



Transforming an 'oil city': urban form and strategies for low carbon transition

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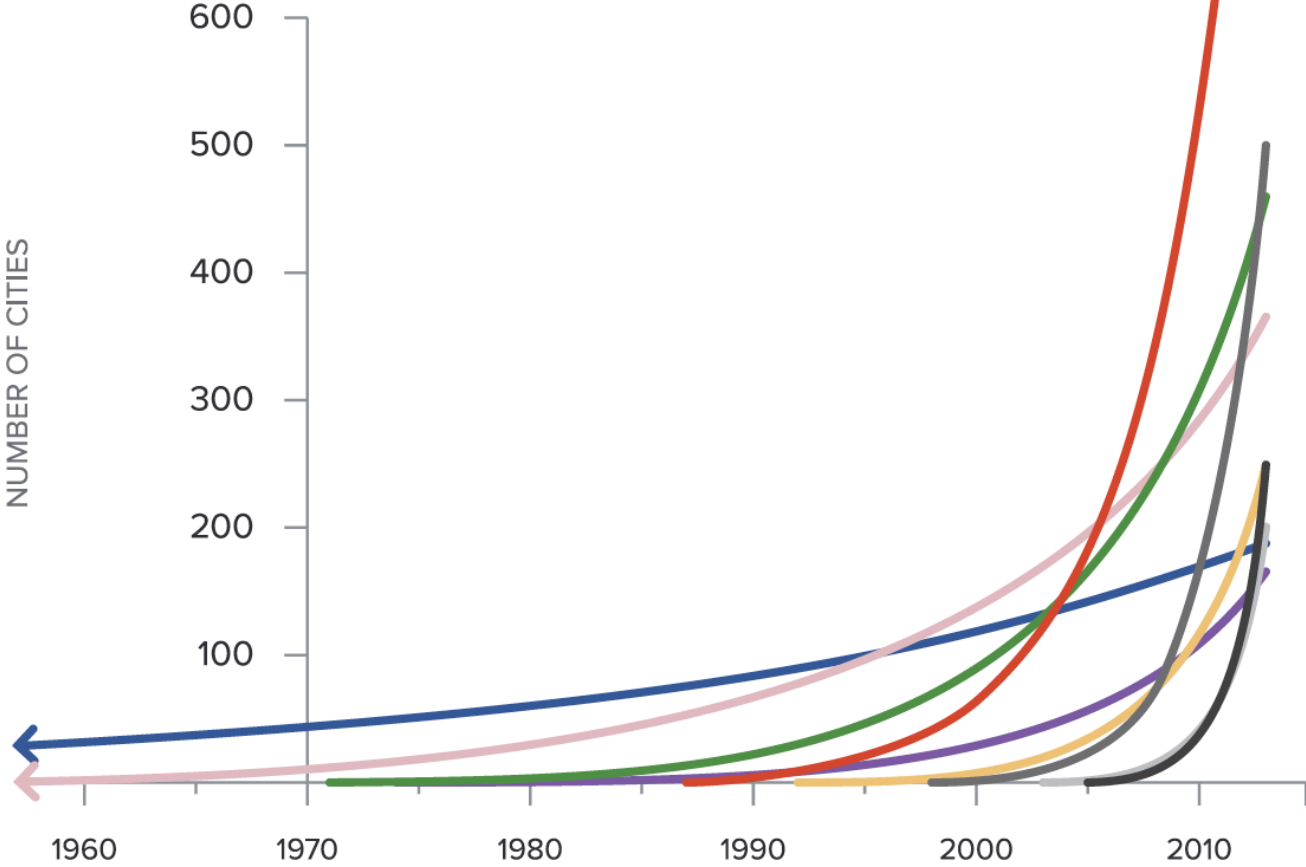
+ Cities and climate change



“For years, the focus on the world’s response to climate change has been on nation states, which have been mostly unsuccessful in brokering comprehensive agreements or taking action. [...] Cities... are emerging as the ‘first responders’ in adapting to and mitigating climate change.”

- Rozenzweig et al., 2010, Nature

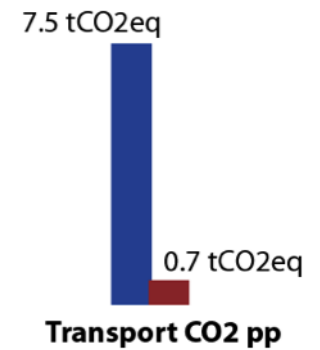
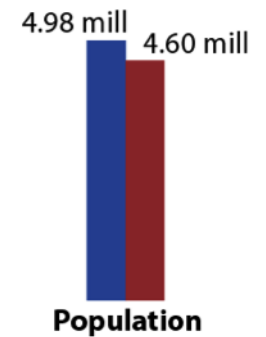
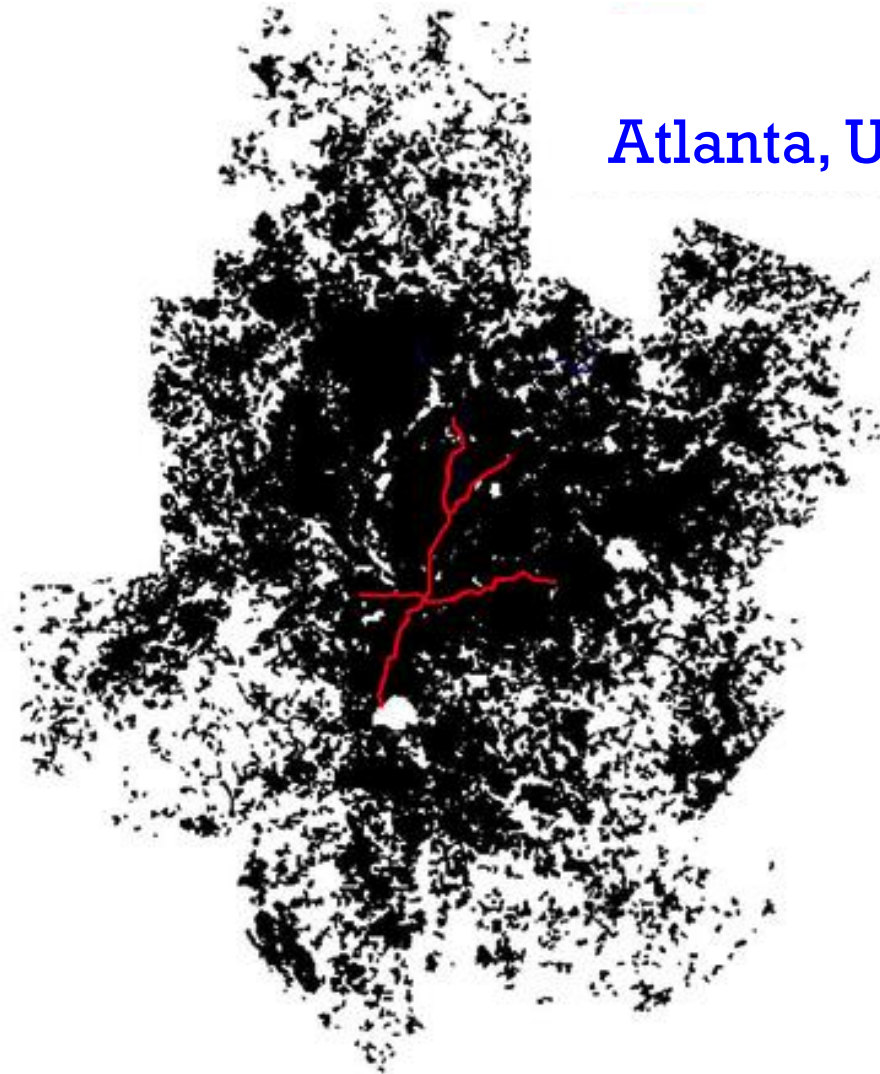
Staggering growth in climate friendly city interventions



- Metro — 188
1863, London, UK
- Bus Rapid Transit — 160
1974, Curitiba, Brazil
- Bike Sharing — 500+
1998, Rennes, France
- Carfree Zones — 360+
1953, Rotterdam, NL
- Car Sharing — 1,000+
1987, Zurich, Switzerland
- Low Emission Zone — 210+
2003, Tokyo, Japan
- Complete Streets — 455
1971, Portland, USA
- Smart Card — 250+
1992, Oulu, Finland
- Google Transit Web Apps — 250
2005, Portland, USA

Urban form and climate emissions

Built up area, same scale



— Metroline



Urban form and GHG emissions

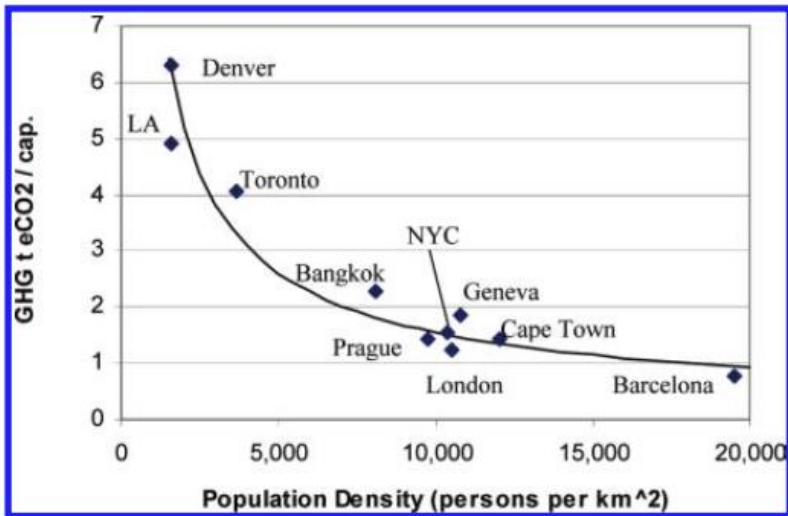
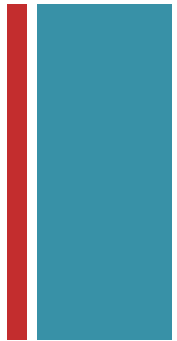


FIGURE 3. GHG emissions from ground transportation fuels are inversely related to population density.

Kennedy et al., 2009

Total GHG emissions per capita spatially distributed in an urban area (Toronto)

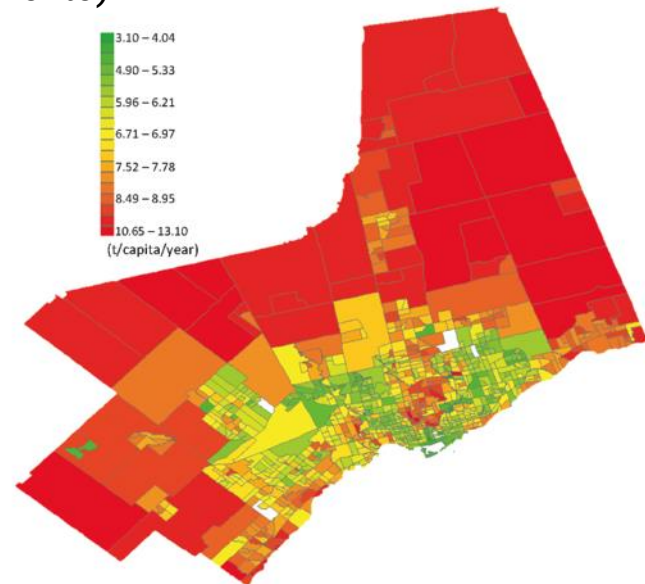
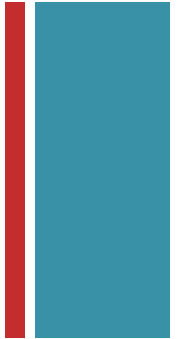


Figure 18.6 | Total GHG emissions from Toronto (tonnes CO₂-equivalent/capita/year). High-resolution images as well as maps for various energy-demand subcategories (residential, transport, etc.) are available from VandeWeghe and Kennedy, 2007.

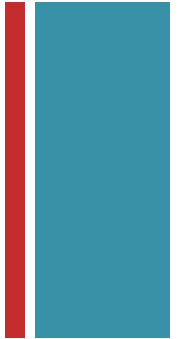
VandeWeghe and Kennedy, 2007

+ Cities and climate change



- The way cities are planned and built is key to low carbon future
- What *imaginaries* shape the way we build cities?
- Where do they come from, how are they changing over time?
 - Theory debate in geography on ‘policy mobility’
- How do they materialise in cities, and to what extent can their material expressions be reconfigured?

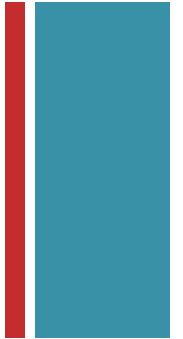
+ Urban imaginaries



Urban imaginaries: collectively held assumptions about future cities (technology, desirable lifestyles, nature)

From the General Motors exhibit 'Futurama' at the World Fair 1939

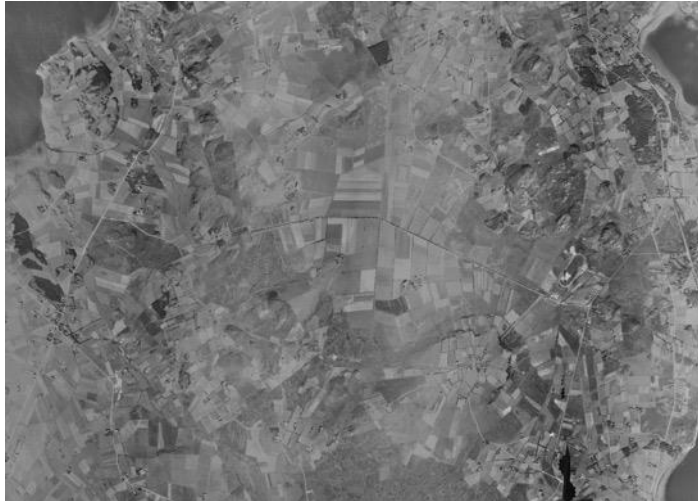
+ Transforming the 'oil city'



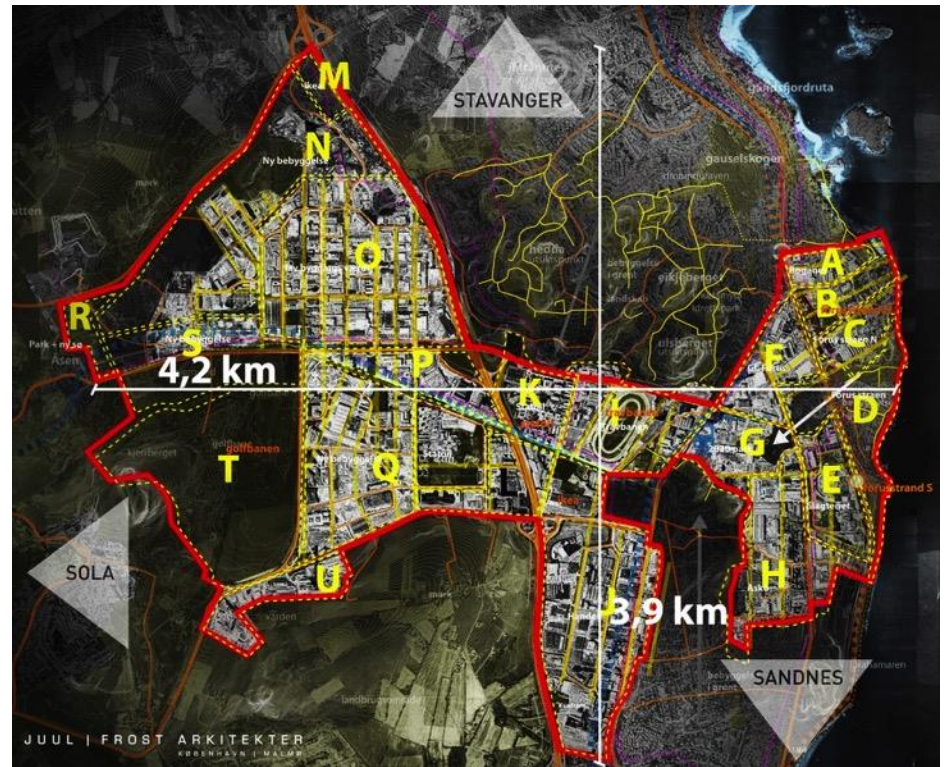
- Tracing the urban imaginaries that have shaped Stavanger, Norway's 'oil city' over time (1965-2015)
- Focus in particular on **Forus Industrial Park**, the core oil cluster in Norway (20% of Norway's GDP)
- How are urban imaginaries materialised in the urban landscape?
- Empirical material: municipal plans, zoning regulations, historical accounts, interviews

Forus Industrial Park

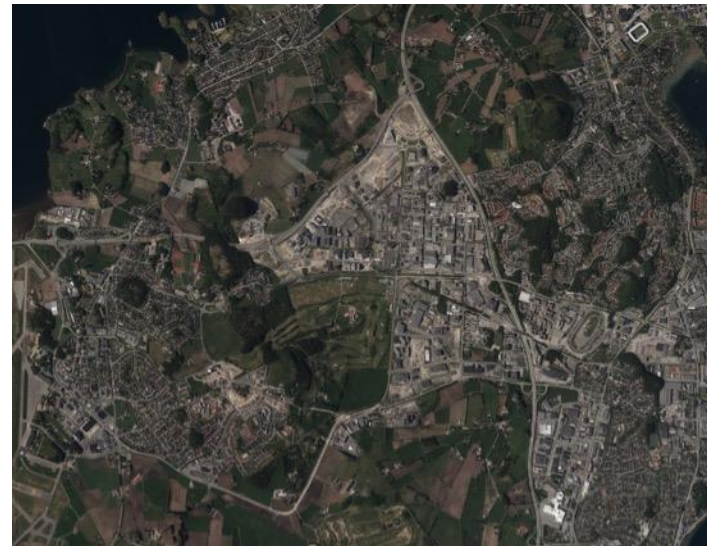
- Around 45,000 employed
- 80% live within 15 km of work, only 19% use public transport or cycling
- Widely acknowledged traffic problem



1937



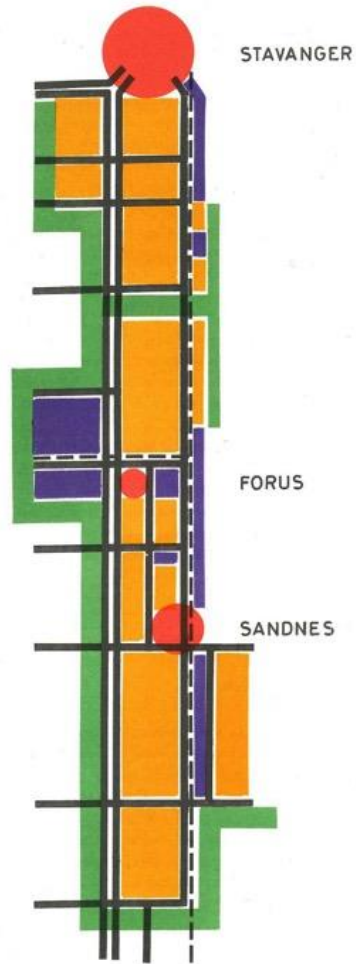
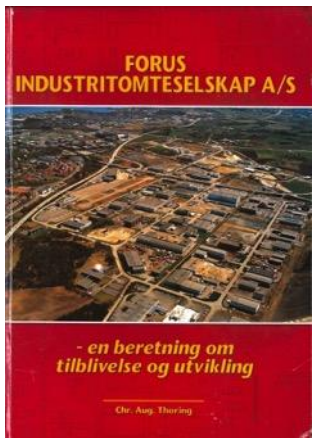
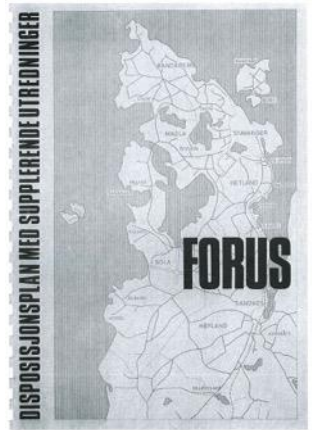
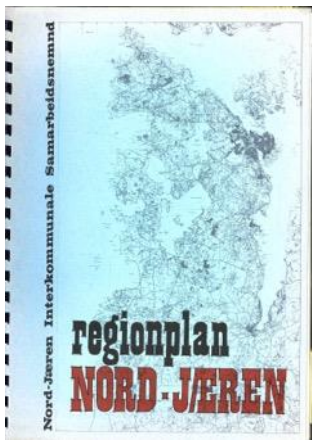
1999



2013

+ Moment 1: the build-up of Forus (1965-1980)

- Expected population growth: facilitating the car is 'rational' planning
- Anticipating and providing for increased private car transport ('the car demands parking space')
- Separation of functions: industry separate from residential areas
- Ideas and inspiration from industrial estates in the UK ('lesson was to not put restrictions on future development')
- After oil discovery in 1969: cultural influence from Texas ('Stavanger wanted to be the Houston of Norway')



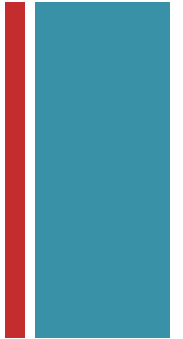
"Systemskisse båndby"

- gult = boligstrøk
- fiolett = industri
- rødt = hovedsentra
- grønt = jordbruk, friarealer



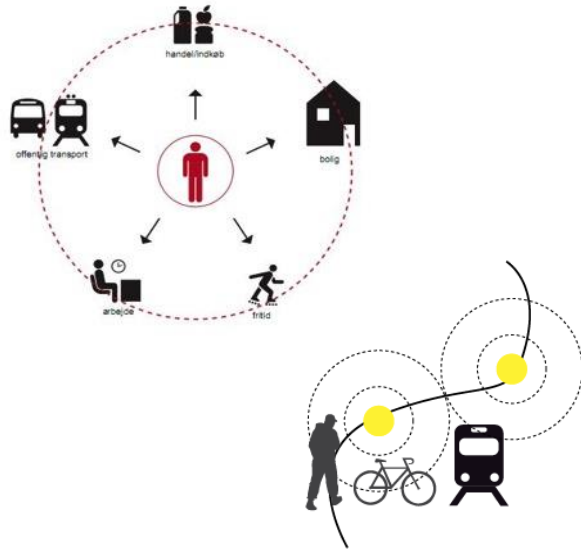


Moment 2: envisioning 'post-fossil' Forus (2000-2015)



- Clear shift towards *livability, compact* urban development, and a *mix* of functions (10-minute city)
- Attempt to rebrand Forus as 'post-fossil', green, walkable urban space
- Commissioned a 'visioning processes' with Copenhagen architects Juul Frost
- Ideas are drawn from Copenhagen, Barcelona, Amsterdam (and Silicon Valley for knowledge-intensive industry)
- Urban densities (150-250% plot ratio)

Forus of the future

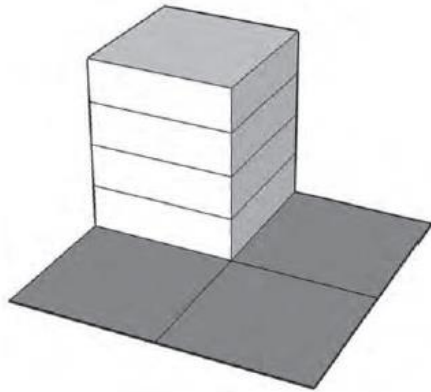


Forus can be 'closely interconnected, labyrinthic urban structure, [...] where the physical organisation of urban life is concentrated in a series of nodal points'

- Juul Frost, Forus Vision

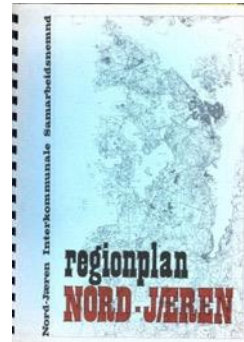


Changing suggested *plot ratio* (measure of density)

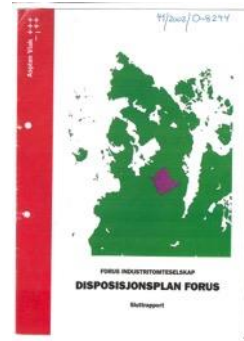


Source: Vicky Cheng

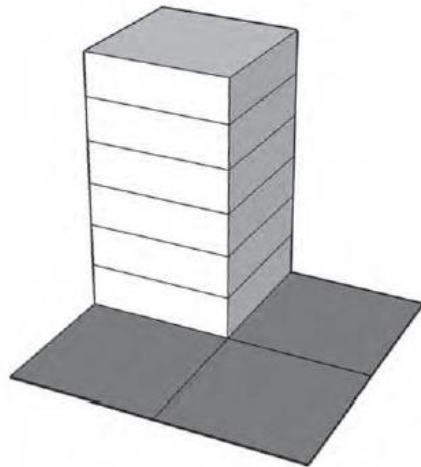
Figure 1.5 *Plot ratio = 1*



1965: 20-40%

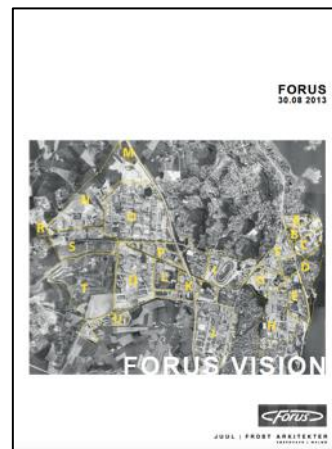


2002: 100-150%



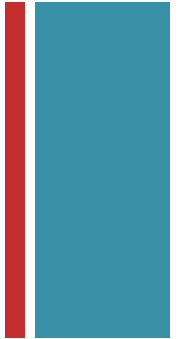
Source: Vicky Cheng

Figure 1.6 *Plot ratio = 1.5*



2013: 150-250%

+ Transforming the city?



- Urban imaginaries have changed radically between mid-1960s and until today
- The new ideal appears to be mixed functions, high density, multiple transport options (car is out...)
 - Copenhagen and Barcelona are ideals, not Houston or Milton Keynes
- New imaginaries are gradually written into plans and zoning decisions – but largely in ‘greenfield’ sites
- Transport corridors are key to shaping the urban landscape
 - Need to focus less on abstract ideals, more on how existing built environment can be reconfigured and tweaked