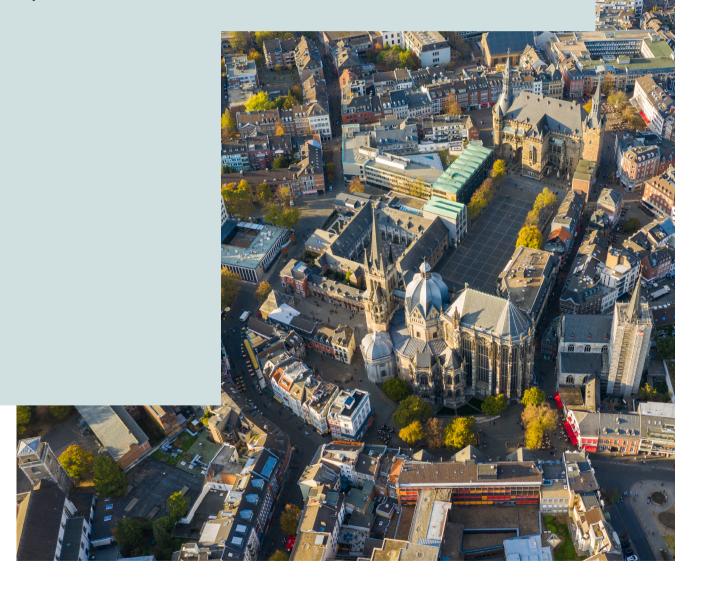# Memorandum
Urban Resilience

Pathways to robust,
adaptive and future-oriented cities

Memorandum Urban Resilience

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1. Preamble

1.1 Pathways to urban resilience

Throughout history, Europe's urban settlements have been faced with regular crises and disasters. They have responded by adapting and evolving, ensuring their successful ongoing development. This response has led to social, technological, cultural and economic innovation, together with planning and design rules that have shaped Europe's Baukultur, improving the quality of the built environment. However, towns and cities still face a broad spectrum of potential risks: extreme weather, disasters, terrorist attacks, power outages, economic crises and pandemics, as well as additional factors that can further amplify these risks, such as digitalisation, globalisation, demographic change, social inequality, migration, and environmental destruction and climate change.

Natural disasters, pandemics and climate change represent major challenges for towns and cities: they call for rapid reactions, test our physical and personal resourcefulness, and highlight the limits of our systems. Our societies, in which efficiency and progress have become all-important, are now required to face the question of which reserves and resources they wish to set aside for potential crises. We are forced to think about what we want our future to look like.

This Memorandum: Urban Resilience aims to illustrate pathways that can be taken to proactively utilise transformative change processes and to make towns and cities more robust in the face of crises and disasters. The safety, well-being and quality of life of citizens are at the forefront of this memorandum, along with the citizens' responsibility for sustainable practices and the protection of global natural resources (global common goods). Urban resilience is defined as "the measurable ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming towards sustainability". A key element of integrated urban development policy is thus to support towns and cities in adopting a coherent approach to reduce known risks, prevent new risks, to improve their capability to overcome crises, and to shape urban development that is robust, future-proof and adaptable.

To achieve this, stakeholders from civil society, government, administration, the private sector, the research community, religious communities, the media, and other experts in the field must cooperate closely. This is the only way to strengthen the resilience of our towns and cities while also fostering a spirit of togetherness. The memorandum therefore explicitly references the coordinating role of integrated urban development, in line with the New Leipzig Charter and in the context of the National Urban Development Policy. Over centuries, towns and cities in Europe have shown themselves as a model for architectural, social and cultural values. We think they can emerge even stronger from the crises they face today.

1.2 Stress test for our towns and cities

The COVID-19 pandemic continues to put our towns and cities through a very specific, extended stress test. The periods of lockdown utilised globally have led to huge changes in urban living. The closure of educational institutions, retail outlets and cafés and restaurants, coupled with reduced working hours and more people working from home, meant that activity levels in our towns and cities fell drastically. The vulnerability of the global economy and supply chains on which it is based became tangible even to individual households. Pressure on the healthcare system, empty streets and public transport, spontaneous acts of everyday solidarity, and restrictions on movement changed our attitude to the places we live. Overall, tension and fear cast a cloud over urban life. However, the situation also brought about the unexpected silver lining of increased solidarity and neighbourliness.

Large numbers of memoranda, position papers and academic studies have come to the same conclusion: the pandemic has served as a catalyst in many regards, shining an unforgiving spotlight on known shortcomings and problems. Many of the resulting tasks and searched-for solutions are not "new", but the pande-

mic has increased their urgency. Places with differing levels of spatial and socio-demographic equality – especially in deprived areas – are facing different challenges and vulnerabilities. "New" challenges have also emerged, especially regarding risk management, healthcare, public space and digital transformation; the very specific nature of these challenges must be taken into account by policy- and decision-makers.

1.3 National and international frameworks for urban development and resilience

At the international level the most important frameworks are the Sustainable Development Goals (SDG) set out in the 2030 Agenda of the United Nations, the Sendai Framework for Disaster Risk Reduction, the 2015 Paris Agreement on climate change, and the 2016 New Urban Agenda. In Europe, the European Green Deal (2019) and the Pact of Amsterdam setting out the Urban Agenda for the EU (2016) are key.

So is the "New Leipzig Charter – The transformative power of cities for the common good", which was signed in 2020. It is a renewal of the "Leipzig Charter on Sustainable European Cities", which laid out goals for integrated urban development policy and was signed in Leipzig in 2007. The New Leipzig Charter is centred around the pursuit of the common good. It sets out five key principles of good urban governance: urban policy for the common good, an integrated approach, participation and co-creation, multi-level governance, and a place-based approach. These principles are connected with the three areas of action "just", "green" and "productive" towns and cities.

2. Call for joint action / Recommendations for action

Based on an in-depth working process with five meetings of an expert advisory committee, a two-day workshop with a total of 50 stakeholders, and a review by the German National Development Policy Board, the memorandum makes the following recommendations for action:

1. Establish strategies for urban resilience
Crises and disasters such as climate change and pandemics illustrate that we need urban resilience strategies for our towns and cities based on the following three dimensions: robust urban development, preventive risk-avoidance approaches, and the ability to transform and adapt. These dimensions must be incorporated into every area of action of integrated urban development, hand in hand with risk and crisis management.

2. Develop existing principles further
Urban resilience builds on the principles outlined in the New Leipzig Charter, which include increased population density, multiple uses, inner city development, urban policy for the common good, high-quality Baukultur, community-building and inclusiveness, and the ability to transform and adapt. If cities and towns are to overcome future crises, they must be made more robust, more flexible and better able to adapt, with more green spaces, nature reserves, temporary uses, and areas for experimentation. To achieve this, building stocks and available land must be increased to provide scope for responding to unforeseen circumstances.

3. Improve regional cooperation
Cooperation across local authority boundaries and at regional level should be strengthened, including the improvement of integrated public transport services across urban areas and their surroundings. The opportunities presented by urban-rural migration should be exploited to promote compact planning options in suburban and rural areas. Planning expertise should also be established in smaller local authorities.

4. Enable flexible governance structures
Urban resilience calls for improved decision-making structures and a public administration that can react quickly and flexibly to crises and disasters. This involves innovative processes, pragmatic solutions, digital infrastructure, analogue redundancies, extended state provision of public services of general interest (including local authority-level risk prevention measures) and a willingness to shape policy accordingly.

5. Promote civic participation
To foster social resilience, social inequality must be reduced and civic participation must be encouraged in the context of a pluralist, democratic society, including at times of crisis. Local authorities should approach participation and co-creation in urban planning as an opportunity, and should foster citizen involvement. Allowing more freedom to experiment in adapting existing buildings for alternative uses is one example of this.

6. Tap into assets at the neighbourhood level

Neighbourhoods and communities held together by solidarity are a strong foundation for urban resilience. Increased numbers of people working from home mean the importance of where we live has grown. Neighbourhoods, with their interpersonal social networks, public amenities and local service provisions should be developed to achieve a compact, "15-minute city". A levelling up of disadvantaged areas is called for, but it is also important to prevent areas becoming disadvantaged in the first place, particularly with respect to environmental and health risks and equality of opportunity.

7. Create resilient infrastructure and healthcare provision

Critical utility services must be particularly robust and have redundancy build in. This encompasses blue, green and grey infrastructure in order to ensure that cities and towns play their part in climate change mitigation and adaptation. While comprehensive healthcare and local healthcare facilities are essential, multiple-use spaces can also improve amenity value in neighbourhoods.

8. Safeguard digital infrastructure and data sovereignty

The pandemic has hastened digital transformation, with far-reaching effects on urban development, including in retail and mobility aspects and working from home. Digital infrastructure must be seen as a public service of general interest and must therefore be universal, while guaranteeing local data sovereignty.

9. Change the face of urban centres

City and neighbourhood centres must be empowered in their roles. They must be made more multifunctional and more diverse through the provision of housing and social and cultural services, which will improve their resilience. Strategies for inner city development must be updated and expanded to include resilience as a key factor.

10. Work towards resilient public space and mobility transformation

Public space should be expanded and redesigned specifically to include green and open areas near to housing, which can be used for multiple non-commercial purposes. Such spaces are important resources in preventive healthcare and climate change adaptation.

Mobility transformation should be encouraged with the aim of achieving eco-mobility, the redesign of road spaces, and the equitable use of roads for all users.

Implications for urban development policy

- The necessary financial and human resources must be made available at all levels to ensure that towns and cities are supported in achieving resilience and in overcoming future crises. This includes continuing education and training, discussion among experts, and skills development for all employees.

- To achieve the goals of the New Leipzig Charter, the National Urban Development Policy should be strengthened and developed both financially and structurally, and expanded to include urban resilience. A recommended proposal would be for a Leipzig Charter Centre as a focus for expertise, along with an Urban Resilience Task Force to help local authorities with crisis management when disasters strike.

- Crucial aspects of risk management, environmental protection, preventive healthcare, climate change adaptation, social justice and integration should be more closely incorporated into funding instruments and urban development planning. Such aspects include socio-spatial monitoring, risk studies, and adaptation strategies and measures. Urban development strategies should therefore be supplemented with the cross-cutting issue of resilience, and budgets for them should be increased accordingly.

- Planning law and urban development support programmes must be broadened to include resilience. Legal restrictions governing mixed-use development and changes of use should be made more flexible, in particular with regard to noise-reduction. Local authorities' land resources should be expanded or established through new or extended land policy instruments, for example by setting up local pools of state-owned land.

- Digital skills must be established and digital transformation projects integrated into urban development strategies to ensure local authorities are future-proof.

- To encourage urban resilience innovation, an "Experimentale" as a special programme of events should be held to help break down existing barriers and to create spaces for experiments that can be made permanent over time.

- The National Urban Development Policy must be expanded to include international cooperation. This will help towns and cities to prepare for future global challenges and will enable them to benefit from other regions' experiences with urban resilience.

3. Urban resilience in sustainable urban development

It is important for resilience to become a central element of sustainable urban development. Resilience should not, however, be understood solely in terms of stabilising existing structures to make them more robust. Urban resilience is not just a question of hardiness: it is also a matter of adapting to change and future challenges. The term urban resilience, therefore, implies a holistic culture that is shaped by change and that brings together lifelong learning, tried and tested experiences, and visions for the future. In the context of sustainable urban development, resilience not only calls for a multi-stakeholder and multi-sector perspective, it also requires an increasingly integrated approach, giving equal weight to natural, technological, biological, economic and social risks.

Crises and disasters affect every level of activity in urban spaces. Urban planning and local self-government are vital to developing solutions tailored to the needs of each locality. The defining characteristics of such solutions are diversity, redundancy built into institutional structures and buildings, multifunctional facilities, and capacities for recovery and regeneration. Extreme events are an opportunity to drive sustainable urban development forward. They call for innovation and implementation, for the willingness of local people to be involved, for risk management skills, for increased financial resources, for decision-making, and for cooperation among stakeholders from civil society, religious communities and the private sector. This understanding of urban resilience also encompasses aspects such as social, economic, environmental and cultural resilience as set out in the New Leipzig Charter and the National Urban Development Policy.

4. Guiding principles, fields of work and action areas

4.1 Guiding principles
Integrated urban development and resilience
Integrated and sustainable urban development, as put forward in the Leipzig Charter, should include resilience concepts in order to contribute to preventing, coping with and recovering from crises. This requires consistent multi-disciplinary action on the part of administrations, and cooperation across the full spectrum of public services – health, sports, children and young people's services, education, culture, economy, transport, environment, construction, civil engineering, planning and so on – while reconciling different, sometimes conflicting, concerns and interests. In accordance with the principles of multi-level governance, all relevant levels are to be involved, including regional, city and neighbourhood.

Urban resilience should therefore be firmly established as a long-term, cross-cutting element of integrated urban development, which will have co-beneficial impacts on all sectors. To achieve this, future planning processes and development projects need to consider and incorporate the various dimensions of resilience. Local authorities will require support to strengthen their capacities accordingly. They will need to be provided with sufficient financial and human resources, and existing administrative processes and structures need to be overhauled. Flexible, agile forms of organisation will be required to implement the necessary changes. In addition, there must be opportunities for reflection so that lessons for the future can be learned from current crises, experimentation and blue-sky thinking can take place, future crises can be anticipated, and new solutions and new practice standards can be established.

Connection to spaces and neighbourhoods
Urban resilience can only be seen in spatial contexts, which range from those of individual blocks, to towns and cities and the surrounding regions beyond, and which must always be taken into account in any planning process. Neighbourhoods increase in priority during crisis situations: they are intermediate territories for direct involvement including commitment from below and regulation from above. They can provide conditions for creative, experimental urban action, where civil society organises and helps shape the urban space it inhabits. When residents feel a sense of belonging in their neighbourhood, it can help create a dynamic, responsive social setting that can become a key local resource in a crisis. The different built environments within a neighbourhood, along with their changing and flexible nature, are also important. In areas where social disadvantage, poor environmental conditions and health risks are superimposed, health risks and vulnerability to crisis increase. Urban development programmes should be extended and implemented in these areas to counterbalance these problems. This can help increase participation, trust, social justice and solidarity.

Public services of general interest and the pursuit of the common good

The pandemic has highlighted the importance of public services, social and technical infrastructure, education and care facilities, and efficient public administration. The state should therefore focus on being "more public" . Increased urban resilience requires infrastructure for the common good that is better equipped and better financed. Acceptance of, respect for, and trust in public administrations and institutions can be thus secured and increased. This calls for flexible processes and agile organisation, in which digital transformation has an important part to play. Pursuing the common good should help to protect vulnerable groups, and help them shape their environments and cope with unavoidable risks.

Critical infrastructure is pivotal here, given that outages could lead to considerable supply bottlenecks or public safety hazards. Firstly, it is important to analyse and define which installations and facilities should be thought of as "critical". This definition must take into account the interdependencies between the territorial planning of services of general interest, and the protection of the critical infrastructure under consideration. In addition, aspects such as failure safety should be kept in mind, for example, in connection with decisions about where infrastructure installations should be located, or the making or maintaining of redundant systems and structures.

Crisis and risk management

Towns and cities are affected by crises and disasters not individually, but as entire systems. To strengthen urban resilience, crisis and risk management as a cross-cutting task in integrated and sustainable urban development should closely involve all stakeholders in a learning process. This means that disaster reduction and prevention becomes a factor in, for example, urban planning, economic development, healthcare, education, construction, traffic planning and environmental protection. At the same time, more attention must be paid to sectoral perspectives in crisis and risk management practice.

Horizontal and vertical networking and coordination are crucial here; without these, any measures taken will be disordered and therefore ineffective. Networking and coordination must extend beyond urban limits – potential risks do not stop at administrative

borders. This provides economies of scale in skills and expertise that would be beyond the means of towns and cities acting individually. By networking processes, it is possible to benefit from experience in different fields of expertise, for example, climate change adaptation, sustainability, or the protection of critical infrastructure. In this way, targeted investments can be made and synergy effects can emerge which make towns and cities more liveable, while at the same time increasing their hardiness in the face of extreme events.

Co-creation and public participation

A significant factor in ensuring a resilient city is a mature society that is capable of action. This is only possible when civil society, the private sector, the research community, policymakers, religious communities and public administrations all play their part and work together. Public negotiating processes which do not shy away from frank discussions, transparent decision-making, and a culture of genuinely listening to what participants have to say, are essential, as is intercultural and interfaith dialogue.

Co-creation is fundamental to promoting innovation, and ultimately to enabling cities and towns to react flexibly when under stress. Close, empowering cooperation increases the likelihood that local knowledge and ideas will be met with public acceptance, resources, and the capacity to deliver. Such processes harness and support existing commitments while fostering new commitments. Particular emphasis should be placed on encouraging citizens to actively contribute to planning processes in their local environment, which will also help to overcome cultural and language barriers. Digital options, such as neighbourhood platforms, can be useful in these circumstances as virtual public spaces.

Urban planning model: the compact, green, mixed-use city

Urban planning models are strategic navigation aids. They set out long-term goals and must be sturdy enough to withstand even major crises. The concept of the compact, dense, mixed-use city (and the associated sustainable and integrated urban development methods and policies) has proved to be a reliable vision, even during the pandemic. High-density urban living is not a problem when there is sufficient available public space. Such a model will remain success-

ful, provided that public space and green infrastructure are not viewed solely in terms of their function as places of social interaction. In fact, they are a major factor in the health of the population and they are also essential to climate change adaptation and mitigation. They must be maintained, nurtured and expanded as community gardens, storm water and flood retention systems, and reservoirs for use during heatwaves. Inner city development combining built and green space must be accompanied by increased local mobility and public transport.

Proactive international urban development policy
In establishing an urban resilience strategy, international experience-sharing should be promoted first and foremost at the local level. There are already shared global goals, similar needs and effective possibilities for action at local government level based on international frameworks (see 1.3 above). However, there are some flaws at the implementation level. The pandemic has highlighted the importance of learning from local governments in other countries that have already developed resilience strategies. More effort should therefore be put into analysing international experiences and their relevance for German urban development, and on communicating positive practical experience amassed in Germany. Future scenarios should be projected and innovative "next practice" experience discussed. These aspects should be reflected in Germany's commitment to help shape and implement global agendas. This international experience should be included systematically in every action area of urban development policy, which brings the topic back to the "learning system" mentioned above. In addition, the National Urban Development Policy should further promote forums for international discussion both of practical experience and research findings.

4.2 Fields of work and action areas
Public spaces
The amenity value of public spaces, and their role as places of social interaction, should be enhanced in order to increase urban resilience. In addition, new spaces for digital interaction should be created, which are accessible to all and that have a local focus, such as digital neighbourhood platforms.

Alongside the essential social function of public spaces, pandemics and climate change highlight the key role of preventive healthcare, and the importance of green spaces as water and heat stores. Urban resilience therefore calls for more public space in general, and the development of green spaces and their retention functions. Expansion alone will not achieve this. Multifunctional grey infrastructure, and its twofold use for social settings or potential climate adaptation functions, can increase available public space and its provision near to housing. Road environments can also be seen as reserves for this purpose; but it should also be possible to temporarily change their functions when crisis situations emerge. Recreation areas or temporarily dedicated open spaces should be within walking distance from every dwelling to encourage social interaction, exercise and sport.

City and neighbourhood centres
City and neighbourhood centres were particularly affected by the pandemic, suffering months with closed shops, cafés, restaurants and hotels. Many businesses are fighting to survive. However, the disruptive effect of the pandemic is in fact an expression of the structural change that retail and the property sector have been undergoing for quite some time. Brick-and-mortar retail has been under pressure from e-commerce for years, and the problem of dwindling revenues has been compounded by huge rises in rents, particularly in city centres. This has turned inner-city areas into places shaped by massive speculation reliant on mono-structural models. But inner- city areas are not only business centres with demands for reliable supply and quality: they are also emblematic to the local population and the very identity of the place.

Historically, city centres were multifunctional spaces. This characteristic must be restored to achieve resilient development. The goal must be a balanced mix of trade and crafts, workplaces, dwellings, educational and cultural facilities, and places for interaction. In additional, local Baukultur and specialist retail and service provision should be promoted, as should regional service and production structures. Resilient inner-city areas also require additional amenity value and more green space with sufficient protection from the weather. The transformation of inner-city areas calls for close cooperation between private sector and civil society stakeholders, under the guidance of local authorities. To this end, land values must be reassessed and new property industry models put in place, enabling mixed-use development that is not solely dependent on revenue. Residents and visitors must have a wide range of rea-

sons to go into city centres. This necessitates increased functional flexibility, including the option of temporary events or uses that can attract citizens and supplement straightforward commercial options.

The changing world of work

Restrictions on public life have also served as a catalyst for the digital transformation of the working world. The level of increased flexibility, particularly in the office and service sector, was previously unimaginable. Swathes of people have been working entirely or partly from home and many of them would like to continue to do so. The positive effects on the climate from reductions in travel, are offset by new challenges. Office locations are under pressure: although they offer potential for mixed use, for example, with higher proportions of housing, there are few strategies or incentives to encourage mixed use. An additional challenge is the lack of reasonable alternatives for those who live in small apartments or who do not have a stable internet connection. Here again, strategies and incentives for increasing mixed usage in neighbourhoods are required, such as neighbourhood co-working spaces.

Crafts and trades and regional production are important components of a resilient structure in times of crisis. The digital transformation is having a positive impact on the skilled trades and the manufacturing industry, and, in particular, their compatibility with urban locations. Reduced space requirements and lower emissions provide new opportunities for mixed-use developments, and not just in commercial zones. Again, strategies and incentives are needed for urban manufacturing and for constructing housing in commercial neighbourhoods. In addition, the employment situation in terms of secure financial planning and the ability to withstand crises, must be improved for the self-employed and those in the culture sector, not least to protect and preserve the diverse range of uses in the city, and ensure a thriving arts and culture scene. Independently of this, space for commerce and industry must continue to be made available in cities to enable manufacturing to be near to housing.

Sustainable mobility

To strengthen urban resilience, towns and cities must continue to focus on mobility that is environmentally sound, climate-friendly, and encourages physical activity and health. Promoting public transport, car sha-

ring, walking and cycling, and multimodal transportation is therefore the way forward. Areas for car traffic, and parking areas in particular, should wherever possible be redesignated for other uses. At the same time, towns and cities should still be accessible for cars and delivery vehicles. Existing networks of bicycle and pedestrian paths should be expanded to encourage cycling and walking. This can be done by creating temporary bicycle paths or converting roads and parking spaces into bicycle lanes. Public space will thus regain many of its urban functions, as a place of spontaneous encounters and exchange.

To restore confidence in public transport, strict hygiene measures must be put in place and communicated clearly to users. Local public transport must also be modernised: networks must be extended, frequencies increased, and cashless payment systems and network-wide ticketing systems introduced; all these things will increase convenience and reduce physical contact. The efficiency of public transport networks must also be increased, especially between cities and the surrounding areas. Sustainable logistics strategies should be developed to deal with increasing delivery traffic, in particular for the "last mile", to ensure the quality of services.

Socially and environmentally just housing and neighbourhoods

Levelling up disadvantaged areas and reducing social inequality are called for to strengthen individual and collective social resilience. Unequal opportunities in housing markets lead to segregation and displacement, the negative effects of which intensify in times of crisis. To counteract this, more affordable housing must be provided in inner city areas to alleviate the huge financial pressure on lower-income households and to increase their freedom of choice.

Cooperation that cuts across age groups and social strata should be sought and mobilised in neighbourhoods to foster a strong social mix. Social networks need to be systematically strengthened to promote a culture of mutual appreciation and participation. Given that residents of the different social strata do not always interact on a day-to-day basis, management structures or options encouraging active cooperation are needed. These can shore up the inherent strengths of a neighbourhood and ensure its vibrancy. Ways to achieve this include interfaith and intercultu-

ral dialogue, neighbourhood management or community work, always taking resilience into account.

Structural discrimination and disadvantage (e.g. in access to housing, transport to schools and workplaces, in terms of barrier-free accessibility, etc.) should be examined and targeted action should be taken. Above all, multiple disadvantages must be counteracted, especially in relation to environmental hazards, healthcare, education and integration. Renovation and new construction projects must always take these factors into account, for example by creating or improving open spaces near to housing, or by upgrading social infrastructure to create places for integration. Disadvantaged groups must be involved in the processes to achieve this.

Digital transformation

Digitalization is a central building block in planning the future of towns and cities. It is a cross-cutting issue affecting every dimension of urban development, and it requires a strategic approach. Digital transformation strategies should take into account urban planning targets, should include all fields of local authority action, and should define and empower local authority autonomy in the digital sphere. Risk and crisis management should also be incorporated, along with the strengthening of digitalized structures and processes. Digital infrastructure should be expanded with high-performance networks and data platforms. At the same time, measures should be taken against IT system failures, and backup arrangements should be put in place to prevent cascading effects.

Data-driven knowledge in areas such as urban data platforms for mobility, infrastructure utilisation or usage patterns, enables better control of the city system. Digital solutions also ensure that administrations and institutions work together in an efficient, networked, citizen-oriented way, and remain capable of action in times of crisis. Digital literacy is a prerequisite if the opportunities offered by the digital transformation are to be harnessed in full, and if citizens are to have the confidence to be a part of shaping it. Digital education as part of lifelong learning also plays a part in strengthening social participation, inclusion, and equality of opportunity, and in expanding the public's ability to use digital services within a digital knowledge-based society. Digital empowerment and equal, non-discriminatory access to digital services

must be guaranteed. It will be essential for local authorities to develop their own digital structures as a public service of general interest, separate from private economic interests, and/or to establish their own non-profit platforms and digital spaces. Planning processes must consider both analogue and digital spaces, along with the interdependencies between social and spatial aspects. The qualities of social interactions, exchanges, and personal contact, however, remain indispensable – they can be complemented with digital formats, but not replaced by them.

Administration and governance structures

Local authorities' ability to act, react and transform must be reinforced in order to carry out crisis prevention and the associated transformation tasks; and this must go hand in hand with cooperative governance approaches. Flexible, agile, digital working practices and new conceptual approaches and forms of cooperation should therefore be incorporated into the activities of local authority stakeholders. Training local authority employees in methods of cooperation and co-creation, establishing a culture of embracing mistakes as learning opportunities, critically analysing completed processes, and specifically designating spaces for experimentation could be useful starting points. Local authority administration structures should be further developed generally so that urban resilience can be included as a cross-cutting issue.

A structured network of local authorities should be established to help authorities advise each other. This will foster the efficient exchange and development of expertise in the innovative design of complex planning and transformation processes in integrated urban development.

A key factor for urban resilience is an active civil society. Greater efforts should therefore be made for the continuous mobilisation and involvement of stakeholders in the co-creation of cities using appropriate governance mechanisms. Greater resilience can only be achieved within a democratic civil society process. Formal and informal on-site participation in planning processes therefore remains a central element of resilient urban development. This applies both in acute crises and in the discussion of fundamental questions of how settings for urban living can be made as robust and adaptive as possible, while ensuring that they remain socially just. Co-creation is a new way of intert-

wining everyday knowledge with professional expertise, leading to new platforms for discussion, and to joint decision-making and implementation processes in urban development.

The basis for participation, cooperation and co-creation is the readiness on all sides to communicate as equals. This also calls for new forms of cooperation. Comprehensible communication from an early stage that is tailored to the target group provides the prerequisite for developing knowledge, skills and an awareness of good strategies and appropriate behaviour in a crisis. It is important to see success as an individual accomplishment, but also as part of a collective experience in the public sphere or in digital formats. This can help a culture of resilience to be established and grow in the public sphere within the local living environment. Successful involvement and communication bring high degrees of commitment and reliability. The scope for decision-making at different levels should be made clear, as should the limits on co-creation: this will prevent unrealistic expectations. It is also crucial for administrations to work on an interdepartmental basis so that flexible, appropriate solutions can be found.

Culture and cultural heritage

The transformation process that makes a city sustainable is above all a cultural process. Culture is an essential pillar of the European community of values, and it requires interaction and exchange. Culture must therefore be better protected, supported and integrated. At the same time, architectural heritage is a valuable resource for strengthening the resilience of towns and cities. Intact historical town centres are both architectural witnesses of the past and models of a resilient city that has survived for many generations. Conversion and new construction projects should be designed to ensure they are suitable for a variety of uses and can also be reconfigured for future needs.

Cultural heritage plays a special role in an urban community's identity and sense of belonging. It includes all the associated traditional knowledge, trade and craft practices and so on that are part of this heritage. In addition to the psychological, identity-shaping components of cultural assets and the institutions that preserve them, cultural assets can also generate valuable synergies for dealing with risks and disasters. Because the protection of built heritage is a valuable resource for

increasing the resilience of towns and cities, it should receive more consideration in urban development, in local plans for adapting to climate change, and in disaster management plans.

Health

The pandemic has shown how important health aspects are in urban development. Decentralised and socially differentiated health care and prevention are essential parts of a city for the common good. At the same time, it has become evident that social and spatial disadvantages increase health risks not only in pandemics, or through the psychological stress caused by complex disadvantageous life situations, but also through environmental pollution, climate stress and the built environment itself.

That is why health promotion and prevention of health risks are to be considered a standard task in all urban development instruments. This specifically includes small-scale, integrated health, social and environmental reporting, as well as noise reduction, air quality control, and open space and green space planning. The promotion of health and physical activity as an integrated task is always connected with social resilience, which is increased through education, psycho-social support and opportunities for participation. Good housing, amenities close to people's places of residence, and sustainable mobility that encourages physical activity provide the bases for pursuing this.

The urban and spatial structure

Segmented systems are less vulnerable to external disruptions, because when one section is affected it does not necessarily compromise the system as a whole. The model of the dense and compact city should therefore be supplemented by approaches for a polycentric city and region, given that a city structure made up of neighbourhoods and local (sub-)centres is more stable in the face of unexpected events. Ensuring that cities are resilient also means that urban space compatible and mixed-use locations must be available for commerce and trades that are indispensable for the daily functioning of cities, for the sustainable redesign of cities, and for quick responses to unexpected problems. High density is not an impediment to urban resilience, as long as housing conditions are stable and green infrastructure is present. Social networks can become active in neighbourhoods to support relationships among neighbours from within. Labora-

tories for innovative approaches can also be created – for example, streets can become spaces for people to interact while maintaining social distancing, which can be done on a temporary basis with the potential to become permanent. However, social and public infrastructures for provision of vital services are needed in all neighbourhoods that are spatially grouped as in a compact city. City-wide or regional services for vulnerable groups which cannot be provided at the neighbourhood level should be otherwise guaranteed and made easily accessible.

This principle of decentralised distribution should also be used consistently in the regional context, and should be enhanced through the ongoing use of regional cooperation instruments. Not only the spread of digital technologies, but also experiences during the pandemic, such as working from home and seeking individual open spaces, have centrifugal effects. Such effects could relieve pressure on housing markets in city centres and reduce commuter flows, but must not lead to a new wave of suburbanisation, and intensive new surface sealing. Rather, this trend's potential should be harnessed to revitalise town centres in suburban and rural areas, to moderately increase the density of already-built quarters and to develop inner city areas. Such goals require the improvement of digital infrastructure and public transport, as well as using suitable incentives, improving binding regional cooperation and creating specific urban-rural partnerships.

4.3 Planning tools and funding strategies
Include urban resilience in planning tools
In many towns and cities, integrated urban development strategies have established themselves as instruments for planning and managing cities as a whole with an integrated and participatory approach. The urban development strategies and the approaches arising from them for areas of development support, should be enhanced to include aspects of urban resilience, especially:

- the interaction between emergency management, disaster preparedness and health;
- the use of socio-spatial monitoring and risk studies as the norm;
- functionality, land reserves for resilience and critical infrastructures;
- temporary solutions and spaces for experimentation; and

- measures to avoid, reduce and adapt to current and future risks.

This **urban development planning** should be process-oriented, transparent, reversible and open-ended, with goals agreed upon and evaluated by the participating stakeholders. Implementing urban resilience strategies requires an interdisciplinary body for steering and coordination. It is also possible to build on existing processes for increasing resilience in urban development, for example as part of smart city concepts or climate change adaptation measures.

To a great extent, the goals for urban resilience can be realised within the limits of current **planning law**. It is recommended that aspects of resilience and risk management be anchored as planning objectives in section 1 (5) of the Federal Building Code. The question as to what extent further flexibility and mixed-use goals can be incorporated in accordance with environmental protection and emission control regulations should be examined.

Along with the city-wide and regional perspectives, greater differentiation at the **neighbourhood level** is required. In addition to their role as a public management instrument, integrated urban development strategies should also be used as a strategic framework for self-organisation in neighbourhoods, e.g. for niche innovations. Communication about desirable visions of the future, which can provide a broader context for specific measures, is an important part of this. These visions, together with the everyday experiences of all population groups, especially the younger generation, should be elaborated in collaborative formats.

Expand integrated crisis and risk management
An improved combination of prevention, preparation for, coping with, and recovering from crises is key to integrated crisis and risk management. This involves paying greater attention to the knowledge gained from crisis management in prevention projects and taking prevention into consideration in post-disaster reconstruction.

Integrated crisis and risk management offers numerous instruments and approaches for implementing risk-informed urban development, which can play a major role in improving urban resilience. These include:

- Regular risk assessments, which collate, analyse and evaluate local hazards, exposures and vulnerabilities in order to increase risk awareness.
- Risk-informed planning supported by appropriate resources, taking into account the different needs and abilities of all population groups.
- Decisions on the acceptability of residual risks, and how to deal with them, in terms of contingency planning, basic and advanced training of management and emergency personnel, and civic engagement.
- Early warning of the population in event of disaster and, where necessary, adjusting local crisis management structures so that they can operate across disciplines and local boundaries.
- Learning from past events and improving recovery processes, which should include the systematic recording of direct and indirect burdens on the local economy, urban society, the health service, education, the environment and the city's cultural heritage. Disaster prevention must also be adapted to rise to new challenges such as climate change.
- Strengthening learning networks and discussion platforms at local authority level to optimise structures and processes.

Implement a land policy for the common good

The continuous influx of new residents and the need for land for housing mean that many towns and cities have reached the limit of their **internal development**. Additional spatial resources and redundancies are needed to respond to the so-called "known unknowns" towns and cities are facing. This applies not just to the current pandemic, but also to migration and the space required for initial accommodation or integration tasks, as well as to climate change, which demands space for adaptive climate measures, and reserve resources to help cope with climate events.

These varying land requirements are increasingly competing with the existing contradictory goals for internal development. It is therefore essential for resilient risk management to incorporate flexible "**expansion joints**" in cities, which can be used to respond to a range of external challenges. Local authority stocks of city-owned land are useful for consolidating and expanding the needed spatial resources, and for establishing sustainable land supplies in local authority areas for the long term. These stocks of land make it possible to respond flexibly to the spatial demands resulting from a range of crises.

Plots that become free as a result of developments in society, such as digitalization, changes in mobility and the transformation of commercial and industrial work, provide new opportunities. Urban development strategies must anticipate this type of urban obsolescence and take advantage of it in order to help meet the land requirements of the future, and create the necessary redundancies to mitigate potential crises. Extended, legally secure rights of first refusal must be available to local authorities to guarantee the use of privately-owned land for the common good, along with development strategies in which these types of land can be pooled.

Legal frameworks for the temporary use of private land as required by unforeseen events could also be a useful option.

Include resilience in funding instruments

Towns and cities can only develop urban resilience if they can act effectively, have a high level of investment and are equipped with sufficient **financial and human resources**. A solid financial basis in the public budget will provide a certain degree of financial freedom. Federal and state governments should provide suitable support structures to local authorities to help towns and cities react to unforeseen crises and disasters, but without limiting local authority autonomy ("Urban Resilience Task Force").

Where funding programmes are put in place, they should be **ongoing and long term**. Funding should be available for investment and resource spending, including for personnel and material costs, so that local authorities can support processes and fulfil additional social integration tasks. At the same time, provision for experimentation and flexible adjustments should be made possible. It is important to ensure that the necessary organisational and financial resources are available to both local authorities and civil society initiatives to enable them to submit strategic and conceptually based funding applications and to use the funding appropriately.

Funding for **civil society initiatives and projects** should be versatile and should also include staff costs. As well as funding flagship projects, targeted support should also be available for experimental projects. This will enable innovative ideas to be tested and, if they are successful, to be applied in the longer term

in other projects and processes. Micro-grants for ideas put forward by civil society are helpful to support local involvement in their development (e.g. neighbourhood funds).

In the future, strategically elaborated and inter-municipally coordinated urban development plans should be expanded to include urban resilience. This inclusion should then become a prerequisite for receiving funding.

Urban development support programmes, as self-learning programmes should be increased, made more flexible and adapted to include urban resilience factors. The administrative agreement between the federal and state governments on urban development funding, which was further developed in 2020, provides a good basis with three new programmes and new funding criteria. The focus on environmental protection and climate change adaptation should be applied to urban development strategies. In addition, research into aspects of urban resilience should become a permanent element of preliminary studies and urban development plans, as well as being anchored in the redevelopment goals of the Federal Building Code (Baugesetzbuch, BauGB). To secure urban development funding in the long term, it would be even better anchored in the Basic Law, in the same way as is provision of social housing.

Provision of social housing should remain a top priority. To ensure that this is the case, federal funding for investment in social housing on the basis of Article 104d of the Basic Law should be made available beyond 2024. State programmes for the provision of social housing should ensure the construction of quality housing – the pandemic made the need for this particularly clear. Quality housing includes flexible floor plans, balconies or terraces in all units, stairwells with natural light and ventilation, and green and open space in the immediate vicinity.

Expert advisory committee

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