Auditing, Accounting and Business

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November 8, 2023

Contents

Chapter 1

Cities and Digitalization

The 21st century has been called the "urban century" by UN-Habitat (the United Nations agency responsible for sustainable human settlements) and by many others. In fact, over 50% of the global population now lives in urban areas, and this trend will continue. This chapter studies the key role that cities can play mitigating climate change by introducing innovative transport, recycling and building policies.

This chapter is still under development. The chapter is based in McCormick et al. (2015). I provide a very basic overview of the topic, and some useful links that I will explore and develop in the future.

1.1 Introduction

Which will be the role of cities to decarbonize the economic system? Which is the key indicators that define a sustainable city and a sustainable neighbourhood? Which is the right way to plan urban infrastructure to achieve sustainable cities? We pay special attention to the role that digitalization could have to foster sustainability in cities, and we put special emphasis on the role of digitalization to decarbonize transport.

Questions:

1. Inside cities, in which areas digitalization could have a larger impact?
   (a) Reducing the waste of food in supermarkets and restaurants.
   (b) Reducing transport carbon emissions and the public transport.
   (c) Improving the recycling system.
2. Would you change your transport routines if you have access to information about your transport carbon emissions?
   (a) Yes, substantially.
   (b) Yes, slightly.
   (c) No.
3. Would you change your transport routines if you have access to information about the air quality?
   (a) Yes, substantially.
   (b) Yes, slightly.
   (c) No.

4. Would you change your transport routines if you have access to information about the air quality in areas located close to hospitals or kindergartens, or nursing homes?
   (a) Yes, substantially.
   (b) Yes, slightly.
   (c) No.

1.2 Cities

Street Plans

UN Habitat

(One planet cities WWF).

LSE cities (link).

LSE Cities, Copenhagen (link).

LSE Cities, Stockholm (link).

ICLEI - Local Governments for Sustainability (link).

Cities C40 (link)

Oslo (link).

City index, The Economist (link).

European Green City index (link).

Mälmo, Europe's first carbon neutral neighborhood - Smart Cities - Horizons (link).

Project for Public Spaces (link).

1.3 Processes of sustainable urban transformation

The 21st century has been called the "urban century" by UN-Habitat (the United Nations agency responsible for sustainable human settlements) and by many others. In fact, over 50% of the global population now lives in urban areas, and this trend will continue.

There are three key areas to discuss when it comes to sustainable urban transformation: Governance and planning, innovation and business, and lifestyles and consumption.

1. **Governance and planning:** Effective strategic planning and integration of policy instruments is essential. Such efforts should be interconnected across sectors and adapted for specific urban and national policy conditions to ensure empowerment, engagement and collaboration of relevant stakeholders.

   In order for strategic planning to be effective, however, three key policy challenges have to be taken into account:

(a) Policies must be ambitious but politically and economically realistic;

(b) Policies must be developed quickly and with flexibility for rapidly changing urban conditions;

(c) Contradictory policies have to be eliminated.

2. **Innovation and business:** There are significant challenges in reconciling economic growth and maintaining or restoring local and global environment. Innovation and clean technology are key parts of a green economy, but also for fostering urban competitiveness in a globalising economy.

3. **Lifestyles and consumption:** Negative implications of over-consumption are particularly evident in cities.

1.4 Climate governance and urban experiments

From the early 2000s, we can identify a new wave of action. Over the past decade, we have seen a greater range and diversity of cities getting involved with responses to climate change. A number of city networks (such as ICLEI – Local Governments for Sustainability and the C40 Cities Climate Leadership Group) formed, through which municipal governments co-operate internationally, and a whole host of partners from the private sector to civil society are getting involved in trying to address climate change at the urban level.

Part of the reason for this shift is a change in how climate change is seen as a policy problem. Rather than focusing on targets for reducing greenhouse gas emissions, we now see an increasing emphasis on the need for decarbonisation, i.e., for uncoupling economic growth and social well-being from the use of fossil carbon-based fuels. As this requires more systematic change across urban areas and infrastructure networks, there has been a shift in how and where climate governance is taking place in the city.

Looking at climate governance in this way has helped us to recognise a new phenomenon – the growth of urban **experiments designed to respond to climate change**. Why is experimentation taking place as a means of governing climate change at the urban scale?

1. **Municipal governments** have limited powers to act on climate change alone and need to develop projects or specific interventions that attract other organisations to work with them.

2. **Private sector and community actors** also find urban environments an important site for action, but lack the power or capacity to intervene at the level of the city as a whole.

3. **Projects** that might have taken place in the past without being thought about in climate change terms are increasingly seen through a climate change lens. In a sense, climate change has come to be a ubiquitous reason for taking different and disparate forms of action at the urban level.

Some links about experiments taken place in urban areas:

One planet cities WWF

ICLEI - Local Governments for Sustainability

Cities C40

Some useful reports about urban design in cities:

LSE cities

LSE Cities, Copenhagen

LSE Cities, Stockholm

1.5 Urban infrastructure and planning

Municipal and city planners are challenged with how to plan structural transformations and they are exploring how urban infrastructure can play a part in greening the economy. Urban infrastructure is the basic physical and organizational structures needed for the operation of a city or urban area. It is also the **services and facilities** necessary for society and the economy to function. This can include **infrastructure** for water, waste, shelter, energy, telecommunications, and mobility, including streets, buildings, sewers, parks and energy systems. Importantly, urban infrastructure can advance sustainability and green economies, or, adversely, it can lock in unsustainable systems and prevent sustainable urban transformation.

To learn more about infrastructure and planning, **urban mobility** is a good example to examine.

- In 2013, there were over 5,000 electric vehicles in the urban area of **Oslo** in Norway. Electric vehicles in Norway are powered by hydro-electricity, resulting in low emissions, improved air quality and less noise. The city council hopes to grow the numbers of electric vehicles through innovative policy and additional infrastructure, for example by continuing to add to the over 700 public and free charging stations already provided in the city. The City of Oslo leads by example in buying only zero emission electric vehicles for its municipal fleet. Electric vehicles are also encouraged through city transport rules allowing them to use bus transit lanes as well as national level taxes on fossil fuels and road charge exemptions for electric vehicles. Of course, electric vehicles help with reducing emissions, but congestion still remains a challenge. For this reason, the City of Oslo is also working with its public transportation system.

- Greener city planning encourages people to act sustainably without thinking about the environment. For example, in **Copenhagen**, most people bike for the convenience of it, rather than its environmental benefits. In fact, the top two reasons for biking in the city are said to be convenience and health. The environment is number three. This is made possible by making biking as convenient as possible and giving it priority in planning across Copenhagen.

- In order to make public transport a competitive alternative that can take you conveniently from your front door to your intended destination, **the connection between different sustainable transport modes needs to be as seamless as possible**. An important challenge is to build transport hubs where, for example, bus, train and subway stations are located next to each other, preferably with access to convenient bicycle par king nearby.

- Another possibility is to integrate **information and communication technology** with public transport and to provide passengers with real-time information and other online services.

Some links to study urban infrastructure and planning:

Oslo

City index, The Economist

European Green City Index

1.6 Sustainable neighbourhoods

Sustainable lifestyles and neighbourhoods can have an impact on sustainable urban development overall. The lifestyles of eco-villages (often developed in rural contexts with strong sustainability principles) are increasingly utilised in mainstream practice in sustainable urban development in Scandinavia. In contrast to rural eco-villages, cities and sustainable neighbourhoods concentrate higher numbers of people in one area, which enables more sustainable services like public transportation and recycling.

We have introduced the example of the Western Harbour in Malmö, Sweden, as a leading sustainable neighbourhood. The Western Harbour was formerly contaminated industrial land which housed a variety of warehouses and factories. The area has since been re-designed as a new neighbour hood with good public transport links and pedestrian and cycle ways to discourage car dependency. There are a mix of buildings for different uses around squares where people can gather. There are systems for managing waste and water sustainably, and renewable energy technologies integrated in the area.

Four **key principles** characterising sustainable neighbourhoods:

1. **Energy systems:** Most sustainable neighbourhoods have shared ownership of renewable energy technologies and low energy demands. For example, residents can build and live in passive energy-saving multi-dwelling buildings. They can have adopted innovative solutions to reduce resource use and stimulate recycling, and they manage water and waste resources sustainably.

2. **Socio-economic balance:** Sustainable neighbourhoods often have local – and organic – food cooperatives which are run by residents. These neighbourhoods often have a strong "social ecology" element that includes direct democracy, transparency and tolerance. They can have trading systems in which local goods and services are traded without the use of money. Furthermore, they have a strong emphasis on the local economy and the local community.

3. **Transport and mobility:** Many sustainable neighbour hoods have efficient public transport connections and might not even allow cars in the area. They promote cycling and walking, and they plan for a compact building layout in order to minimise travel distances. Transport and mobility is there fore closely connected to the urban design and planning of sustainable neighbourhoods.

4. **Urban design:** Most sustainable neighbourhoods have multi-purpose community spaces that promote a variety of social activities, such as central plazas where people can meet, green spaces, public spaces, pedestrian streets, and bike trails. Overall, the design of sustainable neighbourhoods is critical to achieving goals on energy, socio-economic balance and transport.

Some links about successful sustainable neighbourhood experiences:

Mälmo, Europe's first carbon neutral neighbourhood

Project for Public Spaces

1.7 Case Studies: Digitalization and sustainability in Bergen and Drancy

We analyze the role of digitalization to foster decarbonization in the transportation in cities. We use an app developed by the students at HVL and NHH to work out transport carbon emissions, and we study the role of that app to abate transport carbon emissions in Bergen. We also study the role of digitalization to achieve sustainability in Drancy.

In this cases studies, we try to answer the following questions:

- Which is (or could be) the business model for those cases?
- Which is the digital value chain for those cases?
- Which area the main challenges to implement those solutions from a technical and social perspective?
- Which are (or could be) the target groups for those business models?
- How we can use digitalization to foster transport decarbonisation?
- Could you design a Business Canvas Model for those two cases?

Some links that we will use in the case studies:

Bergen calculator

Drancy smart city

1.8 Bibliography

McCormick, K., Richter, J. L., and Pantzar, M., 2015, "Greening the Economy Compendium," *Lund University*.