AALBORG UNIVERSITY

How to develop cities as spaces, places and actors in development of circular economy?

30 November 2018

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Overview

- How to develop cities as spaces, places and actors in development of circular economy?
- Working with the neighbourhood of AAU
- Theoretical approach
- Literature review of examples of foreign cities
- Cases

Our research questions

- How is circular economy organized to become a relevant “matters of concern” able to mobilise and coordinate actions for place-making transformations in cities?
- How has the circular economy been translated over time and places?
- Which governance arrangements underpin the translation of circular economy in cities?
- Can circular economy represent an opportunity for socially inclusive and environmentally desirable urban transformations?

Cities in the development of more circular economies

- Many people live in cities and have a high consumption
- Several cities presenting plans and policies to become ***circular cities***
- Unfolding the interest of cities in circular economy
  - A branding strategy?
  - City administrations developing policies and activities changing social practices in the city and reducing resource consumption?
- What **roles** given to different actors in CE:
  - Businesses, citizens and NGOs, public sector, public regulation, etc.?
- Possible roles of a ***city government*** in circular economy:
  - Mediator, market/customer, consumer, policy maker, infrastructure provider

SYDHAVNEN HANDLER CIRKULÆRT /

CIRCULAR ECONOMY HUB SOUTH HARBOUR

Circular economy areas in South Harbour:

- **Repair strategies for maintaining and prolonging the lifetime of products**
- **Circular economy in urban farming and food production**
- **Sharing economy / gift economy**

AAU part of local circular economy activities

BDO developing a local repair strategy with Sydhavnen

1. Repair Café in Sydhavnen
2. Survey among local citizens about repair experiences and needs
3. Learning from repair activities in socio-economic companies
4. Overview of local repair companies
5. Local retailers' repair strategies
6. Cooperation with local recycling station: Why wasted? Better products? Cheaper repair?

SYDHAVNEN HANDLER CIRKULÆRT /

CIRCULAR ECONOMY HUB SOUTH HARBOUR

In 2017, Climate-KIC (EIT) in collaboration with the Integrated Urban Renewal Initiative of South Harbour (Copenhagen Municipality), invited all entrepreneurs with a circular business idea to participate in the open innovation competition ***Circular Economy Hub South Harbour.***

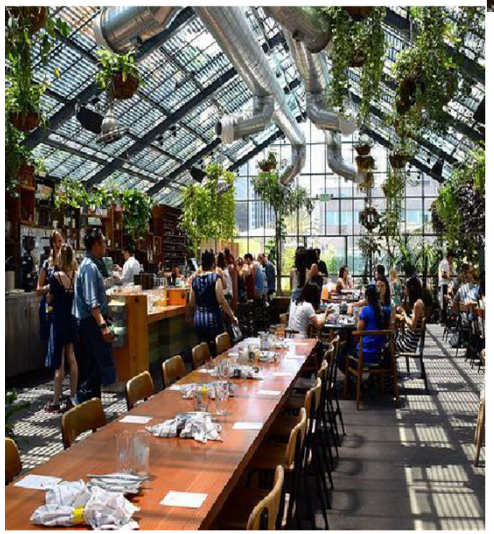
A high-profile jury selected three circular economy business ideas with the greatest potential to create scaleable solutions:

- **BYGAARD** (A boxfarm system to grow local organic food)
- **NetRepair** (App platform connecting consumers with repairers)
- **Zero³** (A zero waste, zero carbon and zero mile circular economy food and farming solution for smart cities)

eit Climate-KIC

OMRÅDEFORNYELSE SYDHAVNEN

BYGAARD OPERATIONS



Restaurant ApS

Rooftop harvest to plate greenhouse restaurant with skyline view.

Microgreens ApS

Organic intensive production of micro greens and sprouts for Supermarkets and restaurants

Mushroom ApS

State of the art production of organic speciality mushrooms for restaurants, wholesalers and supermarkets.

Market Garden ApS

Intensive organic soil cultivation of baby greens and vegetables for high end restaurants and local food markets.

BYGAARD BUSINESS MODEL

Seeds and mycelium

550 m^3 organic waste

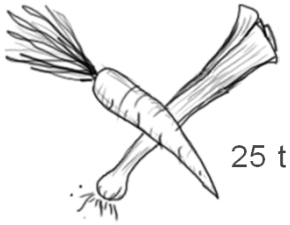
16,5 kW

200 m^3

INPUT

20 tons / year

11.5tons / year



25 tons / year

PRODUCTS

Rooftop restaurant & other restaurants

Wholesalers & Food Markets

+100 local families

CUSTOMERS

Business

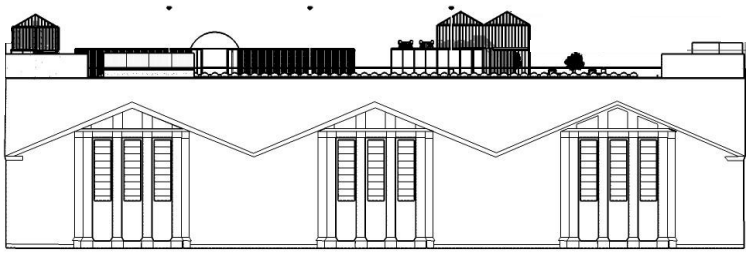
Local jobs

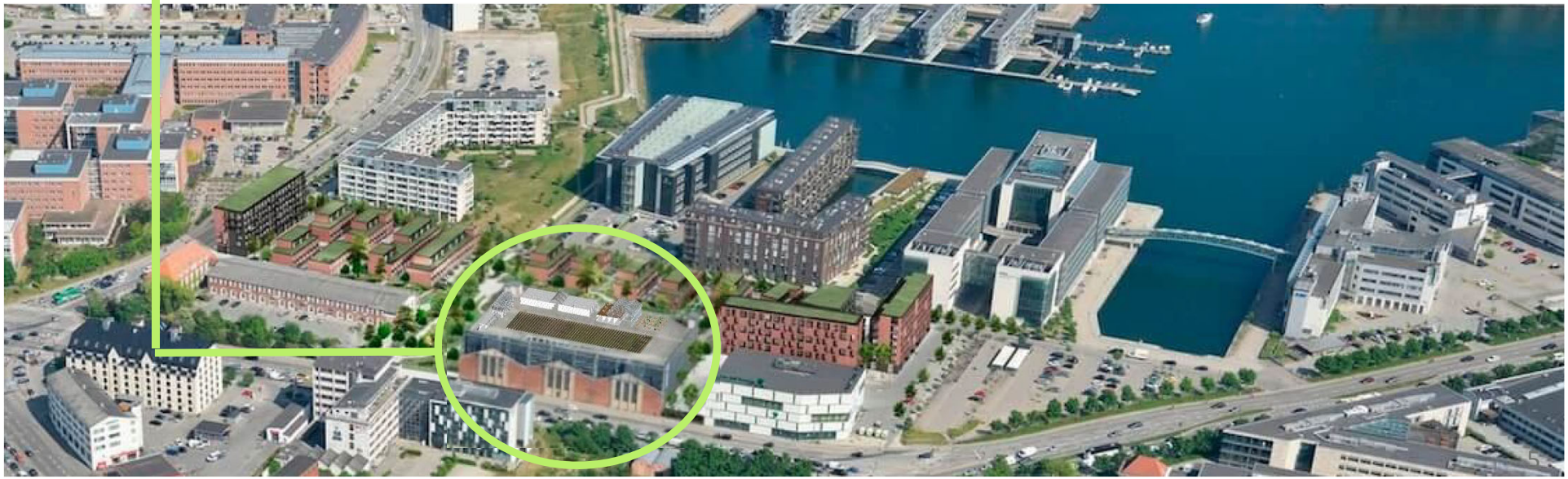
OUTPUT

Site Location

Scandiagale 17

Scandiagade 17 is a old shipyard converted to 18.000 m2 parking house with 3.000 m2 per story. The building is at the intersection between the Old and New Sydhavn, neighbouring Fiskerihavnen, boat clubs and social housing areas on the one side and Aalborg University, Teglholmen, Sluseholmen as well as a series of new residential properties currently under construction. Originally the house was built for Nokia's employees, but have been nearly empty since its construction in 2006. The plot is owned by MT Hojgaard, and rented with a 30 years contract by Admiral Capital. The house is constructed with heavy duty concrete, and has a bearing of 4 tons per m2. Bygaard will be situated atop with 3000 m2 and a 360 skyline view of Sydhavn. The site is secured with a 5 Year contract with favorable rent. The project aligns with the local plan for the area and will form a lively green oasis connecting the old and the new part of the town.

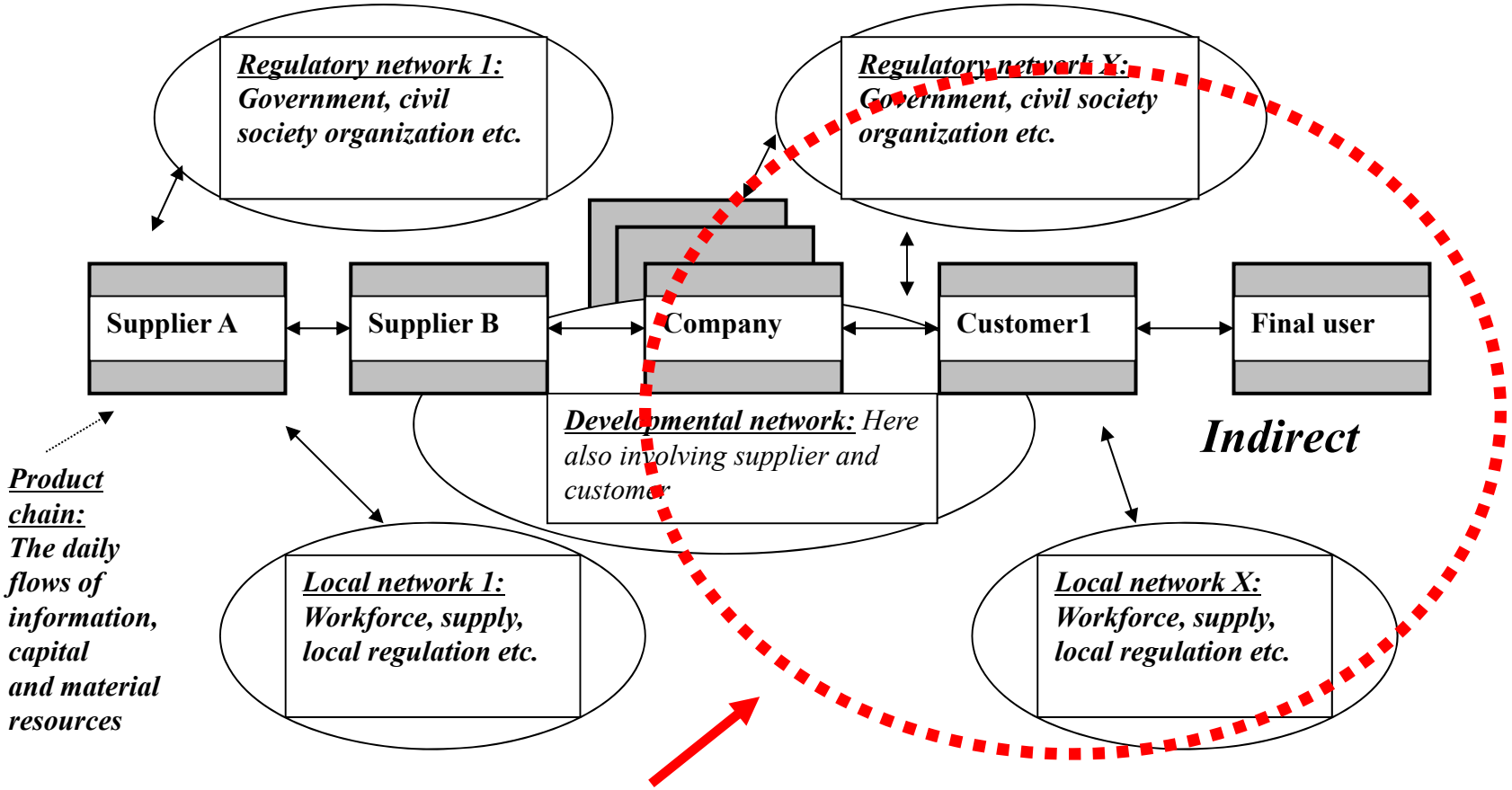




Cities as complex spaces and places

- Growth engines, which can easily lead to unsustainable development if not properly monitored and governed
- Material aspect: A number of different flows in and out of the city
- Socio-material aspects: a number of utility companies
- Social and economic aspect: Cities competing on the global market for tourism, business, industrial development, qualified professionals, etc.
- Productive hot-spots for experiments with alternative, sometimes sustainable, modes of service provision:
  - Spaces and places for making, repairing, sharing, etc.
  - Bottom-up and/or top-down

Circular economy in cities: *Cities as resource flows, institutions, and actor relations*



What pattern of production, consumption, waste management and waste upcycling is found within a city?

UNIVERSITY OF SUSSEX

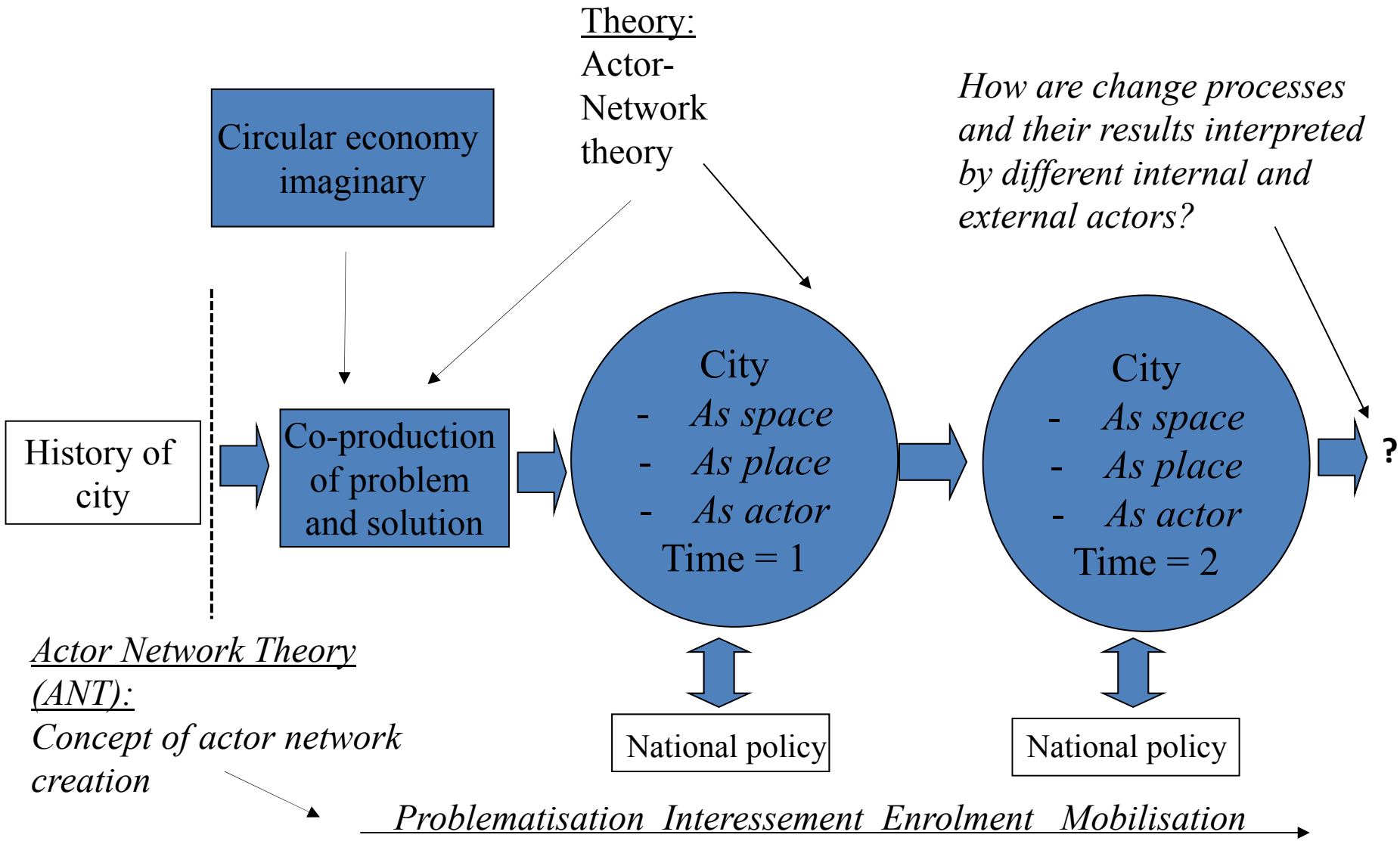
Analytical framework

- **Socio-technical imaginaries** : “collectively held, institutionally stabilized and publically performed visions of desirable futures, animated by shared understanding of forms of social life and social order attainable through, and supportive of, advances in science and technology”

- Exploring the **epistemic infrastructures** – i.e. organizational structures supporting knowledge flows and mode of doings - characterizing governance arrangements enabling stabilization of sociotechnical imaginaries

Enrolling or getting enrolled into an imaginary

Useful for both your analysis and navigation



Copenhagen:
Climate neutral => circular economy

Climate-KIC

(/)

Urban Challenge – Circular Economy Hub South Harbour

Deadline: 31 October 2017, Copenhagen, Denmark

Are you an entrepreneur within the circular economy or do you simply have a brilliant idea? Enter our Urban Challenge and bring your idea to life in the Circular Economy Hub South Harbour!

The Municipality of Copenhagen has set the ambitious goal of making Copenhagen the world's first carbon-neutral capital by 2025. The visionary 2025-strategy recognises the importance of approaching the circular economy by closing the loop of material flows, seeing waste as a resource for recycling and upcycling. The aim is to make Copenhagen the leading city within the circular economy and green innovation sector.

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Inspiration from De Kringwinkel in Flanders?

- A lot of useful products discarded
- Socio-economic non-profit **second-hand** and **repair** company
- Employing citizens at the edge of the labour market

- Enabled by governmental regulation in Flanders:
- 113 shops
- 5000 employees
- 4.6 million customers

Methodology

- Literature review: mapping conceptualization of circular economy in social science literature: *mainly about the important roles of cities in consumption*

- Comparative analysis of documented translations of the circular economy across a diversity of European cities

- Selecting a few cases for an in-depth research: *cases "help" analyse each other: differences and similarities*

Some findings: *Amsterdam*

- Hand in hand with the “smart city”
- Mainly driven by companies
- Government as facilitator
- Material aspects: building materials, waste, energy
- A technical focus: separate handling of different material flows – focusing on closing flows
- Transition to a circular economy enables the city to localize production and minimize resource dependency from other countries
- Job creation and innovation

- Link to Amsterdam as a sharing city not clear

Some findings: *London*

- London Waste and Recycling Board roadmap
- Material aspects: waste, energy, product design
- Focus on new business models - start-ups should play strong role
- 5 types of Circular Economy business models:
  - Product as service
  - Renewable inputs
  - Recovering end-of-life value
  - Prolonging product life
  - Sharing economy
- Public procurement key instrument to scale up the transformation
  - Responsible Procurement Policy: minimizing excess through reuse, recycle and “encouraging the procurement of goods derived from natural sources”

Some findings: *Paris*

- Circular economy as a unifying vision for regional and industrial ecology
- Between “alternative to growth” and “alternative growth”
- Material aspects: waste, energy, climate, product design, environment
- Supporting low-income economic players: food waste (social and solidarity economy)
- Localization of production systems (privilege local logics)
- Creating new service systems within: eco-design, urban agriculture, food (re)distribution, re-use, repair, recover and recycle, education, skills swap, Fab-labs, co-working

Conclusions

- Studying the role of cities in circular economy is a timely and time consuming effort!
- Definition, problematization and implementation of circular economy characterized by “interpretative flexibility”
- Local translations depends on the political, institutional and professional context
- Waste as one of the main object of circularity
- Transforming urban flows (e.g. waste) into “valuable commodity”

SUPPLEMENTARY

AAU engaged in developing a local imaginary:

A neighbourhood as a more circular economy

Focus on slowing and narrowing resource flows, not only on closing through waste recycling:

1) *Housing associations as frame for sharing activities*
2) *Housing associations as critical and reflexive customers and users when procuring goods for appartments, laundries, etc.*
3) *Local public institutions as critical and reflexive customers and users when procuring goods*
4) *Manufacturing companies use local customers as dialogue partners about user experiences: when and why do products show or lose value to customers => how to improve?*
5) *Retailers ask local customers for feedback on user experiences and plan assortment and demands to suppliers accordingly*
6) *Retailers offer user support, repairing, upgrading, leasing, etc.*
7) *Local recycling stations have dialogue with users about why products lose value and how to avoid the waste: better local repair possibilities, better product quality, etc.*

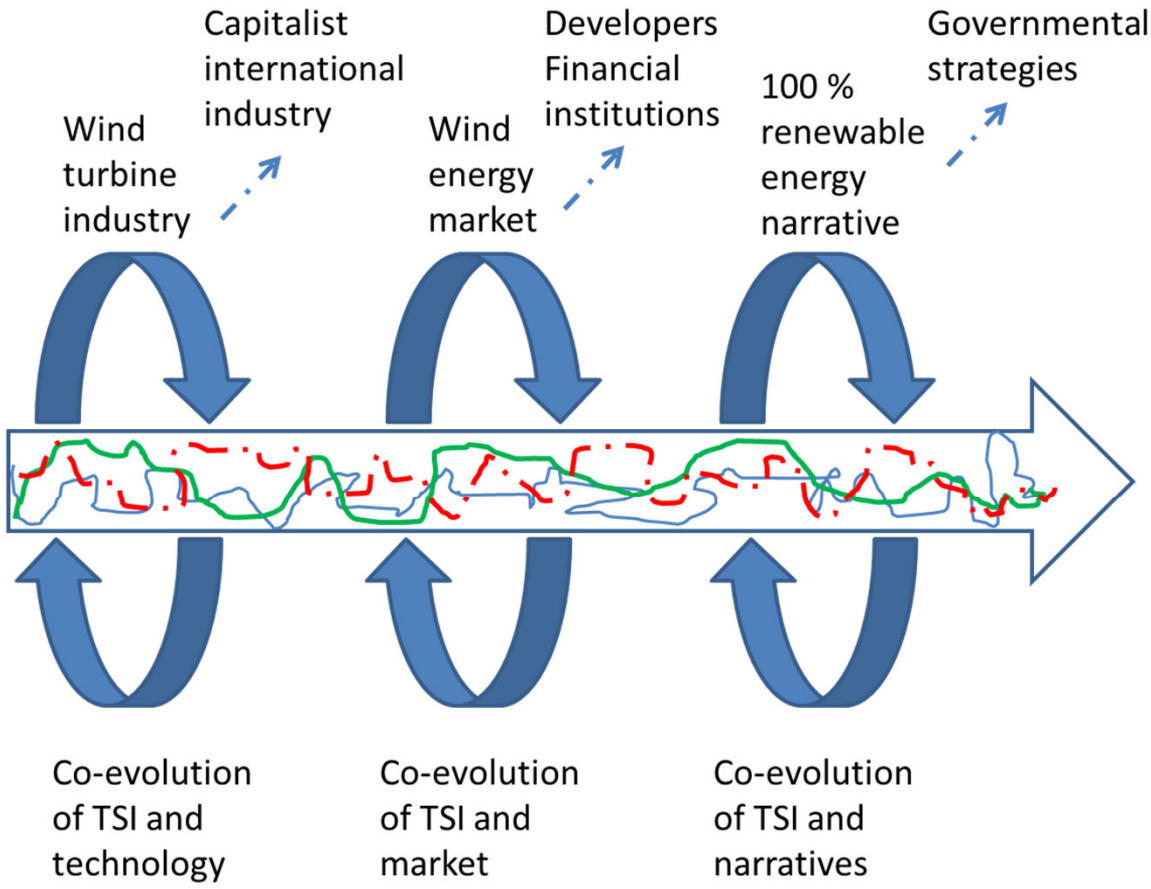
Local translation and implementation of circular economy

- How are the **roles of the specific city** in CE?
  - A co-shaping of problems and solutions?
  - References to specific strong or weak aspects of the city?
  - What is included and what is excluded?
- Are policies in place?
- Are plans and strategies in place?
- Have initiatives been started?
- Output and/or outcome from these activities: Environmental achievements? New competences and capabilities?
- Are experiences from projects/experiments, etc. evaluated?
- Reflections about scaling up, copying, inspiring other internally / externally?

Basic hypotheses about sustainable transition: *from vision to transition*

- Technical opportunities – like circular economy - not 'working solutions' until specified within an institutional and regulatory context
  - Bioenergy
  - Smart homes
  - LED lighting
- Innovation and change is governed by a complexity of interpretations and conflicts
  - Should be seen as necessary parts of process of change
- Transitions occur based on actors becoming aligned and interconnected while maintaining different interests on changing **Arenas of Development**

Case: **The co-evolutionary history of renewable energy** *transition* **in Denmark:** *There were visions, but no grand plan*



Navigating VE grass root activities developing renewable energy

Source: Elle et al , 2015