



# **Norwegian Urban Challenges**

STAKEHOLDER DIALOGUES 2018

FROM THE RESEARCH PROJECT:

**LEARNING FLEXIBILITY:  
COMPLEXITY, INNOVATION & INTER-URBAN KNOWLEDGE TRANSFER**

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# 0 / EXECUTIVE SUMMARY

A major demographic shift to city lifestyles and growing urbanization present both opportunities and challenges. Resource scarcity, climate change and urban growth rank among the greatest challenges, together with our more complex and multifaceted society. Even in highly developed and urbanized countries such as Norway, it is important to grasp the challenges of the future today to ensure sustainable urban growth and liveable cities for future generations.

This report highlights some of the main challenges facing Norwegian cities. These are likely to demand increased attention now and in the years ahead. Through dialogue and discussions with stakeholders, the report discusses questions related to urban development, energy, governance and participation in Norwegian cities over the next three decades, as well as ways of tackling them.

Exploring flexibility as a starting point for engaging with rapid and unpredictable change has been at the heart of these dialogues. By discussing how flexibility can develop in a variety of areas such as urban development, energy, governance and co-determination, we can make connections between these areas and reflect on the significance of looking at these issues and themes from different cities in an integrated context.

## **CHAPTER 2 DEVELOPMENT OF THE CITY: THE GEOGRAPHICAL REGION AS A FIELD OF INNOVATION**

If we are to take sustainable development seriously, we must solve complex and multifaceted challenges. These can be considered 'wicked problems'. Untangling these issues involves collaboration and coordination across silos - disciplines, levels and sectors of society. Doing so demands various forms of flexibility. Today's regional initiatives reflect a systematic commitment to innovation. In the Groruddalen Integrated Urban Regeneration Project and in the Furuset district, Oslo, we see how sustainable urban development can be implemented: in the form of climate-resilient and flexible physical surroundings for a diverse population; collaborative models across disciplines, levels and sectors, and across government, business and civil society. Civic engagement plays an important role, and here, we see a more flexible city combined with a series of challenges. These regeneration projects have charted the road ahead, along with the challenges confronting us in sustainable urban development and the encounter with unforeseen changes and crises.

### **CHAPTER 3 ENERGY MANAGEMENT - FLEXIBILITY AS AN OPPORTUNITY AND A CHALLENGE**

A key challenge for the electricity grid in Norwegian cities is the rising demand for power due to population growth and a steady increase in energy-intensive technology. There is also a substantial maintenance backlog. But this situation creates opportunities for innovative thinking around more traditional solutions. Consumer flexibility and distributed power generation are highlighted as key elements of the future power grid, but this will also create new vulnerabilities linked with cybersecurity and greater planning complexity, combined with trust and solidarity as invisible but vital components of the Norwegian power grid. To counteract these vulnerabilities, cooperation across sectors and disciplines is essential.

### **CHAPTER 4 SELF-ORGANIZATION, VOLUNTEERING AND NEIGHBOURHOOD NETWORKS**

We look at the role of voluntary or self-organized work in pursuit of a more sustainable and robust community from three perspectives: 1) Initiative and self-organization from individuals, (local) business, loose networks and civil society organizations; 2) Local public actors' encouragement and facilitation

of initiatives and activities from individuals, (local) business and civil society actors; and 3) Self-organization that starts in digital media and works together with material and organizational infrastructure in a neighbourhood and geographical area. All the variants reflect explorations of flexibility. The first perspective is at the heart of the discussion in Chapter 4 and is based on the experience from the neighbourhood networks in Bærekraftig Liv (Sustainable Living). Voluntary work takes on new forms and established forms are developed further. When self-organization and volunteering are introduced as part of a flexible city and its sustainable development, many opportunities arise, in addition to new challenges.

One possible way forward is to investigate how cities that have faced situations of vulnerability or crisis have managed to deal with them or solve them. This approach is evident in the title of the research project behind this report - Learning Flexibility. Here, we focus on experiences and solutions from crisis-stricken cities in completely different places, and how these experience may help solve challenges related to urban environments and urban policy in Norway and the Nordic region. In this way, we wish to contribute to a dialogue about how sharing knowledge and experiences between cities may offer a way of coming to grips with tomorrow's urban challenges.



*Storo, Ring 3, Oslo. Photo: Lisbet Harboe*



# **CHAPTER 1**

# 1 / INTRODUCTION

Since 2008, the majority of the world's population has been living in urban areas, and it has been estimated that the proportion will increase to nearly 70% by 2040. This monumental demographic shift towards increased urbanisation opens up many possibilities for citizens and authorities alike, but also entails complex challenges and greater vulnerability. Increasing resource scarcity and population growth, more varied and complex societies and, not least, climate change, are among the biggest challenges. Even in highly developed and urbanised countries like Norway, where four out of five people already live in urban areas, it is important to deal with the challenges of tomorrow today in order to ensure sustainable urban development and habitable towns and cities for future generations. Complex challenges demand innovative answers to how we can develop sustainable cities, and we must start by studying the challenges facing us today.

The growing interest in ensuring urban sustainability is encouraging. The UN's Sustainable Development Goal number 11 is to make 'cities and human settlements inclusive, safe, resilient and sustainable'. The vision set out in UN-Habitat's New Urban Agenda is to create cities and human settlements that 'meet the challenges and opportunities of present and future sustained, inclusive and sustainable economic growth, leveraging urbanization for structural transformation, high productivity, value-added activities and resource efficiency'.<sup>(1)</sup> Others emphasise innovation as the way to meet future

challenges and facilitate sustainable cities. The 2009 and 2015 Lund Declarations point to the need for European countries to intensify their efforts to deal with the grand challenges related to cities, migration and environmental sustainability, among other things. The 2016/2017 white paper on urban sustainability underlines the need for a forward-looking strategy to ensure inclusive, sustainable urban areas and strong rural areas.

These ambitious goals mean that authorities, business and industry and the general public will increasingly have to consider how cities grow and how future challenges will affect urban quality of life. Some of the most important challenges are the need for housing, infrastructure, transport and planning to develop in step with present and future urban growth, and the need for more sustainable energy consumption, to protect cities from the consequences of climate change and uncertainty, and to ensure equal opportunities for all citizens.

We intend this report to be a contribution to the debate on the challenges facing Norwegian towns and cities, and we wish to promote a forward-looking agenda for action. We would like to summarise some of the main emerging urban **challenges in the Norwegian context that may require focused attention now and in coming years**. Based on discussions with various urban stakeholders, we aim to identify some of the main challenges and possible responses relating to issues of urban development,

(1) United Nations (2017) New Urban Agenda. General Assembly Resolution 71/256. 23 December 2016.



***This report is based on interviews with several persons and partners working on challenges that Norwegian towns and cities are facing in the fields of urban development, volunteering and energy.***

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energy, governance and participation in Norwegian towns and cities. The report's target group includes policymakers, urban planners, private sector actors, academics and civil society organisations, in order to contribute to critical discussions on actions to support a sustainable urban future in Norway to 2040.

In our work on this report, we have sought out professional environments that are highly ambitious and have a keen interest in innovation and a capacity for implementation. We have sought examples of fresh thinking in relation to strategies and solutions, and invited speculation from stakeholders on the types of challenges we may face in future. The challenges raised in these discussion point to areas of focus in order to address and solve future urban problems.

This report focuses on societal infrastructures that facilitate sustainable urban environments and living conditions now and in future. We understand infrastructure to mean a set of resources that people share which enables them to carry out certain tasks over time. This can be infrastructure in the traditional sense, such as the electricity grid; but infrastructure may also be considered to be, for example, a library that provides meeting rooms, a photocopier and other resources that can enable people to set up various initiatives in their local communities.

Many of the challenges we discuss in this report can be characterised as 'wicked problems'. A wicked

problem is a complex challenge that has no known solution. Measures that cut across sectors are often required to deal with such problems. This is further complicated by the fact that many changes are rapid and hard to predict. Under such circumstances, flexibility, which is the ability to change form, structure or function while maintaining a form of continuity, may be an expedient approach. In this report, we will describe examples of flexibility as an approach to various wicked problems. In chapter 2, the development of a flexible physical environment in the area of Furuset is used to illustrate how a diverse population is given space to express their needs and the chance to participate in decision making. In chapter 3, we discuss how consumer flexibility is included in plans to secure urban electricity supply under pressure from population growth and climate change. In chapter 4, we discuss flexible forms of community organisation, with the Bærekraftige Liv ('Sustainable lives') network an example of how more can be done to facilitate voluntary initiatives when faced with evolving urban challenges. When we consider examples from different sectors as a whole, we also see that flexibility can have unfortunate consequences, for example in the form of exclusion of people who are unable to make use of the possibilities created.

The report is part of a research and development project that looks at strategies and solutions in cities that have experienced crises and urban areas that face considerable challenges. Can we take important

experiences and solutions from these cities to help Norwegian and other cities address and resolve our own future urban environmental and urban policy challenges? Can we learn to be flexible in a way that makes us better prepared to deal with rapid and unpredictable change? This project takes a closer look at various solutions that have arisen in such cities where innovative measures have brought radical improvements to urban living environments and infrastructures. Examples of these cities include Medellín in Colombia, São Paulo in Brazil, cities in the Indian state of Kerala, Accra in Ghana and Detroit in the USA. Ideas about different solutions emerging in these locations have guided the mapping and discussions about the Norwegian urban context and the aspects we have chosen to focus on.

### **1.1 LEARNING FLEXIBILITY: WHAT DOES IT MEAN?**

Like cities all over the world, Norwegian cities are facing rapid changes that are sometimes difficult to predict. When faced with an increasing pace of change and less predictability, the tried and tested ways of resolving urban challenges may no longer be appropriate. Instead, more flexible forms, structures and functions may be a good point of departure to respond to present and future urban challenges. But what does flexibility mean? Flexibility is a quality that makes it possible to change form, structure or function while maintaining a kind of continuity – because everything cannot be flexible at the same time.

As we consider it, flexibility is about both proactive and reactive actions. Proactive actions are meant to facilitate the possibility of being flexible when necessary. One way of doing this is to develop infrastructure and management systems that can be easily adapted to changing circumstances and that can tackle a wide range of variation and complexity. Flexibility as a reactive action can be about responding to changes or sudden crises by using or combining existing resources in new ways. It can also be about developing flexible infrastructures, management systems or other solutions in response to chaos or anarchy. We have seen examples of this in 'crisis-stricken' cities such as Medellín in Colombia and Detroit in the USA.

In the history of modern architecture and urban planning we can find big ideas about flexibility and experiments with flexible structures. These experiments have sparked debate about what flexibility is. The Nordic expert community distinguishes between three forms of flexibility. In terms of buildings, flexibility can be explained as a building's ability to meet changing requirements simply by changing its physical and technical properties, generality can be explained as a

building's ability to accommodate changes in usage without its properties changing, and elasticity can be explained as the possibility for extension or subdivision of the areas of the building.<sup>(2)</sup> The three terms refer to different forms of flexibility and are related to the distinction between reactive and proactive actions.

In addition to the distinction between reactive and proactive actions, we also believe that it will be useful to examine flexibility in the form of both formal and informal measures. Flexibility can be something that the authorities facilitate and practise, but it can also be initiated by civil society organisations taking the initiative to solve problems that they are experiencing.

What forms can flexibility take in a Norwegian reality? One example of flexible infrastructure is an electricity grid where households are not passive consumers, but actors that respond to signals from the grid and thereby help to achieve a balance. In the same way, flexibility in urban administration can imply giving greater freedom of action to civil society organisations, individual actors and networks, for example by allowing temporary structures such as swap boxes or a floating sauna, or by facilitating good neighbourhood initiatives, such as allowing young rappers in an area to start up a local music workshop. The development of platforms where people can sell, swap and share goods and services support new types of flexible solutions. Smartphones also contribute by opening up new opportunities for two-way communication in real time between citizens and the public administration.

People's ability to take the initiative and adapt their practices to changing circumstances is a resource in societal and urban development. There are also challenges associated with emphasising flexibility in urban management and development, and we will return to this later in the report. For example, conflict may arise between flexibility and considerations for the common good. Vulnerable groups may be left out in a society that emphasises the ability to take initiative and seek out resources. Flexibility can nonetheless be a useful governing principle in dealing with rapid and unpredictable change in Norwegian towns and cities in the period until 2040, but that depends on the flexibility being managed in such a way that it supports rather than reduces society's stability.

We believe that a development towards greater flexibility in infrastructures and management systems will also require a change in people's understanding of the challenges we are facing. Through discussions with our dialogue and collaborative partners and by reading documents that describe work methods, we have identified some ways of thinking that we believe are fundamental when it comes to learning

(2) Kirsten Arge and Kikkan Landstad. 2002 *Generalitet, fleksibilitet og elastisitet i bygninger*. ('Generality, flexibility and elasticity in buildings'), Norwegian Building Research Institute: 336 Project report.



Trygve Lies plass today, Furuset, Groruddalen, Oslo. Photo: Lisbet Harboe

flexibility in practice. First and foremost, it is a matter of accepting that today's urban challenges are often 'wicked problems' in the sense of being complex and unpredictable issues. It follows from this that it will be necessary to challenge silo-thinking mentalities and actively seek out resources across established organisational boundaries. And finally, we return to the question of how to design urban environments, energy infrastructures and management practices for a future that we cannot fully predict. Studying concrete examples of flexible forms, structures and functions in widely different urban contexts, both here and elsewhere in the world, may be helpful.

## 1.2 THE NORDIC CONTEXT

Even though Norway is one of the world's most developed countries with standards of living among the best in the world, we will still face challenges in the coming decades. Norwegian towns and cities are growing quite fast - Oslo, for example, is one of the fastest growing cities in Europe, with estimates predict that the city's population will approach 900,000 by 2040. Moreover, demographic changes indicate that Norwegian towns and cities will become more multicultural and more densely populated. This will bring a greater need for and greater challenges related to housing construction and infrastructure, transport, sustainable energy consumption, integration and equality. Dealing with these changes

will require a great deal of foresight and planning.

In addition to demographic changes, broader economic, political, ecological and technological factors will play a part in shaping the future of urban Norway. The smart city agenda in the public and private sectors drives the digitalisation of infrastructures. Service automation can lower the barriers between citizens and the authorities and help to improve municipal services, but it requires major investments in infrastructure and planning, as well as an awareness of the pitfalls of excessive faith in technology.

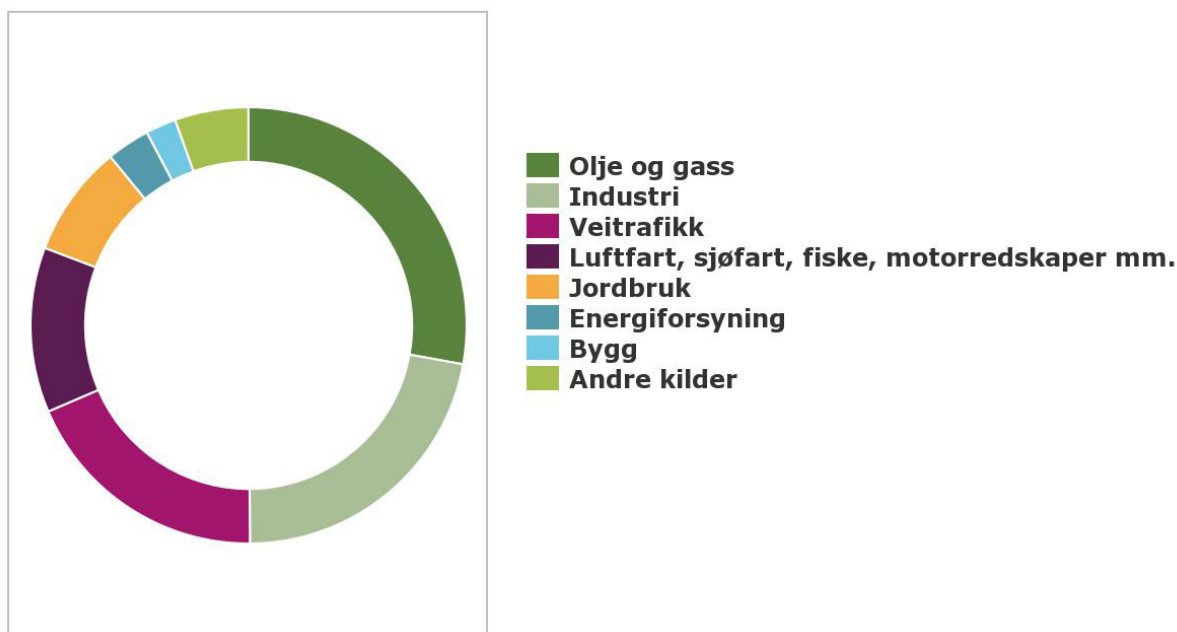
Technology is transforming the labour market and working conditions in a similar manner. In the next twenty years, a technological revolution will radically change working life. Jobs that do not require much expertise may be automated, which will by 2040 trigger a need for investment in retraining and the development of new qualifications for new digital jobs.

Environmental change will likely also have dramatic effects on Norwegian towns and cities. Most of these cities are located in coastal regions, and rising sea levels and temperatures may have significant consequences. At the same time, changes in agricultural conditions may cause food security problems.

Global politics are also linked to climate change.

## Utslipp av klimagasser i fordelt på kilde i 2016

Totalt 53,4 millioner tonn CO2-ekvivalenter



Source: Statistics Norway (SSB) <http://www.miljostatus.no/tema/klima/norske-klimagassutslipp/>

International requirements for climate-friendly development creates great demands for reorganisation in Norwegian cities, towns and suburban areas. Both policies and practices will have to change. Under the Paris Agreement, Norway and the EU are to cut their greenhouse gas emissions by 40% compared with the 1990 emission levels by 2030. Norway's purchase of CO2 quotas has contributed to reducing the need for national reorganisation - or at least delaying it. The cuts towards 2030 cannot be carried out without major changes. Emissions from road traffic accounts for a very high proportion of Norway's greenhouse gas emissions; 18.6% in 2016. See the table below.

This points to a number of challenges for Norwegian cities and towns. Reducing road traffic by a shift to public transport, walking and biking in addition to electric, or even self-driving vehicles constitute direct measures. The geographic distances between the functions of daily life - home, workplace, kindergarten, schools, leisure activities - determine the need for transport and the distances travelled. It is said that land use planning is the mother of all transportation. Therefore, higher-density housing, urban densification and urbanisation are important measures when it comes to reducing road traffic and the amount of land occupied by roads and parking areas. A local area's density is one factor that defines the basis for walking and biking as well as the economic basis for public transport.

Urban densification is therefore a dominant strategy in Norwegian towns and cities' attempts to meet the international requirements for climate-friendly development. This includes urbanisation of the outskirts and high density in areas with particularly good public transport coverage, near public

transport hubs. This is known as hub densification. High density makes construction projects more profitable, yet there is a certain degree of conflict between the conventions for climate-friendly development in the form of densification and the qualities of the local environment. The compact city concept is part of the climate-adapted development policy that aims to reduce road traffic, increase density and achieve urban development with mixed functions modelled on the traditional European city and Norwegian urban centres. The city of short distances is another term for this, and refers to the fact that all important functions are found within walking or biking distance. This name has positive connotations that include the local environment and neighbourhood.

But increased density and diversity of functions could lead to more conflicts. If we consider potential future challenges such as increased immigration and dramatic climate change, the pressure on the urban areas, density and diversity may become acute. The more instrumental understanding of the concepts of city and density on which the compact city concept is based, meets the requirement for climate-adapted urban development. When the concept of wicked problems are drawn into the discussion, the topic expands to include sustainable development. Density was a recurring topic in the discussions on which this report is based. Is it possible to find forms of urban density and densification that safeguard and further develop important qualities of residential environments and neighbourhoods - spatial, social and natural qualities - and that can therefore contribute to good urban development in Norwegian cities, towns and suburbs?





*Furuset og Verdensparken, Groruddalen, Oslo. Photo: Lisbet Harboe*



## **CHAPTER 2**

## **2 / URBAN DEVELOPMENT: THE GEOGRAPHICAL AREA AS A FIELD OF INNOVATION**

Norwegian towns and cities make a material contribution to increasing the CO<sub>2</sub> level in the atmosphere and to global climate change. Diverse populations and widening inequality are clear urban trends, not least in Oslo. The concept of sustainable development as defined by the Brundtland Commission (World Commission on Environment and Development) in 1987 covers environmental, social and economic development. Complex challenges have to be resolved if we are to take sustainable development and social development seriously. Here we again see reference made to wicked problems.

In this context, a wicked problem is a challenge that cannot be resolved by continuing to do more of what we are already doing. The causal connections are often complicated, not fully mapped, and the solutions to such problems, if any exist, are unknown. Many of the wicked problems span several sectors, and possible measures often cut across several sectors and administrative levels. (Ministry of Local Government and Modernisation, 2013)

Cooperation and interaction across silos – disciplines, levels and sectors – is necessary if we are to unravel these problems. This involves various forms of flexibility.

Many of Oslo's suburban challenges in the

Groruddalen area are described as wicked problems. The Groruddalen Initiative was started up in 2007 to deal with these challenges. It is an area-based initiative – a comprehensive and coherent initiative that focuses on a defined geographical area to improve the area's physical and social environment. The initiative includes integrated urban regeneration programmes focusing on the local communities in Groruddalen that have the poorest living conditions and high proportions of environmental, socio-economic and social challenges. The area-based initiative embodies sustainable development in practice, and climate-friendly urban development forms an integral part of this.

If we are to achieve holistic sustainable development in Norwegian towns, cities and urban areas, we will have to resolve complex challenges where physical, organisational, technical and social factors are intertwined. This is what the initiative is trying to achieve in Groruddalen. The final evaluation of the first Groruddalen Initiative 2007-2016 concluded that, so far, the initiative has come a long way in dealing with the wicked problems. This does not mean that the complex challenges have been resolved, but that effective ways of dealing with them have been developed.

If we regard the Groruddalen Initiative as an example of systematic use of innovation, we could claim that



The Groruddalen area covers 4 of the 15 city districts that make up Oslo, and the area has a population of around 140,000. Groruddalen includes residential areas, suburbs, industrial areas, large road systems, green areas and parks. There is also great variation in the composition of the different local communities' population.

### **The Groruddalen Initiative 2007-2016**

The main goals were sustainable urban development, visible upgrading of the environment, improved quality of life and overall improvement of the living conditions in Groruddalen. The initiative was funded by the government and the City of Oslo, with expert advice from the Norwegian State Housing Bank. Groruddalen planning office, part of the City of Oslo's Department of Urban Development, has been in charge of coordinating the city's involvement in the Groruddalen Initiative.

- Initiatives and integrated urban regeneration programmes in Alna, Bjerke, Grorud and Stovner city districts in Groruddalen.
- 35 government and municipal enterprises cooperated across sectors.
- More than NOK 1.5 billion was allocated to more than 300 physical and social projects.

### **The Groruddalen Initiative 2017-2026:**

New ten-year area-based initiative in Groruddalen in continuation of the Groruddalen Initiative 2007-2016. The main goal is to contribute to lasting improvement of services and local environment qualities in the areas of Groruddalen where the need is greatest. The goal is to help more people living in these areas to become self-supporting and active participants in the local community and wider society.

A number of reports, manuals and other material have been developed based on these efforts.

The City of Oslo and the Norwegian State Housing Bank's information pages:

<https://www.veiviseren.no/stotte-i-arbeidsprosess/bo-og-naermiljo/omradesatsing-i-etablerte-boomrader/kunnskapsgrunnlag/omraderettet-innsats-i-oslo>

<https://www.oslo.kommune.no/politikk-og-administrasjon/slik-bygger-vi-oslo/groruddalssatsingen-2007-2016/>  
<https://www.oslo.kommune.no/politikk-og-administrasjon/slik-bygger-vi-oslo/groruddalssatsingen-2017-2026/>

it is one of Norway's biggest and longest-standing innovation programmes. It is large in terms of the broad scope reflected in the goals defined, the total amount of resources invested, and, not least, because many public agencies and other actors have been involved.<sup>(3)</sup>

Committed and systematic innovation work is still being done in Groruddalen in order to continuously develop spatial-social projects, forms of organisation based on interdisciplinary cooperation, cross-sector networks of private, public and civil society participants, and new implementation models. We consider flexibility an important guiding principle in development work. Therefore, it is interesting to look at the development work carried out in the Groruddalen Initiative and some of the challenges encountered during the work and in Groruddalen.

Per Øystein Lund at Groruddalen planning office points out that the area perspective has been an important part of the Groruddalen Initiative. Efforts focused on a geographical area have facilitated and enabled innovation in the form of pilot projects. The pilot projects in the city districts facilitate the exploration of new strategies, forms of cooperation, work methods and solutions because there is freedom and resources to act differently. The area delimitation may have helped to make wicked problems more manageable. There are some

important challenges that cannot be resolved locally, such as access to financial resources, but we will not go into them here.

The Groruddalen Initiative gradually became more locally based. This process included precise mapping of the local communities' resources and challenges, in addition to many participation processes. This preparatory work paved the way for well-founded projects and made it possible to develop strategies and projects that were more relevant for more people in the local community in question. It also improved cooperation across disciplines, levels and sectors - public, private and civil society. Addressing concrete local problems and scenarios for the future made it clearer for all parties involved what the wicked problems and the work to resolve them entailed. Because, as Per Øystein Lund pointed out: 'The challenges you see in an area are not divided into sectors, and the local people don't care which sectors solve their problems.'

### **Challenge:**

It has proved difficult to get to grips with and solve wicked problems within the present management systems, which are divided into sectors and levels. All parties to the discussion share a clear understanding that true sustainable development is dependent

(3) Morten Stenstadvoid. 2016. 'Sluttevaluering av Groruddalssatsingen: Hovedrapport.' ('Final evaluation of the Groruddalen Initiative: main report') Report R8997 by Agenda Kaupang, Proba Research and Civitas for the City of Oslo, Department of Urban Development, p. 17.



A visualization of the new central urban street of Furuset. Now waiting for plans to be carried out. Illustration: Agency for Planning and Building Services, City of Oslo

on interdisciplinary and cross-sector processes and solutions. How can we work to promote urban development across sectors, departments, disciplines and layered management systems? It is not just a question of further developing cooperation across disciplines, but across sectors of society: the private sector, the public sector and civil society.

## 2.1 SUSTAINABLE DEVELOPMENT AT FURUSET: PLANS AND PROJECTS

The Furuset area has a population of 9,500 and is located in Alna city district, which has been part of the Groruddalen Initiative since 2007. The 1970s suburban area is the City of Oslo's primary area project for climate-friendly urban development and the place where important ambitions take concrete form. This makes it an interesting area to look at in order to learn more about flexibility and sustainable development in innovative Norwegian practice.

Furuset has good public transport coverage in the form of bus and metro services and considerable development potential near metro stations and large green areas. Furuset has a multicultural population. Housing associations account for much of the housing stock, which contributes to the area's stability, but the income level is low and there are challenges relating to living conditions.

Furuset is a model area for climate-friendly

urban development and is the first FutureBuilt project to comprise a whole area rather than just a construction project. Furuset will now also be included in the research project ZEN (Zero Emission Neighbourhoods).<sup>(4)</sup> The FutureBuilt area project for Furuset follows the same boundaries as the City of Oslo's 2016 area zoning plan and includes 1,400 dwellings and a population of 3,800. FutureBuilt and the City of Oslo have chosen a suburb and a low income neighbourhood as their pilot area. This makes it more difficult to keep up the pace of development and involve private parties, but it also means that the solutions developed here can also work in many other areas. It also demonstrates an ambition to promote social and geographical equality. The ambitions for Furuset as a pilot project in the area initiative thus merge with Furuset's role as a model project for climate-neutral urban development. The social component of the sustainability concept is given ample space - along with the environmental and economic component.

The development, plans and projects at Furuset really show how interdisciplinary urban development work is carried out and gives concrete form to ambitions, innovations and challenges. The FutureBuilt programme has also functioned as a lever to introduce alternative procedures and new solutions, as emphasised by Hannema Sønstegaard of Alna district, City of Oslo. FutureBuilt is a project-based programme, and entails a commitment to carry out the projects. The projects are given priority

(4) FutureBuilt: Model projects. <https://www.futurebuilt.no/Forbildeprosjekter>  
FME ZEN, Zero Emission Neighbourhoods, Furuset, Oslo. <http://fmezen.no/furuset-oslo/>

### **FutureBuilt**

*FutureBuilt is a ten-year programme with a vision of demonstrating that it is possible to develop climate-neutral buildings and urban areas of high quality. The goal is to develop 50 model projects, both areas and individual buildings, that are to cut greenhouse gas emissions by 50% in the areas of transport, energy consumption and materials used. The programme aims to stimulate innovation and changes in practice and to be a learning arena for developers, architects, advisors, building contractors, municipalities and users. The partners in the programme are the City of Oslo, the municipalities of Bærum, Asker and Drammen, the Ministry of Local Government and Modernisation, the Norwegian State Housing Bank, Enova, the Norwegian Building Authority, the Green Building Alliance and the National Association of Norwegian Architects. <https://www.futurebuilt.no/>*

### **ZEN Zero Emission Neighbourhoods**

*ZEN is a research and development project that aims to develop zero emission buildings and neighbourhoods. The goal is to reduce neighbourhoods' greenhouse gas emissions to virtually zero in a lifecycle perspective. The Norwegian University of Science and Technology (NTNU) and SINTEF head the projects, and the programme partners include government organisations, municipalities, property owners, property developers, consulting firms, architect firms, IT businesses, building contractors, energy companies and manufacturers of construction materials. <http://fmezen.no/>*

in case processing and expert help to develop climate-friendly projects (for example, courses in use of materials or smart energy solutions are available to developers). The fee charged for processing a building permit application is lower for FutureBuilt projects, but other than that, they receive no financial support from the municipality. However, most FutureBuilt projects apply for support from Enova (and most applications are granted).

### **Area zoning at Furuset and a rejuvenated centre area**

The centre of Furuset is an important focus area for climate-friendly urban development. Density with a compact centre area next to Furuset metro station and a local high street are important factors. The high street is planned with taller and more urban buildings, mixed functions and active ground floors with activities targeting the public. The street will prioritise pedestrians, cyclists and public transport. Furuset has a high proportion of motorists, and few people travel by bike.

The municipal planning tool chosen for this project is the area zoning plan. It was chosen in order to make sure that the development of private land in central parts of Furuset complies with the ambitions for climate-friendly urban development. Area zoning is a relatively new level of legal planning that defines the framework for further development in an area in more detail. According to the area zoning plan, Furuset will get 2,000 new dwellings with climate-friendly solutions, a new square with better shopping and service opportunities, new green urban spaces, meeting places for the population – and the public transport services in the area will be improved. The Gorrudalen unit of the City of Oslo's Agency for Planning and Building Services

has led the area zoning plan work based on an order received from the city district. The Agency for Planning and Building Services' Gorrudalen unit links the local level, i.e. the city district, with the agency's management and political leadership. The planning process was organised for the dual purpose of ensuring local participation while following the overriding guidelines. The process also included developing a planning programme as well as planning and architectural design competitions.

Cross-sector forms of cooperation were further developed in the course of the area zoning process. This entailed cooperation across municipal agencies, across levels of the municipal administration from city district to agencies, city councillors and political committees, and in meetings with central government parties. It also meant cooperating across sectors – public, private and civil society. The local business community, housing associations, schools, local civil society organisations, residents' associations and engaged individuals were also involved. The process made it possible for everyone to submit proposals to the plan, and special meetings were held for those who were most sceptical.

In addition, Furuset residents – adults, children and young people – were involved in participatory processes. The Gorrudalen unit, with Gerrit Mosebach in charge, invited people to map good and bad aspects of the area. A version of the tool Barnetråkk (developed by DogA (the Norwegian Centre for Design and Architecture) with support from the Ministry of Local Government and Modernisation) was used for this mapping. In addition, residents participated in analysing and discussing proposed plans and competition proposals.

The processes provided important input to plans, projects and area zoning plans for Furuset and

stimulated local support. Hannema Sønstegaard points out that in participatory processes, most people will accept not getting everything their way if they have been listened to properly. At the same time, Arne Bergsgard adds, it is always important to clarify expectations in advance and show what possibilities the process provides.

### Co-creation in Groruddalen

The broad involvement and participation processes ahead of the area zoning for Furuset form part of the Groruddalen Initiative's extensive 'co-creation processes'. The new term 'co-creation' originated from discussions of public sector innovation. In this context, 'co-creation' is used as a broad term that covers joint production across groups, levels, professional groups and sectors. It is an important aspect that it is voluntary. One of the reasons why we introduce the word 'co-creation' is that the term 'participation' is perceived as too narrow and one-sided. Co-creation can be understood as a continuous and circular process during an area's development, and involves analyses, planning, realisation and use.

The three handbooks from the Groruddalen Initiative 2007-2016 published by the City of Oslo present new strategies and methods that have been developed for area initiatives.<sup>(5)</sup> The handbooks show co-creation as we interpret the term here, and they highlight concrete methods for mapping resources with an emphasis on local actors, resident involvement and mobilisation, various forms of cooperation between public, private and civil society actors, and the development of shared strategies and projects and long-term cooperation. At Furuset and in Groruddalen, as in many other places, the greatest challenge is often to establish contact with the population. The area initiative has developed tactics to reach a much broader section of the population. One tactic was to make contact with people through people they already have a relationship with, for example kindergarten staff, home help staff etc. For reaching children and young people, the most important arena is one that has been used for a long time: school.

We see new forms of flexibility in the different cooperation relationships – across sectors of society, levels of public administration and disciplines – and the different forms of co-creation and resident involvement. Formative research in the Groruddalen Initiative and the experience gained there show that methods and cooperation help to create better surroundings, and that challenges still remain.

### Challenge:

It is demanding to achieve good participation processes in urban development, among other things because it is difficult to reach people. Town hall meetings usually have a low turnout, and the elements of a planning process are quite abstract. Good strategies and tools have been established by the Groruddalen Initiative, but much remains to be done. The area zoning process for Furuset took seven and a half years. How can co-creation and cooperation across organisational boundaries be developed further? Are there ways of speeding up these processes and at the same time further developing strategies for resident involvement and co-creation?

### Speculation:

Participation leads to greater demands being made of the plans and surroundings. Can the local population and city districts not only be given greater influence, but also be held more to account? The Agency for Planning and Building Services usually encounters local resistance when looking for new areas for densification. Gerrit Mosebach in the Groruddalen unit asks whether it could, for example, be possible to divide the densification requirements evenly across the city and then require the city districts to identify and propose new potential densification areas.

### A local energy system at Furuset

In order to speed up the climate work in Oslo, the City of Oslo wants to invest in innovative solutions that can promote increased utilisation of local renewable energy sources, and Furuset will be the pilot. A micro-energy system is planned where local energy solutions will work together with the external energy system both for electricity and heat. The plan includes using waste heat from the ice hall and electricity from solar cell panels as well as other solutions. The micro-energy system is also planned with solutions for seasonal thermal energy storage and short-term storage of electricity. This process is based on the understanding that the energy system must be developed in step with the development of the local area, but that the solution must be developed beforehand and in a way that guarantees the necessary flexibility. The development project is carried out as several work packages where important stakeholders are involved. They include Fortum Varme Oslo, Hafslund Nett, the City of Oslo's Municipal Undertaking for Educational Buildings and Property and its Municipal Undertaking for Social

(5) The City of Oslo's Groruddalen Initiative. 2016. 'Håndbok fra Groruddalssatsningen 2007-2016, 1 av 3: Innføring i metode for områderettet arbeid'.

The City of Oslo's Groruddalen Initiative. 2016. 'Håndbok fra Groruddalssatsningen 2007-2016, 2 av 3: Innbyggerinvolvering, tverrfaglig samarbeid og offentlig-privat samspill i områderettet arbeid'.

The City of Oslo's Groruddalen Initiative. 'Håndbok fra Groruddalssatsningen 2007-2016, 3 av 3: Kilder, metoder og analyser i områderettet arbeid'.



Verdensplassen and Elvebank in Verdensparken, Furuset. Photo: Lisbet Harboe.

*The Verdensparken park was developed in cooperation between Alna District and the City of Oslo, represented by the Agency for Urban Development (and the Agency for Cultural Affairs in the second stage of the project).*

*Landscape park: Sundt & Thomassen landskapsarkitekt*

*Parkour course: Kragh & Berglund landskapsarkitektur & urban design*

*Play landscape: Artist Hans Henrik Øhlers and Rambøll Norge*

*Verdensplassen and Elvebank - the 'river bank': Hjellnes Consult and artist Torgeir Husevaag*

Service Buildings, Selvaag/JM Bygg, FutureBuilt, SINTEF Building and Infrastructure, and SINTEF Energy Research, to name a few. The work is led by the City of Oslo's Agency for Climate.

## 2.2 THE IMPORTANCE OF PUBLIC PROJECTS AT FURUSET:

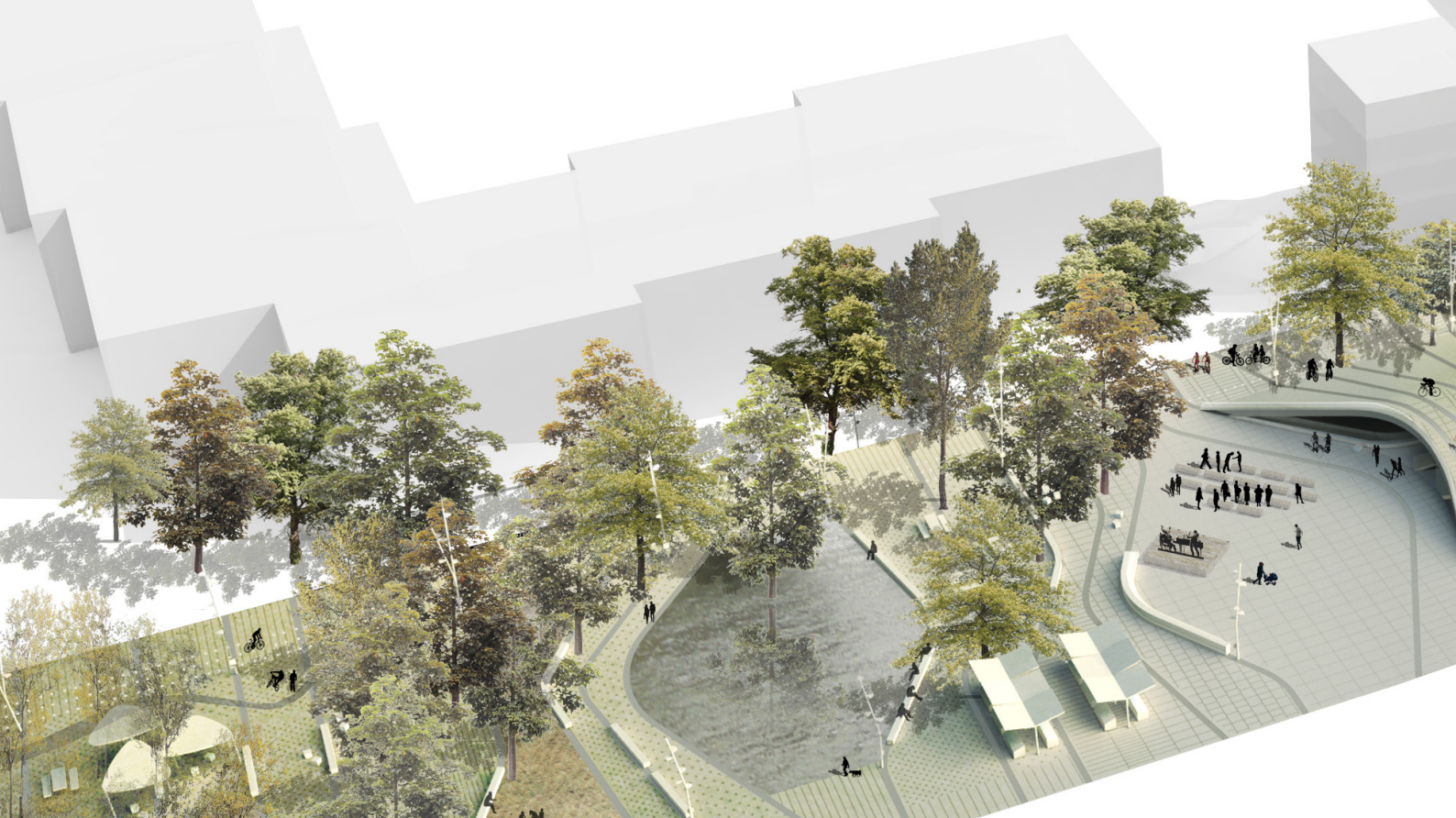
### Verdensparken, Trygve Lies plass, the street and FUBIAK

The public projects at Furuset should contribute significantly to sustainable development. This means that the projects are to have high-quality architecture, promote local environment qualities in the form of good meeting places and a diverse local

community, and make a clear contribution to climate-friendly urban development at Furuset as described above.

### Verdensparken

Verdensparken is a large city district park at Furuset that was completed in 2016. It was originally a green area with long grass and trees. The planning process started in 2008, and in autumn 2009 Alna District carried out a participatory process in the form of meetings and workshops with resident representatives from Furuset. Endeavours were made to reach different groups of residents, with a particular focus on examining the needs and wishes of women and young people. There was a widespread wish for good outdoor meeting places. The process took eight years from the planning of the park until all steps of the construction work had been



New design for Trygve Lies plass and a new park area. Winner project "Flying Carpet" by MestresWåge/BAX + MondozaPartida. Now waiting for plans to be carried out. Illustration: MestresWåge/BAX + MeondozaPartida.

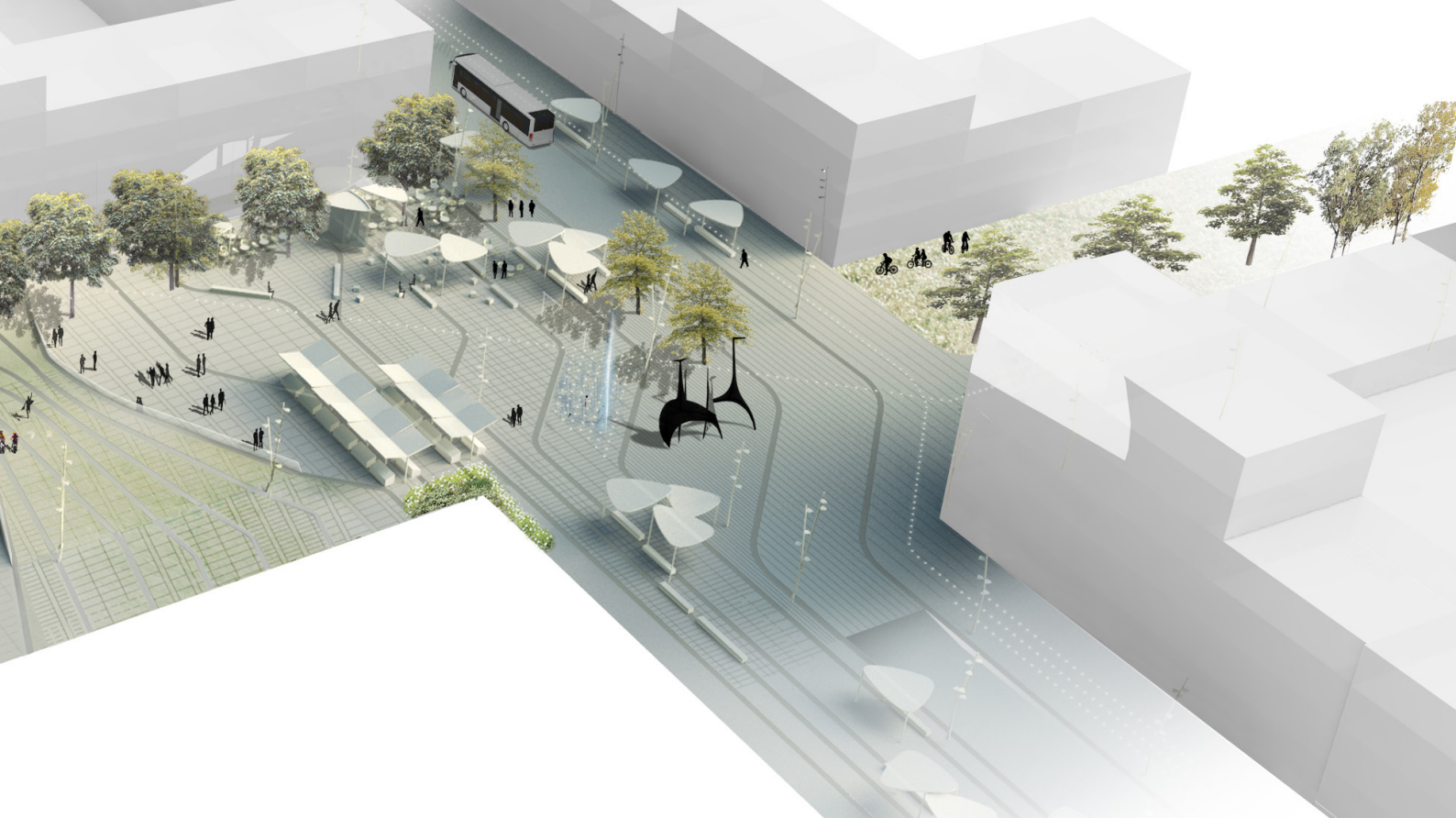
completed and the park was finished. The park is said to be as diverse as the wishes and composition of Furuset's population, and it allows for flexible use. It contains Norway's first parkour course, an orchard with fruit and berries, different types of outdoor zones and seven meeting places, including two water features, a stream and a pond, and a 'river bank' with rocks to jump between and sit on.

### Trygve Lies plass and FUBIAK

Trygve Lies plass is a square that will link the metro station, the planned high street, the city district centre, FUBIAK (Furuset library and activity centre) and the park area. The square is named for the first Secretary-General of the United Nations, Trygve Lie. In 2016, Mestres Wåge won the architectural design competition for the improved square with its design 'Flyvende teppe' ('Flying carpet'). The square is intended as a hub to ease transfers between different forms of transport and create social meeting places. The design of the new square landscape creates an interesting urban space and solves problems related to the interaction between pedestrians, cyclists, public transport, motor traffic and parking in central Furuset. The wide bridge forms a roof over the entrance to the underground bike and car parking facilities and will be a strong marker for the whole area, while the square is divided into smaller, more intimate zones and is very flexible in terms of how it can be used. It may also be an option to use a loop in the micro-energy system to melt snow and ice from parts of this urban space to make it easier to move between buses, the metro, the city district centre and the parking facilities during winter. Furuset is now waiting for the construction of Trygve Lies plass to get under way.

Furuset library and activity centre, named FUBIAK, is located at Trygve Lies plass. The planning started in 2009, and the centre opened its doors in 2016. FUBIAK welcomed 318,000 visitors in its first year, so the centre is clearly popular. FUBIAK fills 1,500 square metres over two floors, and contains a library, communal rooms, a café, a games room, a workshop area, classrooms, a cinematheque, a sound studio and a 'great hall'. This centre shows how cooperation across sectors and levels can work at a concrete level. FUBIAK thus provides a concrete illustration of a phenomenon that is generally more abstract.

The centre is a collaboration between Alna District and the Furuset branch of Oslo Public Library (Deichman), and is home to the local library, Furuset youth centre, Furuset volunteer centre, the primary and secondary education activities organised by the Norwegian Labour and Welfare Administration (NAV) in Alna District, and a café (with local vocational training places). There was extensive user participation during the planning. An interdisciplinary team carried out surveys, held workshops and conducted in-depth interviews with users and 'non-users'. There were also countless town hall meetings and many workshops. The architect firm Rodeo Arkitekter developed the layout, programme, functions and interior design on the basis of this work. The main feature is an open and orderly ground floor with bookshelves along the walls and a first floor with multipurpose rooms, classrooms, a café, a cinematheque and a sound studio. FUBIAK is designed and organised to facilitate encounters between people of different age groups and gender, religious and cultural backgrounds. Everyone over the age of 15 can upgrade their library card to an access card valid from 7.00 to 23.00. This trust-based expanded access



is called Mertid, and the scheme has worked well.

The café also functions as a communal canteen and meeting place for local employees. Local clubs and associations at Furuset use the premises – free of charge. FUBIAK is home to a multitude of activities initiated by its staff and users as well as clubs and associations. Young people between the ages of 15 and 25 is usually a group that libraries struggle to reach, but this is not the case at Furuset. At FUBIAK, they do their homework, study, hang out with friends, and take part in dancing classes and many other activities. They are encouraged to use their voices and take part in public debate: in the sound studio with one of the rappers, at a poetry slam workshop, in house debates and as local reporters. The FUBIAK staff expects young people who use the centre for free to give something back by participating in events, shows, voluntary work, club committees etc.

The centre's programme is planned together with the friends of FUBIAK association, two club committees and all the enthusiasts in local clubs and associations that use FUBIAK. The activities are to be open and inclusive and contribute to the positive development of the local community. The centre has become the social and democratic meeting place that was hoped it would be.

What does the centre contribute? FUBIAK is a large indoor meeting place for the residents of Furuset, and also a driving force in the future local and central development of Furuset. Important synergies arise when activities are co-located in this way, which has given a major boost to Furuset's voluntary organisations. The centre is flexible both in its architecture and the way in which it is organised. The activities that take place at FUBIAK come to grips with the wicked problems and could contribute to

gradual change. At the same time, the co-location has also reduced the area needed by 30%, which is financially and environmentally significant.

The sustainable development at Furuset described here combines climate-friendly urban development and an area initiative in the form of physical and social projects. Forms of flexibility are explored as inherent features of the physical design of spaces, the park and FUBIAK, resulting in spaces that are open to a variety of uses. Resident involvement and participation and voluntary efforts have been important in the planning and urban development processes, and new strategies have been employed to include a multiplicity of stakeholders and inputs.

### 2.3 DECENTRALISATION: CITY DISTRICTS AND NEIGHBOURHOODS

The municipal organisation within the Groruddalen Initiative has given the city districts and neighbourhoods a greater say and more freedom of action. Per Øystein Lund has been tracking the development whereby the local level – in other words, city districts and neighbourhoods – has come to play a more important role over the first ten years of the Groruddalen Initiative. The municipal management practice has changed from a top-down, agency-controlled, technocratic approach with limited local knowledge to a situation where city districts play a key role. A decentralisation has taken place that could lead to more flexible organisational structures. If we track the decentralisation in the energy sector described in the following chapter, there are parallels between the development of energy infrastructures and public organisational infrastructure. A local micro-energy system is also



At FUBIAK (Furuset library and activity centre). Photo: Julia Forsberg

planned at Furuset.

The organisation of central government, county and municipal authorities into different sectors is a firmly established and long-standing practice. Orders, objectives and management systems follow a chain of command from a sector's political leadership to the sector's administrative management and continue down the system within the sector. The Groruddalen Initiative develops new and revised administrative models where the local level plays a much greater role. Among other things, this is done by the district councils preparing plans for their local integrated urban regeneration programmes with strategies and projects. These programme plans function as applications for funding and expert support from the central municipal administration and the Norwegian State Housing Bank. The relevant municipal departments are then involved. Support for, ownership of and commitment to the projects, as well as personal involvement, are highlighted as important factors for the municipal departments that will be involved in planning and realising the projects, and this has been a recurring topic during the discussions. Helene Egeland sees this quite clearly. She led the early phase of the development of the micro-energy system at Furuset, before the Agency for Climate took charge of the work. Egeland has also been involved in the plans for Trygve Lies plass under the auspices of the Agency for Urban Environment.

It is also the case that cross-sector challenges in the field of urban development do not only concern cooperation between agencies, but also cooperation at the political level between city government departments. The agencies act on the basis of political orders from their superior department, and coordination is a crucial factor.

Discussions about the role of city districts in area initiatives and urban development are about decentralisation of power versus the need for control. The advantages, disadvantages and challenges associated with the transfer of power to the level of city districts and neighbourhoods have been a topic in several of our discussions at Furuset and in the Groruddalen area. Per Øystein Lund underlines that this is not an either/or situation, but a matter of both/and. It has been a point in the Groruddalen Initiative that planning should take place at the local level to ensure that plans address local challenges, wishes and needs in a good way, while central control and support is necessary to ensure that the municipality can take action and involve stakeholders across sectors to have the broadest possible range of measures at its disposal for use in the area initiatives.

The City of Oslo has faced the same problem in relation to central government bodies as Alna District is facing in relation to the municipal agencies. It has proved difficult, even impossible to date, to realise major government road and transport projects, even though the central government is an important





financial contributor to the area initiatives. The central government institutions that govern traffic infrastructure work to other time horizons and budgets. Per Øystein Lund points out that major road projects are a matter of political and financial priorities at the national, regional and municipal level. The Groruddalen Initiative has done more work locally rather than pause to wait for a solution that it may be possible to realise in twenty years' time.

#### **Challenge:**

Central control versus distributed forms of management is about the contrasts between the broader community - municipal, regional and national, as well as international - and the local community - in this case, the neighbourhood and city district. How can we best reconcile the different considerations? Which processes and forms of management work best? The concrete resources, problems, commitment and possibilities in an area in terms of the physical environment, business and industry, organisations, groups of residents/ housing associations, social groups and individuals are best known at the local level. The financial, professional and administrative decisions are made at higher levels of the hierarchy, where different local communities are prioritised in relation to each other. How can we make lines of decision-making with such inherent conflicts function in a dynamic and efficient manner? And what about over time?

#### **Speculation:**

Gerrit Mosebach asks whether it is possible to take more radical action to transfer expertise and power to lower levels of the municipal administration to give city districts more responsibility. Perhaps the Agency for Planning and Building Services could be split up into separate city district offices? Or each city district could have a district architect? That would make it possible to have local cooperation over time between, for example, the architect and the social worker.







*Photo: Arne Roar Nygård*



## **CHAPTER 3**

### **3 / ENERGY MANAGEMENT - FLEXIBILITY AS A POSSIBILITY AND A CHALLENGE**

Norwegian towns and cities have very well-functioning electricity networks. Power outages are rare, and most private individuals and businesses can connect anything they need to the grid without worrying about whether the infrastructure will support it. It is easy to take the electricity grid for granted and assume that it will continue to function as well as we have become used to as long as we make sure to maintain the existing system. But the electricity grid of the future will have to serve Norwegian towns and cities that are very different from what they are today, and ensuring that they will have an adequate and stable electricity supply system in the period towards 2040 is increasingly a matter of solving a wicked problem. It will be necessary to monitor changes in demographic patterns as well as climate change and technological developments. Population growth and increased urban population density will require greater capacity in the electricity grids. Climate change could influence both the production and consumption of electricity. Extreme weather conditions such as storms, floods and landslides are becoming more common, and this may result in increased repair and maintenance costs and even require new solutions to ensure that the electricity grid is robust enough to withstand such conditions.

Technological developments will have a bearing on both electricity consumption and how the electricity grids of the future operate. The growth in electric vehicles is one of the factors that will demand a lot in terms of electricity and power. Technological developments will also facilitate measures to make

the electricity grid more efficient and robust. Great changes are taking place as the 'internet of things' is spreading in buildings, transport and other parts of our physical environment. They can make it possible to balance supply and demand, thereby making the electricity grid more efficient. At the same time, the 'internet of things' can be a source of vulnerability in the form of security challenges and increased output requirements when large amounts of data are to be processed.

Security of supply is an important aspect when faced with rapid and unpredictable developments in many areas. Opinions differ when it comes to how security of supply can best be ensured, however. Should we go for distributed solutions in the grid (e.g. more buildings with battery-based solutions), or is maintaining and strengthening the infrastructure we already have a better strategy? One reason why it is important to explore such issues now is that we have a maintenance backlog in the electricity grid. Old lines and components are in need of replacement and upgrading. This opens up possibilities for change and innovation. Since the consequences of infrastructure investments will extend far into the future, any decisions to maintain a traditional structure could potentially be very important to what our energy supply system will look like in 2040.

In this chapter, we will take a closer look at some changes that we are fairly certain will occur and speculate on changes that may happen. Many of these changes concern increased flexibility.

### **Understanding the need for maintenance as a possibility for innovation**

What does it take to maintain something? The word suggests that it is a matter of ensuring that something is kept in the same state as before. But there could be good reason to challenge the status quo when a system needs repairs or updating. Perhaps new technology has been developed that makes it possible to solve old tasks in new and more efficient ways? Maybe the system's users have changed so that it is possible and expedient to organise things differently? Utgard Microgrid is a company that represent this way of thinking about maintenance. The company is owned by TrønderEnergi and Powel AS, and its business concept is to help grid companies to save money by taking an alternative approach to the maintenance backlog in the Norwegian electricity grid.<sup>(6)</sup> They argue that, in some places, establishing microgrids could be cheaper than upgrading the electricity grid in its current form and offer services related to assessment of possibilities, construction and operation. Utgard Microgrid emphasises the possible advantages of avoiding investments in costly sea cables to supply electricity to island communities, and they are in the process of setting up a microgrid pilot project for two farms at Byneset near Trondheim.<sup>(7)</sup> Although the biggest savings can be made by establishing microgrids in remote areas, this innovative approach to managing the electricity infrastructure could perhaps stimulate radical ideas for urban power supply as well.

Information scientist Steven Jackson<sup>(8)</sup> discusses how we can learn to recognise opportunities for innovation when faced with breakdown, wear and tear. Asking 'how will this break down?' is as important as asking 'how will this work?' Emphasising decay over flawless functioning when imagining infrastructures will make it easier to focus on repair and maintenance when developing new things. Making repair and maintenance a focus rather than considering them subordinate activities can make it easier to spot the possibilities for combining things in new ways and introducing new elements to old systems

## **3.1 A MORE FLEXIBLE ELECTRICITY GRID**

Consumer flexibility, in other words the possibility of connecting and disconnecting loads in the grid, will be important in the electricity grid of the future. The introduction of AMS (advanced metering systems) makes it possible to measure power consumption down to household level. AMS can be used to send signals through tariffs and other incentives to optimise consumption management. Aggregate data from AMS can make the grid companies better equipped to deal with variations in energy and power draw. The grid companies' need to balance supply and demand in the grid, combined with technology developments that provide new opportunities for measuring and managing electricity consumption, creates new possibilities for buying and selling consumer flexibility. This provides business opportunities for new actors, and also allows for greater user participation. The development towards a more flexible electricity grid opens up new opportunities for ensuring a sufficient and stable electricity supply to Norwegian towns and cities, but the increased flexibility also presents some challenges. We first discuss how flexibility is important to the electricity grid's development.

When more and more things are connected to the grid, providing sufficient power will become a key challenge. Power is the work done per unit time. A shortage of power occurs, for example, when many electric cars are charged at the same time. In theory, the power shortage problem can be solved by developing the grid as the loads increase. This

will give us a grid with sufficient capacity to cover all needs at peak demand, but it will have a low utilisation rate most of the time. This is not a socio-economically sound solution, as the investment costs are likely to be disproportionately high. In addition, building new lines will cause significant climate and environmental impacts. Instead of increasing the grid's capacity, load management could in the long term be a more profitable and sustainable way of reducing the power shortage problem. Load management means that electrical appliances are disconnected from the grid in periods of power shortage. This can to a certain extent be achieved by influencing electricity customers to think in terms of to power, not just electricity. Demand tariffs for households will be introduced within a few years. This means that electricity customers will not only pay for the amount of electricity they use, but also for the power they use. Demand tariffs could help to change consumption patterns, but that depends on the tariff and how well it matches the variations in local challenges.

Another load management method is the interruptible load tariff. Smart metering systems make it possible to automatically connect and disconnect things from the grid. Customers with interruptible load tariffs agree to have things automatically disconnected from the grid for short periods during peaks in demand in return for a lower price on electricity. So far, it is mostly industry customers that can use interruptible load tariffs, but now that advanced metering systems (AMS) are being installed in all households, it may become

(6) <http://utgardmicrogrid.com/>

(7) Svein Tønseth, 20 February 2018. Denne vindturbinen skal vise hvordan øysamfunn kan bli selvforsynte med fornybar kraft. Weekly engineering magazine Teknisk Ukeblad. <https://www.tu.no/artikler/forskning-denne-vindturbinen-skal-vise-hvordan-oysamfunn-kan-bli-selvforsynte-med-fornybar-kraft/430940>

(8) Jackson, Steven J. 2014. 'Rethinking Repair.' In *Media Technologies : Essays on Communication, Materiality and Society*, edited by Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot, 221–39. Cambridge: MIT Press.



Keyserløkka, Oslo. Photo: Hanne Cecilie Geirbo

possible for e.g. large housing associations to enter into an agreement that allow their water heaters to be turned off for short periods.

Private solar cell installations can also become part of this flexible market, but only in combination with energy storage solutions and, if relevant, consumer flexibility (such as connecting and disconnecting water heaters). Electric cars could also be a component in a flexible electricity grid in future. Management technology can ensure that parked electric cars top up their batteries during peaks in electricity production and return the electricity to the grid in case of shortage.

Flexibility can also be a matter of reducing the use of electricity in some areas, for example using waste heat instead of electricity for heating. That will free up capacity in the electricity grid for other things, for example electric vehicles. The development of a micro-energy system at Furuset in Oslo is an example of this. The plan involves using waste heat from the ice hall in a local water-borne energy system. Electricity that was previously used for heating can then be used for street lighting or to charge electric buses, among other things.

### **3.2 NEW ROLES AND NEW COMMERCIAL PLAYERS IN THE ENERGY INFRASTRUCTURE**

A more flexible electricity grid means new roles and business opportunities for new types of actors. Buying and selling flexibility opens up a market for companies that develop and sell electronics and software. With their customers' permission, businesses can use AMS data to provide services, for example visualisation and management of home electricity consumption. One service is applications that can turn on and off water heaters and other equipment that does not need to be kept on all the time. When demand tariffs are introduced, such services may be in high demand among private customers. Another example is applications that control the charging of electric cars so that as much charging as possible takes place when electricity prices are lowest. Access to more detailed consumption data makes targeted marketing of services and products possible. For example, climate and consumption data can be combined to identify the customers that could achieve the greatest savings from energy efficiency measures.<sup>(9)</sup>

When demand tariffs become compulsory for all consumers in a few years, this will open up for the role of aggregator. An aggregator is an intermediary between grid companies and electricity customers that can provide consumer flexibility to grid companies by entering into agreements with large groups of customers to allow their electricity consumption to be remotely controlled within defined limits in exchange for a lower electricity bill. So far, such arrangements have only been

<sup>(9)</sup> Thorud, Bjørn. 2016. "Hva er det med distribuert solenergi?" *Praktisk økonomi & finans* 32 (03): 297-313.





possible for the industry and large commercial customers, but the introduction of management technology in private homes means that it could also be relevant for housing associations and other groups of households. For example, the possibility of overriding a large number of water heaters is a possible means of balancing supply and demand in the electricity grid.

The possibilities of generating more data about electricity consumption also opens opportunities for companies that wish to develop and operate platforms where such data can be processed to benefit the grid companies. By means of machine learning, advanced map solutions and systems that facilitate exchange of information between data silos (interoperability), such actors can provide solutions to rationalise grid operations, including troubleshooting.<sup>(10)</sup>

### 3.3 INCREASED USER PARTICIPATION

The development towards a more flexible electricity grid also makes more user participation possible. This is partly initiated by the grid companies to make the electricity grid more balanced, and partly sought by groups of consumers that buy products and services for the interface between household and electricity grid. The planned introduction of demand tariffs is intended to motivate people to become more conscious electricity consumers. At the same

time, some take on an active role by buying products that give them better control over their consumption. Such products are commonly known as 'smart home technology'. The introduction of AMS opens up a market for new such products and services.

Another new role for the end user level is that of 'prosumer', which is a customer that both produces and consumes electricity. Private individuals are entitled to sell electricity they produce to the grid as long as they stay under 100 kW and fall under existing facilities. If we assume that people who decide to install solar cell panels at home base their decisions solely on financial and security of supply considerations, it seems unlikely that private solar cell installations will play a major role in the Norwegian electricity supply any time in the near future. But people who wish to install solar cell panels at home can also be motivated by a wish for a more sustainable way of life or an interest in new technology. The research project 'Power from the people', led by CICERO Center for International Climate Research, has investigated the reasons Norwegians consider installing solar panels. The sample of people considering doing so was small, but contributing to a better environment and an interest in technology were among the reasons given.<sup>(11)</sup> Social factors, such as its function as an identity marker for people with a keen interest in technology or a sign of identification with a subculture where a sustainable lifestyle is important,

<sup>(10)</sup> Olsen, Pål-Christian. 2017. *Nettdrift Anno 2020: Digital Disrupsjon i Energisektoren. e-Smart Systems.*

<sup>(11)</sup> Sæle, Hanne, and Todd L. Cherry. 2017. 'Attitudes and Perceptions about Becoming a Prosumer: Results from a Survey among Norwegian Residential Customers - 2016.' SINTEF report.

can also be a motivator. By studying maps that show the development of private solar cell panels over time, Bjørn Thorud, who is in charge of solar energy for Multiconsult, has noticed that in some places, clusters of roofs covered in solar panels have formed around the first house in a neighbourhood to install solar panels on its roof. The observed 'neighbourhood effect' indicates that people are inspired by their surroundings when deciding to install solar cell panels at home. Another aspect of this is that knowledge about new technologies becomes more available when you can learn from your next-door neighbour instead of having to actively seek out knowledge.

So far, private customers who produce electricity have to sell it through an electricity supplier. It is possible that this will continue in the foreseeable future, but blockchains or similar technology that may be developed in future could change the trade in electricity via the electricity grid. A blockchain is a distributed database that keeps transactions secure. Each node in the database automatically verifies changes and additions made in any of the other nodes. This allows two parties to conduct a secure transaction without using an intermediary. This means that 'prosumers' can sell electricity to each other without going via an electricity supplier. It also means that it will become technically possible to run the electricity market in towns and cities in micronetworks as independent entities. This will entail a radical transformation of the electricity infrastructure. There is a pilot project in New York that uses blockchains <sup>(12)</sup>, but at present, this technology is talked about far more than it is actually used. One of the disadvantages is that blockchains consume a lot of energy. This could prove a serious obstacle to this technology becoming widespread among 'prosumers'.

Increased flexibility provides new tools for dealing with power shortages and ensuring security of supply. At the same time, increased flexibility in the energy infrastructure is a source of new uncertainty and new forms of vulnerability. We would first like to discuss how new roles and stakeholders and more user participation creates uncertainties that could make it more difficult to plan operations and development.

### **Challenge: New players and user participation as a source of uncertainty in planning**

New actors develop products and services related to the electricity infrastructure, and private individuals can manage their consumption to a much greater extent than before, and even produce electricity themselves. When new actors and new roles become part of the electricity infrastructure, this will have a bearing on the planning of the grid's operation and development. If user-friendly load management products come on the market, less development

will be necessary to resolve the power problems. At the same time, new actors and roles are a source of uncertainty for planning. For example, poor user experiences and negative reviews of 'smart home technology' could result in it not becoming as widely used as expected. Improved user-friendliness could make it necessary to include new factors in electricity grid planning. Calculating profits is not enough to estimate the growth in the number of 'prosumers' if people are motivated by ideology or social factors to start producing solar energy at home. Then you may have to develop models that take into account ideological trends and political developments as well as social factors. At the same time, it may be that these factors will only apply to such a small proportion of electricity customers that the old planning models will still work well in future.

### **Challenge: New technology brings new forms of vulnerability**

Inviting businesses and consumers to take on more active roles in the electricity infrastructure can improve flexibility, but it also brings uncertainty to planning. Another serious challenge is that it creates new forms of vulnerability, for example the risk of cyberattacks. The grid companies are connecting new digital units, for example sensors, and the number of consumer devices (e.g. control units) is increasing. Poorly secured digital units are a potential point of entry for attacks on the electricity grid. The automatic collection of grid operation data and their accumulation in databases also represent a new form of vulnerability that requires more focus on data security.

The development towards a more flexible electricity grid brings vulnerability relating to digitalisation, but organisational and social changes towards greater flexibility are also a potential source of vulnerability.

### **Speculation: The balance between electricity supply as a community project and distributed solutions**

As mentioned above, flexibility in the electricity grid is about the possibility of connecting and disconnecting loads in response to supply and demand. Distributed solutions, for example homes with solar cell panels and batteries or micro-energy systems, can provide such flexibility. Private individuals and neighbourhoods or housing associations can contribute to a secure and stable electricity supply for the community by placing themselves at the disposal of grid companies that need to maintain balance in the electricity grid. However, distributed systems also have the potential to undermine this community project unless the big picture of market design, regulation and grid development is taken into consideration. The solar cell market in the state of Nevada is one such example. When subsidies were introduced, the

(12) <https://www.brooklyn.energy/>, <https://lo3energy.com/innovations/>



number of private individuals who installed rooftop solar panels skyrocketed. These households did not have to pay the network tariff and, as a result, it became difficult for the grid company to maintain the distribution grid that benefits all inhabitants.<sup>(13)</sup>

Blockchains and similar technology that facilitates internal trading in electricity in a microgrid can also pose a challenge to the electricity supply as a community project by causing lost revenues for the central government. It is therefore important to be one step ahead of such trends and develop business models that ensure that distributed solutions contribute to the common good.

At the same time, private solar cell panel installations and micro-energy systems can spread knowledge about and stimulate an interest in electricity in the general public. Highlighting neighbourhood electricity production can make people more aware of their own energy consumption, and that can motivate people to make choices that serve the common good. Local energy systems can also become part of a local identity and a source of solidarity in a city district or neighbourhood. Helene Egeland of the Agency for Planning and Building Services points to this as a possibility in the development of the Furuset micro-energy system. For example, the upgrade of Trygve Lies plass can include an installation that visualises the flow of energy from the ice hall to different buildings. This could become a source of local pride, in Egeland's words: 'Furuset was first!'

### **Challenge: Maintaining trust and solidarity as key components in the Norwegian electricity grid**

The possibility of distributed electricity systems in towns and cities highlights trust and solidarity as key components in an electricity infrastructure. On its website, Brooklyn Microgrid mentions the wish for a backup solution in case of power outages as motivation.<sup>(14)</sup> An article about the microgrid states that experience gained from Hurricane Sandy, which caused power outages in New York in 2012, among other things, was part of the motivation for this project.<sup>(15)</sup> Norwegian citizens generally trust the authorities, so Norwegians are probably less likely than citizens of many other countries to be motivated by emergency preparedness concerns when they choose to produce electricity at home. There is nevertheless reason to reflect on how this trust and solidarity may be challenged in the years to come and how they can be maintained. With extreme weather conditions becoming more and more common and the global situation becoming increasingly unstable, we cannot rule out the possibility that the idea of emergency preparedness as a private concern will gain ground in Norway too. Moreover, people's perception of risk does not necessarily tally with actual risk. If people perceive the electricity supply to be vulnerable, this perception could influence their choices regardless of the actual state of the electricity grid.

***This means that maintaining a robust electricity***

(13) <https://www.npr.org/2016/03/11/470097580/nevada-solar-power-business-struggles-to-keep-the-lights-on>

(14) <https://www.brooklyn.energy/about>

(15) <https://www.siliconrepublic.com/machines/brooklyn-microgrid-blockchain-energy-networks>



New design for Trygve Lies plass and a new park area. Winner project "Flying Carpet" by MestresWåge/BAX + MondozaPartida. Now waiting for plans to be carried out. Illustration: MestresWåge/BAX + MeondozaPartida.

**infrastructure towards 2040 should not be understood to mean only replacing and upgrading its technical components - it should also include measures to maintain trust and solidarity as the system's invisible, but crucial, components.** Such measures can involve communication, training and user involvement. Micro-energy systems like the one planned at Furuset can be an arena for the introduction of such measures. For example, Helene Egeland suggests that if an installation that visualises the micro-energy system is built, local schools can use it in their teaching activities.

### **Challenge: Energy management across disciplines and sectors**

Sustainable urban development depends on energy infrastructures being planned as part of the bigger picture together with area and transport planning. This will require different agencies to coordinate their plans. Bjørn Thorud points to **silos mentality as an obstacle to developing good solutions for the cities of the future.** It is a problem that planning often takes place as a kind of relay, for example when architects do their job first, then the engineers are involved, and then other professional groups follow. His experience is that this way of organising the work increases the need for crisis management because the necessary perspectives are not brought to light at an early stage of the planning process. The project that is developing the micro-energy

system at Furuset is addressing these challenges. <sup>(16)</sup> The idea is to let climate and energy solutions set the conditions for planning land use and transport. The project seeks to see the different perspectives in conjunction with each other by defining work packages that deal with energy technology, transport and social elements of the micro-energy system. This approach can reduce the risk of crisis management overshadowing good planning as Thorud warns us against. The Furuset project emphasises another goal of the integrated project model, namely to produce innovative solutions. It is seen as an added value that the execution model could form a template for other areas in Oslo. In this way, the micro-energy system being developed at Furuset can be regarded as exploration of a model for sustainable urban development through cooperation and innovation across sectors and professional groups as much as an energy infrastructure development.

**The development towards a flexible energy infrastructure emphasises the need for good models of cooperation and co-creation.** An infrastructure that includes new commercial actors and business models, that incorporates new digital technologies, that is based on end users responding to signals of desirable practices, and that is held together by trust and solidarity will require, to an even greater extent than today, cooperation across disciplines and sectors.

(16) Development project: Micro-energy system Furuset. Klimasats - Støtte til klimasatsing i kommunene - 2016. Reference number 16.SD8E6E. <http://www.miljokommune.no/Documents/Klima/Klimasats-s%C3%B8knader%20og%20tilsagn/Utviklingsprosjekt%20mikroenergisystem%20Furuset,%20Klimasats-s%C3%B8knad%202016%20fra%20Oslo%20kommune.pdf>





LandåsFest 2014. Big street party organised by Bærekraftige Liv Landås ('Sustainable Lives' Landås). Photo: Lars Ove Kvalbein.



## **CHAPTER 4**

## **4 / SELF-ORGANISATION, VOLUNTEERING AND THE NEIGHBOURHOOD**

Can we make a top-down system to eradicate loneliness? Can we create integration and inclusion in this way? Can we manage to support the unemployed and those on disability benefits, who languish at home and struggle to find meaning in their lives? I don't think the system can do this from the top down, this is something we have to solve from the bottom up. If we are to resolve some of society's challenges from the bottom up, wider society will have to trust the people more. And that is hard. As a society, we pass up on enormous resources in the form of enthusiasm and goodwill to solve things. (Tvinnereim, 2017)

Agnes Tvinnereim is one of the people behind Bærekraftige Liv ('Sustainable lives'), a network organisation and local community agent. The organisation works to promote self-organised neighbourhood initiatives with little management and formal organisation. The aim is a network structure of parties, initiatives and activities that is capable of growing and developing in an organic manner, but nevertheless has a clear profile: Concrete and goal-oriented work for a sustainable society. Compared to traditional forms of organisations, this is bottom-up cooperation.

We examine the role that flexibility and volunteering can play in making society more sustainable and robust from three perspectives: 1) Initiative and self-organisation by individuals, (local) businesses, network and civil society organisations. Digital media

have made more diverse forms of self-organisation possible, and Bærekraftige Liv is one example of this. 2) Local authorities' encouragement and facilitation of initiatives and activities from individuals, (local) businesses and civil society stakeholders. Alna District and Furuset have developed interesting ways of working. FUBIAK, or Furuset library and activity centre, is a physical and organisational example of such facilitation. 3) A third perspective is self-organisation that starts in digital media and interacts with the physical and organisational infrastructure of a neighbourhood or geographical area.

The Groruddalen Initiative, the City of Oslo and many other Norwegian municipalities engage in systematic efforts to increase volunteering through social, organisational and material framework conditions. Strategies have been developed as part of the Initiative and at Furuset whereby the public sector facilitates and contributes directly to self-organisation, volunteering and private initiatives in all parts of the population. The measures at Furuset go further than those described in the City of Oslo's 2016 volunteering report, which emphasised access to premises, financial support schemes and cutting red tape. Alnaskolen is perhaps the best example of how volunteer work develops when the city district also operates as a social developer. It was difficult to get parents involved and get them to take responsibility in the sports club and children's activities at Furuset. Many of these parents come from places where it is not common for adults to



### **Bærekraftige liv:**

*'Bærekraftige Liv is a movement of neighbourhoods where we make great things happen. We lift each other out of our inability to act and inspire a life worth living for you, others and for the planet...'*

*Your neighbourhood is a small part of the world. It is home to all the problems of wider society, but also to all the solutions. We just haven't found them all yet...'*

*<http://www.barekraftigeliv.no/>*

*<https://www.facebook.com/barekraftigelivlandaas/?fref=ts>*

*Status 2017: Bærekraftige Liv is made up of three 'branches'. 1) The local organisations, full of volunteers. 2) The network of local organisations called Bærekraftige Liv Samvirke. It includes the NABO ('neighbour') project, which takes grassroots experiments to the next level and is the sum of the volunteering neighbourhoods. 3) The physical base at present is Lystgården, a sustainable food and culture centre where everything is brought together. As of 2017, the Bærekraftige Liv Norge network comprised about 40 neighbourhoods in Norway. 'At the point of intersection between own involvement, inner desires and private knowledge and the paralysing as well as pressing challenges of wider society, there is a great untested freedom of action. In the local community. That is where Bærekraftige Liv is conducting experiments in small, local, real-life laboratories.'*

take part in such activities. The sports club Furuset Idrettsforening and Alna District decided to go after young people instead. They started the training programme Alnaskolen, which trains young people between the ages of 15 and 25 who want to take on leadership roles in leisure activities, sports and other forms of volunteer work. These young people become role models and leading figures. This programme fosters volunteering.

The term 'self-organisation' has primarily been associated with individuals' self-build and initiatives to improve their own living conditions in the southern hemisphere. The financial crisis hit Southern Europe hard, and we have seen a greater degree of local self-organisation driven by necessity due to unemployment and hardship in Spain, Greece and Portugal. Grassroots networks become important to fulfil people's basic everyday needs. People make contact with others who have something they don't have themselves, and they exchange food and services. The international Transition Network is a movement that links many of these grassroots networks, and Bærekraftige Liv is a member. The motives for self-organisation are not the same in Norway, Tvinneim concludes. Bærekraftige Liv's activities are more about creating arenas for leisure activities, a festival or value-based initiatives such as swap days and local solar cell panel installations. The same motivation underlies the increasing interest in self-organised building of homes in Norway, but a financial component also comes into play,

as does expectations for better-quality housing. As Tvinneim underlines: in the absence of major crises, the self-organised initiatives can largely be about building a sense of fellowship in the local community and/or making life more meaningful. These comparisons also refer to the importance of existing cultures and volunteering and self-organisation networks when faced with new social challenges and crises.

Bærekraftige Liv promotes local volunteer organisations in neighbourhoods, and the local organisations form a network. The process should be organic, with as little top-down direction as possible. The local organisation Bærekraftige Liv på Landås has a core group in charge of certain administrative functions that can help individual neighbours to realise what they dream about or want to happen, for example a particular cooking course. The neighbour can notify Bærekraftige Liv to have them make posters and spread information, but it is up to the neighbour to find someone to give the course and book the school kitchen. Tvinneim says that a top-down model moves responsibility away from the individual, and the sense of ownership along with it, taking it 'from being everybody's to being somebody's'. It is not a matter of preparing a plan for the year that ticks away, because 'then you suddenly find yourself in a situation where nobody wants to organise the energy meeting that year, and you just have to find someone who is willing. Then you have suddenly made a system where you have to go out

and find someone who can take on the task.' This may sound obvious, but this form of organisation is not particularly common in the Norwegian context.

Bærekraftige Liv's goal is not only to make people active, but to change society. 'Our goal is not to make a fun neighbourhood initiative, we could have done that in much easier ways. We have a very clear idea that Bærekraftige Liv should help to reduce our ecological footprint, improve quality of life, and promote closer relationships and readier access to a scope of action that makes it possible for people to actually do something.' In this way, the model should also help to revitalise democracy. This informal form of organisation causes tension in relation to public institutions, people who prefer more conventional organisations and the organisation's idealistic objectives. Important issues and measures could remain untouched because no one wants to get to grips with them. Is it a job for volunteers to think in terms of integration and invite people in who are not easily integrated? This is a conundrum for Bærekraftige Liv's core group who have helped to formulate the objectives: They cannot order anybody to invite the broadest possible range of people, reserve spaces for the young, the elderly or immigrants, or organise a certain type of course. This problem has not been solved, and there may not be a solution. Based on an informal organisation, Bærekraftige Liv wishes to contribute to organic, step-by-step change that could add up to major changes in society. The project explores a very flexible organisational structure - which is not to say that it should be without direction.

### **Challenge:**

How can organic, bottom-up development be facilitated and directed? Since civil society stakeholders, volunteers and neighbourhoods wish to take their own initiatives to benefit society as a whole, how can we cultivate an openness to such initiatives? At the same time, there is a tension between flexibility and direction, between self-organised bottom-up initiatives and goal achievement, and between individual commitment and the common interests of society. There are inherent contradictions.

In Norway, there is great interest in local and civil society initiatives and the resources that volunteer work represents. There are many examples. Concepts such as co-creation, municipality 3.0 and official reports on the voluntary sector illustrate this development. At the same time, bureaucratic quality assurance systems grow, and they require signatures and clear lines of responsibility. The school principal asks: 'Who will be responsible for the key and sign to confirm that the fire regulations for borrowing or renting public premises have been reviewed?' This is something quite different from the principal meeting and entrusting the key to an engaged fellow human being. During the 2016

refugee crisis, Bergen's biggest emergency asylum reception centre was established at Landås, and the city's politicians regarded it as a good thing that it was located in the neighbourhood where Bærekraftige Liv på Landås is based. Here, there were neighbours who were willing to open up their homes and develop close relationships with new people. But the engaged neighbours were not given a chance - at least not to begin with. The reception centre operator referred to security procedures and requirements for courses to learn to balance closeness with not being swallowed up socially. 'The highly motivated volunteer community was not given a chance to contribute, because the system was unable to receive it,' Tvinnereim concludes. Here, civil society's engagement is in line with the public sector visions and plans, but there was no point of contact to be found in the middle of what has been called a refugee crisis. This example stands in contrast to the organisation of FUBIAK, described in a previous chapter, and libraries' Mertid scheme as examples of open, trust-based systems.

We are seeing a rapid development in technology platforms that make it easier for individuals to come into contact with strangers to share, barter or trade with them. Examples include services such as Uber and Airbnb. Blockchain technology takes this development to another level by making it possible to conduct secure transactions without a third party acting as guarantor. Blockchains place trust in a network of computers instead of between two people who want to conduct a transaction. This means that it is no longer important whether or not you trust the other party. It could become easier to take the initiative and realise plans together with others with joint interests when it is no longer necessary to relate to a third party to coordinate or function as a gatekeeper in one way or another. Tvinnereim believes that such direct solutions without public involvement and permits can help to make society more robust when faced with great upheaval: 'It is much easier to see that what you do can have an effect, it is much easier to feel a sense of ownership - that I can actually help to make a difference.' But at the same time, the human contact is lost in direct digital solutions. There are dilemmas here that we are only just beginning to understand.

### **Challenge:**

As mentioned in Chapter 3 on energy, there are challenges associated with decentralised systems. If we want local community measures to be more self-organised and independent of bureaucratic institutions and political priorities, it is also important to be aware of who or what will not be included in these systems. Are there groups that, for one reason or another, will not be seen or invited? When digital platforms make it possible to scale independent networks that go beyond the local community, this makes it even more important to address the matter in order to avoid 'outsiderness' that could have a



Photo: Lars Ove Kvalbein

destabilising effect on society.

A particularly important field of volunteering, one that has developed in recent years, is urban agriculture. Urban agriculture is an important part of Bærekraftige Liv's activities. Oslo, Bergen and other Norwegian towns and cities have seen a development whereby urban agriculture has gone from being an alternative movement to becoming part of the green and sustainable wave. Oslo's allotments have gained popularity, and waiting lists have grown considerably. The allotments are part of a longstanding tradition. They were established to supplement the diet of poor families, but are now mostly lifestyle projects that build local communities. Many of Oslo's allotment gardeners are immigrants. Neighbourhood gardens are urban centres of agriculture, urban organic innovation and green local community involvement that combine commercial services, courses and networking activities with social projects. New networks and social meeting places based on swapping and cooking produce, courses, and sales of local food products grow up around the neighbourhood gardens. Many new organisations, networks and initiatives involving neighbourhoods, volunteering and commercial actors have emerged rapidly. In Bjerke District in Groruddalen, the cooperation platform ByDyrk has been established to contribute to urban agriculture and cooperation between different actors and help to strengthen the area's social infrastructure. The City of Oslo's Centre for urban ecological innovation, named Bykuben, promotes climate-friendly urban

development and sustainable urban living in Oslo, and this includes urban agriculture. The Agency for Urban Environment's urban agriculture experts work to promote urban agriculture, among other things by holding courses.

### Challenge:

Urban agriculture and local food is a new field where self-organisation plays a significant role, social and commercial entrepreneurship interact, and the public sector contributes in the role of facilitator. This is one of many areas where self-organisation and volunteering are important. Here, we find different perspectives, organisational cultures and agendas that must be attended to in order to encompass a multitude of people and financial cultures and increase flexibility, both today and in times of crisis. An independent voluntary sector is important, among other things because it brings alternatives to prevailing ideas and because it can develop its own flexible models. How can the independent voluntary efforts in the civil society sector be developed further while also being brought into closer cooperation with the public and private sectors – in other words, in a way that makes Norwegian towns and cities more flexible and resilient when encountering change and crises?







*Water reservoir as public park including a community centre, in Medellín, Colombia. One of many facilities developed and own by EPM (Empresas Públicas de Medellín). Photo: Lisbet Harboe*



## **CHAPTER 5**

## 5 / **THE WAY FORWARD**

This report has not aimed to provide a full description of the challenges that Norwegian towns and cities may face in the decades to come, but rather to give insight into a selection of them. We have focused on complex challenges and wicked problems in Norwegian towns and cities and examine how different stakeholders handle them by adding flexibility.

In the report, we have highlighted some examples of flexibility as part of urban development, neighbourhood development and the energy infrastructure development that are all part of sustainable social development. At Furuset, we find a concrete, complex and interesting example where the development of energy infrastructure is integrated into sustainable urban development in a new and more flexible manner. And not least, we have examined how flexibility is included in new projects, strategies and methods aimed at solving wicked problems. Unravelling these problems will require, among other things, cooperation and interaction across silos - in terms of disciplines, levels and sectors. Resident involvement and voluntary work are of material importance in the projects and methods we have examined. Bærekraftige Liv's neighbourhood initiatives aim to take small steps to resolve one of the greatest wicked problems at the global level - climate change. Flexibility, however, may be a mixed blessing, and one of its problematic sides is the risk of exclusion of people who are unable to make use of the possibilities created, and

further aggravation of existing challenges.

The purpose of shedding light on these matters has been to encourage readers, including ourselves, to reflect on how the challenges that Norwegian towns and cities are facing are both multidimensional in nature and require answers and input from as many of the affected parties as possible, and thereby contribute to debate about the development of Norwegian towns and cities towards 2040. In this way, we hope to trigger reflection on these challenges across discipline and sector boundaries. We do not make concrete policy or practice recommendations. Instead, our contribution focuses on how we think about learning, capacity and perspectives related to towns and cities, in Norway, as well as abroad.

Regarding how towns and cities can understand and respond to challenges that are yet to come, we find it useful to point to good practices and solutions from other urban areas; and reflect on these challenges using the tools that the field of comparative urbanism<sup>(17)</sup> has to offer. When local framework conditions are mapped and discussed, contributions from best or good practice elsewhere can help to renew and improve existing practices both in the private and public sector. Comparative urbanism also opens up for reflections on patterns and trends in phenomena and practices that may, on the surface, seem unrelated. One example from this report is the fact that, both in electricity infrastructure and in

(17) Ward, K., 2010. Towards a relational comparative approach to the study of cities. *Progress in human geography* 34, 471-487.





Medellín, Colombia. Photo: Lisbet Harboe

models and practices for citizen participation, we find a conflict between, on the one hand, decentralised solutions that provide flexibility and, on the other, the responsibility for providing universal joint solutions. Identifying similar conflicts across different sectors and in different cities can give favourable conditions for developing solutions that are truly innovative and not limited by existing conventions in the individual fields.

In light of this, the research project Learning Flexibility investigates how we can learn from towns and cities that have already experienced crises or challenges, and explore how such experiences and knowledge can be shared. This contrasts with the idea of 'formal' or technocratic lessons or solutions being transferred from 'successful' cities to 'cities in crisis' (for example from the Western World to the Global South). Instead, we examine which practices can be transferred from one context to be adapted and applied to challenges in another context. In this way of thinking, challenges are not understood as being related to isolated geographical, economic or political conditions, but as something that could have relevance to other contexts. Moreover, potential solutions are not linked to levels of wealth, development or formal structure, since a good or effective practice can be adapted or further developed to resolve similar challenges in other urban contexts. Learning from other towns and cities and continuing to strengthen formal as well as informal learning networks could be a productive

way forward in this our urban century.

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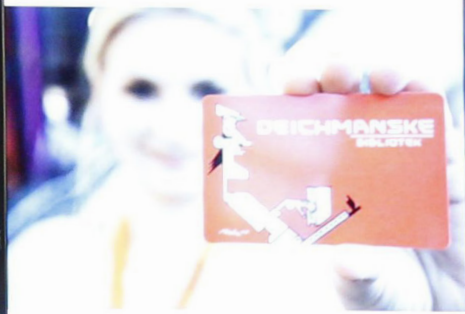
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