Is there an economic rationale for early action on green growth in cities?

The intellectual foundation of the LSE report spans across a diversity of fields (1/3)

From science... ... to economics

The Stern Review (2006) argued that the benefits of strong, early action on climate change outweigh the costs:

- Without action, overall costs of climate change are equivalent to 5%-20% of world GDP each year
- The impacts are irreversible and unevenly distributed; poor people in less developed countries are likely to suffer most
- To avoid the worst effects of climate change about 2% of world GDP needs to be invested
The intellectual foundation of the LSE report spans across a diversity of fields (2/3)

...to the economics of urban agglomeration

“Cities are actually the healthiest, greenest, and richest places to live. New Yorkers, for instance, live longer than other Americans; heart disease and cancer rates are lower in Gotham than in the nation as a whole. More than half of America’s income is earned in twenty-two metropolitan areas. And city dwellers use, on average, 40 percent less energy than suburbanites.”

New York Times Review of Books
The intellectual foundation of the LSE report spans across a diversity of fields (3/3)

... to a “new” industrial revolution
### The state of the debate

<table>
<thead>
<tr>
<th>Growth and climate have tradeoffs</th>
<th>Neutral</th>
<th>Growth and climate have co-benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth model too fragile to take on climate action now</td>
<td>▪ There are multiple factors which affect growth in the next 3-5-10 years which are more important than climate action (which is frankly second-order)</td>
<td>▪ Higher resource efficiency can lead to better short-term growth/less volatility</td>
</tr>
<tr>
<td>High energy costs will kill growth and create competitive asymmetries</td>
<td></td>
<td>▪ There are major co-benefits (air quality)</td>
</tr>
<tr>
<td>Climate action puts an unfair burden on the developing world</td>
<td></td>
<td>▪ Cleantech is an enormous innovation driver that will spillover positively to the whole economy</td>
</tr>
</tbody>
</table>

Source: The Global Commission on the Economy and Climate, New Climate Economy project.
What is a green economy leader?
LSE defines a city as a "green economy leader" using three key attributes

A green economy leader is characterized by...

1. High productivity and competitive advantage in the short and medium term
2. High and growing levels of environmental performance
3. Long-term sustainable growth

which is evaluated through...

- Performance relative to other cities of comparable size and development
- Current status and historical trends
- "Strategic pathways" to become carbon-neutral by 2025
- Challenges and opportunities
A framework for assessment of urban green growth is used to structure the analysis and the report.
Overall performance
Over the past 20 years, Copenhagen’s economy grew by 25% while simultaneously reducing GHG emissions by 40%
Copenhagen ranks at the top of green city indices, coupled with one of the highest levels of income per capita.
The city benefits from high levels of national competitiveness

Figure 2.6
Relationship between national competitiveness and economic output of the country’s capital city
Competitiveness is based on the World Economic Forum’s competitiveness index. Output is measured as Gross Value Added per capita.

Sources: Brookings Institution, LSE Cities et al. 2010; World Economic Forum 2012
At a national level, Danish GDP per capita is ranked among the top 10 countries in the world, higher than many neighbours.
Between 1993 and 2012 growth in GDP per capita in the Capital Region averaged 2% per year
Since the mid-1990s labour productivity in Denmark has increased less than leading OECD economies.
Labour productivity in Copenhagen is in the top 15 in Europe, other cities have higher productivity levels.
Average inward foreign direct investment (FDI) in Denmark have been below other small advanced European economies.
Copenhagen’s cleantech cluster has performed strongly - from 2004 to 2009 total exports grew at 12% per year

Note: Green growth companies are defined as those active in environmental protection or resource management technologies, products and services. This includes about 18,000 firms, with roughly 600 firms having green growth as core to their operations (>33% of activities).
The cleantech cluster has a strong position among key industrial clusters and growth sectors in Europe

Figure 6.10: Composite Indicator scores for regional business environment compared to change in annual revenues and change in output 2010-2013

Note: Based on the 2013 European Cluster Excellence Scoreboard survey and interview findings. For eco-industries the assessment was undertaken in three leading EU regions.
What are the challenges and opportunities?
“Ambitious policy decisions taken in the next few years will have a critical impact on meeting the goals” 1/3

<table>
<thead>
<tr>
<th>Strategic policy area</th>
<th>Green challenges</th>
<th>Long-term pathways</th>
<th>Interdependencies</th>
</tr>
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</table>
| Thermal and electric power generation | Low-carbon fuel and technology substitution  
Resource effectiveness: maximising resource opportunities of waste management | 1. Increase use of biogas, thermal energy storage  
2. Reduce share of energy from waste  
3. Reduce use of district heating and cooling, and increase use of distributed micro-generation and mini-grids | Bioenergy supply chain / sustainable bioenergy practices  
Waste management practices  
Building-level energy generation and management  
Vehicle electrification  
Intelligent energy grids |
| Energy for transport | Improving building energy performance  
Increasing volume of building retrofits | 4. Substantial building energy demand reduction | Building design and product standards |
“Ambitious policy decisions taken in the next few years will have a critical impact on meeting the goals” 2/3

Table 4.2 Transport and mobility: strategic policy pathways

<table>
<thead>
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<tbody>
<tr>
<td>Non-motorised mobility</td>
<td>Increasing trip numbers (journeys and distances) by bicycle</td>
<td>1. Increase cycling infrastructure</td>
<td>Traffic management / allocation of roadway space</td>
</tr>
<tr>
<td>Mass transit</td>
<td>Increasing ridership on buses, trains, and metros</td>
<td>2. Improve mass transit service provision and infrastructure</td>
<td>Traffic management / allocation of roadway space</td>
</tr>
<tr>
<td>Low-carbon vehicles</td>
<td>Reducing emissions from vehicles</td>
<td>3. Infrastructure for electric and hydrogen vehicles</td>
<td>Vehicle electrification</td>
</tr>
<tr>
<td></td>
<td>Integrating electric mobility, distributed energy storage, and intelligent local energy networks</td>
<td></td>
<td>Intelligent energy grids / electricity storage</td>
</tr>
</tbody>
</table>
“Ambitious policy decisions taken in the next few years will have a critical impact on meeting the goals” 3/3

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</thead>
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<tr>
<td>Potable water use reduction</td>
<td>Reducing water consumption rates</td>
<td>1. Water recycling and non-potable water use</td>
<td>Building design and water consuming products standards</td>
</tr>
<tr>
<td></td>
<td>Use of recycled water</td>
<td></td>
<td>Streetscape design and wastewater management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Public health regulations</td>
</tr>
<tr>
<td>Recycling and composting</td>
<td>Waste diversion and recycling</td>
<td>2. Waste separation at source or at management facilities</td>
<td>Energy supply infrastructure</td>
</tr>
</tbody>
</table>