

Urban Insight 2023 - Resilient societies

The search for resilience in a world of polycrises





The search for resilience in a world of polycrises

Introduction	3
Making cities resilient – European cities can take the lead as global resilience hubs	
The search for resilience in a world of polycrises	5
Talk of the day - Global risks and resilience	6
Sustainability vs resilience	9
Climate and environmental resilience	11
Risk of flooding - a solution	
Preliminary study on climate resilience declarations	
Short term vs long term	13
Risk reduction	
Crisis management	
The risk of war	
Crises as resilience catalysts	
Urban resilience - European cities can take the lead as global resilience hubs	15
Making Cities Resilient 2030	
Four European cities take the lead as global resilience hubs	
Resilient networks	17
Social resilience	
Resilient communities	
Resilient societies - 10 key take-away messages	19
Reference list	20

Introduction

Making cities resilient – European cities can take the lead as global resilience hubs

It is clear that we are at a global tipping point, where the various economic, political and humanitarian emergencies are worsening as the climate crisis consolidates as a global threat. Added to the numerous political debates, international conferences, scientific reports and overwhelming evidence, the health crisis has accelerated the mobilisation of wills and contributed to the generation of what we could picture as a global consensus on the urgency to respond to climate change and its systemic consequences.

The New Urban Agenda (NUA) and the Sustainable Development Goals (SDGs) can be interpreted as the structural agreement around which global society must mobilise in each of its forms of governance, from political and institutional frameworks to individual and citizen structures. This implies the structural redefinition of roles, disciplines and operating models at all levels of social organisation.

In this sense, the wider field of infrastructure and territorial development emerges prominently from the different agreements as a focus for the transition towards sustainable social models and the articulation between the different climate ambitions. This encourages the different disciplines involved in urban development to fundamentally redefine their practice in order to comply with this social mandate. In this context, how can urban development professionals contribute to the process? What capacities do we have at our disposal? Can we take a more proactive role? Can we keep up with the challenges ahead?





Did you know that:

Cities have a significant role to play when it comes to developing resilient societies.

- It is estimated that nearly 84% of the fastest growing cities are highly vulnerable to disaster/ climate risks putting 4 trillion dollars (3.76 trillion euros) worth of assets at risk.¹
- Almost 500 million urban residents live in high-risk coastal areas. In the 136 biggest coastal cities, there are 100 million people and 4.7 trillion dollars (4.42 trillion euros) in assets exposed to coastal floods.²
- By 2050, the annual cost of flood damage in Europe could reach 40 billion euros. This is seven times more than in 2014 (5.3 billion euros).³
- Only 7% of economic losses from flood events in emerging markets – and 31% in advanced economies – have been covered by insurance in the last 20 years.⁴
- People exposed to natural hazards in the poorest nations are more than seven times more likely to die than equivalent populations in the richest nations.⁵
- Every year, an estimated 26 million people are pushed into poverty by natural disasters.¹
- 58 developing countries exposed to climate change have almost 500 billion dollars (470 billion euros) in collective debt reserivicing payments due in the next four years.⁶
- Disasters cause around 300 billion dollars (282 billion euros) in economic losses annually. If we account for impacts on well-being, the total is closer to 520 billion dollars (489 billion euros).¹
- By 2030, without significant investment to make cities more resilient, natural disasters might cost cities worldwide 314 billion dollars (295 billion euros) each year, up from around 250 billion dollars (235 billion euros) today, and climate change might push up to 77 million urban residents into poverty.¹
- The energy supply crisis, the cost-of-living crisis, rising inflation, the food supply crisis and cyber attacks on critical infrastructure are among the top risks for 2023 with the greatest potential impact on a global scale.⁷
- Biodiversity loss and ecosystem collapse are viewed as the fastest deteriorating global risks over the next decade.⁷

The search for resilience in a world of polycrises

The outbreak of COVID-19 in February 2020 was unexpected. Then, two years later in February 2022, Russia invaded Ukraine. Meanwhile, climate change has continued unabated, giving rise to new extreme weather events. Floods and high temperatures in Pakistan, China and many other parts of Asia, snow storms and low temperatures in the United States. In Europe, too, both high temperatures and floods hit many cities and communities hard last year.

All of this taken together has resulted in rapidly rising inflation, an energy crisis, insecure supply chains, cyber attacks and an

approaching recession, just to mention some of the risks that have increased uncertainty, both in the short and long term.

This uncertainty means that the work to strengthen the resilience of everything from cities and countries to households and companies has become more relevant than ever.

Resilience describes the ability to resist and cope with change, as well as to recover and develop further. Today, great emphasis is placed on not only recovering and restoring to the initial state, but also reaching a new higher level where

the resilience to withstand new shocks or changes is greater than before. The word resilience comes from the Latin verb 'resilire', meaning to rebound or recoil.

The meaning of resilience changes depending on what context it is being used in:⁸

Ecological resilience - the ability of an ecosystem to meet changes and disturbances without transitioning to a different state. It enables reconstruction and renewal after disruption.

Social resilience - society's ability to handle change and develop further without reducing welfare or freedom of choice and flexibility for the future. It can relate to anything from natural disasters to political or economic unrest. Ecological and social systems are interdependent.

Organisational resilience - the ability that a company or organisation possesses to withstand crises and stresses. By using these as opportunities for learning, innovation and efficiency, the organisation can become even more resilient.

The world is facing major crises and challenges today:

- **Geopolitics:** War, energy needs, independence and security issues
- **Climate and environmental:** Natural disasters, climate change and loss of biodiversity leading to irreversible changes to ecosystems and affecting the lives of the inhabitants.
- **Social:** War refugees and climate refugees, the need for social equity and diversity, migration and integration, health and well-being.
- **Economic:** The pandemic aftermath, war and increasing prices, inflation and economic uncertainties ahead, disruptions in supply chains and restrictions.
- **Technological:** Cyber threats and digital risks.



Talk of the day - Global risks and resilience

This year's theme at the recently concluded World Economic Forum in Davos was 'Resilient Dynamism'. At the same time, this year's edition of The Global Risks Report was released, where business leaders rank the main risks they perceive in both the short and the long term.

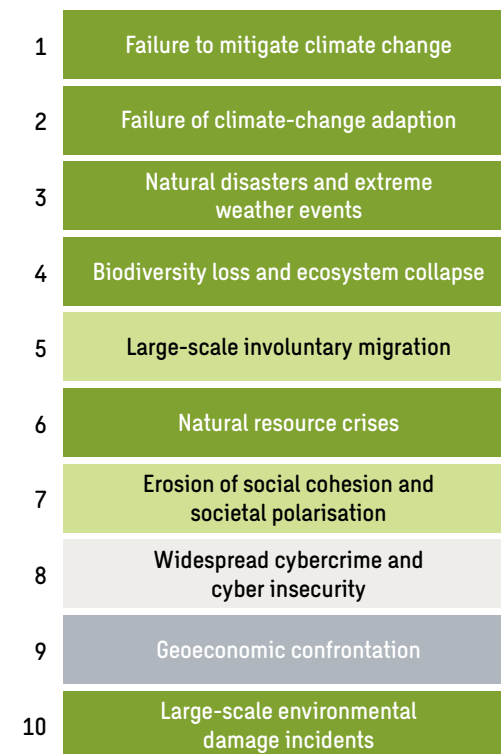
The top two risks were the cost of living crisis in the two-year term and the failure to mitigate climate change in the ten-year term. However, like the saying goes, misfortune never comes alone, the discussions were also very much about polycrises, that is, about the synergies that several simultaneous crises can give rise to.

The likelihood of polycrises increases as interacting risk events compound one another, resulting in impacts that greatly exceed the sum of each part. Such events currently include uneven recovery from COVID-19, the Russia-Ukraine conflict, inflation, natural catastrophes, cyber attacks and more. Taken together, these compounding risks raise the level of food, energy, cyber, supply chain and livelihood insecurity worldwide, while challenging effective short-term responses and long-term resilience strategies.⁹

2 YEARS



10 YEARS



Risk categories ■ Economic ■ Environmental ■ Geopolitical ■ Societal ■ Technological

Image: Global Risks Report 2023

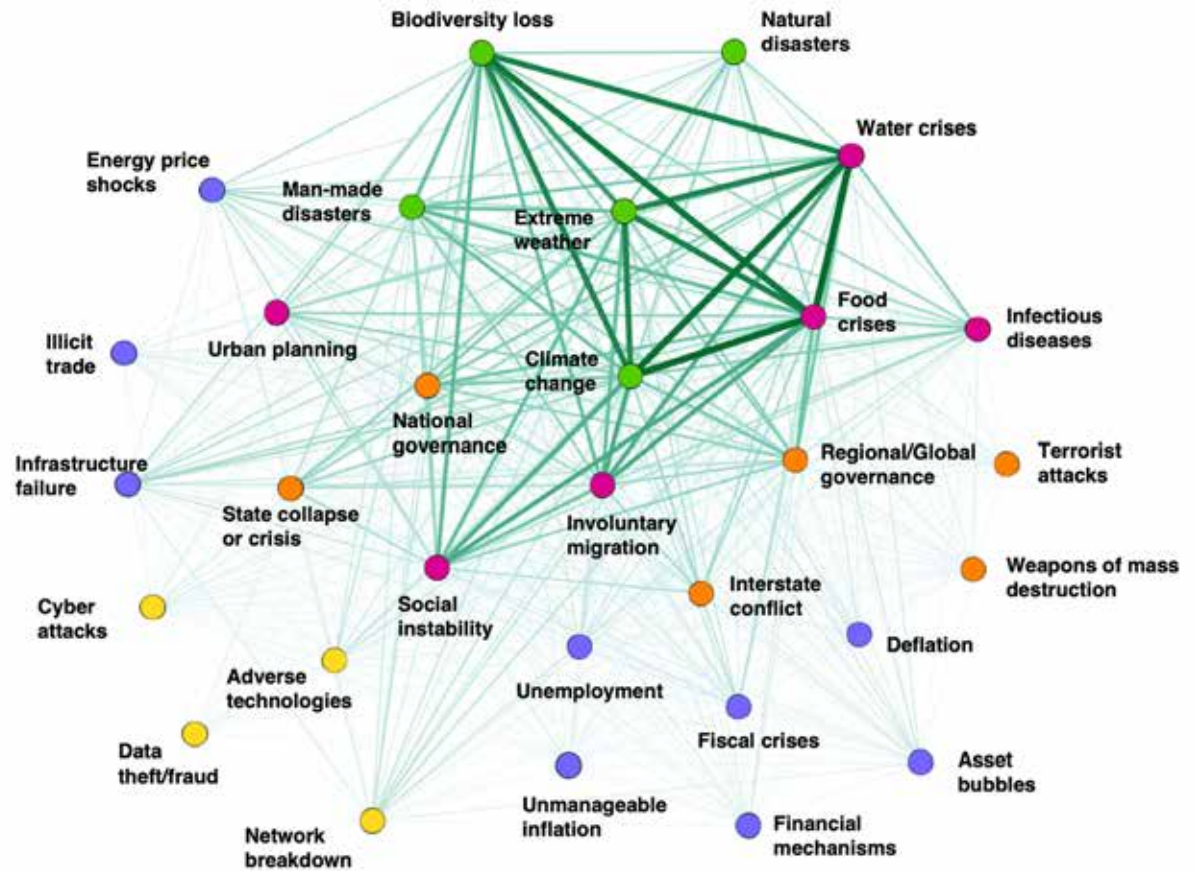
“The same can be said for investments in resilience and resilience measures. An action can have a positive effect on other types of risks. One example might be collaboration on education to manage the skill gap. These measures not only address the cost of living crisis but also social polarisation in society, which is a major risk for both companies and governments,” says Carolina Klint, Risk Management Leader, Continental Europe, Marsh and co-author of The Global Risks Report.

“The risks are far from independent of each other, we will increasingly be exposed to situations where risks interact and lead to events we did not expect”, says Thomas Elmqvist, Professor in Natural Resource Management at the Stockholm Resilience Centre, Stockholm University.

“We need to think about how we build general resilience with redundancy and diversity, so that we can face an increasingly unpredictable future.”

Caroline Klint concludes that there are always limits on how many resources you can commit to building resilience. Even in the best of times, trade-offs are necessary. This is forcing many to refocus their resilience strategies to deal with today’s crises while preparing for future risks.

“One lesson we have learned in recent years is that we have rewarded efficiency over resilience. We have created a resilience debt. We have not built our systems to prepare for a changing risk landscape. The relative predictability of the business climate in recent decades has allowed companies to pursue efficiencies that have contributed to exceptional profit growth, but this focus has left many companies very lean, thin, without margins and vulnerable to shocks”, she says.



Future Earth Risks Perceptions report 2020 Climate change – Biodiversity loss – Extreme Weather – Food crisis – Water crisis nexus. A network analysis of potentially synergistic risks that can lead to global systemic crisis. The colour of the node indicates the risk category (*green*=environmental; *pink*=societal; *orange*=geopolitical; *yellow*=technological; *blue*=economic). The thickness of the lines represents the frequency of responses identifying a synergistic interconnection between two risks.

“We are now seeing how companies are much more willing to accept costs up front to build better resilience in the form of extra stock, alternative suppliers, bringing home production or even buying up suppliers and customers to strengthen their supply chains”, Carolina Klint says.

Crises can only be addressed effectively if an enhanced agenda that acknowledges their interconnectedness is adopted, states McKinsey.¹⁰

The current resilience discussion is still characterised by differences in interpretation and opaqueness on objectives, measurability and areas for action. Consequently, the prerequisite for a coordinated, systematic approach to resilience is a common resilience framework. Such a framework, similar to the existing environmental, social and governance (ESG) framework, would provide organisations with a common resilience language, structure and objectives. It would also provide guidance on how to protect and enhance sustainability and inclusiveness in an environment where there are more frequent crises and disruptions. With the framework as a basis, organisations could enhance their mostly reactive risk-management practices, harness strategic thinking and take a more forward-looking view, McKinsey states.

Instead of focusing on resilience, we should look one step further, argues Alexandra Lybaert, Program Director for Energy Transition at Sweco in Belgium.

“One key concept in this effort is antifragility, which refers to systems that actually benefit from disruptions and shocks.” She was inspired by a book called Antifragile by Nassim Nicholas Taleb. This sort of system not only benefits from chaos but also needs it in order to survive and flourish.

“We have a term for fragile but we don’t have a term for anti-fragile because that is not the same thing as being resilient. The risk with resilience is that we fixate on the status quo. On the other hand, an antifragile society actually thrives from disruptions.”

To explain, Lybaert points to an idea for harnessing the power of Japan’s increasing number of typhoons.

“Theoretically, you could capture a lot of energy from these typhoons, but the way that wind turbines are designed you actually need to switch them off in order to protect them from getting damaged by heavy storms. However, what if you designed them so they could withstand the typhoons and produce a lot of energy during the storms. This is a simple example of what antifragility means.”



Images by Sweco

Sustainability vs resilience

It is easy to think that work on sustainability and work on resilience always go hand in hand, but this is not always the case. "There is a built-in danger in interpreting sustainability as mostly being about increasing efficiency. By pushing the efficiency angle, you risk losing important components of a system such as redundancy and diversity, components that represent back-up functions and give us alternatives when one or several parts fail," says Thomas Elmqvist from the Stockholm Resilience Centre.

"This is, for example, how the internet is structured. There are many, many alternative pathways and the system is very hard to knock out."

Sustainability must be interpreted in a way that is much broader than increasing efficiency and must include dimensions of equity of access to resources within and among generations. Thus, says Thomas Elmqvist, sustainability is a normative concept, representing a vision for society while resilience is not.

"Resilience is a characteristic of a system; it is neither good nor bad in itself. There can be cases of undesired resilience, such as dictatorships or corruption that may turn out to be very resilient."

Currently, there are many big transformations going on in the world. One of them is the rapid development towards a fossil-free transport system.

"If you assume that resilience means maintaining a system as it is, then the fossil industry is fighting tooth and nail to maintain their power and influence right now. For a transformation to take



Antifragile City District: A Vision by Sweco. Location: Belgium, Ghent.
Visualisation by Lisa Debeer.

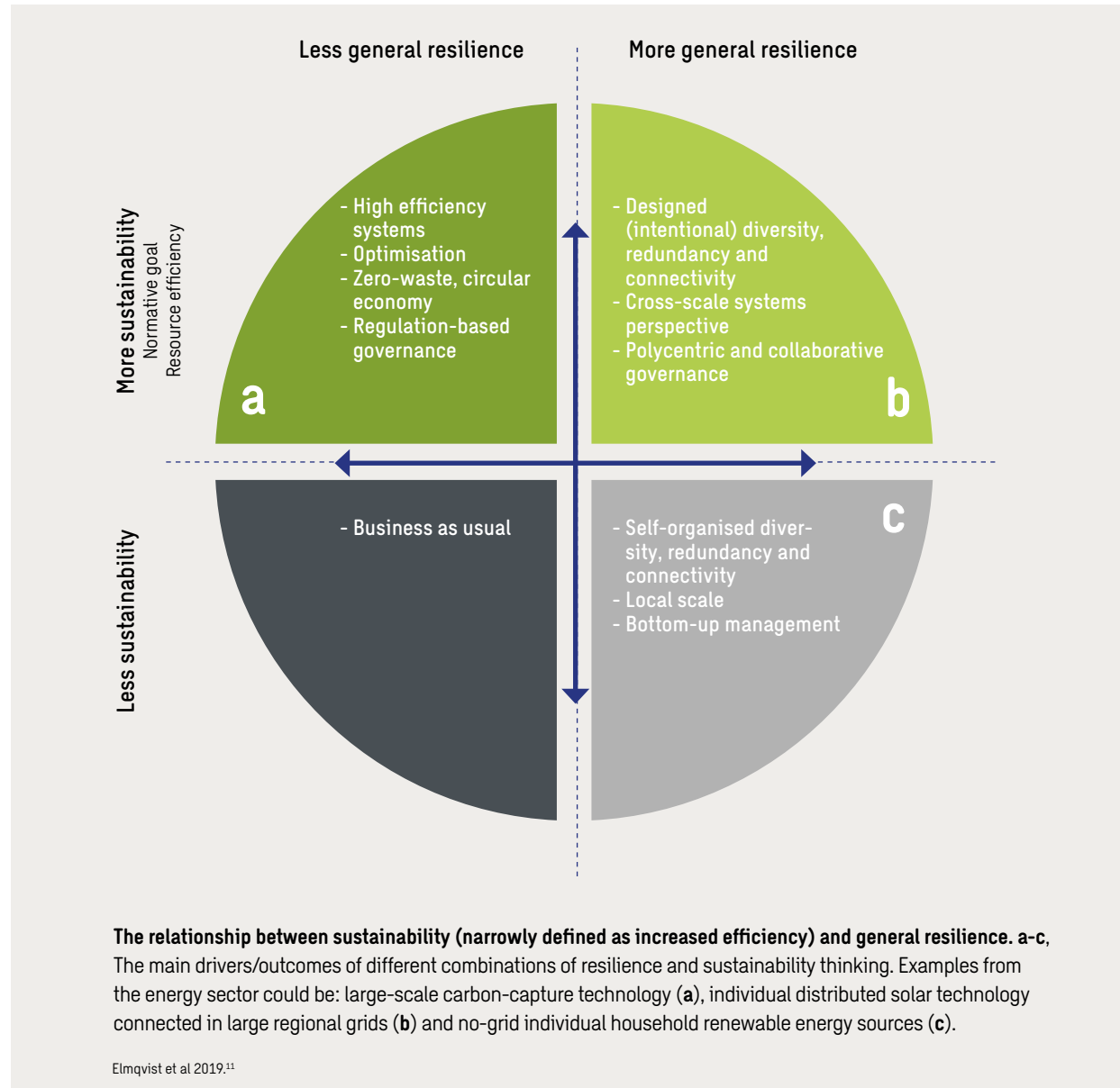
place, the resilience of the fossil fuel industry must be reduced, for example, through bottom-up processes and political pressure.”

For a transformation to happen there needs to be a vision and the technology and financial frameworks required need to be available. When you consider the transportation system, you might say that these requirements are already available now.

“The speed of this transformation is increasing right now as a result of multiple global disruptions like the energy crisis we are currently experiencing as a result of the Russia-Ukraine conflict”, Thomas Elmqvist says.

Erle Kristvik, specialist in water and environmental engineering at Sweco in Norway, says having the right balance between resilience and sustainability is crucial.

“There are many examples of high-risk perception leading to very technically robust measures, such as large-scale, grey infrastructure for storm water detention and conveyance that are not necessarily the most sustainable options. You need to consider climate mitigation, adaptation and sustainability, all of these need to be at the front of your mind all the time.”¹¹



Climate and environmental resilience

Regardless of what we do to reduce greenhouse gas emissions, society will experience the consequences of climate change in the next 20-50 years. Climate adaptation for reduced vulnerability means that the ability of both society and ecosystems to prepare for, cope with and recover from climate-related changes must be strengthened.

The increasing number of natural disasters is believed to be partly due to the fact that humans have influenced the earth's climate so that extreme weather phenomena have become more common, and partly due to the fact that more and more people are forced to settle in vulnerable areas.

However, according to the Millennium Ecosystem Assessment, part of the increase in the number of natural disasters is also due to the fact that we humans have impaired the ability of certain ecosystems to mitigate the effect of natural disasters. For example, ecosystem services such as wetlands and forests buffering against flooding and mangroves, coral reefs and other coastal ecosystems protecting coastlines from large waves associated with storms, hurricanes and tsunami waves. By preserving ecosystems' ability to handle stress and shocks (their resilience), we thus help them protect us from natural disasters.

There have also been more nature-related events that have no connection to climate/weather – for example, earthquakes and volcanic eruptions. The concept of resilience is also used in relation to these types of non-climate-related disasters.¹²

Risk of flooding - a solution

As cities grow, the natural ground surface disappears and is replaced with various hard and less water-permeable materials and products. This development leads to more flooding, the overloading of storm water systems and to the death of many urban trees.

“This project contributes to creating cities that are better equipped to face increasing urbanisation and a rainier climate. With new system solutions, local management of storm water is promoted through flow equalisation, purification and infiltration into the city's green spaces”, says Björn Schouenborg, PhD at the RISE Research Institute in Sweden.

“With an holistic approach and with interdisciplinary tools, we strive for well-thought-out system solutions where the grey, green and blue work together to create attractive cities where the trees live, the flooding problems are reduced and the hard surfaces, despite the increased permeability, have maintained functionality.”



Illustration by Sweco. Illustrator: Jonathan Eriksson.

Preliminary study on climate resilience declarations

Climate change means that, in the near future, higher demands will be placed on buildings to withstand extreme weather or temperature changes, and this might also affect how properties are valued.

Climate change and its associated risks create large costs for society and must be taken into account during urban planning as well as during construction projects. Threats and their impact are increasingly noted and might affect investments in future projects, as well as the valuation of existing assets.

The goal of a project led by Rise is to carry out a preliminary study that looks at how a climate resilience declaration (CRD) could create:

- A tool for better valuation and incentives on the financial market for developers, property owners and others to increase work around climate adaptation.
- Gradations for infrastructural climate resilience that are easy to understand, to compare and reduce uncertainties around insurance underwriting. In the preliminary study, the focus is mainly on buildings.

The project group envisioned a system where relevant actors could work with the same classifications, similar to existing energy declarations. In the same way, a CRD could create transparency for investors, residents and owners and create a better basis for decision-making for all actors.

The project brings together multidisciplinary researchers and relevant stakeholders representing the financial sector, the

housing market, property owners, authorities and industry to investigate whether a CRD could be a possible solution by testing a prototype. The expected result is a better understanding of the concept, which risks should be taken into account, the necessary basis for assessment and conditions for collecting

these, possible valuation systems or indexes for risk assessment and management, proposals regarding business models and the effect on actors in the market.¹³



Short term vs long term

Risk reduction

The work of long-term transitions, strategies and visions is often agreed through international cooperation. The main global agreement is the Sendai Framework for Disaster Risk Reduction, which has been ratified by 187 Member States and aims to reduce the risks and consequences of accidents and disasters. The Sendai Framework aims to address the driving forces that generate risks and, therefore, has a broad approach. In addition to natural disasters, technological, biological, environmental and health-related risks are also included. Sendai also has a broad definition of disasters and includes small-scale, frequent and non-frequent, sudden and slow disasters.

Priorities for Action

Priority 1: Understanding disaster risk.

Priority 2: Strengthening disaster risk governance to manage disaster risk.

Priority 3: Investing in disaster risk reduction for resilience.

Priority 4: Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction.

“Recent events have again underlined the urgency of understanding and reducing risk. The fragility of society’s fabric and the disastrous effects of not being adequately prepared have become clearer in light of recent crises”, writes MSB in its mid-term evaluation of Sweden’s work with the Sendai Framework. Three UN agreements promote the development of a safe and sustainable society.¹⁴

Agenda 2030 is partly about DRR

Goal 1 End poverty in all its forms everywhere. (Leads to increased resilience)

Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable.

Goal 13 Take urgent action to combat climate change and its impacts.



Source: UN

Three UN agreements promote the development of a safe and sustainable society

- **The Paris Agreement** often referred to as the Paris Accords or the Paris Climate Accords, is an international treaty on climate change. Adopted in 2015, the agreement covers climate change mitigation, adaptation and finance.
- **The Sendai Framework for Disaster Risk Reduction 2015-2030** outlines seven clear targets and four priorities for action to prevent new and reduce existing disaster risks:
 1. Understanding disaster risk
 2. Strengthening disaster risk governance to manage disaster risk
 3. Investing in disaster reduction for resilience
 4. Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction.

It aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets

of persons, businesses, communities and countries over the next 15 years. The Framework was adopted at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan, on 18 March 2015.

- **The 2030 Agenda for Sustainable Development**, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognise that ending poverty and other deprivations must go hand in hand with strategies that improve health and education, reduce inequality and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. This Agenda is a plan of action that seeks to strengthen universal peace in larger freedom.

Crisis management

Russia's war against Ukraine has actualised the existence and role of the defense alliance NATO, especially in Sweden and Finland, which now aspire to rapid membership. Article 3 of NATO's statutes makes it clear that member states must maintain and develop their individual and collective ability to resist an armed attack. However, NATO has also clarified what Article 3 means regarding resilience. Membership in NATO means that Sweden undertakes to be able to resist and recover not only from war but also from such things as natural disasters and failing critical infrastructure. "Each NATO member country needs to be resilient to resist and recover from a major shock such as a natural disaster, failure of critical infrastructure, or a hybrid or armed attack. Resilience is a society's ability to resist and recover from such shocks and combines both civil preparedness and military capacity."¹⁵

The risk of war

In addition to the war in Ukraine, there are several potential conflicts in the world that need to be monitored. The International Crisis Group, an independent organisation working to prevent wars and shape policies that will build a more peaceful world, points out 10 potential foci of concern that are at risk of developing into real conflicts in 2023 and that might affect the world negatively and lead to crises of various kinds.¹⁶

In an article from the think tank Carnegie Europe, they question whether the region takes resilience seriously.

Of course, more can be done, and I think we'll see more efforts along the lines of Sweden's pioneering public-education campaign 'If Crisis or War Comes', says Elisabeth Brawn, Senior Fellow at the American Enterprise Institute.¹⁷

"Sweden and Finland are interesting in this regard, with reputations for having strong resilience. The foundation for this is the notion of total defense developed during the Cold War—a concept that Ukraine has also studied carefully. Total defense includes all activities needed for society to prepare for war. It underlines that all citizens are responsible for the security and preparedness of the country. A well-informed and well-prepared citizen can act and help others in a crisis situation. In light of this experience, increasing crisis awareness and preparedness among citizens would be an important achievement to increase resilience in Europe."

Crises as resilience catalysts

A shift to rail and shipping as means of reducing the transport sector's climate footprint has long been desired, but the transport sector has proven very resistant to political attempts to force this change. Researchers at the Swedish research institute VTI have looked at examples of transition, and it turns out that a crisis, such as when Storm Gudrun, 2005, brought down the annual production of timber, is a good catalyst for changing transport arrangements and contributing positively to the climate, economy and redundancy.

Storm Gudrun increased demand for domestic timber transport across all types of transport. Road and sea transport increased sharply in 2005 and decreased thereafter. The railway share increased from about 20 percent (before 2005) to about 30 percent (as of 2005) and stayed at the higher level.¹⁸

Actions against short-term crises can also have long-term effects. One example is how resilience in the energy field in the wake of Russia's war in Ukraine must be solved in the short term with less climate-friendly alternatives, while in the longer term the crisis could lead to better energy resilience in the form of new innovations, more efficiency and more alternative energy sources.

On a more practical level, we need to think about how to react to short-term incidents without forgetting about the long-term visions, states Diego Luna Quintanilla, an architect and an urban planner at Sweco in Belgium.

"Usually we get projects with a long-term vision from a public or an institutional actor, but with no concrete action plan, with no operational framework. On the other hand, when dealing with a short-term scope, we interact with different types of actors, a private client or a community organisation, with a fixed business plan, limited time, a defined budget and the ambition to get short-term returns in either societal or economic benefits, but not necessarily looking at the big picture", he says.

"Very few projects are located in the middle, dealing with the two scopes at the same time. That's where we come into the picture. We need to initiate those projects ourselves. By being at the point of convergence of different actors, we have the opportunity to contribute a wider vision of the context and a cross-cutting influence on the project. We're in a good position to initiate ventures and push ambitions further. Very few actors deal with this area in between, so we can take up that role."

Urban resilience – European cities can take the lead as global resilience hubs

With a growing portion of the global population living in cities, there is an increasing focus on building resilience in urban areas. This includes initiatives such as green infrastructure, smart city technology and community engagement in city planning.

The idea of building resilience at a community level, rather than relying solely on government or other external actors, is also gaining traction. This includes initiatives such as community gardens, local emergency response plans and citizen-led disaster preparedness training.

Making Cities Resilient 2030

Making Cities Resilient 2030 was launched in 2021 by the United Nations agency for the promotion of disaster risk reduction work at the local level. By signing up for MCR 2030, a municipality gets access to a network of contacts and tools to build resilience against accidents and create a sustainable and climate-adapted society.

Some cities that are taking part in MCR 2030 have come to be called ‘resilience hub cities’. Through delivering a clear three-stage roadmap to urban resilience, providing tools and access to knowledge, monitoring and reporting tools, MCR 2030 are supporting cities on their journey to reduce risk and build resilience.

These resilience hub cities have developed and implemented DRR strategies and plans in line with the Sendai Framework

for Disaster Risk Reduction and contributed to achieving the Paris Agreement and the UN’s Sustainable Development Goals (SDGs).

Four European cities take the lead as global resilience hubs

Barcelona, Greater Manchester, Helsingborg and Milan were the first four European cities recognised as resilience hubs for their policy and advocacy work in addressing growing climate and disaster risks.¹⁹

Greater Manchester has revamped its resilience strategy with particular attention to local flooding risks. Through the ‘Moors for the Future’ partnership, for instance, the city aims to prevent flooding by addressing it at source in the upper catchment rather than mitigating its impact in the urban centre.²⁰

Adopting a similar holistic approach, Helsingborg combines emerging technology with municipal data to integrate disaster risk and resilience into urban planning. Interactive maps simulate risk scenarios throughout the city, such as heavy rain, raised sea levels and pollution. Hence ensuring risk awareness at early stages of city development.

All the cities are tackling diverse municipal issues as well. The city of Milan is utilising green infrastructure to fight growing rain and temperature risks, as well as developing innovative financing mechanisms to deliver a green economic recovery post-COVID.

“In a world that constantly changes, resilience is the only possibility for a city to continue developing in a fair, inclusive and sustainable way”, says Milan mayor Giuseppe Sala.

Another key aspect of the resilience hubs initiative is collaboration. Each of the cities are sharing what they have learnt and encouraging other cities to follow suit. Barcelona has established itself as a centre for global cooperation on resilience serving as a mentor for policymakers in Tunis, Bogotá and Gaza City.

“Resilience work is about breaking down silos”, says Magnus Qvant, co-founder of the Nordic Urban Resilience Institute and Chairman of the Resilient Regions Association, which offers a forum for business, academia, municipalities and other authorities where societal benefit is the focus. Their goal is to jointly develop attractive, smart, sustainable cities and regions that function regardless of the challenges and pressures they face. He is a fire engineer with experience working with the Swedish Civil Contingencies Agency (MSB). When he started working on resilience in 2010, no one talked about it. Therefore, it became important to agree a useful definition.

“We defined it as cities’ ability to maintain their functionality under stress, chronic or acute.” A model was developed in which how well a city functions was measured against a system of six flows. These were based on the EU’s four free flows of goods, services, money and people, as well as information and energy. The functionality of the cities was also added to the model.

The model also included four challenges, climate change, urbanisation, disruptive technologies and aging cities. The latter relates to both how to build a city for an aging, but still vital, population plus infrastructure that has seen its best years, as well as the challenges from the million homes programmes.

By working with resilience, silos can be broken down and new capital captured, says Magnus Qvant and exemplifies his point:

“The schools in Paris had good maintenance plans but they only related to fixing what was already there. When instead you start collaborating in order to contribute to addressing other challenges in the city, such as more social and green spaces, you get a huge return on invested capital and co-benefits.”

“Paris Mayor Anne Hidalgo has clearly stated that the city will not make major investments unless they address at least three challenges from the resilient strategy.”

Magnus Qvant also highlights two other cities that are far ahead in the field of resilience, Danish Vejle and Dutch Rotterdam.

Many cities are developing their resilience and sustainable strategies and are also looking for new ways of restructuring and developing a new civil defense.

“There is great potential in combining these tasks and making sure that new civil defenses are based on resilient and sustainable principles, hence it will also contribute to a more resilient society facing daily challenges”, he says.

“After all, the first line of defense is resilience at a local level.”



Illustration by Sweco. Illustrator: Jonathan Eriksson.

Resilient networks

Social resilience

“When we discuss the climate, we have quite a lot of input from social scientists about how climate change is causing increased inequity, with less affluent populations being the most vulnerable”, Thomas Elmqvist says.

“However, it is also important that we look at the question from the other side, how existing social and economic inequality affects climate change. Political protests, from groups such as the yellow vests in France and far right groups in the US, can block change. In some cases, it should be pointed out that such political expressions are based on a great deal of dissatisfaction as a result of socio-political and economic inequality”.

In Davos, the fact that there must be a system where the very richest, the richest one percent, must be taxed more heavily to reduce the inequalities that block a sustainable transformation was openly discussed.

“It is important that social scientists contribute a deeper understanding of the pathways to reduce inequality, Thomas Elmqvist states.

“Then we have the eternal question, how should we prepare society for increased uncertainty? We usually talk about the knowns and the unknowns. For example, on the climate side, we may talk about the known unknowns, we know change is happening, particularly at the global scale, but there are still a large number of unknowns about precisely what will happen at local and regional levels.”

“However, what is really difficult and challenging are the unknown unknowns, things that we are still completely unaware of, thus going completely under the radar.

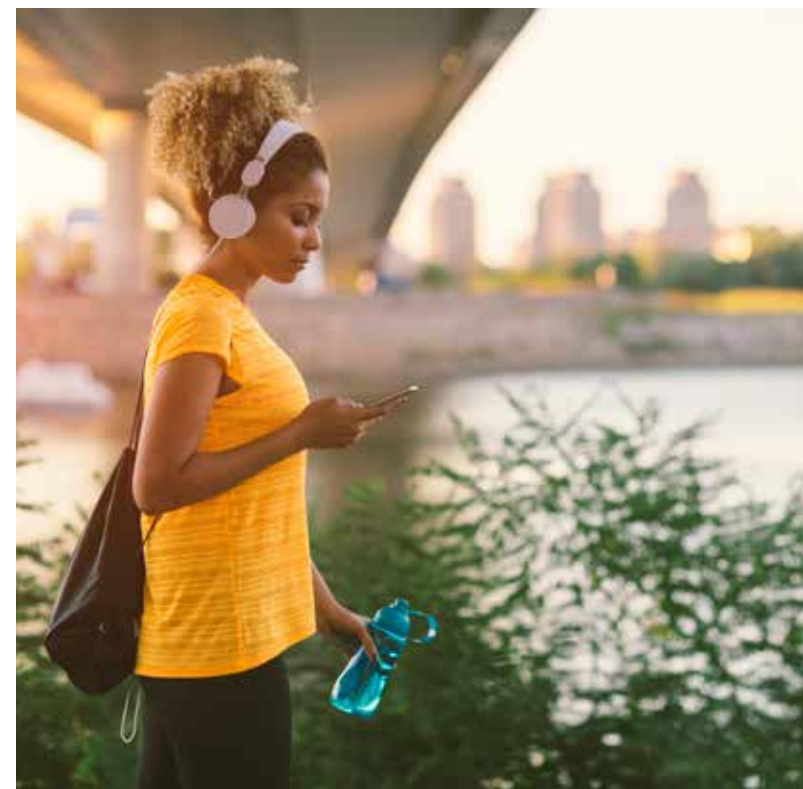
Again, resilience may be the best option for society to handle such unknown unknowns and be better prepared to meet an increasingly uncertain future”, Thomas Elmqvist concludes.

Resilience is about bringing people together, argues Jani Pääivänen, Sweco Land Use and Sociocultural Environment expert in Finland. For more than 20 years he has been working with urban and community planning, transport projects and social impact assessment.

“Resilience for me is some kind of flexibility and lots of connections. It’s mainly how people connect to each other.”

In my perspective, resilience in view of global crises and the consequent local and urban challenges boils fundamentally down to communication and co-design. Are we efficiently working in our cities and in the world, for example, recognising and solving social issues that accompany the necessary ecological measures, and hence getting ahead of the challenges? More must be done with less, so each step should be resource efficient and non-wasteful.”

“Are we prepared for the coming crises? As city planners, engineers and architects, we could do a lot to provide citizens with meeting places and spaces for social life”, Jani Pääivänen concludes.



Resilient communities

Resilience refers to the ability of systems to adapt to changing conditions. Therefore, a resilient society is one that evaluates, plans, anticipates and prepares to respond to changes, often unexpected ones.

The concept of resilience is intrinsically linked to the notion of diversity and balance. The more diverse the society, the greater the chances of recovering balance after an unexpected change.

For society to respond effectively, the links between the diversity of actors, cultures, capacities and talents must be strong. This means attributing a share of responsibility to the many actors who build the city from specific places and communities and ensuring that they have the means and capacities to fulfill this responsibility.

In a multi-crisis context, the speed with which we must implement changes requires new and radical forms of learning that are not possible without diverse formats of collaboration with other challenge-oriented entrepreneurs and knowledge networks.

The consolidation of cooperation networks, the search for synergies between various actors and the broader coalition of 'agents of change' with concerted goals, is essential for the creation of resilient societies. This concept is clearly illustrated in the notion of community. Strong communities, understood as

interdependent networks of actors (professionals and citizens), are better prepared to respond to (unexpected) changes.

Resilience becomes something concrete in cities when networks of people, economies and technologies are linked in a network. The more diverse the better. However, the network also has to be well connected and agile for the resilience to fully kick in, argues Diego Luna Quintanilla, architect and urban planner at Sweco in Belgium with more than ten years' experience of working with urban design and strategic planning.

"Today, large parts of our world are already built, so urbanism is about anticipating changes while studying the complexity of urban dynamics and working with different partners to work together on sustainable solutions."

Global cooperation networks and knowledge sharing

In addition to programmes such as Making Cities Resilient 2030, other initiatives are adding to the effort to create networks of cooperation and knowledge exchange with a view to building resilience on a global scale.

The 100 Resilient Cities (100RC) initiative, pioneered by the Rockefeller Foundation between 2013 and 2019, "enabled cities to hire a Chief Resilience Officer (CRO), develop a resilience strategy, access pro bono services from private sector and NGO partners and share ideas, innovation and knowledge through the global network of CROs".²¹

The efforts and achievements of this initiative led to the formation of new cooperation structures, seen by member cities and CRO networks as the next phase in the consolidation of the urban resilience movement at the global level.

The Resilient Cities Network (R-Cities) was officially launched in 2020, with a mission to reduce vulnerability and improve well-being. R-Cities now brings together global knowledge, practice, partnerships and funding to empower member cities. The work of R-Cities is broadly organised into three pillars: climate resilience, circularity and equity. With presence in 16 European cities and 98 cities worldwide, the R-Cities can be seen as a bottom-up, city-led trajectory to support urban resilience actions and projects by engaging members and creating partnerships.

Resilient Cities Catalyst (RCC), on the other hand, is an independent not-for-profit organisation formed by members of the 100 Resilient Cities (100RC), created to drive change in the way cities plan and act. RCC has modelled itself as a more agile consultancy, creating professional networks of resilience experts and practitioners. RCC supports cities, non-governmental organisations and communities by advising them on their resilience processes to generate impact in their communities and building capacities.

“Resilience, the ability to adapt to changing conditions, expected or unexpected, is more and more about diversity. The more diverse a system is, the more resilient it will be when a shock happens. Certain elements can be damaged, but if the network is diverse enough the other elements are able to compensate.”

“The great challenges arise essentially from the question of how to manage the transition towards a resilient society. These challenges are consequential with the great changes in the territorial development field of expertise and the widening of its professional scope. The increasing vulnerability of traditional clients (not well prepared to deal with new challenges), evolution in forms of governance, the changes in market dynamics, the evolution in business models, new emerging markets and new professional roles are some of the most visible evolutions.” Diego Luna Quintanilla concludes.

Resilient societies - 10 key take-away messages

- 1 The awareness about sustainability has increased during the past years, but resilience is now gaining traction due to urgent needs to adapt. We need to talk about resilience and sustainability. Simultaneously.
- 2 The meaning of resilience has moved from just bouncing back to bouncing back better.
- 3 Crises are often a resilience catalyst and can lead to both short term and long term actions.
- 4 Resilience and sustainability don't always go hand in hand - by pushing only one of the aspects, you risk losing redundancy and diversity in a system.
- 5 The risks are far from independent of each other. We will likely increasingly be exposed to situations where risks interact and lead to events we did not expect.
- 6 Polycrises - the synergies that several simultaneous crises can give rise to. The same can be said for investments in resilience and measures. An action can spill over into other types of risks.
- 7 Social resilience and climate change - we tend to forget to look at how an existing social and economic inequality affects climate change. Political protests can block change.
- 8 In a world that constantly changes, resilience is the only possibility for a city to continue developing in a fair, inclusive and sustainable way.
- 9 Resilience work is about breaking silos. The more diverse the society, the greater the chances of recovering balance after an unexpected change.
- 10 We should focus more on measures that take resilience one-step further, make our societies thrive and actually benefit from disruptions.

Urban Insight is Sweco's international knowledge initiative that provides insights into sustainable urban development as seen from a citizen's perspective. The initiative is built on a series of reports, based on facts and research. The initiative provides society and decision-makers with the facts needed to understand and meet both current and future challenges.

Together with our clients and the collective knowledge of our 20,000 architects, engineers and other specialists, we co-create solutions that address urbanisation, capture the power of digitalisation, and make our societies more sustainable.

Sweco – Transforming society together



Reference list

- 1) World Bank
- 2) Resilient Cities Catalyst (RCC)
- 3) ec.europa.eu
- 4) Bevere, Lucia and Federica Remondi, Sigma: Natural catastrophes in 2021: the floodgates are open, Swiss Re Institute, 30 March 2022.
- 5) Economic Losses, Poverty & Disasters: 1998-2017, UNISDR
- 6) White, Natasha, "Debt-for-Nature swaps gain traction among developing countries", Bloomberg, 7 November 2022, <https://www.bloomberg.com/news/articles/2022-11-07/debt-for-nature-swaps-offeroption-for-developing-countries?leadSource=verify%20wall>.
- 7) World Economic Forum Global Risks Perception Survey 2022-2023.
- 8) <https://www.msb.se/sv/publikationer/resiliens--begreppets-olika-betydelser-och-anvandningsomraden/>
- 9) https://www.weforum.org/reports/global-risks-report-2023?_gl=1*1hgj8x*_up*MQ..&gclid=Cj0KCQiA8a0eBhCWARI-sANRFRQGdiYQ-Zty-ipY2tzrv_Xe05Alblnjjh_yXbA53Ndnr3wFivlytUaAjmiEALw_wcB
- 10) <https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/resilience-for-sustainable-inclusive-growth>
- 11) <https://www.nature.com/articles/s41893-019-0250-1>
- 12) <https://www.msb.se/sv/publikationer/resiliens--begreppets-olika-betydelser-och-anvandningsomraden/>
- 13) <https://www.ri.se/en/what-we-do/projects/feasibility-study-on-climate-resilience-declarations-for-real-estate>
- 14) <https://www.msb.se/contentassets/9c1d0ad0bc004298b994f74b0830f5c0/sendai-framework-midterm-review-country-report-sweden.pdf>
- 15) https://www.nato.int/cps/en/natohq/topics_132722.htm
- 16) <https://www.crisisgroup.org/global/10-conflicts-watch-2023>
- 17) <https://carnegieeurope.eu/strategieurope/88150>
- 18) <http://vti.diva-portal.org/smash/record.jsf?pid=diva2%3A1712562&dsid=763>
- 19) <https://www.preventionweb.net/news/four-european-cities-announced-global-making-cities-resilient-2030-resilience-hubs-climate-and>
- 20) <https://www.moorsforthefuture.org.uk/>
- 21) <https://resilientcitiesnetwork.org/>