks at how utilities can support these cities in their Smart City strategy, thereby opening up a new mega-market for such organizations.

What we did: A comprehensive study of Smart City strategies in mid-sized EU cities

We asked decision makers and experts in mid-sized cities (100,000-500,000 inhabitants) of 13 European countries – from Western Europe (UK, France, Spain, Netherlands, Portugal, Denmark) to the DACH region (Germany, Austria) and Central and Eastern Europe (Poland, Hungary, Czech Republic, Romania, Slovenia) – about their city's Smart City strategy. In total we collected and analyzed answers from 50 cities across the 13 countries. The result is a comprehensive picture enabling us to compare different regions and describe the opportunities for utilities in detail.

We analyzed 50 cities across 13 European countries



Source: Roland Berger

Takeaway 1: Smart City solutions are at the top of the agenda in many mid-sized EU cities

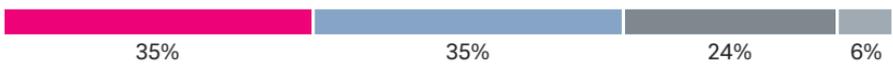
Almost a third of the decision makers and experts surveyed gave Smart City solutions a high strategic priority, with the ambition to be first movers in the implementation of smart solutions. Over 80% of respondents consider the Smart City strategy a medium or high priority. The will to act is there, which opens a big opportunity for external support. The numbers are most promising in the DACH region, while the CEE region lags behind.

Question: How do you rank the importance of developing/integrating smart solutions in your city?¹

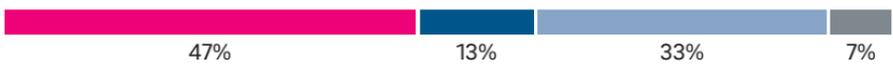
All regions



Western Europe



DACH region



CEE



- High strategic priority, ambition is to be the first mover in the implementation/development of smart solutions
- High priority, ambition is to be first in the convergence towards and eventual establishment of a Smart City
- Medium priority, focus is on the development of mature existing products and solutions
- Low strategic priority placed on developing/integrating smart solutions
- No priority placed on developing/integrating smart solutions

¹ May not sum up to 100% due to rounding

Source: Roland Berger

Takeaway 2: To date, only stand-alone smart technologies have been piloted by mid-sized EU cities

Four out of five mid-sized EU cities have implemented smart technologies. But when we asked the respondents to specify the technologies, most of them mentioned only standalone pilots relating to the implementation of smart technologies, largely in the mobility sector.

Question: Do you have smart technologies already implemented in your city?

All regions



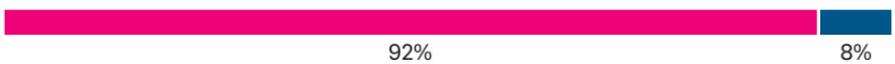
Western Europe



DACH region



CEE



■ Yes ■ No

Selected smart technologies piloted

Western Europe

- Smart mobility and parking
- Smart lighting
- Data centers
- Waste management systems

DACH region

- Car and e-bike sharing
- Charging stations for electric vehicles (EVs)
- Intelligent traffic lights
- E-government solutions

CEE

- Traffic management
- Dynamic passenger information systems
- E-services for residents, investors and tourists
- Regional data centers

Source: Roland Berger

Takeaway 3: Most mid-sized EU cities lack a clear Smart City strategy

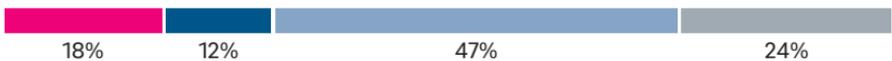
Despite bold ambitions for smart solutions, most of the mid-sized EU cities lack a clear short/medium-term Smart City transformation strategy: Only 20% are pursuing such a strategy. Again, this shows that there is a need for external support. The DACH region has a leading role in Europe when it comes to the Smart City transition.

Question: Do you have a short-term or medium-term Smart City transformation strategy/plan?¹

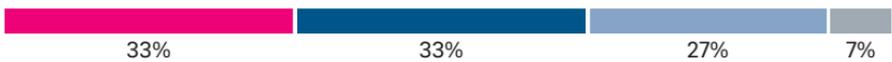
All regions



Western Europe



DACH region



CEE



- Clear short-term or medium-term Smart City transformation strategy/plan
- Smart City transformation strategy/plan depends on the outcomes of ongoing smart solution implementation
- Smart City transformation is planned but not further specified (i.e. short-term or medium-term timeline undefined)
- No transformation strategy/plan

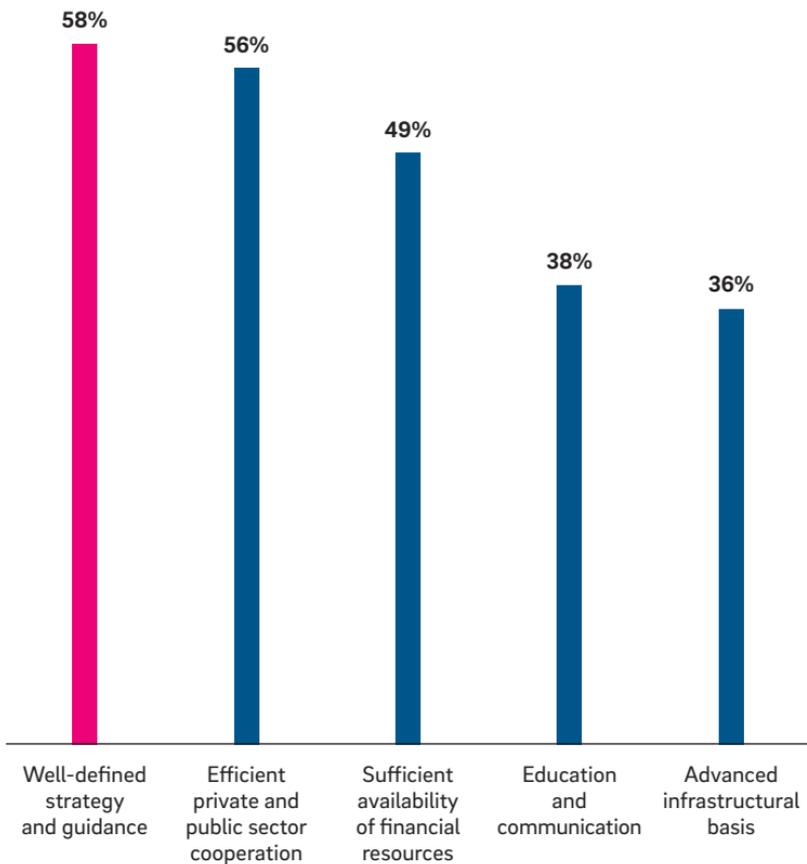
¹ May not sum up to 100% due to rounding

Source: Roland Berger

Takeaway 4: A well-defined strategy, efficient cooperation and sufficient resources are key

The high priority that our respondents place on a Smart City strategy is borne out by the key factors behind the success of existing Smart City projects. The first of these is a well-defined strategy and guidance, followed by efficient private and public sector cooperation and, lastly, sufficient availability of financial resources. This means that external support can make an important contribution to guide a strategy, foster cooperation and make resources available. The same is true with other, lesser factors: External partners can help communicate targets, educate users and deliver advanced infrastructure.

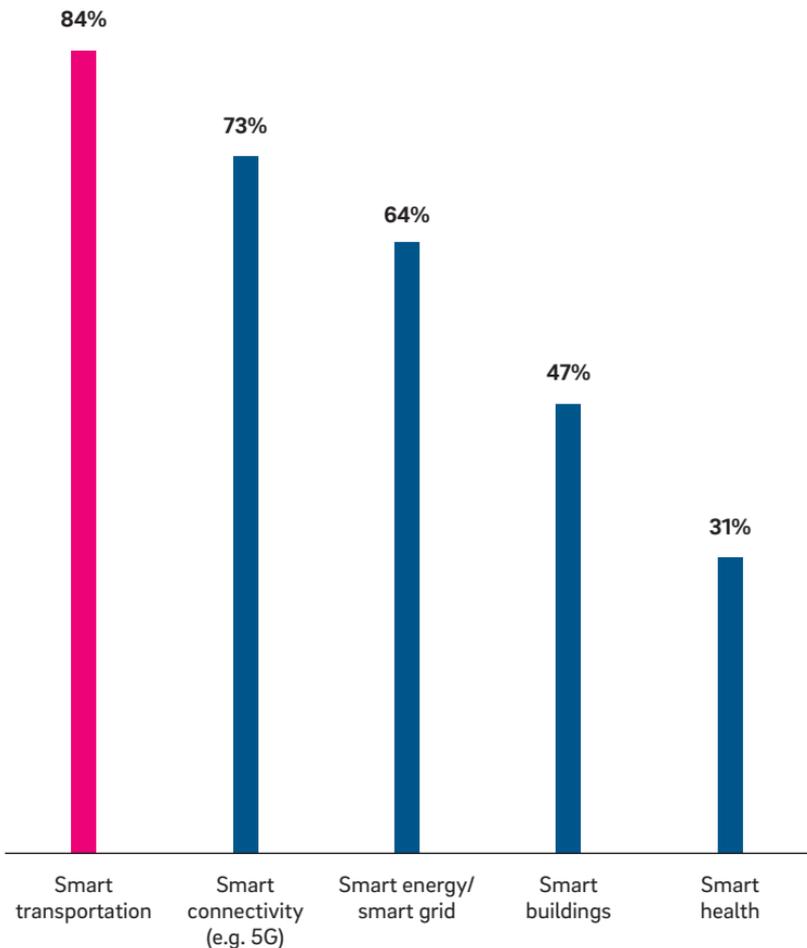
Question: What are the key success factors of existing Smart City projects? Multiple answers possible.



Takeaway 5: A Smart City needs to integrate several smart elements to ensure a holistic strategy

Several elements need to be combined to build the comprehensive "smartness" of a city. Smart transportation was the element most often mentioned by our respondents as a key element. Solutions from ride-pooling with taxi-vans to autonomous buses provide people with better connections, reduce traffic jams and pollution, and can help minimize the subsidization of public transport. In Germany alone, the state funds municipal public transit companies to the tune of EUR 3.2 billion per year.

Question: Which key elements do you think form the basis of a Smart City? Multiple answers possible.

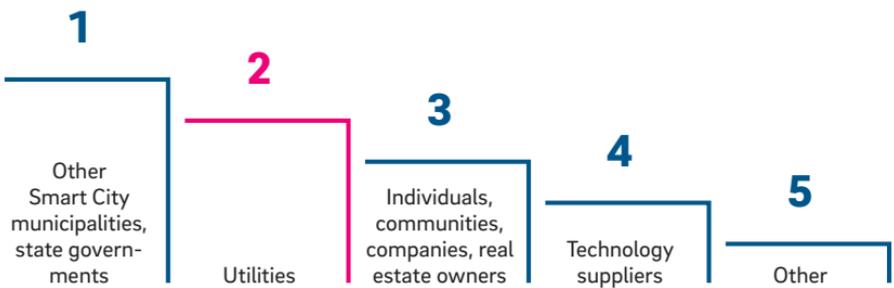


Source: Roland Berger

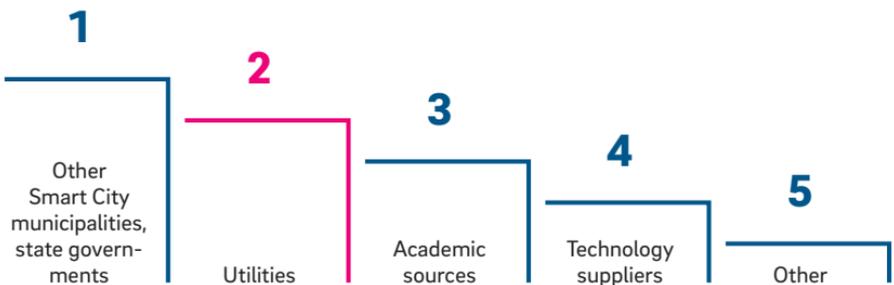
Takeaway 6: Mid-sized cities rely on their peers and utilities to implement their Smart City strategies

Decision makers and experts in mid-sized EU cities consider their peers – other Smart City municipalities and state governments – to be the most important stakeholders for Smart City development, also when it comes to delivering valuable know-how for Smart City projects. It is reasonable and appropriate to look for support within one's own network. In both categories, utilities are in second place. As they are able to combine a breadth of know-how and tools to provide comprehensive support, utilities are seen as more important than technology suppliers.

Question: Please rank stakeholders based on how important they are for Smart City development.¹



Question: Who would you consider a knowledgeable source for Smart City projects?¹



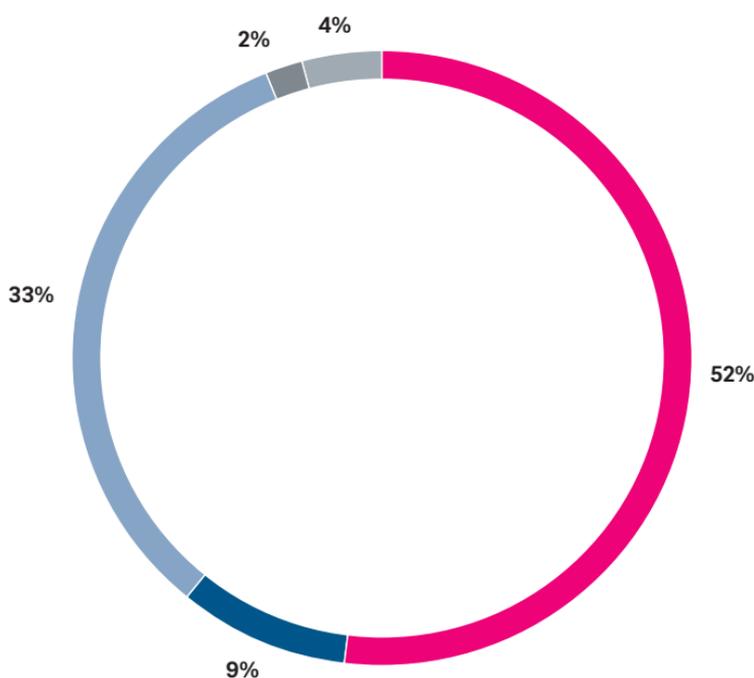
¹ Rankings according to the number of answers naming the respective stakeholder as most important

Source: Roland Berger

Takeaway 7: Cities greatly value support from utilities, presenting huge market opportunities

More than half of the cities surveyed think that utilities will play a key role in the shift towards a Smart City. They believe utilities are the most important sector, or will likely be key to the implementation of most Smart City solutions. Only a very small number of respondents see no significant role for utilities. The high expectations that cities have of utilities mean that there is a huge opportunity for them to enter a market that is not only large by numbers (there are more than 280 mid-sized cities in the EU), but also very promising in terms of the size and duration of projects.

Question: What role should utilities assume in Smart Cities?



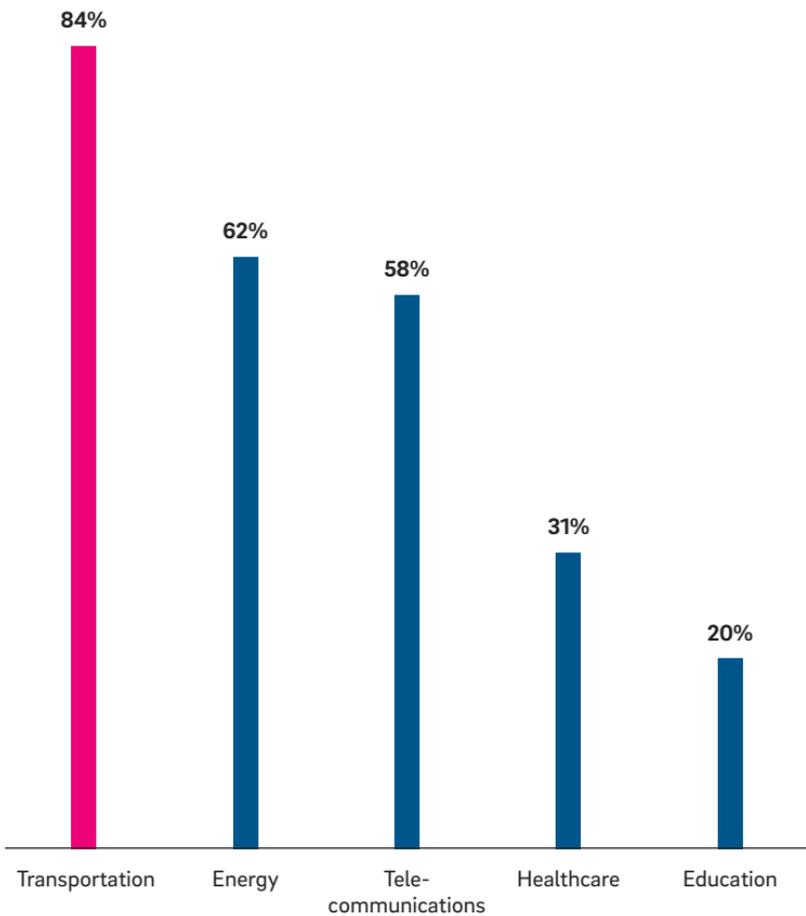
- Utilities are the most important sector, or are key to the implementation of most Smart City solutions
- The main role of utilities will be to ensure the decentralized supply of energy
- Various industries are required to establish a Smart City and there are no clear leading sectors
- No significant role for utilities
- Other

Source: Roland Berger

Takeaway 8: Mid-sized EU countries favor allocating Smart City funds to three major utilities sectors

Our results showing which sectors are the top priority for Smart City funds highlight the important role that decision makers and experts in mid-sized EU cities attribute to utilities. Three big utilities sectors lead the field: transportation, energy and telecommunications. Transportation, which is often heavily subsidized, has the highest priority. This is little surprise as smart transportation solutions can lead public transport towards profitability, giving cities financial leeway for further investments.

Question: Which sectors have top priority in the allocation of Smart City funds? Multiple answers possible.

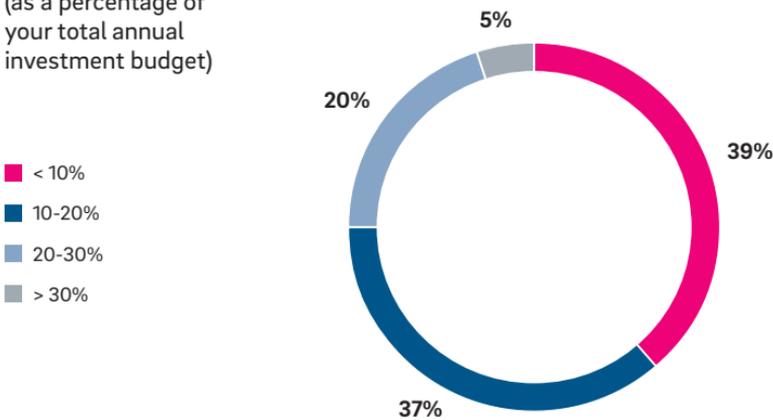


Takeaway 9: Mid-sized EU cities are willing to invest significant budget share to build a Smart City

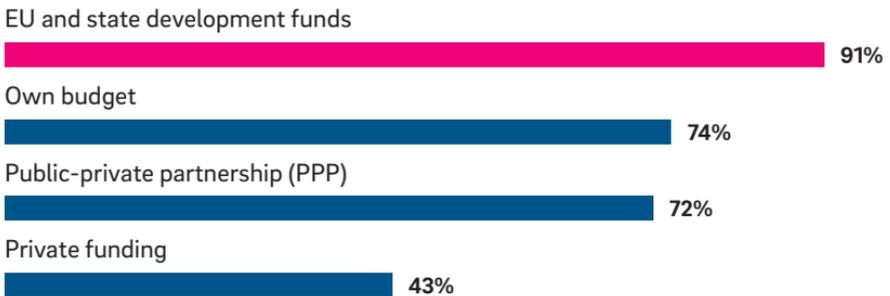
Mid-sized EU cities are committed to spending significant funds on their Smart City projects. A total of 57% of our respondents said that these investments should account for 10-30% of their total annual investment budget. Based on all the responses, we calculate a weighted average of 14.3%. For Germany's cities and local districts (entire municipal level¹) this would total EUR 4.3 billion p.a. When it comes to financing, 9 out of 10 respondents would use EU and state development funds to realize Smart City projects.

Question: How much should be invested on an annual basis to build a competitive Smart City?²

(as a percentage of your total annual investment budget)



Question: What type of funding would you use to realize Smart City projects? Multiple answers possible.



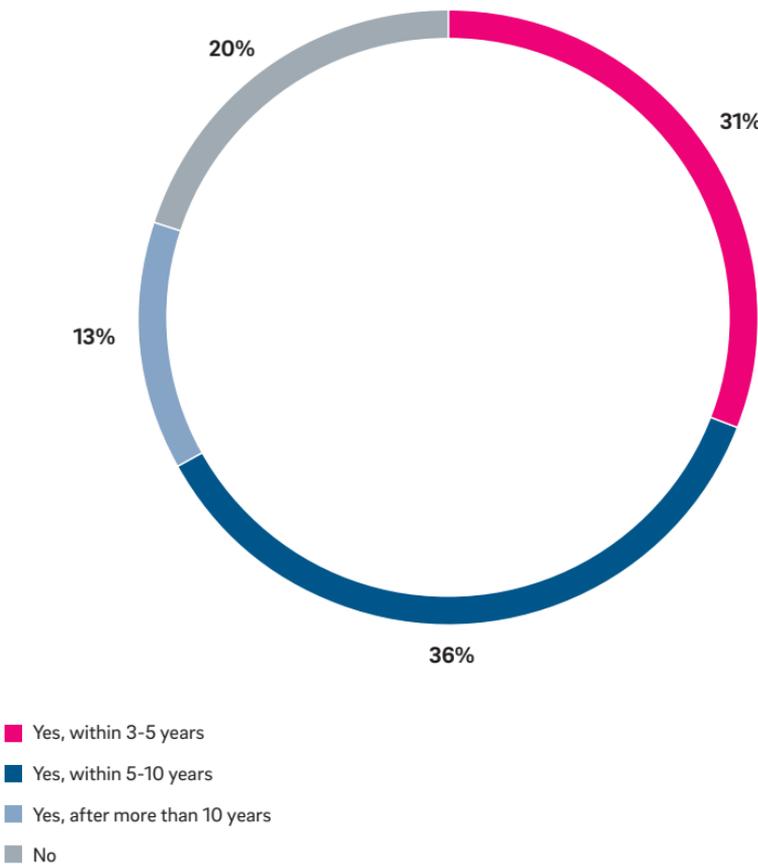
¹ In 2018, tangible investments by German cities (not including city states) and districts on the municipal level totaled EUR 30.1 billion (source: destatis) ² Does not sum up to 100% due to rounding

Source: Roland Berger

Takeaway 10: 80% of mid-sized EU cities expect Smart City projects to be profitable

Public services and infrastructure provided by cities are often not profitable, but cities have a duty to provide their citizens with them. It is therefore very encouraging that our survey shows that a huge majority – 80% – of decision makers and experts expect Smart City projects to be profitable. Some 31% of respondents even expect a return within 3-5 years, while 36% expect Smart City projects to be profitable in 5-10 years. This suggests their willingness to invest a significant amount of money is motivated by the expectation that the investment will pay off in a relatively short timeframe.

Question: Do you expect Smart City projects to be profitable?



Source: Roland Berger

So what needs to be done now?

Eight actions to exploit the full potential of Smart City strategies

We have seen that mid-sized EU cities consider Smart City strategies to be very important, that these cities are committed to investing significant amounts and that they view utilities as their most important partners. So what do cities and utilities need to do now? Below we outline specific actions to successfully develop and implement Smart City strategies.

Actions for cities

1. Stop piloting and go for a holistic strategy

Piloting single Smart City projects is useful to get an idea of what is possible and to receive first user feedback. But piloting again and again leads to a patchwork of solutions, meaning a city will never be able to realize synergies and exploit the full potential of a Smart City. In addition, it will be harder and harder to connect the single solutions. Thus, cities should aim to formulate a holistic Smart City strategy.

2. Create your own Smart City competence center

Mid-sized cities will not be able to implement a Smart City strategy by themselves – they need utilities and other companies as partners. But to maximize cooperation with their partners they should build up their own strategic, technical and application know-how and capabilities and bundle them together in a Smart City competence center.

3. Join forces and establish a "Smart City Fund"

Smart City technologies can be expensive, but cities expect that they will be profitable. Co-funding with PPP concepts often failed in the past. So instead, cities in the same country should join forces and work together to establish a national "Smart City Fund". Equipped with guarantees or investors from the nationwide group of cities, the fund could attract investments from big institutional investors such as banks, insurance companies and pension funds.

Actions for utilities

4. Market your Smart City strengths

As our results show, the key elements of a Smart City strategy are closely aligned with the strengths of utilities, particularly in the transportation, connectivity and energy sectors. These are also the most important sectors when it comes to the allocation of Smart City funds.

5. Focus on mid-sized EU cities

These cities are most in need of comprehensive external support – they often lack strategy and planning capabilities, as well as financial resources. Their locations near rural areas or close to other cities mean they have to adjust to different infrastructures. There are also a lot of them: More than 280 EU cities have between 100,000 and 500,000 inhabitants. In addition, mid-sized cities will appreciate support that comes from a single source.

6. Develop a modular set of strategy elements

Smart City strategies and projects have to be as individual as cities are, but utilities don't need to reinvent the wheel with each new Smart City project. Instead, they should develop a tool set and combine and adapt its elements for individual Smart City strategies.

7. Foster strong relationships with cities

Mid-sized cities need tangible support. If a partner develops a good strategy, they also want that partner to implement the strategy. This is a great opportunity for utilities to conduct long-term projects and to develop deep customer relationships.

8. Make Smart City projects profitable

The huge majority of mid-sized cities' decision makers and experts expect Smart City projects to be profitable. Utilities should work hard to meet expectations. If they can demonstrate early profitability for initial projects, that will serve as an excellent reference for further projects.

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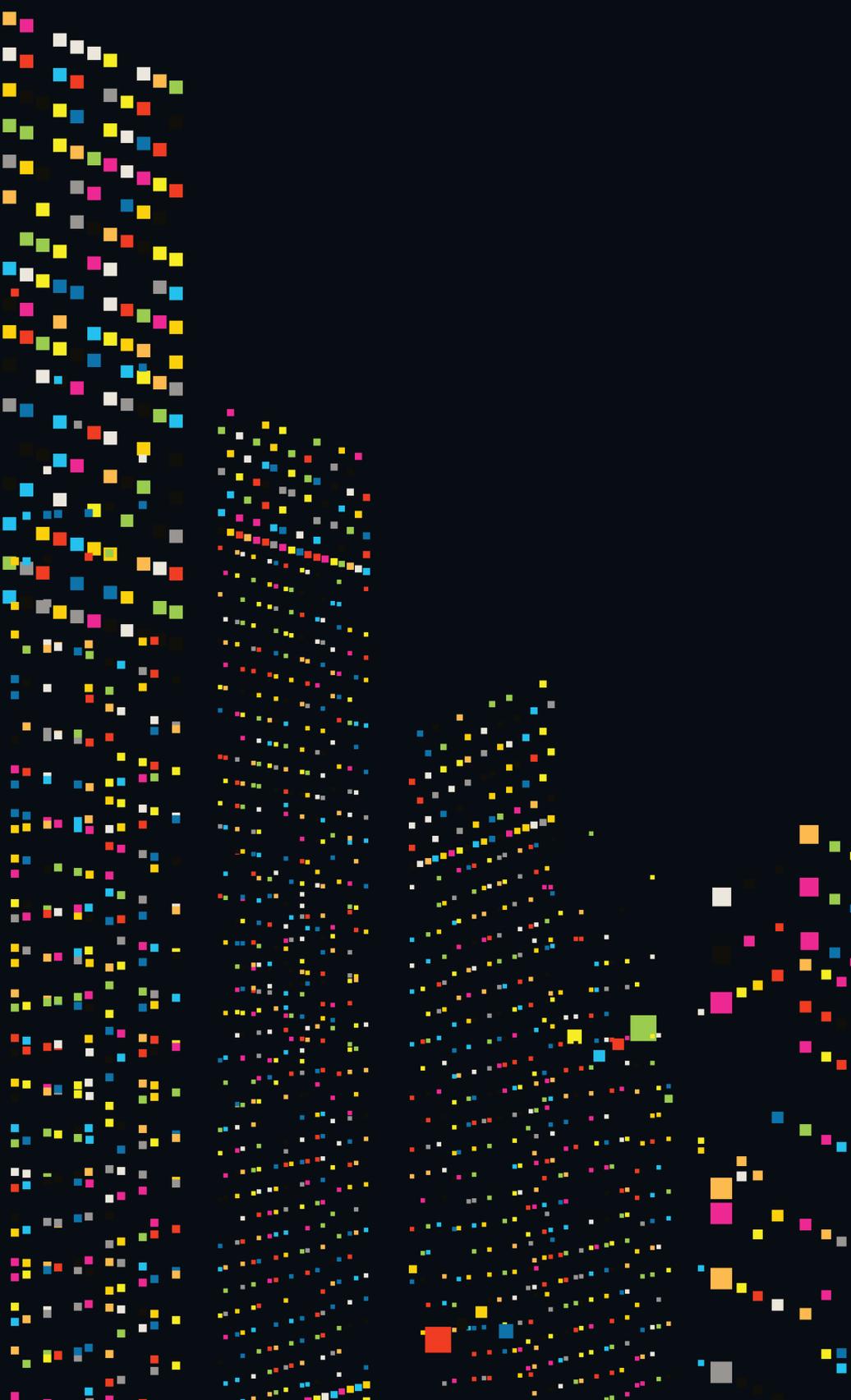


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