



A strategic innovation program with support from the Energy Agency, Vinnova and Formas

Climate transition in cities

A Swedish Governance Model to Accelerate the Rate of Transition



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Author: Allan Larsson

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Viable Cities

Viable Cities is a strategic innovation programme focusing on the transition to climate-neutral and sustainable cities. The programme's mission is climate neutral cities 2030 with a good life for all within planetary boundaries.

Viable Cities is a catalyst for new forms of cooperation between cities, industry, academia, research institutes and civil society. This is to mobilise to change the way our cities operate in line with our national, environmental, and climate goals as well as our international commitments linked to the Global Sustainability Goals – Agenda 2030 – and the Paris Agreement.

Viable Cities' work is closely linked to the European mobilization around "Mission Climate Neutral and Smart Cities 2030".

The programme's timeframe is 2017-2030 and is implemented with support in a concerted effort by Vinnova, the Swedish Energy Agency and Formas, where the Swedish Energy Agency is the responsible authority.

KTH is the host organization for Viable Cities.

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Foreword

This report has been commissioned by Vinnova within the framework of the Viable Cities programme. The report has two main aims:

- Firstly, to provide a policy-relevant overview of two new elements for sustainable urban development: new forms of governance for leading, managing and executing urban planning projects, and new forms for supporting innovations in the form of systems-altering missions rather than a variety of small projects.
- Secondly, it also aims to help evolve these experiences and lessons learned, with an emphasis on new forms of governance for climate transition in cities and municipalities.

The report has been prepared alongside a team of scientists, experts and practitioners. Professor Emeritus Örjan Svane, KTH Royal Institute of Technology, has contributed research perspectives on new forms of governance for climate transition. During the process, Vinnova and Viable Cities have arranged seminars on the financing of Climate Investment Plans, and on digitalization. The report has been sent for referral to the 23 municipalities who signed Climate City Contract 2030, and to six government agencies: Formas, Vinnova (the Swedish Agency for Innovation Systems), the Swedish Energy Agency, the Swedish Agency for Economic and Regional Growth, the Swedish Transport Administration and the Swedish Environmental Protection Agency. Maria Tengvard, Viable Cities, is the editor.

Thanks to everyone involved in authoring and reviewing the report, and for participating in the seminars and referrals.

Allan Larsson

Author of the report, founder of ElectriCITY in Hammarby Sjöstad, Chair of Viable Cities 2017–2021, Vice Chair of the EU Mission Board for Climate-Neutral and Smart Cities 2019–2020.



Summary

Why cities, why governance? (Chapter 1)

This report is about the climate transition, about the role of cities and an emerging new model for leading, managing and implementing that transition more quickly than at present, a process known in brief as governance. The report contains a number of central messages:

- Cities take up just 3% of the Earth's surface but produce as much as 72% of carbon dioxide emissions. More than 50% of the world's population currently live in cities, and by 2050 that figure will be 70%. Cities are therefore pivotal to the climate transition, and city managements, citizens, the local business community and civil society are the most important players.
- Entire cities must transition; it is not enough to simply build new climate-neutral buildings, blocks and districts. New production comprises around 1% of the built city. Efforts in the existing 99% will determine the success of the transition.
- The rate of transition needs to be accelerated considerably. In Sweden in recent years, the reduction in CO₂ emissions has been a couple of per cent a year – 2021 excepted – but that needs to increase to 7–10% a year to meet the goals of the Paris Agreement.
- Achieving such an acceleration calls for new ways of leading and managing the transition. Revamping municipal operations is not enough. The transition must also take place in companies, properties, transport and consumption. The municipal management must involve everyone who has authority over operations and activities that are of significance in the climate transition, i.e. it needs to apply governance to areas beyond its own authority.
- Citizens must be engaged – not just through information and consultation. The citizens are producers and consumers, and in many cases owners of homes, modes of transport and recycling systems – and they must be engaged

in all of these capacities. The climate transition must take place with and for the citizens.

- The business community has a key role to play. Companies that take the lead will be better positioned to develop than the ones stuck in the fossil economy. Through Fossil Free Sweden, the business community is engaged in creating competitiveness in the new economy. Close collaboration with the business community is a catalyst for faster, innovation-led climate transition in the cities.
- New forms of collaboration have been developed in municipal urban development projects over the past 20–25 years. In national and European innovation programmes, they have been identified as keys to successful climate transition.

The aim of this report is to provide a few examples of new forms of governance for the climate transition, and to show how these forms can be fostered and developed. The recurring theme is the question: Who does what in the climate transition? How can municipalities best engage everyone who can make a contribution, and how should the efforts be organised?

Hammarby Sjöstad 1.0: “twice as good” – governance for building a sustainable city (Chapter 2)

Two major urban planning projects in Stockholm, Hammarby Sjöstad and Norra Djurgårdsstaden/Stockholm Royal Seaport, have served as test beds for new forms of governance to ensure that ambitious goals for sustainability and climate transition can be achieved. In the late 1990s, the City of Stockholm decided on an environmental programme for Hammarby Sjöstad, with the overall goal of “twice as good”. The project group was tasked not only to utilize its role as a local government agency in areas where it has authority, but also other forms of influence – information, negotiation, consultation, education



and so on – with the players that had direct authority over sectional goals. This is what is meant by the idea of governance.

Following Hammarby Sjöstad this model has since evolved, for example in the planning and building of Norra Djurgårdsstaden, known in English as Stockholm Royal Seaport. Stockholm Royal Seaport has a Sustainability Plan, not an Environmental Plan as in Hammarby Sjöstad. There are also social and economic sustainability goals. Similar forms of management and governance have been applied in other major urban planning projects over the past two decades, such as Västra Hamnen in Malmö.

Hammarby Sjöstad 2.0 “renew a new city” – governance for climate transition of the built city (Chapter 3)

Hammarby Sjöstad 1.0 was a model for building a new city district. The new addition to the built city in terms of homes and infrastructure, however, amounts to just 1%. This means that the existing built city comprises 99%, and for these parts a completely different kind of governance is needed. The municipality’s direct influence is limited. Rather it is property owners, business leaders and residents of houses and tenant-owner housing associations who have authority over large parts of the energy systems in homes: over vehicles and garages, over their own consumption, waste separation and recyclable waste, and to drive the climate transition forward. In Hammarby Sjöstad, the municipal project has therefore been supplemented with a citizen-led initiative, Hammarby Sjöstad 2.0, which has made the district a successful test bed for collaboration between tenant-owner housing associations, businesses and research. The operation’s objectives have evolved over time, from an ambition “to renew a new city” and a simple goal to reduce energy use in homes, “under 100”, into a climate goal: Hammarby Sjöstad 2030, which is to say that the district is to be climate neutral by 2030. In tandem with this, the forms of governance have evolved too – from a basic citizen initiative with nothing more than the ability to develop ideas and projects – into an innovation platform involving tenant-owner housing associations, businesses and academic institutions, now

totalling some 80 parties in all. This has resulted in innovative solutions, a good environment for innovative companies, reduced energy costs for residents, and climate benefits.

Governance for climate transition in the EU’s research and innovation strategy, Horizon Europe (Chapter 4)

Efforts to develop new forms of governance for being able to build sustainably and manage the climate transition have been under way for more than 20 years as part of municipalities’ planning and building of new city districts. It was a few years before these issues came up for discussion at the national level, in the Delegation for Sustainable Cities and later in the Council for Sustainable Cities, and a few years later at the European level. The latter was primarily the result of a fresh approach in the European research and innovation programme, Horizon Europe. In a report from 2020, the EU’s Mission Board on Climate-Neutral and Smart Cities emphasized the importance of coordinating the cities’ administrations around the systems changes that have to come about in the climate transition, i.e. to move away from a silo mentality to a holistic approach in public service administration. This also entails collaboration with the business sector, academia and civil society to ensure the broad involvement of everyone who is empowered and required in the climate efforts. On the basis of this report, the EU has decided to support 112 cities in Europe – seven of which are Swedish – in becoming pioneers for the climate transition leading up to 2030, and to pave the way for transition in cities on a broad front, with an emphasis on the cities’ coordinating role and citizens’ responsibility for the climate transition (“by and for citizens”).

Viable Cities: Climate City Contract 2030 – governance for climate transition in cities (Chapter 5)

In tandem with the EU dialogue on a new direction for Horizon Europe, discussions were under way in Sweden on a new direction and new forms for innovation funding. One of these new programmes, Viable Cities, began in 2017 with the aim of mustering forces for climate transition in cities. Since 2020,





Viable Cities has been developing a new form of collaboration between state and municipal authorities, in the shape of the Climate City Contract 2030. This highlights the municipalities' role as a unifying force in local transition efforts, both where the municipality itself has authority and in other areas where citizens and businesses have authority and need to be engaged on the municipality's initiative. Climate City Contract 2030 has now been signed by the heads of 23 municipalities in Sweden, encompassing around 40% of the Swedish population. These municipalities have thereby committed to work towards a highly ambitious goal, and to develop new forms of governance in order to achieve that goal: climate neutrality by 2030.

Climate Investment Plans – crucial in a new governance model for climate transition (Chapter 6)

The Climate Investment Plans are a central aspect of the Viable Cities Climate City Contract 2030. A Climate Investment Plan is a concrete expression of a new form of governance, which means that the municipal management takes overall responsibility for mustering all forces – industry, housing companies, civil society – in order to be able to implement the climate transition.

The Climate Investment Plan should take a broad approach, which means it should encompass all investments of significance to the climate transition, and not only municipal ones. It should allow for innovations and new policy, such as the new EU legislation (Green Deal/Fit For 55), which will come into force over the next year or two. It should also have a long-term perspective, i.e. the next ten years. Such a plan will therefore show a large flow of investments, which will jointly constitute the built city for decades to come. Each such investment, whatever its size, contains a choice between fossil technology, which delays, or new solutions and technologies that accelerate the climate transition.

How to coordinate public funding for the climate transition? (Chapter 7)

Climate investments do not exist 'alongside' or 'on top of' the investments made by municipalities, housing companies and industry. The entire flow of investments should be seen as climate investments. This also means that there are well-established institutions, both public and private, that fund these investments. For example, the state co-finances strategic or innovative investments through Industriklivet (Sweden's Recovery Plan for industry), Klimatklivet (Support for Local Climate Investments) and so on.

In 2020, Climate City Contract 2030 was signed by four Swedish government agencies – the Swedish Energy Agency, the Swedish Agency for Economic and Regional Growth, Vinnova and Formas – who committed to coordinate their funding in line with the consensus on climate transition as an overall responsibility, a mission. The following year, the four were joined by the Swedish Transport Agency, and the Swedish Environmental Protection Agency signed in 2022. A process has now been initiated to find forms for coordinating government agencies' co-funding of local climate investments. Work will proceed during 2023, the aim being to draw conclusions and make any necessary political decisions in time for the renegotiation and signing of Climate City Contract 2030 at the end of 2023.

A contract for consumers' climate transition? (Chapter 8)

In Sweden, our private consumption generates an average of 8 tonnes of carbon dioxide per person per year, according to the Swedish EPA. According to the Paris Agreement, the average global emission should be a maximum of 1 tonne per person by 2050.

Regarding transition when it comes to consumption, a different strategy is needed than for business and public service investments. The strategy must be focused on convincing each consumer to alter their consumption patterns step by step, and thereby reduce their climate impact – a process known as 'nudging'.

There are many tools and systems in place to enable consumers to make climate-conscious decisions. The Stockholm Environment Institute, alongside Kalmar and Umeå Municipalities and others, has developed the 'Consumption Compass'. The World Wide Fund for Nature has developed a Footprint Calculator, and IVL Swedish Environmental Research Institute has developed The Climate Account to help consumers make the right choices. Many municipalities that have signed Climate City Contract 2030 are working on their own projects to make it easier to make the right choices. One way for citizens/consumers to contribute to systematic change is to make their own commitments and formalize them, a kind of 'My Climate Contract', much like a written New Year's resolution. Examples of initiatives like these can be found in several

municipalities' Climate City Contract 2030. It could be developed into an annual commitment with gradually raised ambitions. Contracts for consumers' input to the climate transition could be a format suitable for municipalities, environmental organizations and the research community to develop, but best provided by independent players.

Digitalization as a tool for climate transition (Chapter 9)

Climate City Contract 2030 entails a huge commitment on the municipalities' part, to muster local forces and thus accelerate the climate transition. To achieve this, each municipality needs to formulate a powerful strategy for fostering the great potential offered by digitalization. This relates especially to the integration between digital systems and energy systems, which can be exemplified by the digitalization of power grids and buildings, the development of local energy communities, and digitalization of mobility/transport. Government agencies also need to consolidate their role and their collaborations in order to back up the area of digitalization in the development of Climate City Contract 2030. Against this background, knowledge and expertise development on both hard and soft digital infrastructures, with climate data and digital tools for climate transition, needs to be a new development area for collaboration between the municipalities and the state, with support from the academic and industrial sectors.

New export opportunities when Sweden takes the lead in the EU (Chapter 10)

Viable Cities, like other strategic innovation programmes, aims to contribute both to innovative and sustainable solutions to global societal challenges, and to greater international competitiveness for Swedish industry. This latter aim entails several dimensions: strengthening companies on the domestic market, making Swedish companies successful on the export markets, and creating interest in working with Sweden and Swedish companies.

Sweden has a long tradition of international marketing of environmental engineering. For a long time, SymbioCity was a joint brand for marketing



Swedish environmental engineering to cities around the world. In the mid-2010s, Smart City Sweden was established to deal with the far-reaching interest in sustainable Swedish urban planning and development, both in the form of visits to Sweden and through export-promoting activities in other countries. There is now an excellent opportunity for a fresh start of export promotion with climate-neutral and smart cities being the focus. A first step is to identify the 112 cities in Europe now working on having their Climate City Contracts approved by the European Commission and gaining a 'Mission Label'. These cities – with municipal authorities, companies and organizations – will be looking for solutions that can contribute to a reduction in climate impact, with good economy. Swedish concepts, products and services in energy transition, mobility, recycling and digitalization can be launched as state-of-the-art solutions. The combination of the internal market and the EU's Climate City Contract creates the framework for a market with huge potential.

Conclusions, recommendations and suggestions (Chapter 11)

The most important basis for the report's conclusions and recommendations is the fact that the cities' climate contracts are to be renegotiated every year. The renegotiation makes it possible to gradually adapt the contract's commitments to each city's specific circumstances, and to changes in the wider world. In this report, the negotiations are also opportunities to hone the city's commitments. The renegotiations aim to gradually refine the definition of the commitment to climate neutrality, to make it as concrete and comprehensive as possible. So the key is 'continuous improvement', a concept from ISO 14 000, the standard for environmental management systems.

Governance – how can Viable Cities spread the new model for climate transition to all 290 Swedish municipalities?

The fact that 23 Swedish municipalities, encompassing 40% of the nation's population, have signed Climate City Contract 2030 is evidence that this contract-based collaborative approach is attractive to the municipalities, and that it creates added value. The goal should be, as

work on climate contracts evolves and matures, that all 290 Swedish municipalities should work in this systematic way within just a few years, in order to influence investments and consumption in a way that accelerates the climate transition. On that journey, the 23 municipalities that have already signed the Climate City Contract 2030 will act as pioneers with the task, supported by regional players, of reaching out to municipalities in their own region with expertise and inspiration.

How can the research and innovation authorities develop the next generation of programmes for climate transition in cities?

In 2022, the Swedish Energy Agency, Formas and Vinnova were tasked by the government to design and launch the strategic innovation programmes of the future. These go by the name Impact Innovation, and aim to help transform Sweden towards greater sustainability, reach more players that want to drive developments forwards, and to boost Sweden's competitiveness internationally through international collaborations in the fields of innovation and research. The next generation programmes could encompass the following development projects as powerful contributors to the climate transition in the municipalities:

- Develop and deepen the **governance dimension in Climate City Contract 2030** by stimulating local contracts between the municipality, industry, property owners and civil society.
- Develop and **boost the implementation of Climate City Contract 2030** by establishing national platforms for knowledge, expertise and capacity development in financing, digitalization, policy/regulation and transition in private consumption.
- Develop and deepen European and international collaboration by involving responsible government agencies and stakeholders in establishing a **new platform for knowledge exchange, innovation promotion, business development and export promotion**. This could build on experiences from SymbioCity, Smart City Sweden and the Climate Smart Cities Challenge, and take advantage of the growing market arising as cities across Europe increase the pace in their climate transition.



1. Introduction: Why cities, why governance?

In just a few years, insights into the significance of cities in climate transition have come to the fore in national, European and international politics. These insights are based on the fact that cities, which take up just 3% of the Earth's surface, produce as much as 72% of carbon dioxide emissions. Cities (population centres) are therefore pivotal to the climate transition, and municipal managements, citizens, the local business community and civil society are the most important players.

This report, commissioned by Vinnova, focuses on the urban system, i.e. the cities and the role of municipal managements as coordinators of the transition, which is to say on governance of the urban system as a whole. The report looks at how new governance models have been developed in a few municipal urban development projects which have gained attention over the past 20–25 years, and what national and European innovation programmes have done to bring about ongoing development and broad dissemination. The aim is to show how these forms of governance for faster climate transition can be further developed.

The report has been prepared in consultation with Professor Emeritus Örjan Svane, KTH Royal Institute of Technology, whose contribution includes the definitions of governance used in this report:

- **Governance** is applied when a government agency needs to go beyond an area over which it has direct authority in order to achieve a goal. In governance, the government agency works with industry, civil society and academia.
- When there are several goals, several **governance models** are needed. Each model shows which players need to collaborate. Together they fill the gap between the **transitioners** who have the authority (e.g. the property owners) and the **coordinator** (the municipality or citizen initiative). Between them are the **bridgers** (consultants, entrepreneurs etc.) who provide the goods and services the transitioners need.
- The goals should be achieved within a certain number of years. During this time, the coordinator drives the work forwards in a **governance process**. It has several governance models, which come and go as projects.
- The concept of **backcasting**, a term used in future studies, is used to explore possible ways forward to achieve goals that are hard to accomplish. It is a parallel and iterative process that looks at "What needs to be done" and "Who has authority" over these measures, and by doing so a governance model is created through backcasting, from the future to today.



2. Hammarby Sjöstad

1.0: “twice as good”

– governance for building a sustainable city

Hammarby Sjöstad and Norra Djurgårdsstaden, the latter known in English as Stockholm Royal Seaport, are two of Sweden’s most widely noticed urban development projects. Hammarby Sjöstad began being planned in the mid-1980s. An old port and industry area would be transformed into an attractive housing area, close to central Stockholm. In around 1990, the City of Stockholm began vying to host the 2004 Summer Olympics – with Hammarby Sjöstad as the Olympic Village and an excavated hill, Hammarbybacke as Olympic Arena. As part of this process, the district was given a unique environmental programme, and an equally unusual project organization for seeing it through. The first homes were occupied in 2000. In the early 2020s, the district is almost fully developed. The project organization’s working methods are an example of innovative thinking that remains educational today.

What was it that made Hammarby Sjöstad so attractive? It was the waterside location, proximity to metro and Tvärbanan light-rail services, the closeness to nature, the open architecture, and the light coming into the apartments thanks to large windows. But there was something else too: the combination of openness and environmental thinking that came to be a hallmark of Hammarby Sjöstad.

The aim was for the district to be “twice as good” compared to the development from the 1990s. The City of Stockholm had written this in the 1996 environmental programme, as a target for planning and building the new district. This lofty ambition was expressed in eight detailed, quantified orientation goals. Energy use would be halved, work commuters would use the light railway, bus, cycle or walk, and road traffic would be reduced: parking figures were set at a low 0.5 spaces per apartment. Materials flows, i.e. waste and recyclable materials, would be reduced and sorting at source would increase. Water consumption would fall from 200 to 100 litres per person. A goal for land use was introduced, and land remediation was carried out. Targets were also set for storm water and waste water, and for noise.

In urban development of this kind, the city has good opportunities to govern through its role as a government agency, for example via urban planning, land allocation, development contracts and transfer of land. But its authority would not be enough to make the many thousands of decisions needed to achieve all the goals and targets. A new form of management and leadership was needed, one that included all the players that could help make the vision into a reality. The City of Stockholm





formed a brand new kind of project organization, where the participating administrations had a joint mission to coordinate the realization of the environmental programme. It was a form of management that could work systematically outside of the municipal authority, more so than in a conventional project. It was this new form of governance which, alongside the systems-based approach for a more circular economy, laid the foundation for the project's success. In this text, governance is defined as indirect influence on other players to work together and in tandem. This influence can take many forms: communication and persuasion, consultation, education and so on.

For it to work, the group had to identify the players that had direct authority over individual goals, and convince them to accomplish what the project group could not do by itself. This happened with e.g. building contractors, consultants and entrepreneurs for many of the orientation goals for energy. In addition, the project group did not have any direct authority over the city's many administrations and public enterprises for things like district heating, waste and sewerage, so here too it needed to apply governance. Accomplishment of the transport and waste goals was dependent on citizen actions, but the project group did not target citizens directly; instead it targeted government agencies and administrations and enterprises, which in turn could indirectly influence the citizens. Hereafter in this report, players that had direct authority are referred to as transitioners. The players targeted by the project group which had indirect influence are called bridgers. The unique combination of project group, transitioners and bridgers that was needed to achieve one or more sectional goals is called a *governance model*, and the transition is described as a number of such models which are used in a *governance process*.

With these innovations in place as an approach for leading and managing urban development, the City of Stockholm was groundbreaking. The planning and building of Hammarby Sjöstad has been evaluated, and the reports show to what extent the city succeeded with its "twice as good" goal.



The energy goal, to reduce energy use by half, was not achieved, although this can be attributed to the fact that the construction techniques to build with such low energy use did not exist. The goal for total passenger and freight transport was probably achieved, although there is insufficient data. Waste separation at source was extended according to plan. However, since residents of Hammarby Sjöstad are dependent on the city's large-scale infrastructure, the goals for returning nitrogen and phosphorus to farmland were not achieved. The land use goal was achieved, and land remediation was carried out. The goals for storm water and waste water were achieved. The goal of less noise could only be partially achieved. So the results were mixed. One important reason for this is that, for many years, the district was developed as a conventional project for urban renewal, before the environmental programme was introduced. There was therefore an inherent sluggishness that slowed the change process, but also great freedom of action thanks to innovative governance. On the one hand, the project group was weighed down by established routines, which it could do nothing about. On the other hand, the group had great freedom to influence other players to achieve the goals of the environmental programme.

Since then, this model has evolved, for example in the planning and building of Stockholm Royal Seaport. Stockholm Royal Seaport was planned and began to be built a decade or so after Hammarby Sjöstad. The Royal Seaport district could be planned with the benefit of past experiences from Hammarby Sjöstad, both the successful and less successful aspects. Stockholm Royal Seaport therefore had a very ambitious sustainability programme with annual follow-ups and a project organization similar to the one in Hammarby Sjöstad. The sustainability programme has five overall goals: 1) Vibrant City, 2) Accessibility and Proximity, 3) Resource Efficiency and Reduced Climate Impact, 4) Let nature do the work, and 5) Consultation and Learning. The programme has since been revised a few times to allow for new conditions.

The governance process was well coordinated between the City Planning Administration and the City Development Administration, and was used to convince building contractors to help in implementing the sustainability programme. Citizens are not mentioned in the programme's description of players and organization. In a later version of the programme citizen dialogue is mentioned, but the citizens' role as producers, consumers and owners of homes, modes of transport and recycling systems is not mentioned.

Professor Örjan Svane draws the following conclusions for the future in his analysis of the development of the new model for governance: *"Climate transition is necessary, demanding for everyone and more urgent than the environmental goals were and other sustainability goals are today. The necessary knowledge exists, but the transition calls for a whole new kind of thinking as regards what needs to be done, who has the authority, and how the transition should be organized. If new projects are to make their contribution to the global 1.5°C goal, both governance models and the governance process must go far beyond the Royal Seaport example and the Climate City Contracts signed to date. All players that have authority over some kind of climate impact must be included in the governance models, and the rate of transition must increase."*



3. Hammarby Sjöstad 2.0 “renew a new city”

– governance for climate transition of the built city

Hammarby Sjöstad 1.0 was an urban planning project in which the City of Stockholm planned over 20–25 years to build a new city district that would be twice as good, with an environmental programme with clearly defined goals, a concept for a circular economy, and a management organization that would make it possible to concretize the goals into action. The new ambitions to build sustainably garnered a lot of interest, not just in Sweden but around the world.

Even so, the annual addition to the built city in terms of homes and infrastructure only amounts to just under 1% as an average for Swedish municipalities; this means that the existing built city comprises 99%. It is there, in the already built city, that the greatest need for transition exists. A completely different kind of governance is needed there than the kind developed in Hammarby Sjöstad and Stockholm Royal Seaport. Once the city has finished a project and handed over housing, infrastructure and public services to management, someone else has to take over. It is property owners and citizens who have authority over large parts of the energy systems in homes, over how they organize mobility and accessibility, including vehicles and garages, over consumption and recycling – and it is therefore they who can drive the climate transition forward.

Citizens therefore need to engage, or be engaged, and create a governance model for transition of the built city. This was how Hammarby Sjöstad 2.0 was born: a citizen-led, bottom-up project. There was an ambition, expressed by the words “Renew a new city”, but there were no concretized goals from the start, of the kind seen in Hammarby Sjöstad 1.0. When the goals were formulated, they were initially very specific, such as “under 100”, i.e. energy use of less than 100 kWh per square metre per year. They were however gradually developed and honed into becoming “climate neutral by 2030”.

In the same way, the organization evolved: it emerged gradually and was only formalized several years in. It all started informally in 2011 by a group of Hammarby Sjöstad residents, who had opinions on how the district was working and how it could be developed. They were working on a completely voluntary basis, and at that point they had no authority whatsoever over the changes that were being discussed. The city’s project group had been working with negotiations and agreements to influence urban development beyond its authority as a government agency – governance. The citizen group had no authority at all, and therefore had to use other methods.

The operation was conducted in project form under the name HS2020, with a focus on energy in homes, transition to electric vehicles (EVs) and better recycling. Shortly after starting, the project joined forces with Sjöstadsföreningen, a collaboration organization for tenant-owner housing associations in the district. Up until 2014 the work was informal, but in partly funded projects. The parties involved were good at building networks of players with indirect influence over climate impact, called bridgers in this report, and who can provide technology or services that the direct transitioners need. By spring 2014, HS2020 had enough companies interested to form an innovation platform with them, the ElectricITY economic association. Members included Volvo, Envac, IVL Swedish Environmental Research Institute and SP Technical Research Institute of Sweden.





Membership fees and other funding made it possible to carry on and expand HS2020's working method. The entire operation's organization, management and collaborations developed in the years that followed, in response to what needed doing.

HS2020/ElectriCITY used the assessments of goal achievement in the urban planning project, which showed that energy use was not "twice as good" as originally planned. A pilot study indicated that there was great potential in reducing energy use to under 100 kWh per square metre per year, i.e. below the goal from 2005 for buildings in Hammarby Sjöstad. A new model was launched – goal-oriented energy management – in order to achieve energy efficiencies. Implementing the action plan called for an organization and management for the process – a governance model. Through the collaboration with Sjöstadsföreningen, ElectriCITY had a good chance of reaching a significant proportion of the district's property owners – the tenant-owner housing associations.

A network of energy managers from each interested housing association's board was established. The energy managers were invited to energy meetings, where they could exchange experiences and access expert knowledge. ElectriCITY brought together transitioners so they could learn from each other. A competence centre with internal and external energy experts was also established.

The housing associations received assistance in auditing the buildings' energy systems. These audits recorded far-reaching faults and shortcomings, from planning and building and also from running of the systems. These then formed the basis of action plans – from low-hanging fruit such as optimizing energy systems to work as intended, to digital control and operation. ElectriCITY's collaboration with the housing associations grew over the years, from a handful originally to some 50 interested associations, and the participants became increasingly knowledgeable in their roles as laymen and property owners.

Meanwhile, Elbil2020 was started up, an organization for governance of the transition to EVs. It had two concepts for gradual electrification of the transport system. One of them, "Charge at Home", was based on experiences from the City of Stockholm's investment in charging points on the city's streets. The conclusion was that such charging points were needed, but they would not be enough to convince car owners to switch their fossil-fuelled



cars for electric ones. To really make a breakthrough, drivers must be able to charge their cars at their own parking space and/or at their workplace. This initiative was initially met with disinterest, but once the first charging posts had been installed resistance eased off. A newly instituted investment grant and joint procurements helped to speed up investment. The governance model needed for this did not therefore involve the direct transitioners,

i.e. Hammarby Sjöstad residents in their capacity as car owners. Instead, the target was once again the housing associations in their capacity as property owners. Based on that approach, the results were encouraging: in 2022, the district probably has more charging points per citizen than anywhere else in Sweden.

The second concept related to electrification of the buses. It began with a suggestion that the 74 service through Hammarby Sjöstad could be a demonstration line for electric buses and it continued with a plan – Bus Plan Stockholm – with a vision to make all the city's bus fleet, around 330 buses, electric. Following discussions with Storstockholms Lokaltrafik (SL, the Greater Stockholm Local Transit Company), a demo line was introduced, but elsewhere. SL then conducted an inquiry into how the entire bus fleet could be electrified. This led to a decision within Region Stockholm. The entire bus fleet will not, however, be fully electric until 2030.

In addition to work on energy transition and the switch to EVs, HS2020/ElectriCITY were involved in Hammarby Sjöstad's system for recycling – an area where the district was, and remains, an international demo location. HS2020 established a governance model early on to collaborate with refuse-suction company Envac, the City of Stockholm and others, to develop the recycling system and build new digital and mobile services associated with it. This governance model too involved the bridgers, making it easier for the direct transitioners to separate their waste at source.

Through the ElectriCITY innovation platform, the operation and its governance were able to expand in two directions, partly in the form of concrete measures that required collaboration with a growing number of tenant-owner housing associations and businesses, and partly in the form of research and innovation projects, which came to use Hammarby Sjöstad as an “urban living lab”. This brought new knowledge to the governance process, which in turn demonstrates the freedom of action for transitioners and bridgers. One of these was the EU-funded ERA-NET project alongside KTH Royal Institute of Technology, which would highlight the future transition of the energy system from centrally produced and distributed energy, to a system with a greater element of local production, storage and distribution. This project provided a solid foundation for ElectriCITY in collaboration with a group of housing associations to jointly procure technology for geothermal heat, solar energy, storage and charging. This evolved into strategic partnerships for procurement, i.e. agreements under which the housing associations could place orders.



So the governance model that originally built on the housing associations' informal collaboration and shared learning, was formalized in joint procurements. It was a great success: in the first couple of years, running parallel to the pandemic, 24 associations decided on procuring energy investments. Joint procurements were also used in areas other than energy systems, one example being the transport services that the associations procured for handling waste in their recycling rooms. Under this scheme, which encompasses 48 of Hammarby Sjöstad's 70 or so housing associations, transport was reduced, fossil-free vehicles were introduced, and the associations saved up to 40% in costs for these services.

When HS2020 began in the early 2010s, digital support for property and energy management was in its infancy; since then, it has taken great leaps forward. More and more buildings now use digitally connected sub-centres to monitor and control energy systems. Sensors are also installed to measure indoor climate, save energy and prevent water damage. Buildings generate huge amounts of data, and with IoT this information can be used to improve administration and energy use. Digitalization also entail major benefits for charging electric cars. The new infrastructure of next generation chargers also encompasses central control of these charging points, so that charging can be adapted in line with needs and extended power contracts can be avoided.

When the target of "under 100" for energy use was achieved for more and more buildings, a discussion began on a new goal for energy and climate efforts. It was inspired by discussions with researchers at KTH Royal Institute of Technology. ElectriCITY acted on it, and the new goal of climate neutrality by 2030 was stipulated in the operational plan for 2019. The wording (in translation) was that "... Hammarby Sjöstad shall be a climate-neutral district by 2030". Exactly what was meant by the term "climate neutral" was not defined. It did not, for instance, include local residents' consumption, although this is mentioned in more recent operational plans.

A summary in late 2021 of the investments made by 24 tenant-owner housing associations in Hammarby Sjöstad in energy efficiency, control systems, geothermal heat and solar cells put the total amount at SEK 133 million (SEK 541 per sq.m.). In addition, eight associations have invested SEK 4.5 million in solar energy, generating about 900 kWh/sq.m. a year. There are also association investments of around SEK 15 million in charging equipment, which mean that one in four garage parking spaces, about 1,000 in all, are equipped to enable fossil-fuelled vehicles to be replaced by EVs. Schemes currently under way in the form of micro-grids for local production, saving and sharing will entail further huge savings for the participating companies' and housing associations' purchases of energy, which leads to reduced climate impact both directly and indirectly.

After ten years, Hammarby Sjöstad 2.0 is a successful test bed for collaboration between housing associations, businesses and academic research, all coordinated by ElectriCITY. This has resulted in innovative solutions for reducing energy use, an attractive environment for innovative enterprises, reduced energy costs for residents, along with climate benefits – as well as several good examples of a new form of "governance without government" for climate transition in the built city. Inspired by this success and the international attention it has garnered, ElectriCITY has now established a governance model for collaboration with four surrounding districts – Årsta, Sickla, Slakthusområdet/Meatpacking District and Skanska's Sthlm New – for global leadership in climate transition in cities: Stockholm Green Innovation District. The collaboration aims to promote innovations, investments, exports and digitalization, as well as cooperation with other leading cities in the EU.

Professor Örjan Svane has been a companion researcher and has assessed HS2020, ElectriCITY and Hammarby Sjöstad 2.0. He notes that HS2020 started out with a relatively





vague idea about what could be changed in Hammarby Sjöstad. But between 2011 and 2022, ElectriCITY and the predecessor HS2020 managed to build an organization with huge potential to be able to “renew a new city” in concrete, practical terms. The goals set prior to forming the economic association in 2014 were largely accomplished. They took advantage of opportunities that arose, created other opportunities and involved other crucial stakeholders in their projects. The loose network of partners from 2014 has gradually become more formalized and better funded.

Even so, the ambitious goals for 2030 call for yet more renewal when it comes to governance. This is particularly true if “climate-neutral Hammarby Sjöstad” means that all climate impact over which the district’s many transitioners have authority has been dealt with. Örjan Svane has noted that it is hardest to find ways of building governance models where the district’s 25,000 or so citizens are actively involved as necessary transitioners. ElectriCITY has only just started work on the models required to transition food and other consumption. Building governance models for a climate goal like this is demanding and uncharted, both for municipalities and for an organization of “governance without government”.

In other words, already by 2014 HS2020 managed to successfully integrate *What* needs to be done with *Who* needs to do it, in its governance model. The most important overall lessons for the future are, in Svane’s wording:

- **It is possible to find measures that significantly contribute to sustainable development in a newly built city district.**
- **It is possible to build networks with the players required to renew a newly built city district.**
- **If a new district is to be renewed in a similar way to Hammarby Sjöstad, there must be a similarly proactive coordinator and instigator, and that organization does not need to be a citizens’ initiative.**

The initiative for HS2020 was taken in a unique way and by an unusually proactive group of people. If “to renew a new city” is to become a reality in other districts, initiatives from a more established organization are likely to be necessary. One possibility is that the municipality takes the initiative to appoint a proactive project group that can build networks and develop them into governance models.

Another is that once a company has developed a business model for providing a service in Hammarby Sjöstad, that company then seeks to expand also beyond that district. In this way, the innovation “to renew a new city” will spread via innovators seeking new markets.





4. Governance for climate transition

– in the EU’s research and innovation strategy, Horizon Europe

Efforts to develop new forms of governance for being able to build sustainable cities have been under way for around 20 years as part of municipalities’ planning and building of new city districts. It was a few years before these issues came up for discussion at the national level, first in the Delegation for Sustainable Cities, then in the Platform for Sustainable Urban Development and later in the Council for Sustainable Cities, and later also at the European level. This was primarily the result of a fresh approach in European research and innovation policy.

In assessing the EU’s research and innovation programme, Horizon 2020, a self-critical audit of project-focused, sector-based research policy was conducted. This audit confirmed that it was hard to demonstrate how the many R&I projects contributed to the necessary systems changes. Essentially, the projects were islands of change in a sea of stagnation. The assessment recommended a new way of managing EU R&I policy, an approach that was more focused on effects and missions.

These analyses and recommendations were concretized in 2018 in a report authored by Professor Mariana Mazzucato, University College London: “Mission-Oriented Research & Innovation in the European Union, A problem-solving approach to fuel innovation-led growth”, which had a huge influence on the next R&I programme, Horizon Europe.

She emphasized the importance of working at a level that lies between broad societal challenges and projects, and which encompasses different types of initiatives. According to Mazzucato, these should not only be R&I projects, but also policy interventions,



deployment actions and involvement of end-users. An important part of Mazzucato's argumentation related to funding, where she stressed the importance of co-investment to achieve success both for society and for businesses:

“By setting missions that require different sectors to work together, it is possible to create instruments that reward those businesses that are willing and able to co-invest alongside European and Member State public investments. It is not about static subsidies but about dynamic co-investment along the entire innovation chain. It is about thinking how to concretely share not only the risks of innovation but also how to best share the rewards in ways that benefit society the most.”

She also gave recommendations on how the operation should be organized: *“...mission-oriented policies have to be driven by mission-oriented organisations. This ability to welcome risk, to think big, to evaluate in a dynamic way, to actively shape and co-create markets and not just fix them, to then also assess that process, to be much more active in how you might engage, just requires a very different mindset than the current one.”*

Mazzucato's input and several other reports and inquiries were used as foundation material in efforts to formulate the first strategic plan for Horizon Europe. In 2018, the European Commission proposed five broad mission areas:

- **Adaptation to Climate Change, including regional and community resilience**
- **Cancer**
- **Restore our Ocean and Waters**
- **Climate-Neutral and Smart Cities**
- **Healthy soils, health and food**

One express requirement was that the missions should be clearly anchored in the pillar of “Global Challenges and European Industrial Competitiveness”.

The EC appointed a steering committee, Mission Board, for each of the five missions.

In line with Mazzucato's and the EC's lists of characteristics in suitable missions, the Mission Board for Cities proposed a bold, quantifiable mission: *100 Climate-Neutral and Smart Cities by 2030 – by and for the Citizens*”. This mission comprises the following elements:



1

Climate City Contract. A new form of collaboration between the EU and each city. A contract that aims to help the city be climate neutral by 2030, and specifies how the city can be supported by the EU via funding, innovation, best practice etc. (“external governance”).

2

Climate City Governance. This is about a new way of coordinating all the city’s administrations around the systems changes that have to take place in the climate transition. To move away from a silo mentality to a holistic approach in city administration, and to work alongside the business sector, academia and civil society to ensure the broad involvement of everyone who is empowered and required in climate efforts (“internal governance”).

3

Climate City Investment Plan. An instrument the city should prepare to show how it will move from business as usual to a level of ambition high enough for the city to achieve its goal of climate neutrality.

4

Climate City Funding Facility. A new kind of cohesive financing of investment plans, rather than the current fragmented project-based funding. In this process, the European Investment Bank (EIB) will play an important part, as will the EU’s long-term budget and Next Generation EU.

During autumn 2021, the EC invited cities across Europe to register their interest in becoming forerunners in the transition to climate neutrality. In spring 2022, 112 cities were selected to begin efforts on Climate City Contracts. The first contracts are expected to be approved during 2023. Of the 112 selected cities, 100 are in the EU and 12 in associated countries. These 112 include seven Swedish cities: Malmö, Helsingborg, Lund, Gothenburg, Stockholm, Gävle and Umeå. All of these seven are among the 23 cities in the Viable Cities initiative Climate Neutral Cities 2030.

To support the cities’ efforts in becoming climate neutral, following a call, the EC formed the NetZeroCities platform, which started up in autumn 2021 and will run until 2025. NetZeroCities is a collaboration of more than 30 organizations across Europe, including Viable Cities, which primarily contributes in the development of Climate City Contracts for cities at the EU level, and the Climate Investment Plans that are a part of these. EIT Climate KIC is leading the work.

With support from NetZeroCities, the 112 cities will develop Climate City Contracts to be signed and implemented by each participating city. The contracts will contain an overarching action plan for climate neutrality in important sectors, such as energy, buildings, waste management and transport. The Climate City Contracts will also include investment plans. Climate transition in these cities will necessarily involve local players, industry, research institutes and civil society, as well as the EU, national and regional government agencies – and last but not least, the citizens. Co-creation is the key, and everyone is needed to achieve the ambitious goals. The cities that have signed a Climate City Contract and undergone a validation process will be assigned a Mission Label by the EC, to affirm the quality and feasibility of the city’s commitments under the Climate City Contract. The Mission Label will also open up funding opportunities in the EU’s many programmes for climate transition. All in all, Horizon Europe is investing EUR 360 million in the Cities Mission and in research and innovation initiatives linked to the Mission in e.g. mobility, energy and urban development over the period 2021–2023.





An intensive development phase linked to process and content in the Climate City Contracts on the European level has begun in 2022, and has involved the Mission Cities. Efforts to prepare European Climate City Contracts build for example on experiences from national Climate City Contracts through Viable Cities in Sweden and CitiES 2030 in Spain. Direct dialogue with the EC's Mission Secretariat has been established.

Viable Cities has also been a source of inspiration for other EU Member States in preparing a mission infrastructure for accelerating cities' climate transition. The EC has launched the initiative *Building Capacities for the Climate Neutral and Smart Cities Mission* (CapaCITIES), to develop and strengthen national structures with the aim of supporting the cities' transition. The CapaCITIES approach builds for example on methods and tools used in Viable Cities. CapaCITIES runs 2022–2024.

As evidenced by the early preliminary work for the general mission objectives of Horizon Europe and the specific statements of the Mission Board on 100 Climate-Neutral and Smart Cities, the intention from the start has been to support the implementation of work on the Mission through a range of different initiatives of varying natures, and with partly different focus areas. Apart from NetZeroCities and CapaCITIES, there are also other initiatives such as New European Bauhaus and Driving Urban Transitions, in which Viable Cities is also involved.

5. Viable Cities: Climate City Contract 2030

– governance for climate transition in cities

In tandem with discussions in the EU in the late 2010s on a new direction for Horizon Europe, discussions were under way in Sweden on a new direction and new forms for funding research and innovation. Vinnova, the Swedish Energy Agency and Formas were tasked by the Swedish government to design a new major R&I initiative, which became the strategic innovation programmes or SIPs. In a first step, constellations of players prepared a number of innovation agendas, SIAs, as a foundation for decisions on SIPs. One of these is Viable Cities, which began in 2017 with a time frame until 2030. The aim was to muster forces around transition in cities linked to the global SDGs of the 2030 Agenda and the climate goal of the Paris Agreement. The programme's mission is *"climate-neutral cities by 2030 with a good life for all within planetary boundaries"*. Like the other 16 SIPs, the programme is funded by Vinnova, the Swedish Energy Agency and Formas.

After initiating operations with two broad-reaching calls in spring 2018, the Viable Cities board decided on a more clearly defined mission-based focus on cities, which led to the Climate Neutral Cities 2030 initiative. This began in 2018 with a different call aiming to support a long-term strategic transition process, giving municipalities a central role in bringing together players and building joint transition capabilities. There was great interest in participating, and in 2019 nine Swedish cities were selected: Enköping, Gothenburg, Järfälla, Lund, Malmö, Stockholm, Umeå, Uppsala and Växjö. During the autumn, discussions were held with representatives from the cities regarding how work on the programme should be carried out, and the talks were influenced by ongoing developments in the EU's Mission Board for Climate-Neutral and Smart Cities.

Viable Cities built on the Mission Board's discussions about a contract-based mission, and translated this into a proposal for a contract between Swedish municipalities and national government agencies. This was initially called a "KSO contract", as the person signing it would be the "kommunstyrelsens ordförande/KSO" or Chairman of the City Executive Board (called 'Mayor' in the City Contracts). This was an important step. The aim was that the municipalities would no longer carry on working in projects, but rather in a more mission-led transition process raised at the highest political level, the City Executive Board and its Chair or "KSO". The name was later changed to Climate City Contract 2030, in order to also highlight the level of ambition in the collaboration between the national level and municipal authorities.

Climate City Contract 2030 highlights the municipalities' role as a unifying force in local transition efforts, both where the municipality has authority and in other areas where citizens and businesses have authority and need to be engaged in the governance process. The importance and responsibility of citizens in the transition of the built city, its management and operation, are particularly highlighted. Already back in April 2020, nine Mayors signed a declaration of intent, and December 2020 saw the signing of the Climate City Contract 2030 – the first of its kind in Europe.

The municipalities' commitments under the Climate City Contract include describing their climate goals and strategy, including organization and management; collaboration





with industry, academia and civil society; the use of digital support for implementation, and how they plan to become innovation hubs in their regions for climate-neutral municipalities. They are also expected to test, implement, assess and scale up concrete activities, with a focus on initiatives that make a real difference in the climate transition.

The Viable Cities commitments include contributing in efforts for better regulation, innovations, coordinated funding and backup prior to EU funding. For the national government agencies taking part, there is a joint commitment relating to coordination on lessons learnt and regulatory frameworks, research, innovation and development, coordinated funding, and work with the European R&I programme, Horizon Europe. The contract also includes a joint commitment when it comes to strategic development projects to further develop work on the Climate City Contract step by step.

The bearing elements of Climate City Contract 2030 are: a) that the contract is revised annually with the aim of raising the level of ambition and honing implementation; b) that the municipality (Mayor) takes charge and coordinates the local governance process; c) that citizens are engaged as consumers and producers; d) that the municipalities prepare Climate Investment Plans with a broad approach; e) that national government agencies coordinate their support for the municipalities, including funding; and f) that digitalization is developed to support decisions and implementation.

The contract is thus made more flexible, more dynamic and more innovation-promoting than traditional, state-regulated or state-funded activities tend to be:

- It is **dynamic** in that it starts from the municipality's adopted climate policy and conduct an annual revision of the commitments in the Climate City Contract 2030, in order to bring about continuous raising of the levels of ambition and hone the degree of implementation.
- It is **flexible** by allowing scope for a mutual give and take between the municipality and national government agencies.
- The Climate City Contract is also more **innovation-promoting** by giving municipalities access to networks, where successful innovations and best practices can be shared.





In the Climate City Contract signed in 2021, Climate Adaptation and Climate-Smart Mobility were added as municipal commitments. That year, the joint development projects focused on System Demonstrations, Regional Climate Contracts and Mission for Climate-neutral Cities by 2030 internationally.

In spring 2021, Viable Cities issued a new call: Climate Neutral Cities 2030 2.0. A further 14 municipalities were selected for inclusion in the programme. Climate City Contract 2030 has now been signed by the heads of 23 municipalities in Sweden, jointly covering around 40% of the Swedish population. They have thereby committed to develop new forms of governance in their individual long-term strategic climate transition up to 2030.

An analysis of the 23 climate contracts signed in December 2022, and to be implemented in 2023, contain a series of good example of how the level of ambition has been raised and the work approaches have developed. Nine of the municipalities have been involved in the process since 2019:

- **Enköping** claims that this new way of working in collaboration has also meant that the municipality now develops its own organization's ability to work on sustainability with management by objectives in a new way.
- For **Gothenburg**, it has become clear that the climate transition in the city does entail some serious challenges, both as regards fundamental choices and more operative initiatives. This highlights an important need for close dialogue and co-creation between the city and participating agencies on the best way to manage this risk-taking.
- In **Järfälla**, a network has been started up for housing associations, with a focus on energy efficiency, cost savings and environmental benefit. The network has grown rapidly and over 50 associations are currently members.
- **Lund** Municipality has had the goal of becoming a fossil fuel-free municipality. This was 99% achieved in 2020 thanks to a sharp focus on the municipal organization's vehicle fleet and the introduction of new business models that lead to a more resource-efficient use of the vehicles.
- The analysis of potential climate actions in **Malmö** has helped provide decision-makers there with a knowledge base for the process up to 2030: "The transition by 2030 is possible but requires courage, perseverance and structure."
- In the City of **Stockholm** there is a strong mandate to work for climate neutrality. The proposed budget for 2023 contains stricter climate goals, and includes an emission-free inner city by 2030, as well as an environmental zone type 3 in parts of the city centre and efforts to reduce road traffic. There is also a goal to halve emissions from consumption.
- During 2022, **Umeå** Municipality was selected to participate in the EU Cities Mission (100 Climate-Neutral and Smart Cities by 2030). Umeå will strive to ensure that the Mission has an impact throughout the region, and to increase collaboration both in northern Sweden and with Vaasa in Finland.



- **Uppsala** Municipality has adopted a revised Environmental and Climate Programme in order to speed up the pace of climate transition, reducing greenhouse gas (GHG) emissions in Uppsala between 2021 and 2030 by 10–14% a year. This means that the goal of a fossil-free welfare municipality by 2030 and a Climate Positive Uppsala by 2050 has been more closely defined as a Climate Neutral Uppsala 2030 for a Climate Positive Uppsala by 2050 at the latest.
- **Växjö** reports that one of its strengths when it comes to sustainability work is “a combination of the political agreement across block boundaries, the courage to set ambitious goals, and the insight that the solution lies in collaboration between many players”. More concrete aspects that are highlighted are the transition to 100% renewable energy production, halved energy consumption in apartments after renovation, wooden construction, and climate requirements in procurement.

During 2022, 14 municipalities signed climate contracts for the first time: Borlänge, Borås, Eskilstuna, Gävle, Helsingborg, Kalmar, Karlstad, Kristianstad, Linköping, Mariestad, Nacka, Skellefteå, Örebro and Östersund. Overall, the 23 climate contracts reveal a high level of ambition and activity,

and productive collaborations. One common denominator is that the municipalities are all developing an “internal governance”, which is to say governance within the municipal organization and in interaction with industry and civil society.



A development process was initiated and is proceeding in 2023 alongside government agencies as regards the design of the new tool referred to as a “System Demonstrator”. This means a controlled means of testing a sustainable systems transition with a mix of innovative solutions in a real environment – and with reference to the context in which it is to work. Viable Cities has also been tasked by the government to develop regional climate contracts in the municipalities affected by major corporate establishments and expansions in Norrbotten and Västerbotten regions: Skellefteå, Umeå, Boden, Gällivare, Luleå and Kiruna.

Viable Cities’ development of a new model for governance in cities’ climate transition has taken place in productive dialogue with the European Commission. The restructuring of Viable Cities’ activities to a mission-led method in 2018–2019 was inspired by the fresh approach within the EC in planning the new research and innovation programme, Horizon Europe. In the next step, concretization of the mission concept into mission-led practice including a Climate City Contract 2019–2020, Viable Cities was the organization that put the idea to the EC. In the same way, Viable Cities has taken inspiration from other EU nations, and in return has contributed Swedish experiences.

Spain is the country with which Sweden and Viable Cities have had the most comprehensive exchange. Spain has built a national platform for climate transition in cities, called the Spanish National Mission Platform. Unlike Viable Cities, which is commissioned by four Swedish government agencies, the Spanish model is a bottom-up initiative. It began in 2020 as a





Photo Fredrik Persson

platform for dialogue, El Día Despues, EDD, with four organizations as partners, including the Centre for Innovation in Technology for Human Development at the Technical University of Madrid (UPM). EDD saw extensive response from cities, industry and academia, and soon grew from a dialogue forum into also being involved in implementing development projects. EDD became a meeting-place for important decision-makers, including the mayors of Spain's biggest cities: Madrid, Barcelona, Valencia and Seville. This dialogue forum later evolved into CitiES 2030, a forum for collaboration between the managements of Spanish cities. When, in 2021, the EU's Mission Board on Climate Neutral and Smart Cities presented its proposal for Climate City Contracts involving 100 European cities, the Spanish cities could immediately begin preparations and sign an agreement with its national government, an agreement which a further four cities also signed. When the EU announced which cities would be involved in the Climate City Contract in 2022, seven of the Spanish cities were included. This prompted a ramping-up of the organization into the Spanish Cities Mission Platform, which is financed by a Spanish government foundation called Fundación Biodiversidad (The Biodiversity Foundation). The platform's task is to help the cities in their climate transition efforts, i.e. roughly the same role Viable Cities has in relation to the Swedish cities that signed up to the Climate City Contract 2030, and will sign European Climate City Contracts.



6. Climate Investment Plans

– crucial in a new governance model for climate transition

The Climate Investment Plans are a pivotal feature of the Viable Cities Climate City Contract 2030, and are a concrete expression of the new form of governance which means that the municipal management takes overall responsibility for mustering all forces – industry, property owners, financial institutions, civil society – and creating a long-term strategic process for being able to implement the climate transition.

The Climate Investment Plan is formulated in consultation between Viable Cities and the municipalities. To contribute to the climate transition, the plan must have a broad, flexible and long-term approach. It should be broad, which means it should encompass all investments of significance to climate neutrality by 2030, and not only municipal ones. It should be flexible, which means it should build on innovations and new solutions that already exist or are close to reaching the market. It should also be flexible in terms of new policies and new regulations, such as the new EU legislation (Green Deal/Fit For 55), which will come into force over the next year or two. It should have a long-term perspective, i.e. the next ten years. Such a plan will therefore show a large flow of investments, which will jointly constitute the development of the city for decades to come. Each such investment, whatever its size, contains a choice between fossil-fuelled technology, which delays, or new solutions and climate-smart technologies that accelerate the climate transition.

There are investments of strategic significance for the climate transition, and these should be given particular attention in the Climate Investment Plans:

- **The transition to fossil-free energy supply and efficient energy use.**
- **Electrification of the transport system – public transport, freight transport and private motoring.**
- **Planning of the built environment, and infrastructure – to reduce the need for transport.**
- **Consumption and recycling – to reduce the use of resources, increase recycling and bolster the circular economy.**

The Climate Investment Plans are the result of a process including planning, cost calculations, risks analyses and funding requirements. Viable Cities has developed a database and a digital tool for all Swedish municipalities, which shows the extent of emissions in 2019 and a forecast for emissions in 2030 assuming the municipality continues with business as usual. These facts illustrate what the EU Climate City Mission refers to as “a climate policy deficit”. With this database as a tool, action and investment plans can be prepared to achieve the 2030 goal. The database and the digital tool also contain information about a number of climate actions the cities can take, and the economic conditions for these actions.

As a general conclusion, it could be said that the municipalities are in an introductory phase in their work on Climate Investment Plans encompassing all operations of





relevance in the entire municipality. The ongoing development work in the municipalities prompts some important insights into a mission-led evolution of Climate Investment Plans moving forward. Firstly, funding issues need to be integrated with organizational and management/collaboration issues, i.e. governance. This integration will make democratic buy-in for climate transition both a precondition for inclusive implementation, and an effective mechanism for risk management in that implementation. Secondly, the Climate Investment Plan is no longer about project funding for individual climate actions. Rather, a mission-led approach is needed that develops a multi-level and cross-sectoral governance structure, i.e. both within a municipality and across the municipal, regional and national levels, and integrated across different thematic areas. This structure lays a new and necessary foundation for systematically mustering forces and jointly driving the climate transition work. Finally, transition risks can no longer be managed at the project level alone. These exist on the organizational and systems level and obviously need to be managed with systems knowledge, transition capability, and above all with innovative thinking around governance practice. At the same time, this mission-led evolution on the local level places new and higher demands on the undertaking of national government agencies, not only in the form of more needs-led support and coordinated state backup, but also a deeper commitment to municipal development work.

Over the coming months and years, the work needs to be intensified and methods developed both for the fundamental analyses of costs, income and funding, including risk analysis, and for a more ambitious and mission-led evolution of the Climate Investment Plans.

7. How to coordinate public funding for the climate transition?

The basic idea in the Swedish climate contracts is that all investments involve a choice between the old logic of the fossil economy and a fossil-free economy with no – or vastly reduced – climate impact. It is the choice between the one logic and the other that determines how the transition to climate neutrality can take place with sufficient speed. So climate investments do not exist ‘alongside’ or ‘on top of’ the investments made by municipalities, property owners and industry.

This also means that there are well-established institutions that fund these investments. The municipalities can fund investments using tax income. For large, long-term investments Kommuninvest – a Swedish Local Government Funding Agency co-owned by 280 municipalities and 14 regions – can offer financing on favourable terms. Kommuninvest accounts for about 60% of the local government sector’s loan financing. Green loans comprise around 13% of the lending. Municipal enterprises can fund their investments using their own resources, and by borrowing via Kommuninvest and other banks.

The financiers – from Kommuninvest to commercial banks – now also place increasingly clear conditions on financing, that investments should contribute to sustainable societal development, driven by policy changes such as the EU’s taxonomy of sustainable economic activities.

The state helps out by co-funding strategic or innovative investments. The government agencies that can contribute funding of relevance to the Climate Investment Plans are the Swedish Transport Agency, the Swedish Environmental Protection Agency, the Swedish Energy Agency, the Swedish Agency for Economic and Regional Growth, Vinnova and Formas. These agencies have different roles to play in the Climate City Contract. The three R&I financiers – the Energy Agency, Formas and Vinnova – invest in new knowledge and innovations. The Energy Agency and the EPA can use their funding programmes – such as Industriklivet (recovery plan for industry) and Klimatklivet (support for local climate investments) – to support investments.

The question that has emerged from the Climate City Contract 2030 process is whether this form of funding can be better organized. The municipalities have noted that state funding is fragmented and project focused, and unable to be used efficiently for a purpose like climate transition in a city. The Climate City Contract 2030 is an expression of a new approach, a mission-led rather than a project-led transition. With the Climate City Contract 2030 now signed by six Swedish government agencies – the Swedish Energy Agency, Vinnova and Formas, the Swedish Agency for Economic and Regional Growth, the Swedish Transport Administration and the Swedish EPA – it entails a commitment to coordinate funding in line with the basic idea of climate transition as an overall responsibility, a mission.

Work has now begun to find better forms for funding investments within the framework of the climate contracts. This work will proceed during 2023, the aim being to draw conclusions and make any necessary political decisions in time for the annual review and signing of Climate City Contract 2030 at the end of 2023.





8. A contract for consumers' climate transition?

According to the Swedish EPA, private consumption in Sweden generates an average of 8 tonnes of carbon dioxide per person per year, which is far higher than the global average. Private consumption represents about two-thirds of Sweden's consumption-based emissions, and stems from businesses and other activities. According to the Paris Agreement, the average global emission should be a maximum of 1 tonne per person by 2050.

The aspects of private consumption that affect the climate the most are food, transport, housing, and clothes and shoes. For many consumers air travel – with current aviation fuels – is the single largest source of emissions: a return trip to southern Spain emits an average of about 1 tonne of CO₂ per passenger (including the high altitude effect). Another example: Today, the consumption of meat causes almost one tonne of emissions per person per year on average in Sweden. Swedish people's clothing purchases entail a climate impact equating to 4.2 tonnes of CO₂ equivalents across their entire life cycle, which broken down is almost half a tonne per inhabitant per year.

Different kinds of consumption call for different transition strategies, so we therefore divide them into five categories: food, ground journeys, air journeys, housing, and other. The governance model for each of these categories differs from the others, primarily in that they have different bridgers between the municipal coordinator and the direct



transitioners: for instance the bridgers in transition relating to food need to be food retailers, restaurant owners, school meal coordinators and so on. The transition away from private car journeys calls for completely different bridgers, as does the transition for clothes and air journeys. Citizens' freedom of action as regards the climate impact of housing is governed by the form of tenancy and/or ownership. For all consumption categories, consumers cannot really consume in a climate-neutral way as long as their consumption is produced by fossil fuels. But once they have done what they can, that is the end of their transition, since in this report we limit a municipality's climate neutrality to the scope of authority that local players have.

For climate transition when it comes to consumption, a different strategy is needed than for business and public service investments. Investments generally bring about lasting change, provided they are maintained. Consumption is rather about decisions that are made individually or by households. Moreover, each decision often has an immediate but short-term effect: we buy food often and eat every day. Habits, often unconscious, govern what we buy and eat. The alternatives are unknown or inconvenient. Trying something new every now and again does not lead to new habits being established; it is easy to fall back into old habits. This means that the strategy must be focused on convincing each consumer to alter their consumption patterns step by step, and thereby reduce their climate impact.

Such a strategy is supported via the municipalities and other agencies' recommendations, binding rules and economic incentives, but also by measures to build infrastructure that supports climate-smart consumption choices. A good example is the transition to fossil-free cars, which has been supported by the bonus-malus system and is backed by investments in charging infrastructure. In addition there is an EU policy that no fossil-fuelled vehicles may be sold after 2035. Right now, forecasts suggest that all new vehicles sold by 2030 will be electric. This would mean that new car sales would have gone from 1% in 2015 to 100% in 15 years. This offers a perspective on what can be achieved in the foreseeable future. But the transition doesn't have to end there: rather than having their own car, a household might opt to join a car pool. The percentage of journeys undertaken by public transport or bicycle might also increase. There are windows of opportunity here if a household is changing vehicles anyway, or moving to another location. If in that



situation they come into contact with bridgers that represent these alternatives, they will become aware of just how much freedom of action they actually have. The municipality's coordinators can involve these bridgers in their governance model for ground transport, and find ways to reach the transitioners when their willingness to change is at its height.

Buying clothes and booking holiday flights are other windows of opportunity that bridgers can take advantage of in the relevant governance model.

Tenants in rental properties have less potential to reduce their climate impact compared to property owners. But in tenant-owner properties, the residents themselves are the property owners. As laypeople, they need help and support. The ElectriCITY example shows how the municipality can build a governance model specifically adapted for this situation. People living in houses have full authority as property owners, but they too are laypeople. A governance model intended for them therefore needs bridgers that can identify opportunities for lower climate impact, and provide the required services.

There are many tools and systems in place to enable consumers to make climate-conscious decisions. The Stockholm Environment Institute, alongside Kalmar and Umeå Municipalities and others, has developed the 'Consumption Compass'. The World Wide Fund for Nature has developed a Footprint Calculator, and IVL Swedish Environmental Research Institute has developed The Climate Account to help consumers make the right choices. Many municipalities that have signed Climate City Contract 2030 are working on their own projects to make it easier to make the right choices.

So ultimately it comes down to individual decisions and bringing about far-reaching buy-in among citizens to change their consumption patterns, a process known as 'nudging'. In behavioural economics, nudging involves influencing people to make more sustainable decisions through repeated reminders. Sustainable decisions means decisions that are good for the individual, and for the wider society. But who does the nudging? In the climate contract cities, it is the municipal coordinator that has the initiative and builds governance models through nudging. Nudging bears great similarities to methods deployed in marketing. Messages are targeted to the expectations of specific target groups, and the messages are then repeated and varied. The governance model's bridgers should therefore use marketing methods when communicating with the transitioners. This also has an advantage in that we, as consumers, are more tolerant to advertising messages. Measures taken by government agencies can easily be interpreted as an infringement on personal integrity.

One way for citizens to formalize a change that comes from nudging is for them to make their own commitments, a kind of 'My Climate Contract', much like a written New Year's resolution. Examples of initiatives like these can be found in Helsingborg's Climate City Contract 2030. It could be developed into an annual commitment with gradually raised ambitions. Contracts are a format suitable for municipalities, environmental organizations and the research community to develop, but best provided by independent players.



9. Digitalization

– as a tool for climate transition

The World Economic Forum (WEF) has estimated that digital technologies and applications can deliver up to one-fifth of the reductions needed in CO₂ emissions by 2050 in energy, materials and mobility. Another international report, written by researchers at the Stockholm Resilience Centre and others, claim that digitalization is the key to halving emissions up to 2030.

The integration between energy and urban systems and digital systems has already begun. The potential can be illustrated with examples of some strategic areas of importance to climate transition:

- **Digitalization of the electricity system.** Encompasses computerization for measurement and monitoring, remote control and control, digitalized decisions and automation. This is under way among the grid owners, although some have made more progress than others. According to a study conducted by Power Circle, 15% of the power grid companies can be regarded as being digitalized, while the rest are still in the early stages.
- **Digitalization of properties.** Buildings account for 40% of Sweden's energy use for electricity and heating, and roughly one-fifth of Sweden's GHG emissions. Digitalization enables buildings to be connected, systems to work together, real estate managers to work towards clearly defined goals, predictions of changes in weather to be integrated into control systems, and decisions to be automated. Some of this has already been achieved, but a lot remains to be done.
- **Local energy networks.** European legislation on local energy communities opens up new opportunities for interaction between users and other players in the energy system. Buildings, blocks and entire districts can be linked together to produce, store and share energy. The aim is to increase the proportion of renewable energy, save energy and increase flexibility. The pilot projects that are under way are expected to contribute to a reduction in energy requirement of 40% and energy use of up to 30%.
- **Mobility/transport.** This sector currently represents one-third of Sweden's total emissions. Digitalization is already contributing to a more efficient transport system (GPS, digital meetings, online shopping, sharing, mobility-as-a-service, etc.). The transition to electrically powered, digitally connected vehicles reduces the energy requirements dramatically – an electric car can drive 2–3 times as far as a fossil-fuelled car on the same amount of energy – and the cars can serve as stores in energy systems with digital control of charging and energy outtake in order to reduce the output requirement.

Digitalization and digital tools can support the climate transition in municipalities both within these priority areas and at the systems level, for instance in the form of cross-sectoral synergies, greater circularity for resource efficiencies, and behavioural changes to increase the interaction between emission reduction and the production and consumption stages. An integrated digital- and climate transition in practice is a broad process that encompasses strategy and management, architecture and infrastructure, analysis and visualization, safety and confidentiality. This development process needs to take place as part of the municipalities' strategic decision-making, and across administrations.



Within the framework of Climate City Contract 2030, all municipalities need to formulate and implement powerful strategies for digitalization in strategically important areas which they have authority over or can influence indirectly. In the ongoing work, some municipalities have made more progress than others when it comes to digitalization that supports the transition. At the same time, they have identified common development needs that require support for competence development, partnerships and collaboration:

- Creating a data-led culture and building competence, linked to climate transition efforts.
- Being able to identify the need for data for monitoring and steering towards set climate goals.
- Establishing information ownership and creating technical and organizational conditions for making transition-related open data accessible in a controlled manner, i.e. developing both hard and soft digital infrastructures to support climate transition.
- Having access to collected, visualized and climate transition-related data tools for consensus and understanding surrounding effects and goals.
- Gaining an insight into and understanding of digitalization policy frameworks at the EU level that have a significant impact on the local transition work.

Based on experiences from Vinnova's previous initiative "City as a Plattform (Caap)" and ongoing work as part of Smart City Lab being conducted by RISE Research Institutes of Sweden in close collaboration with Viable Cities and other principal players, such as the Swedish Internet Foundation and the Swedish Association of Local Authorities and Regions (SALAR), much is in place to meet these development needs. For example:

- Viable Cities and Vinnova's work on system demonstrators can create opportunities for and support cities' implementation of the Climate City Contract within the framework of an integrated digital and climate transition.
- Closer collaboration between Smart City Lab and Viable Cities to bolster knowledge and capacity development around the soft digital infrastructure, i.e. the ability to collect data and make it accessible in a controlled manner, focusing on climate data.
- A mustering of forces among principal players, such as RISE, the Swedish Internet Foundation, SALAR, academia and industry, to develop a long-term platform for knowledge and competence development in the field of digital support for climate transition in cities, including the application of EU frameworks.

Viable Cities ought also to develop support for digital representation/presentation of the Climate City Contract 2030 in the form of visualization of climate impact; such a model can appropriately be based on Viable Cities' digital tool for climate investments, and as far as possible be developed in line with best practices and standards internationally.



10. New export opportunities

– when Sweden takes the lead in the EU

Viable Cities, like other strategic innovation programmes, aims to contribute both to sustainable solutions to global societal challenges, and to greater international competitiveness for Swedish industry. This latter aim entails several dimensions: strengthening companies on the domestic market, making Swedish companies successful on the export markets, but also creating interest in working with Sweden when it comes to knowledge, innovation and reform.

Investments for climate transition are important to the development of a municipality's trade and industry. The Climate City Contract 2030 states that concerted mobilization for the transition to climate neutrality can lay the foundation for companies in Sweden to develop new business strategies that enhance competitiveness. The 23 climate contracts signed in December 2022 contain several good examples of this. One can be seen in Mariestad which has established ElectriVillage, a testing and demonstration platform concept for sustainable transition and industrial renewal.

During 2023, Viable Cities will further strengthen its collaboration with business in order to muster forces for transition. This will take place on several levels, not least through collaboration in initiatives such as Fossil Free Sweden and The Green Transition Leap. In addition, local mobilization of companies in the Climate City Contract 2030 will be enhanced.

The other dimension relates to how Swedish companies can be even more successful on export markets. Sweden has a long tradition of international marketing of exports of environmental engineering. For a long time, SymbioCity was a joint brand for marketing Swedish environmental engineering to cities around the world. In the mid-2010s, Smart City Sweden was established to deal with the far-reaching interest in sustainable Swedish urban planning and development, both in the form of visits to Sweden and through export-promoting activities in other countries.

The organization Smart City Sweden has had six regional branches (Stockholm, Gothenburg, Malmö, Linköping, Borlänge and Umeå), and its operations have been a success. A database has been built up with 120 different smart solutions from across Sweden, along with information from more than 700 companies. Over the years, several hundred delegations from 70 countries have visited Smart City Sweden's nodes or offices. A process has been established around the visits to involve relevant parties when requests are received, to host the visits, and later follow up and assess the business potential. It has become clear that the funding of pilot studies fills a gap in the Swedish export model. With small sums of SEK 200,000–500,000, Smart City Sweden has used consultants and experts to take the initial pilot on to firm business. About 20 such studies have been carried out in the areas of climate-smart cities, mobility, smart networks, water, waste, renewable energy, food production and more. Some of these have already been ramped up to full scale, such as buses in Colombia, design of full-scale water treatment in Bolivia, pilot tests to enable the Scania factory in China to run on biogas, and the export of solar cells to Somaliland and El Salvador. A large number of cities and regions have also put out calls for collaboration on climate neutrality.





Government funding of Smart City Sweden has ceased and the organization is now seeking a new remit. It is therefore time to make a new start. The Swedish Energy Agency, Vinnova and Formas – along with other government agencies with a remit to promote exports – now have a golden opportunity and should consolidate Sweden’s leading role in the EU when it comes to climate transition in cities. A first step is to identify as a fast-growing market the 112 cities in Europe now in the process of having their climate contracts approved by the European Commission and gaining a ‘Mission Label’. These cities – with municipal authorities, companies and organizations – will be looking for solutions that can contribute to a reduction in climate impact, with good economy. Swedish concepts, products and services in energy transition, mobility, recycling and digitalization can be launched as state-of-the-art solutions. The combination of the internal market and the EU’s Climate City Contract creates the framework for a market with huge potential.

Moreover, there is an opportunity to build on the experiences and collaborations established within the framework of the global innovation competition, the Climate Smart Cities Challenge, initiated by the Association of Swedish Engineering Industries and Viable Cities. In this, a large number of Swedish government agencies, large companies, UN Habitat and others have worked together for climate transition in cities, in partnership with cities around the world.

In a such a new start, there is reason to go beyond traditional export-promoting activities and establish a new platform for both innovation promotion and business development and export promotion, a kind of “Innovation Open Source” that illustrates all the new opportunities and can ultimately generate export business. Such a mustering of forces will also be a strength for Swedish innovation and export promotion beyond Europe.

11. Conclusions

– recommendations and suggestions

11.1. Governance for climate transition in cities – conclusions

In just a few years, insights into the significance of cities in climate transition have come to the fore in national and European politics. During this time, new ideas have emerged and been translated into concrete measures. One of these new ideas was to change the focus of R&I policy from a large number of small projects to systems-changing missions. Another was to establish a new form of collaboration between the EU and cities, and between national government agencies and cities in the form of Climate City Contracts, i.e. a collaboration of mutual give and take. A third idea relates to new forms of governance, whereby municipal managements bear responsibility not only for their own operations, but also for taking up the reins and engaging industry, civil society and citizens.

It is a mark of success that policy has developed so much in such a short time and that backup for the new approach is now in place from the EU, national government agencies and municipal managements. The Swedish cities' climate contracts demonstrate a high level of ambition and a great many connected activities, in a long-term process with clear direction.

So how can this work now be taken forward, intensified and make an impact in all Swedish municipalities?

11.2. How can the research and innovation authorities develop the next generation of programmes for climate transition in cities?

In 2022, the Swedish Energy Agency, Formas and Vinnova were tasked by the government to design and launch the strategic innovation programmes of the future. These go by the name Impact Innovation, and aim to help transform Sweden, reach more players that want to drive developments forwards, and boost Sweden's competitiveness through international collaborations in the fields of innovation and research.

The agencies should continue the work that Viable Cities and other strategic innovation programmes have done and refine the forms of governance and boost the capacity to be a driver in the climate transition. This can be done via the following reforms:

Develop and intensify the local **governance dimension in Climate City Contract 2030** in the municipal organization and through local contracts with the municipality on the one hand and the business sector, property owners and civil society on the other – something that several municipalities are already doing, including Malmö, Umeå and Helsingborg



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Develop and **strengthen the implementation of Climate City Contract 2030** by establishing national support functions/knowledge centres in collaboration with relevant players for

- *a) funding* – **in collaboration with Kommuninvest and other financiers.**
- *b) digitalization* – **in collaboration with SALAR, the Swedish Internet Foundation and others.**
- *c) policy/regulations* – **with a focus on the EU’s new climate legislation, Fit for 55 and the Digital Agenda for Europe, in collaboration with the Permanent Representation of Sweden to the EU, SALAR, Swedish regions’ EU offices and others.**
- *d) transition of private consumption* – **in collaboration with IVL Swedish Environmental Research Institute, WWF, the Stockholm Environment Institute and others.**

Develop and deepen European and international collaboration by involving relevant government agencies and stakeholders in establishing a **new platform for innovation promotion, business development and export promotion**. This could build on experiences from SymbioCity, Smart City Sweden and the Climate Smart Cities Challenge and create a “Climate Innovation Open Source”, to take advantage of the growing export market arising as cities across Europe increase the pace of climate transition.

11.3. How can Climate City Contract 2030 be spread to all 290 Swedish municipalities?

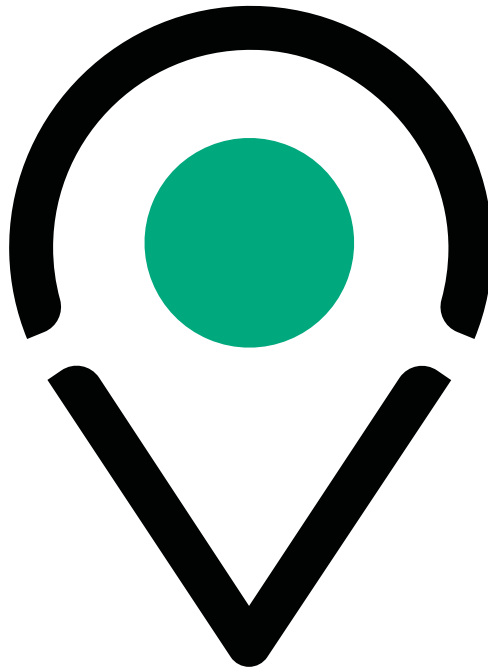
The fact that 23 Swedish municipalities, encompassing 40% of the nation’s population, have signed Climate City Contract 2030 is evidence that this collaborative approach is attractive to the municipalities, and that it creates added value. This should mean that the new forms of governance inherent in the climate contracts are so well developed, that they ought to be of universal benefit. The goal should be, as work on climate contracts evolves and matures, that all 290 Swedish municipalities within just a few years work in the systematic way that Climate City Contract 2030 aims for in order to accelerate the climate transition.

This can be achieved either through national legislation or through dialogue and agreement between the municipalities, to encourage them to engage more deeply in the climate transition. This report recommends the latter – in line with the reciprocity entailed by the contract-based collaborative approach. One way of organizing the far-reaching efforts could be to involve the regional level, something that is being discussed in different contexts both in Sweden and in other European countries. This has huge potential, but is also associated with several challenges. Regardless of the form of active national dissemination, the 23 municipalities that have already signed the Climate City Contract 2030 will act as pioneers with the task, supported by regional players, of reaching out to municipalities in their own region with expertise and inspiration. This is the import of their commitment under the Climate City Contract 2030: to act as innovation hubs.

11.4. Can the contract model be used in other areas of society to improve coordination between several levels, many government agencies and trade organizations?

Experiences at this early stage of mission-led transition based on a climate contract collaboration approach are good. There is therefore good reason to consider whether this could be a new approach to complement traditional organization of public administration and welfare services in order to improve collaboration between the state, regions and municipalities, in interaction with industry and civil society.





Cities occupy only 3 percent of the earth's surface, but are responsible for as much as 72 percent of carbon dioxide emissions.

Today, over 50 percent of the world's population lives in cities, in 2050 it is 70 percent. Therefore, cities are central for the climate transition. This report is about climate transition, about the role of cities and a new emerging model for leading, managing and realizing the transition faster than today, that which in summary is called "governance".

Viable Cities

Royal Institute of Technology, KTH

Drottning Kristinas väg 43 B | 100 44 Stockholm, Sweden

www.viablecities.se