



Territorial Review Copenhagen

Preliminary draft
(Under embargo until 27 January 2009,
11am)

The final version will be published in March 2009

Foreword

Across the OECD, globalisation increasingly tests the ability of regional economies to adapt and exploit their competitive edge, as it also offers new opportunities for regional development. This is leading public authorities to rethink their strategies. Moreover, as a result of decentralisation, central governments are no longer the sole provider of development policies. Effective and efficient relations between different levels of government are required in order to improve public service delivery.

The objective of pursuing regional competitiveness and governance is particularly relevant in metropolitan regions. Despite producing the bulk of national wealth, metropolitan areas are often characterised by unexploited opportunities for growth as well as unemployment and distressed areas. Effective policies to enhance their competitiveness need to address their functional region as a whole and thus call for metropolitan governance.

Responding to a need to study and spread innovative territorial development strategies and governance in a more systematic way, the OECD created in 1999 the Territorial Development Policy Committee (TDPC) and its Working Party on Urban Areas (WPUA) as a unique forum for international exchange and debate. The TDPC has developed a number of activities, among which a series of specific case studies on metropolitan regions. These studies follow a standard methodology and a common conceptual framework, allowing countries to share their experiences. This series is intended to produce a synthesis that will formulate and diffuse horizontal policy recommendations.

Acknowledgements

This Review was elaborated by the Directorate of Public Governance and Territorial Development (GOV) of the OECD, with the support and co-operation of the City of Copenhagen and the Capital Region of Denmark. Special thanks are given to the Lord Mayor of the City of Copenhagen, Ritt Bjerregaard and the Chair of the Regional Council, Vibeke Storm Rasmussen, as well as city and regional officials Elisabeth Kongsmark, Mette Broholm Olsen, Karoline Amalie Steen, Kristian Johnsen, Michael Ryan Andersen, Helen Lundgaard, Claus Schøsler, Claus Juhl and Jens Christian Sørensen, and numerous other individuals and organisations that provided valuable inputs and contributions.

Valuable comments were provided by a reference group, consisting of: Jørgen Lotz (chairman), Niels Jørgen Mau, Niels Østergaard, Anders Hoffmann, Professor Peter Maskell, Professor Jens Blom-Hansen and Professor Peter Munk Christiansen.

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The OECD Territorial Review of Copenhagen belongs to a series of OECD Territorial Reviews produced by the OECD Division of Regional

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Assessment and Recommendations

Copenhagen's competitiveness is essential to Denmark as a whole

The Copenhagen metropolitan region's competitive position is essential to the economic health of Denmark as it accounts for nearly half of the country's national output. With 2.4 million inhabitants, the Copenhagen metropolitan region accounts for 44% of the Danish population, in an area that includes the cities of Copenhagen and Frederiksberg, as well as five adjacent former counties. Among 78 OECD metropolitan regions with populations of more than 1.5 million inhabitants, the Copenhagen metropolitan region ranks fourth in terms of its share of national output. Metropolitan regions within the OECD often function as the engines of national economic growth: they are usually richer, more productive and more innovative. This is also true of Copenhagen. The Capital Region alone, an entity created in 2007 with a population of 1.6 million (somewhat less than the Copenhagen metropolitan region), provided 75% of the new jobs created in Denmark in the last 10 years. The area, home of the best universities in the country, concentrates 80% of Denmark's high-tech firms, as well as 70% of its private research and development. More than half of all Danes with higher education live within its confines, and its economic influence is felt throughout the nation. For every 100 jobs created in Copenhagen, 20 jobs are created elsewhere in Denmark, whereas for every 100 jobs created elsewhere in Denmark 7 jobs are created indirectly in Copenhagen.

Equity and efficiency are compatible in Copenhagen

Copenhagen benefits from a diversified metropolitan economy, a thriving labour market and good social indicators. A robust, export-oriented combination of industries bolsters its strong competitive position. The metropolitan area is one of the most service-based metropolitan economies in the OECD, with an employment share in the service sectors comparable to that of London or Paris. Business services remain the largest employer, although the wholesale and retail sector experienced the steepest increase in

value added in the period from 1995-2005 (25.5%). Copenhagen boasts a diverse mix of economic specialisations and a strong competitive advantage in biotechnology, a field in which it has become a European leader. Unlike many other OECD metropolitan areas, Copenhagen's economic performance has not resulted in economic disparity. Unemployment in the Capital Region has remained low, at 5% (2007), the participation rate is high, and social segregation is limited by comparison with other OECD metropolitan regions. This is generally reflected throughout Denmark, which not only enjoys unusually low unemployment and remarkably little income disparity between regions but also contains one of the most equal income distributions in the world.

*Copenhagen's critical mass is
enhanced by the Øresund region*

At the regional level, the opening of the Øresund Bridge, which links the City of Copenhagen to Malmö in Sweden, has brought new opportunities for trade and communication and has positioned the metropolitan area as a regional hub in the Baltic Sea. Copenhagen is a relatively small city located at the margin of Europe: of the metropolitan areas in Europe, it is one of the farthest removed from market potential. Cross-border commuting traffic remains limited, although it has risen steeply in the last decade, and the Øresund region is not yet an integrated and functional labour market. However, it holds great potential for synergies in regional labour markets and among firms in knowledge-intensive activities such as medicine, pharmaceuticals, and the information and communication technology industries, which are responsible for a high number of patents. The Øresund region has also developed a significant specialisation in food processing, as well as a cluster of companies that either deal in environmental technology or make products and services more environmentally friendly. These organisations – Medicon Valley Alliance, Øresund IT Academy, Øresund Food Network, and Øresund Environment – already play an important role in promoting networking and integration across the region, and show a great deal of promise. This nexus is buttressed by the 12 universities and 150 000 students in the Øresund region. Working in collaboration with researchers, business leaders and policy makers, the Øresund University, created in 1997, has helped to identify driving growth clusters and to facilitate the development of networking associations in these areas.

Its international ranking is mixed...

On the global level, Copenhagen faces some challenges. Although its GDP per capita and productivity are higher than the national average, it is in the middle range of OECD metropolitan areas and falls behind major North European metropolitan areas (Stockholm, Helsinki, Oslo) in terms of GDP per capita and productivity. Its economic prospects are clouded by its recent modest growth performance: real annual GDP growth averaged only 2.0% in the 1995-2005 period, which is low compared with several cities with the same average GDP per capita. Stockholm, Houston and Dublin, for example, scored higher on this indicator. Except in the field of biotechnology, Copenhagen's economic base is characterised by a low rate of specialisation in technology-intensive industries. Although process innovation and non-technological innovation help to contribute to the strong exporting performance of some firms, the relative underrepresentation of knowledge-intensive activities could jeopardise Copenhagen's long-term competitiveness, given increasing competition from cities in emerging countries. As is the case in many OECD metropolitan areas, Copenhagen must constantly boost its innovation and productivity to secure its economic position. Given global financial turmoil and tighter credit markets, exports are projected to be weak during 2009, and leading businesses are expected to cut back investment.

...and challenged by a shortage of skilled workers and a capacity for innovation that could be improved

Firms in Copenhagen remain vulnerable to two salient factors that compromise its productivity and regional output capacity. These are:

1. *The scarcity of skilled workers.* Labour market shortages already constrain growth, particularly in areas that are critical to maintaining Copenhagen's international competitiveness, such as science, but also in the hotel and restaurant industries, graphic design, the welfare sector, such as health care and education. These shortages are predicted to become more acute in the coming years. Although the labour market is particularly tight in Copenhagen, other regions in Denmark rate little better. Inter-regional labour mobility, from Malmö and the Skåne region (South Sweden) for example, can thus provide only limited relief. Facing the inevitable prospect of economic slowdown, Denmark, unlike most countries, is already

experiencing severe pressures on capacity and from wages rising much faster than warranted by productivity growth.

2. *Average innovation capacity.* Copenhagen scores only average on several indicators for innovation, such as research and development spending, patents per inhabitant and share of the population working in the high-tech and medium high-tech sectors. Copenhagen registered around 400 patents per million of its working population; half the figure for Stockholm and a third of the number for Munich. In Helsinki and Stockholm, between 7% and 8% of university students are pursuing doctoral degrees; for the Capital Region, the figure is only 3%.

A strategic vision is needed...

Dealing with these issues calls for a common strategic vision. Several strategic documents exist for Copenhagen, such as the *City Development Strategy*, the *Business Development Strategy* of the Growth Forum of the Capital Region and the *Regional Development Plan* of the Capital Region. Although these plans do not entail any outright contradictions, they do not provide clear priorities on how to sharpen Copenhagen's competitiveness. The processes leading up to the elaboration of these plans have increased the involvement of strategic actors, but the plans' relative lack of focus is a missed opportunity to sound the sense of urgency that is needed to mobilise more support in the effort. The national government could play a key part in formulating a strategic policy, considering its important role in many of the areas crucial for Copenhagen's competitiveness.

...that could be based on four main areas for action

A well-rounded strategy could be articulated by the three tiers of government around four main objectives. The first two would directly address the issues of productivity and output capacity, and would consist in 1) increasing the availability of skills and 2) fostering innovation and research. The appeal of Copenhagen as a location to live and work could also be improved by 3) upgrading infrastructure and housing supply and cultivating a better environment. Finally, 4) governance provisions for implementing economic development could be strengthened.

The lack of skill is of paramount concern...

The scarcity of available skills in Copenhagen can be explained by four main factors.

- First, the population's *level of attainment in higher education* is average in Copenhagen by comparison with many U.S. and Nordic cities, for example Boston, San Francisco, Stockholm and Helsinki. The main reason for this score lies in Denmark's high dropout rates. Projections show that without policy changes, around 95% of the students in Denmark leaving primary school in 2005 will start secondary education, but that only 79% will complete it. Only 48% will have completed tertiary education by 2030, and less than 30% will have completed a vocational degree.
- Second, *the late entry of students into the labour market* is an issue. Among OECD countries, Denmark's workers are the oldest at the time they enter the labour market. Students take extended breaks between secondary and tertiary education, and generous student grants create incentives to prolong their studies once they have started. The median age for starting tertiary education in Denmark is around 23 years, one of the highest in the OECD. Around 40% are still enrolled in tertiary education six years later. This reduces a worker's life-time earnings, leaving fewer years to practise the acquired skills in the labour market, and much of this loss is carried by public finances through foregone tax revenue.
- Third, *the existing foreign labour force is under-utilised*. The figures for aggregate employment of immigrants in Denmark are low. Employment rates for native-born Danes stood at around 78% in 2005, as compared with 56% among the foreign-born, and 51% for the foreign-born from non-OECD countries. In few other OECD countries is the disparity between employment rates for immigrants and the native-born, across all education levels, as high as in Denmark. Although immigrants in Denmark are less highly educated than the native population, their rates of qualification do not appear to be any lower than those in other countries. The gap in employment rates between highly skilled native-born and foreign-born workers is even higher (19%) than the gap for low- (15%) and medium-skilled workers (15%). This is particularly challenging for Copenhagen, where most of the immigrants are located and where labour market scarcity is most acute. Immigrants could increase their educational attainment if efforts to reduce the dropout rate in secondary education were intensified.

- Fourth, Copenhagen has a lacklustre track record of *attracting high-skilled foreigners* and the number of immigrant arrivals, as well as of foreign students, is relatively limited. Copenhagen's share of immigrant population is below average compared with that of other metropolitan areas. English-speaking metropolitan areas obviously enjoy an advantage in this respect, but many non-English-speaking metropolitan areas have higher shares of foreign population than Copenhagen. Since immigrants tend to locate in places where they already have acquaintances, established immigrant cities such as Toronto, New York and London can more easily attract highly skilled foreigners. Copenhagen does not have this advantage, and must put in more effort to attract foreign labour.

Students enter late in the labour market...

Addressing the late entry of students into the workforce could be made a priority. The national grant system does not encourage students to become rapidly active on the labour market, or to make efficient study choices. Higher education is free, and grants of up to six years are provided to cover students' living expenses. As a result, students enter universities at a high median age and switch studies regularly. In 2006, the national government introduced measures to reduce grants for those who delay their studies by more than two years. The national financing policies of universities and students could be recalibrated to increase the efficiency of educational choices, reduce the dropout rate and improve the adaptation of students to the needs of the labour market. This could take the form either of introducing tuition fees, or of partially replacing student grants by student loans to be repaid after graduation.

...and immigrants are not fully integrated

The skills of current immigrants could also be put to better use. The City of Copenhagen has pursued different strategies to improve the educational performance of immigrants and facilitate their integration into the labour market, for example through education and integration policies. Such measures could be intensified in order to reduce the dropout rate among immigrant children. Active labour market programmes are not always effective in enhancing the integration of immigrants into the labour market, but only limited use has so far been made of enterprise-based job training, a promising means of dispelling employers' hesitations about the

qualifications of immigrants and their lack of experience in the Danish labour market. The Employment Region Copenhagen and Zealand, as well as the job centres in the area, could come up with an action plan with the business sector, presenting ways to increase enterprise-based job training for immigrants.

Attracting talent is a challenge

Given its moderate global appeal, Copenhagen could more actively recruit foreign workers. The City of Copenhagen barely rates as one of the 50 most globally connected cities as regards business links and international services, and cannot be considered a major airline hub. It has relatively few major internationally oriented companies, making it difficult for foreign workers (and their spouses) to find appropriate career opportunities. Furthermore, Copenhagen's universities are less outwardly oriented than universities in other metropolitan areas. Copenhagen's relatively modest size may explain the limited number of international companies it has attracted, but other metropolitan areas in Europe of its size appear to be much better connected internationally. Moreover, the international reach of the City of Copenhagen appears to have declined relative to other OECD cities with which it competes for global talent.

...and attracting more internationally oriented firms could be helpful

Recently, Copenhagen has intensified its efforts to attract foreign firms and international events. Considering the tight labour market, bringing in foreign businesses is not a priority, at least with regards to job creation. There may, however, be a rationale for selectively attracting the headquarters of foreign firms that generate knowledge spillovers, as well as employment opportunities for the spouses of highly skilled immigrants. As regards the competition for global events, this may only be relevant for Copenhagen's competitiveness as long as it contributes to enhancing its appeal as a place for highly skilled foreigners to live and work. The city could reconsider its policies for attracting firms, tourists and international events in this light. Serious reflection is warranted on how a World Expo in 2020, currently under consideration by the three levels of governments, could help to increase Copenhagen's attractiveness to highly skilled foreigners.

*An ambitious campaign to recruit
foreigners with particular skills could
be launched*

Copenhagen could refine its strategy for recruiting foreign workers. The stakeholders in the Copenhagen metropolitan region must be congratulated upon their efforts to reflect on the kind of individuals they want to attract, as expressed in the so-called Copenhagen Brand Book. Copenhagen likes to present itself as an environmental capital on the coast, with high quality of life and a healthy work/life-balance. However, this may not be sufficient to compete with other Northern European capitals for attracting internationally mobile highly skilled labour. The City of Copenhagen, with the Capital Region and other local authorities, could try to refine its image and experiment with more ambitious measures. A “green card” scheme and tax arrangements for highly skilled foreigners have been adopted nationally, but these policies do not constitute sufficient incentive by comparison with those of many other OECD countries. A more active approach is required by all levels of government, as well as universities and businesses, if substantially more highly skilled people are to be recruited. Copenhagen’s local authorities could more actively promote the importance of attracting talent and involve immigrant groups more systematically in policy making. In 2009, the City of Copenhagen plans to set up an office for expatriate affairs, the Welcome Shop; this initiative needs to be expanded and marketed. Celebrating cultural diversity could be systematically included as part of Copenhagen’s event strategy. The City of Copenhagen and the Capital Region could develop a campaign to attract highly skilled foreigners, conducted by a local or regional stakeholder, such as the office set up to attract foreign investment, Copenhagen Capacity, or a similar organisation.

*Tax accommodations for skilled foreign
workers need to be considered...*

At the national level, a major obstacle to attracting foreign skills is the high marginal income tax rate. The tax code in Denmark includes an option under which approved researchers and key employees recruited abroad may opt out of the income tax system in favour of paying a flat rate of 25% for three years, a period that has recently been extended to five years. While this is a step towards addressing the problem, the scheme is somewhat narrowly conceived, and a more general approach is warranted, since it does not address the problem of retaining skilled Danes who might be tempted to migrate. Beyond that, the target group is restricted to professionals paid

more than twice average full-time earnings, although R&D employees, mainly scientists, may also benefit from the programme at lower incomes. Younger specialists in areas such as finance, management and marketing, as well as entrepreneurs, may find it difficult to obtain approval. In addition, the five-year limit necessitates more staff turnover than may be desirable and militates against long-term planning and investment. The best option would be a general overhaul of the income tax system, reducing the very high marginal tax rates in Denmark; the Tax Commission that is currently looking at taxation has a mandate to make proposals to this effect. Alternatively, tax accommodations for foreign workers could be reconsidered: to effectively attract and retain highly skilled foreign workers, the tax exemption could be allowed for a longer period and for more categories of workers.

...and universities have a key role to play

Universities could make more active efforts to attract international students, given that they are a potentially important source of highly skilled labour. Universities in Copenhagen are not particularly well adapted to this strategy. Denmark has fewer international students than many other OECD countries, and the percentage of international students in tertiary education was 4.4% in 2005 in Denmark, as against 6.7% in the OECD as a whole. Copenhagen scores somewhat higher than the national average; the University of Copenhagen has a student population of 6% foreign students, but this figure is still limited compared with many metropolitan universities worldwide. A similar tendency is found with respect to foreigners in research. The share of international students in Denmark has increased by 35% from 2000 to 2005, as compared with 49% in the OECD as a whole. Universities could do more to actively compete for international students so that a larger pool of potential foreign talent becomes available. Co-operation at the Øresund University is needed to reap concrete benefits like economies of scale (merging faculties or courses); a common internationalisation strategy is recommended for targeting countries from which to attract students. Students could be engaged more by regional internships, teaching and research projects, and by increasing student mobility through supporting student travelling expenses.

Innovation capacity is average...

Copenhagen scores average on research and development indicators, both with respect to share of GDP invested, number of high tech-staff and

number of patents per inhabitant. Although firms in Copenhagen excel in process innovation, user-driven innovation and non-technological innovation, and despite a high degree of innovation in the welfare sector, there is room for improvement with regards to product innovation, research and the commercial use of research, which strongly influence competitiveness. One important research area in Copenhagen is health, which has seen strong growth since 2000 and which benefits from the extensive Danish data registers that gather health and socio-economic data. Although health science in Copenhagen performs better than elsewhere in Europe, career possibilities for young researchers are limited, forcing them out of the field. Flexible employment structures in universities and hospitals, allowing for career enhancement, could resolve this problem. Links with Lund University with its strong life sciences department could be strengthened.

*...and could be improved by further
links between higher education
institutions and firms...*

Networks of business and academia could be stimulated, rather than intermediary organisations created. The focus of policy in innovation has been on the commercialisation of research. The main instruments chosen to achieve this have been university patenting and science parks, and as a result, Copenhagen now has a wide variety of technology transfer offices, incubators and science parks. However, university patents and science parks have not necessarily proven successful, according to numerous foreign studies, and some doubt prevails as to whether they have been effective in Copenhagen. Domestic academic contributions to Danish dedicated biotechnology firms has declined as a result of the Danish Law on University Patenting, and only a minor part of this decline has re-emerged as inventive capability in university-owned patenting or in the establishment of university spin-offs. An assessment of the Symbion science park, which is specialised in commercialising inventions in IT, telecommunications and biotechnology, found relatively few links to the higher education institutes in the area and low student awareness of the initiative. This suggests that institutions such as Symbion have in fact reduced interaction between higher education and industry. To achieve more commercialisation of research, complementary approaches will be needed to increase university-industry co-operation. This could take the form of networks, rather than new institutions and intermediaries; business, universities and other research institutes are the main responsible actors, but the City of Copenhagen and the Capital Region could stimulate the creation of these networks.

Commercialisation of research could be streamlined in the context of the Øresund Science Region, leading to more co-operation on commercialisation of research among the universities in the region (more common projects, for example).

...and an incentive-based research funding scheme

The quality of research could be improved by the introduction of more incentives to fund it. Denmark has a two-tier system for the allocation of research funds. The first tier is the basic grant, disbursed by ministries directly to the institutions. The second tier consists of grants from the National Research Councils, strategic research programmes, R&D funds from the different ministries, private funds and firms. Although basic research grants facilitate long-term planning for the universities, they offer no incentives for efficiency, relevance and impact on society. No mechanisms are in place to ensure that the institutions producing the highest quality research are rewarded. The complexities of the second tier can easily become opaque and bureaucratic. The national government would do well to reconsider its funding mechanisms and introduce more incentives in the first tier of research funding, as it is considering doing as of 2010. In addition, a simplification of second-tier funding is needed.

Entrepreneurship policies could be aligned with Copenhagen's needs

National entrepreneurship policies could benefit from improved co-ordination and alignment with regional and local initiatives in Copenhagen. The national government in Denmark recently prioritised entrepreneurship, particularly businesses that can generate rapid growth in personnel, value added and exports. In order to stimulate high-growth entrepreneurship, Regional Centres of Growth were established to provide services to these entrepreneurs. One such Regional Centre of Growth is active in the Capital Region, in addition to the business centres of various municipalities in the Copenhagen metropolitan region. The City of Copenhagen conducts its own business policy, in which creative entrepreneurship and ethnic entrepreneurship play an important role. As part of these policies, creative zones were created by the City of Copenhagen, setting up favourable conditions for entrepreneurs in the creative sectors. National policies sometimes appear to conflict with regional and local goals. A tension exists between encouraging entrepreneurs to increase personnel and the already very tight labour market in Copenhagen, as implementation of this policy

would add to growing recruitment challenges; moreover, creative entrepreneurs tend not to consider increasing staff numbers a priority. National policies might be better aligned with regional needs by leaving more room for regionally differentiated targets in the contracts with the Regional Centres for Growth. Co-ordination between Regional Centres for Growth and municipalities could be strengthened by a second generation of letters of agreement between Regional Centres of Growth and municipalities. There are serious concerns about the devolvement of funding of regional centres of growth to municipalities after 2010; this could be reconsidered. More focus on Copenhagen's entrepreneurship policies would improve the results, which are currently mixed. There is no clear indication that the creative zones result in positive effects, and although some may yet materialise, a more focused approach is warranted. More emphasis could be put on stimulating creative industries that have shown promise of attracting highly skilled foreign labour. In addition, the synergies of creative industries with other economic sectors could be systematically explored, for example, with the life science and environmental sectors. The City of Copenhagen could play a role in stimulating the creation of inter-sectoral networks aimed at creating these synergies.

Attractiveness is an asset...

Copenhagen's reputation for liveability could be further enhanced. Although it scores well on several rankings as regards quality of life and the quality of its public services, the city faces some challenges, particularly with regards to:

1. *Infrastructure.* Even though traffic in the Copenhagen metropolitan region is far less congested than in other European capitals, there are issues to address. Congestion in the Capital Region rose by 10% in 2007, at a cost estimated at EUR 1.2 billion. Copenhagen faces several challenges as far as external accessibility is concerned. The construction of the Fehmarn Belt Link provides an opportunity for linking to the European high-speed rail network. However, the railway connection between Ringsted and Copenhagen is still under discussion. Although the Øresund Bridge has stimulated cross-border traffic, it could be further utilized as a means of creating a functionally integrated area.
2. *Housing.* Housing prices have increased considerably from 1995 to 2006, especially in the northern and central municipalities, due to such factors as population growth, migration and low interest rates on loans. Denmark has some of the highest housing costs relative to income in the EU. In 2003, Danes spent 28.6% of their income on housing costs,

surpassed only by Spain and Sweden. Consequently, residents generally perceive the City of Copenhagen as a place where it is difficult to find moderately priced housing, especially rental units. An average family with children with an annual income of approximately EUR 80 000 will typically have to look for housing 50 kilometres away from the city centre to find affordable housing.

3. *Liveability and environmental sustainability.* Copenhagen, renowned for its quality of life, nevertheless faces obstacles to improving liveability. Part of its appeal is size; Copenhagen is close to natural amenities that provide for outdoor activities, and in 2006, around 36% of its inhabitants bicycled to work. Issues related to *cultural amenities*, crime and air quality, however, remain. The City of Copenhagen has a collection of fine cultural institutions, but lacks certain facilities, for example a large-scale multi-use indoor facility for live performances. The limited number of tourists to the city indicates a lack of awareness worldwide of Copenhagen's urban amenities. *Crime rates* are higher than in several similar-sized metropolitan areas in the OECD: the rate of car theft from 2003 to 2006 was for example 9 per 1000 inhabitants, the second-highest among European capitals. There is room for improvement with regards to *air quality*: though the City of Copenhagen has one of the lowest sulphur concentrations, many large cities in the OECD have lower concentrations of NO₂ and particulate matter. In the case of particulate matter, large cities such as Paris, London and Frankfurt have managed to achieve lower concentrations. In 2005, the limit for daily average value for PM10 (50 µg/m³) was exceeded 64 times in Copenhagen, 29 more days than EU's permitted threshold.

*...thanks to solid infrastructure
endowment*

Strengthened infrastructure policies can ensure that proximity and relative lack of congestion continue to be an asset for the region. The development of smart transport infrastructure is important for urban competitiveness, not only to capitalise on transit needs and encourage economic growth, as well as providing proximity and agglomeration effects, but also to mitigate the burden of transit on the environment. Transportation is one of the three main planks of the 2008 regional development plan of the Capital Region. To accommodate further growth of its metropolitan area, Copenhagen could build upon its strengths in internal and external accessibility.

A congestion charge could be considered

A congestion charge could help to limit traffic jams in the region, following in the footsteps of other OECD metropolitan areas, like Stockholm, London, Milan and Oslo. Congestion charges have been discussed extensively in the Copenhagen metropolitan region over the last decade. According to a recent modelling by 16 municipalities in the Capital Region, introduction of congestion charges in 2010 would decrease congestion by 23% within the toll ring in the city and by 4% in the entire Capital Region, with net benefits amounting to EUR 200 million per year. Political consensus among the different levels of government is a key condition for the success of the introduction of a congestion charge and its modalities. According to Danish law, road charges are considered a general tax and must therefore be determined by the national Parliament. In order to avoid adding a new tax burden, a congestion charge could be introduced in parallel with a reduction of fixed car taxes, so as to tax congestion rather than car ownership.

External accessibility could be improved

External accessibility can be improved by making better use of the Øresund link, integrating the upcoming Fehmarn Belt link between Denmark and Germany into the Europe-wide transportation network and continuing to improve the connectivity of Copenhagen airport. Given the price elasticity of the Øresund bridge tariffs, reconsidering the constraints on setting tariffs might advance the functional integration of Øresund region. As for the railway connection to Germany, if the Fehmarn Link is not established, the potential for connecting the European continent and the Nordic countries will be lost. Further co-operation between both countries is desirable to incorporate the Fehmarn Link into both Danish and German infrastructure.

The cost of housing has become prohibitive for many families...

It has become more difficult for families to acquire moderately priced housing in the Copenhagen metropolitan region, since housing prices have outpaced incomes. Housing in the suburbs of Copenhagen and in the Øresund region as a whole has become more attractive and boosted growth

in the suburban periphery, while the housing stock in Copenhagen proper has remained relatively unchanged for the past twenty years. Although such suburban outmigration is typical of many OECD metropolitan areas, compact urban development could help reduce traffic congestion and ensure the proximity of workers to their jobs. The current labour market in Copenhagen is tight, and jobs such as municipal health visitor receive on average 1.25 applications per post. Labour market matching in the Copenhagen metropolitan area suggests housing and transport policies that promote the accessibility of jobs to a large labour pool. While housing costs have decreased from their peak in 2006, developers are still constrained to construct moderately priced units. Further contractions may arise in light of the impact of the current global financial turmoil. Accordingly, a two-pronged housing strategy, geared towards densification of the inner core and inter-municipal collaboration on construction, would help reduce housing pressures in the Copenhagen metropolitan region.

...densification and increased housing construction in central Copenhagen could help...

Additional land use tools, particularly densification, could be utilised to increase Copenhagen's housing stock, given that its population density is half that of Vienna, Munich and Berlin and less than a quarter than that of Paris. The creation of more favourable rental housing construction economies could facilitate growth in the housing stock and respond to the needs of residents who earn too much to qualify for social housing and too little to rent expensive flats. The expansion of housing in Copenhagen could also be coordinated with the refurbishment of Copenhagen's housing stock, two-thirds of which was built before World War II. Heightened collaboration with developers of moderate-cost housing could help reduce the costs of appraisals, such as the design fees, environmental site studies, and legal work. To help make these projects more economically viable, the central government could empower municipalities with more flexibility to negotiate planning agreements with private developers, as is the case in the United Kingdom and the Netherlands.

...but must be complemented with a regional approach

Given population growth in Copenhagen's suburbs, land scarcity in the city centre, and the paucity of larger sized family housing, additional regional policies are needed to co-ordinate metropolitan growth. A new

generation of land use tools could better align housing and transit policies in outlying suburbs. Though Copenhagen has a long tradition of excellence in regional planning, the dissolution of the national Ministry of Housing in 2001 and the creation of a Capital Region that has no mandate for housing have reduced the capacity for inter-municipal co-ordination of housing policy. Copenhagen could benefit from inter-municipal co-operation on joint housing and infrastructure projects to address trade-offs and fair distribution. This would allow municipalities to pool resources for shared facilities, especially infrastructure. Since the abolition of the conversion fee (*frigørelsesafgift*) in 2004, which rewarded rural areas that urbanised, outlying municipalities have had less impetus to develop new land plots. To encourage inter-municipal coordination on land use, the central government could consider additional mechanisms allowing municipalities to borrow to finance infrastructure. These combined strategies for mobility and housing could foster an emerging polycentric urban form.

*Further collaboration within the
Øresund region can increase its supply
of cultural amenities*

Copenhagen does not have the critical mass to sustain the amenities typical of larger metropolitan areas. Whereas cities elsewhere in the OECD can potentially enlist other cities' co-operation to create such an effect, Copenhagen is not situated within sufficient proximity to the other large Danish cities. It is, however, close to Malmö and Lund, which could potentially provide promising synergies. This would require co-ordination of policies in the Øresund area to expand cultural amenities, housing, international events, marketing and tourism. The City of Copenhagen could systematically identify where a lack of urban amenities weaken its position vis-à-vis other metropolitan areas in the OECD, and where amenities in the Øresund region as a whole could fill those gaps.

*Copenhagen could become one of the
most environmentally friendly city
regions*

Fine-tuning environmental policies could help the City of Copenhagen realise its ambition to become the greenest capital in Europe. Myriad environmental initiatives are in place: the City of Copenhagen has agreed on a strategy to reduce CO₂-emissions by 20% in 2015 and will host the UN Climate Change Conference in December 2009. Such initiatives would capitalise on existing programs that have allowed the city to reduce its CO₂

emissions by 25% since 1990 and to ensure that around 36% of its workforce bicycles to work. However, more could be done to bolster the City of Copenhagen's sustainability, including reduction of air pollution. Additionally, improved energy conservation techniques could reduce Copenhagen's ecological footprint, and expanded public reporting of environmental and climate change data could be instituted to better track this. Finally, an ecosystem-based planning approach and continued cross-border environmental co-operation is called for, given the permeation of pollution in the Øresund region.

A common agenda for Copenhagen is needed...

Copenhagen needs a common agenda to increase the availability of highly skilled labour, boost innovation capacity and enhance the attractiveness of the region. The Capital Region has made commendable efforts to define strategies for the region. The Growth Forum of the Capital Region, in which business, academia, regional and local governments are represented, developed a business development strategy in 2007. In addition, the Capital Region presented the Regional Development Strategy in 2008, involving citizens, governments and civil society. These are all laudable initiatives, with thorough assessments and wide involvement of stakeholders, yet at the same time, they have not sharpened focus on priorities. The underlying assumption has been expressed in city and regional documents as "you can have both": the possibility of combining seemingly contradictory goals. In reality, policy trade-offs are warranted, especially in the matter of where to invest scarce resources and on what areas to focus policy. One of these trade-offs is maintaining the welfare state (with correspondingly high taxes), or fostering a more entrepreneurial city (and country). In many cases, these trade-offs are slightly more subtle, in that the accumulation of policy aims dilutes political attention and takes funds away from higher priorities, such as attracting highly skilled labour. Becoming the environmental capital of Europe, for example, is a worthy goal, but whether it is a reliable way of attracting highly skilled foreign labour is not so clear. Likewise, stimulating creative sectors in Copenhagen may make Copenhagen more attractive, but one could wonder whether the stimulation package has been designed with the demands of highly skilled foreign labour in mind. A lack of focus on its most important challenges could hamper the region's competitiveness.

...supported by the main stakeholders...

Main stakeholders will have to be involved in the agenda for Copenhagen, so that resources and instruments focus on the same goals. The Capital Region will need the co-operation of the municipalities in the area, as well as of the national government, to increase Copenhagen's global appeal. During the 1990s, the national government recognised the importance of Copenhagen's competition with other European cities; this formulation has been effective due to the central government's recognition of the value of Copenhagen and its co-operation with regional actors, despite the absence of a regional planning agency. Governance mechanisms can influence the efficiency with which the common agenda can be formulated and implemented, and whether policies, public goods and services can be delivered.

...with room for governments in the area to implement this agenda

Considering Copenhagen's crucial role in the national economy, all the actors concerned, including the central government, have a stake in ensuring that governance frameworks and policies help to boost the competitiveness of the Copenhagen metropolitan region. Many of the obstacles to its future competitiveness are directly or indirectly related to national policy: (i) national immigration and tax policy have made Copenhagen less attractive to high-skilled foreign labour, (ii) housing legislation has made it difficult to solve issues of housing affordability, (iii) particular differences in national legislation of Sweden and Denmark have hindered the functional integration of the Øresund region, and (iv) the national parliament maintains control over the introduction of local congestion charges. Although these national frameworks are commonplace in unitary countries like Denmark, flexibility is essential given the unique nature of Copenhagen's challenges as compared to the rest of Denmark. Copenhagen is better connected to the global economy, has more immigrants, higher housing prices, more air pollution and more congestion. National policies will have to take Copenhagen's competitiveness into account. From a financial perspective, sub-national autonomy has been limited drastically over the last few years. National government has now put constraints on local taxation, expenditures, deficits, borrowing and the use of alternative financial instruments. Although this is understandable from the perspective of fiscal discipline, it leaves little flexibility for investments in municipalities that seek to improve their competitive position, such as the City of Copenhagen

and the other municipalities in the region. These constraints are even larger for the Capital Region, given its complete lack of taxation powers.

*The structural reform compromised
metropolitan governance ...*

The 2007 structural reform has not fostered governance within the Copenhagen metropolitan region. This national reform created a regional authority—in the case of Copenhagen, the “Capital Region”—which has few planning powers. In addition to replacing 16 counties with 5 regions, the reform reduced the number of municipalities in Denmark from 271 to 98. Although the reform was remarkable from an international comparative perspective, its ability to promote metropolitan governance in the Copenhagen metropolitan region was minimal. With the structural reform, the City of Copenhagen has lost its special position and some of its former responsibilities, in contrast with the practices of the capital cities of some OECD countries (e.g. Madrid, Paris) or with their major metropolitan areas (e.g. Korea, Portugal, Japan). The regional government has been weakened; it is now almost exclusively involved in health care, and its authority to levy taxes has been taken away. The former and somewhat problematic vehicle for metropolitan co-ordination, the Greater Copenhagen Council, was abolished. This structural reform transferred the responsibility for spatial planning from the former counties and the Greater Copenhagen Council to municipalities and the national government. Whereas municipalities in most other regions in Denmark merged massively, the number of municipalities in the Copenhagen metropolitan region has remained more or less constant. The Capital Region encompasses 29 relatively powerful municipalities, including a core city that is relatively small in relation to the wider metropolitan area. Around 21% of the inhabitants of the Copenhagen metropolitan region live in the City of Copenhagen. As in almost every metropolitan area in the OECD, administrative boundaries are different from functional areas; the Copenhagen metropolitan region as defined by commuting flows is, however, considerably larger than the Capital Region (2.4 as compared to 1.6 million inhabitants). Moreover, structural reform has complicated metropolitan co-ordination: whereas the municipalities in the Greater Copenhagen Council formed part of five more or less equivalent counties, the same area is now within the jurisdiction of one region (Capital Region) and is part of another region (Sjælland). Neither the Capital Region nor the municipalities have many instruments for cross-municipal co-ordination at the regional level.

...and better co-ordination is called for...

Metropolitan co-ordination will need to be strengthened. Although a large number of decentralised government units can provide a diversity of goods and services and be able to adapt to local circumstances, there are areas where regional co-ordination is called for, for example in transport, land use planning and local economic development. This is particularly the case in Copenhagen, where commuting increasingly takes place across administrative boundaries. Some of the regional co-ordination in Denmark takes place at the national level, for example with regards to land use planning via the Finger Plan. Most of this national co-ordination is sectoral, which leads to a certain lack of policy coherence at the regional level. Cross-sectoral issues are difficult to address, which is sometimes a result of silo thinking within the central government, *i.e.* a lack of co-ordination between the line ministries. Few co-ordination mechanisms between Copenhagen and the central government exist. The Capital Region has yet to acquire the legitimacy to speak for the whole region. The City of Copenhagen and the city of Frederiksberg, which is embedded within the City of Copenhagen, used to talk separately to the central government, but in the structural reform of 2007, they lost their special position as municipalities that were also counties. National policies for the regions, for example the Capital Region, could be better coordinated by strengthening the role of the Ministerial Policy Committee for Regional Policy. Co-ordination between the central government and Copenhagen could be increased by a clear national government programme for the capital. Examples worth noting include a ministerial portfolio for the co-ordination of the programme in this metropolitan area, as has recently been introduced for Randstad-Holland in the Netherlands, or Paris in France.

...by the Capital Region and other actors...

The Capital Region will have to continue to pursue its co-ordination for the metropolitan area. As the current vehicle for metropolitan co-ordination, it has spearheaded strategies for business and regional development, engaging many stakeholders in the region. Although it has limited responsibilities, most of which are relevant to co-ordination in Copenhagen, it is in effect the only instrument of metropolitan co-ordination left after the abolition of the Greater Copenhagen Council. Its task is sensitive, considering that it will require buy-in from municipalities that sometimes have conflicting interests, and also taking into account the limited policy

instruments at its disposal. A special effort could be made to reach out to those municipalities in Sjaelland that are not part of the Capital Region but that form part of the Finger Plan; they will need to be involved in metropolitan co-ordination. The experience of municipal amalgamations in other parts of Denmark could also be considered within the Capital Region. Integrated transportation planning is increasingly necessary at the level of the metropolitan area, as development of each mode affects and is contingent upon other modes. Although Movia, a regional mechanism for bus transport, has recently been created, more could be achieved by consigning all transportation planning for the Copenhagen metropolitan region to a single organisation. Transportation planning could also be co-ordinated with the land use plan such as the Finger Plan.

...and the internal local government model needs to be improved

The City of Copenhagen would benefit from strengthening its internal local government model so that it can play a more decisive part within the metropolitan area. Under the current formula, all political parties are part of the city government, which consists of one Lord Mayor and six other mayors who cannot be instructed by the Lord Mayor. This has led to a situation where mayors are sometimes left to implement policies that they voted against in the city council; and it has in some cases also led to overspending. The City of Copenhagen will need a majority government system in which executive and control tasks are separated, and a model that is able to support the connection between policy formulation and implementation across departments. However, the national legislation does not afford the room to choose such a government model. Current reflections in the city on alternatives cannot be endorsed and implemented unless the national legislation is extended to provide room for the city government to adopt such an alternative. One possible model is the government of Oslo, which has a similar national institutional tradition of coalition and minority government. Under this model, the city council appoints an executive council leader, who appoints a city cabinet, and city council committees play no role in policy implementation.

Co-operation with other regions could yield large-scale benefits...

Finally, closer co-operation between the Copenhagen metropolitan region and Denmark's major regional cities could yield economic benefits. Such initiatives could clarify concurrent mandates that are vaguely defined

and highlight the interdependence of the major cities. A similar mechanism developed between London and its network of outlying cities was shown to be effective. Although it is the primary responsibility of the authorities of the different cities in Denmark to engage in such a dialogue, the national government could play a facilitating role. More explicit governmental support for the urban network throughout Denmark could help foster economic synergy between cities.

*...and Øresund is a unique opportunity
to enhance competitiveness*

Fostering the integration of Øresund region (Copenhagen/Malmö) through further concerted government action would help to expand the Copenhagen labour market. Cross-border commuting in the Øresund region has increased dramatically over the last decade, although the overall numbers are still modest. The nearly 15 000 commuters from Southern Sweden (Skåne Region) to the Capital Region represents a sevenfold increase in the ten years from 1997 to 2007. A comparison of European data shows that several regions in Europe had more cross-border commuting in 1999 than Øresund did in 2007. Concerted government action could increase these cross-border commuting flows, by providing more harmonisation in regulation, taxation, social security and tariffs for the Øresund Link, to promote labour market integration in the area. Several steps have already been taken. In 2007, the institutional structure of the Øresund Committee was strengthened, and policy formulation was given increased emphasis. This has resulted in a strategic vision for the Øresund in 2008 that will result in a common development strategy in the coming years. In 2007, the Danish and Swedish ministers of labour signed an agreement to remove some of the barriers to a common labour market. Several cross-border initiatives have been undertaken, and a special unit of the Danish Tax Authority has been set up to deal with tax issues for employees who work in Denmark, but live in Sweden. More of these initiatives would be welcome: national governments in Denmark and Sweden could be strongly encouraged to increase co-operation in the Øresund region. The City of Copenhagen and the Capital Region, as well as stakeholders such as the tourist promotion office Wonderful Copenhagen and the foreign investment attraction office Copenhagen Capacity, could also benefit the Øresund region, for example in its strategies to attract international events, tourists and foreign firms.

Chapter 1: The competitiveness of Copenhagen

This Metropolitan Review of Copenhagen studies the competitiveness of Denmark's capital city and assesses its policies and governance. This assessment is used as the basis for policy recommendations on how its economic edge could be increased. This Review has three chapters, the first evaluating the city's economic performance; the second outlining policies that could strengthen its competitiveness, and the third the governance arrangements in Copenhagen.¹

Copenhagen's economy accounts for almost half of the national economy and is essential to the well-being of Denmark as a whole. Although it has strong economic sectors and has displayed a reasonably robust economic performance in the last few years, its economic growth is likely to be constrained by the availability of highly skilled labour, its innovation capacity and urban attractiveness. This chapter assesses Copenhagen's economic competitiveness and its economic position in Denmark, its economic profile and its performance.

1.1 The location of Copenhagen

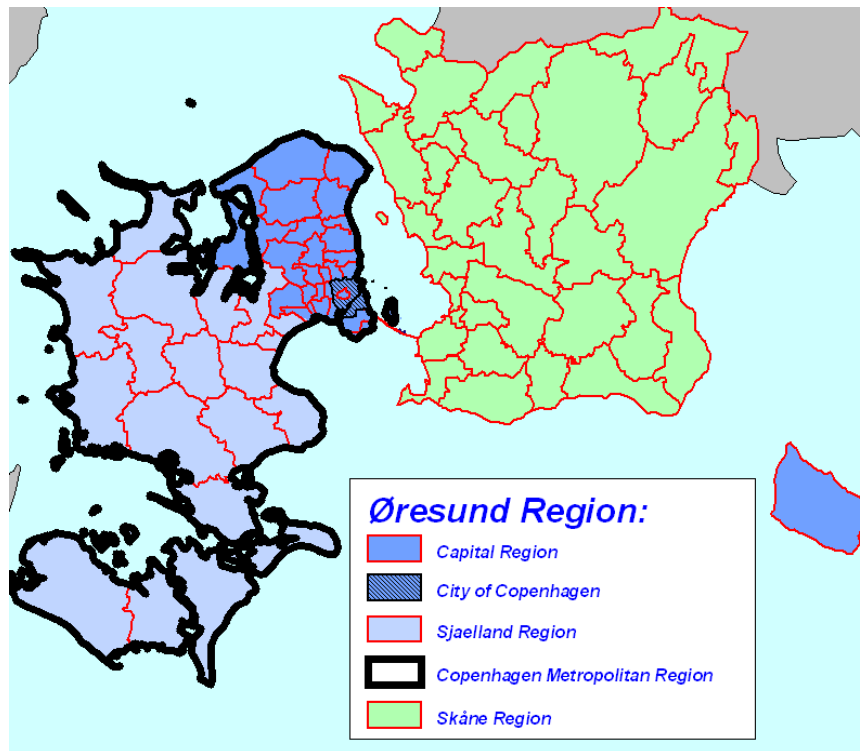
Copenhagen is the major urban area of a small, sparsely populated country, comprised of the mainland, Jutland (Figure 1.1), and several islands, the largest of which is Sjaelland, where Copenhagen is located. A large proportion of Denmark's inhabitants, about 40% according to the OECD regional typology,² live in areas with a population density of less than 150 inhabitants per square kilometre. Its rural population is twice the average in OECD countries. Two-thirds of Danish territory can be considered predominantly rural; only 5% is predominantly urban; and the rest is intermediate.³ Whereas Copenhagen is an urban region, large part of Jutland has a predominantly rural character, although it contains the second (Aarhus) and fourth largest city (Aalborg) of Denmark. Although Denmark is a small and flat country, the average travelling time from rural areas to the closest urban centre, while below the OECD average, is relatively high compared to that in other small countries (OECD, 2007).

Figure 1.1. Map of Denmark



Source: www.mapsofworld.com.

Figure 1.2. Map of Copenhagen and the Øresund Region

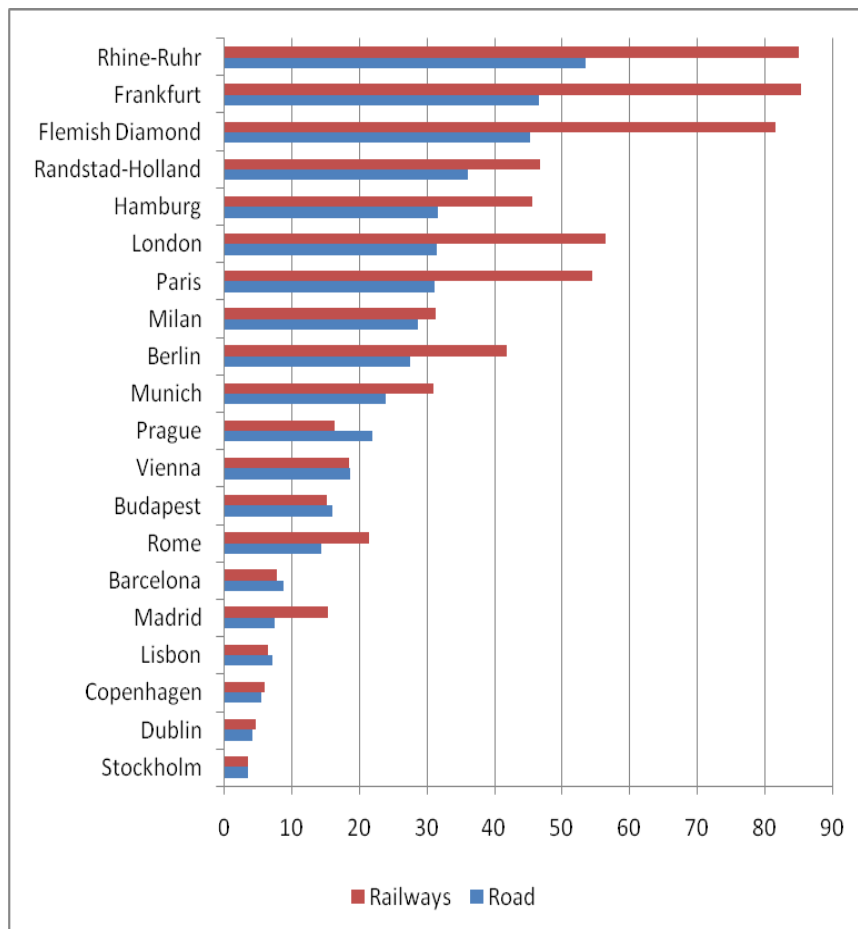


Source: The City of Copenhagen.

Copenhagen is located at the margin of Europe, at the centre of the Øresund Region. The number of inhabitants living within five hours of the capital by road or railway, is fewer than 6 million people.⁴ This relative marginality is comparable to that of Stockholm, Dublin, Lisbon and to a lesser extent, Barcelona and stands in striking contrast to London, Paris and urban areas in Germany, Belgium and the Netherlands in particular, where up to 85 million people live within in five hours' striking distance (Figure 1.3). The number of people within five hours by plane of Copenhagen is larger (46 million). This figure is relatively small compared with many large cities in Europe (Figure 1.4), but it underscores the important role the airport plays in connecting Copenhagen to larger markets. While Copenhagen is networked to other hubs, its geographical position in regard to other large cities in the world puts it at a disadvantage. Since 2000, Copenhagen has been linked to southern Sweden (the Skåne Region) via the Øresund Link;

another connection between Copenhagen and south Sweden is through ferries between Helsingør and Helsingborg (Skåne). As such, Copenhagen is placed centrally in the Øresund Region, the cross-border region that includes both Sjaelland and the Skåne region in Sweden.

Figure 1.3. Number of people that can be reached in five hours by road and rail (million people)

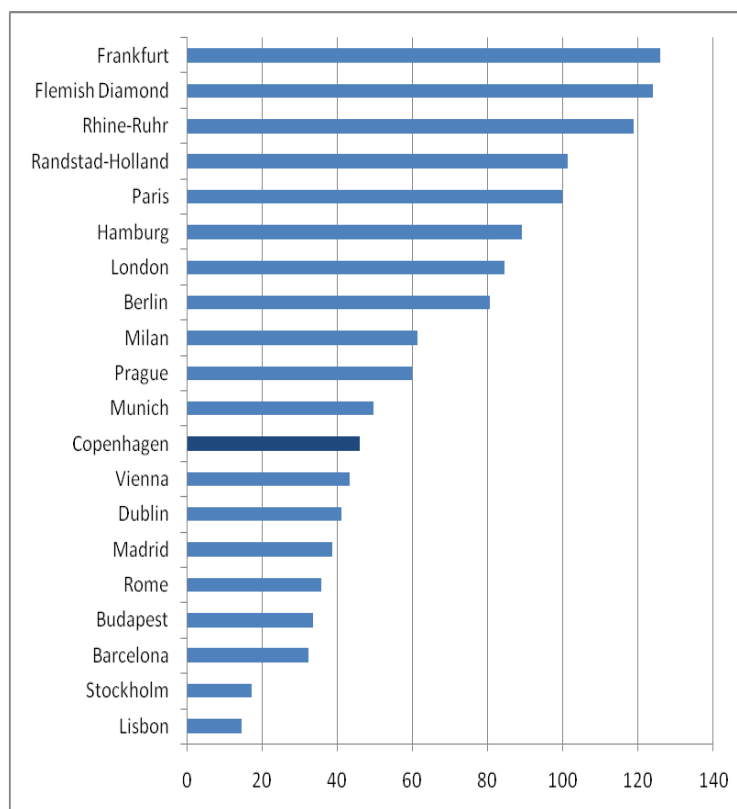


Source: TNO (2007), Randstad Monitor 2007, Delft.

The geographical position of Copenhagen is both an asset and a constraint. Considering the findings in the literature about the advantages of being a coastal city, Copenhagen's location near the sea would appear to be an asset. Because it is located on an island, connections from Copenhagen to

other areas in Denmark are more time-consuming than if it were located on the mainland, but its flatness and its several links connecting it with the mainland and other islands compensate for this. Travel by road or train to Aarhus, the second-largest city in Denmark, however, still takes several hours, which is remarkable in a country so small. In a larger European context, Copenhagen's geographical position might prove to be somewhat of a constraint. Copenhagen is one of the metropolitan areas in Europe that is furthest removed from market potential, as suggested by the number of people that can be reached in five hours by road and rail.

Figure 1.4. **Number of people that can be reached in five hours by plane (million people)**



Source: TNO (2007), Randstad Monitor 2007, Delft.

Copenhagen is the largest city in Denmark, a country of approximately 5.5 million people. Within its administrative boundaries, the city of Copenhagen currently has around 510 000 inhabitants. With the

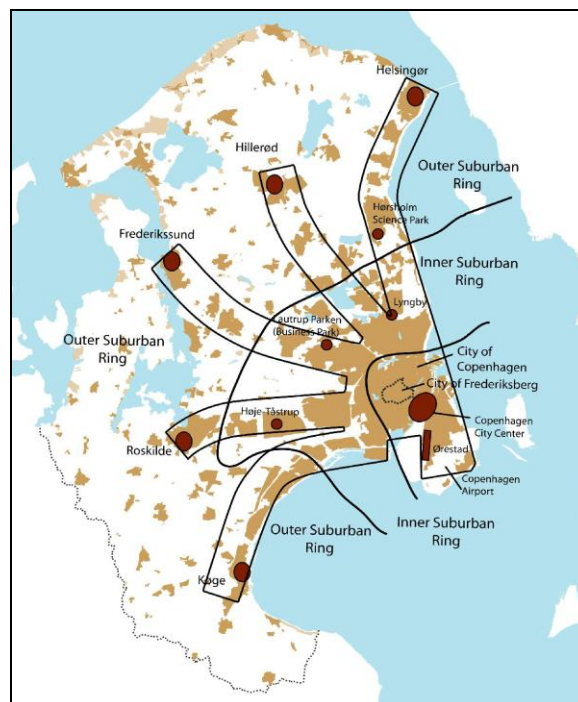
municipality of Frederiksberg, which is located within the city of Copenhagen, this adds up to 594 000 inhabitants, roughly twice as much as in Aarhus, the second largest Danish city. This definition, however, understates the importance of Copenhagen, since the functional metropolitan area of Copenhagen is considerably larger. The functional area is the area in which people live, work, shop and enjoy their leisure time, regardless of administrative (municipal) boundaries. According to the OECD methodology,⁵ this functional area of Copenhagen is demarcated as an area of 2.39 million inhabitants, and consists of the city of Copenhagen, the city of Frederiksberg and the five former counties surrounding them.⁶ This area represents 44% of the total Danish population. For the purposes of this Review, it will be considered the Copenhagen metropolitan region and the standard reference for international comparison, unless specified otherwise. This definition is in line with those of observers who consider the whole island of Sjaelland, on which Copenhagen is located, a fair estimate of the population base of the Copenhagen metropolitan region and its labour market (Nielsen and Hovgesen, 2005). Limitations in the availability of data sometimes necessitate the use of alternative definitions for benchmarking purposes. An alternative demarcation that corresponds to the administrative reality since 2007 is delineated by the boundaries of the Capital Region, with a population of 1.64 million; this area includes the city of Copenhagen and 28 neighbouring municipalities and the island of Bornholm (Table 1.1). The important role that the Capital Region plays in providing employment for the whole of Sjaelland can be illustrated by commuting flows. The net commuting flow from the Sjaelland region (consisting of Sjaelland with the exception of the Capital Region) into the Capital Region consisted of 66 200 people in 2007; this represents 19% of the Sjaelland workforce.⁷ Aarhus, the second-largest Danish city, had a population of 237 500 in 2008, with a total functional area estimated to have a population of around 530 000. In addition to these different definitions, with their respective boundaries, there is the area defined by the 1947 Finger Plan, whose demarcation transcends the boundaries of the current Capital Region, but does not extend to the whole functional area (Figure 1.5).

Table 1.1. Population shares of Copenhagen in 2008

	Population	Share of national population (%)
City of Copenhagen	510 000	9
Cities of Copenhagen and Frederiksberg	593 000	11
Capital Region	1 640 000	30
Copenhagen metropolitan region	2 390 000	44

Source: Based on data from Statistics Denmark. Population data for the Copenhagen metropolitan region refer to the situation in 2005.

Figure 1.5. Map of Copenhagen and the Finger Plan



Source: Østergård (2007).

A functionally integrated Øresund Region will bring benefits to Copenhagen, but this is not yet a reality. As a relatively small metropolitan area from the OECD perspective, Copenhagen may lack critical mass for some of the functions that could be crucial for it to remain competitive. Whereas other cities in the OECD can potentially engage in collaboration with neighbouring cities to create critical mass, Copenhagen is not sufficiently close to the other large Danish cities. It is, however, close to Malmö and Lund, which could potentially provide more critical mass. Despite the Øresund Link, metropolitan Copenhagen and Skåne do not yet form a functionally integrated metropolitan area. The travelling time from Copenhagen to Malmö has been reduced thanks to the Øresund Link, which has resulted in increased commuting flows between Copenhagen and Skåne. The net number of commuters from Skåne to the Capital Region in 2007 was 14 500; this represents around 0.65% of the regional labour force, a modest share compared to those from areas in Sjaelland and compared with other cross-border regions in Europe (see Section 1.4.1). The average number of travellers crossing the Øresund is, however, higher than the average number of travellers crossing the Great Belt.

Denmark is one of the finest examples in the OECD of a country with an evident hegemonic metropolitan area. Not only is Copenhagen the largest metropolitan area and the political capital, but it is also the dominant economic and cultural centre. This is true of several OECD countries, but different from such countries as the United States, Italy and Germany, where these functions are dispersed over several cities. Copenhagen is also larger than would have been predicted by a model of city size distribution that holds empirically for many countries. This model posits an inverse relationship between the size of a city and the number of cities that are this size. Denmark presents an exception to this empirically tested model: although the model holds well for medium-sized and small cities in Denmark, Copenhagen turns out to be larger than would have been predicted (Knudsen, 2001). The large population share of Copenhagen metropolitan region (44%) translates into an even higher share of national economic production: almost half of the national economy. Of the 78 metropolitan areas in the OECD that form part of the OECD Metropolitan Database (Figure 1.7), Copenhagen has the fourth-highest share in the national economy.⁸

Figure 1.6. Map of the Øresund Region

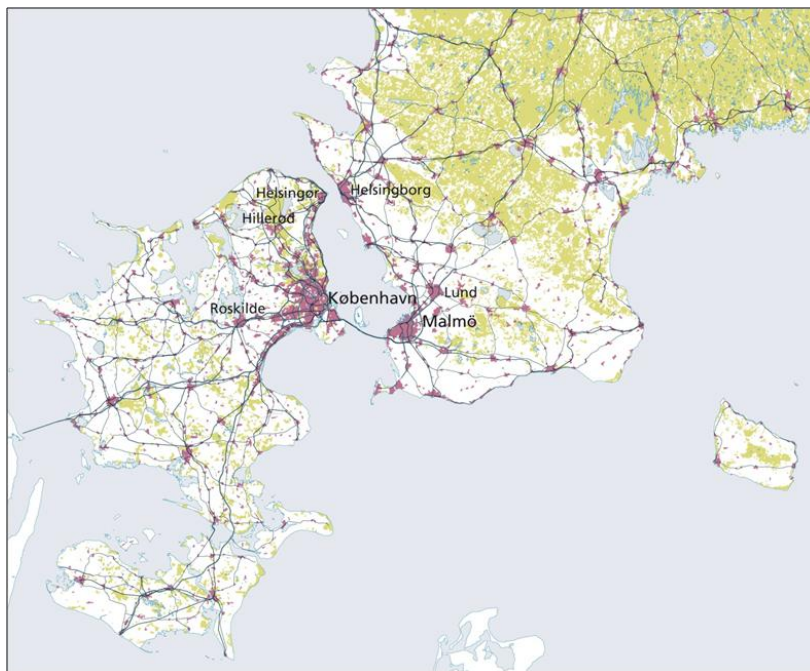
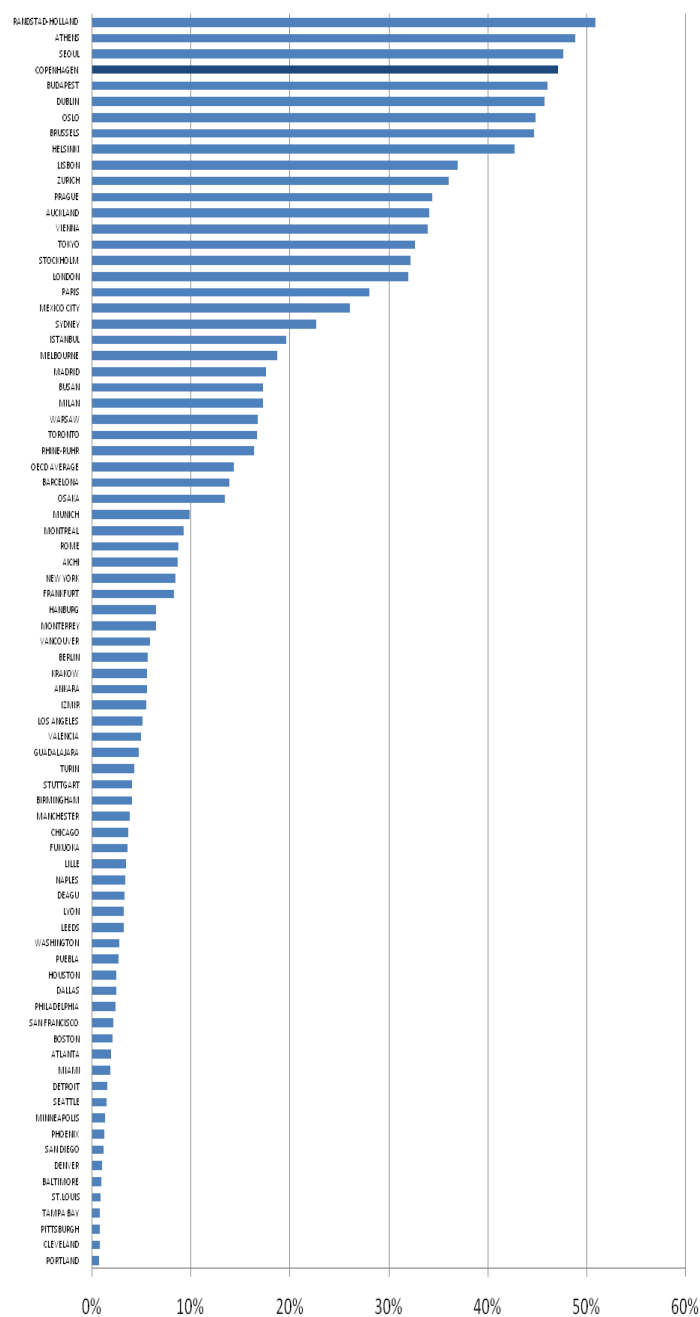


Figure 1.7. Regional GDP in % of its national GDP



Source: OECD Metropolitan Database.

An engine for national economic growth

Copenhagen not only generates more economic production per inhabitant than the rest of the country, but also per worker. GDP per capita in Copenhagen in 2004 was around 40% higher than the average GDP per capita in Denmark. Copenhagen is not the only region whose economic performance is above the national average. East Jutland, for example, has recently also shown relatively high growth, which is at least partly based on strong exports and innovation in high-tech industries. The impact of Copenhagen in many fields is, however, larger: it is the most highly educated, most innovative and most cosmopolitan region of Denmark. The Capital Region has 30% of the Danish population, but is home to 53% of all Danes with higher education. It is the place where 80% of all high tech-enterprises are located and where 85% of the foreign investment into Denmark takes place. The Capital Region has created 75% of the employment growth in Denmark over the last decade. Although larger employment growth in metropolitan areas is not unusual, this share is high from an international perspective. On average in the OECD countries, around half of employment growth occurs in 10% of the regions. In Denmark this percentage was 70% in the period 1998-2003. Only in Japan, Germany and Iceland was the employment growth, as generated by the best-performing regions, higher (OECD, 2007).

Copenhagen is by far the most internationally oriented region when it comes to scientific co-operation via co-patents. Copenhagen has far more foreign co-patents (83% of all Danish foreign co-patents) than its share of the national economy (49%) would suggest. This is a very high percentage when compared with similar cities in the OECD that also take up a large share of their national economy (Table 1.2). Mainland Denmark scores very low on this indicator: ranging from 7% in Mid-Jutland to 2% in North Jutland.

Table 1.2. **Dominance of selected OECD metropolitan areas in foreign co-patents (2004)**

	Foreign co-patent over-representation index	Share of total national co-patents with foreign countries (%)	Share of national economy (%)
Copenhagen	1.69	83	49
Oslo	1.68	62	37
Helsinki	1.48	62	42
Brussels	1.41	62	44
Dublin	1.08	52	48
Randstad	0.96	49	51

Source: OECD Secretariat's calculations on the basis of OECD Patent Database. Units of analysis are similar to those in the OECD Metropolitan Database.

Copenhagen plays a crucial role in Danish exports. The Capital Region accounts for 51% of all Danish exports. The average export rate of turnover in goods in 2005 was 24% in Denmark, 27% in the Capital Region and 33% in the city of Copenhagen (including Frederiksberg). Some economic sectors in the Capital Region have a particularly high export rate, particularly in agriculture, where in 2005, 39% of the turnover in Denmark came from the Capital Region, but 87% of the exports. Some distortion may be involved, owing to exports that were assigned to headquarters but not necessarily produced there. The numbers reflect Denmark's strong exporting position in agriculture, if not necessarily that of the Capital Region. This cannot, however, account for all the export over-representation in Copenhagen. Other strong exporting positions are found in transport and communication and in personal services, where the Capital Region takes up 90% of the total exports. The only sectors in which exports from the Capital Region are relatively under-represented are in wholesale and retail (Table 1.3).

Table 1.3. **Export over-representation of Copenhagen (Capital Region) in 2005**

	Export over-representation index	Share in Danish turnover (%)	Share in Danish exports (%)
Agriculture	2.21	39	87
Public and personal services	1.63	55	90
Finance and business services	1.25	61	77
Transport and communications	1.19	75	89
Manufacturing	1.04	29	31
Construction	1.03	36	37
Wholesale and retail	0.96	44	42
Total	1.10	46	51

Source: OECD Secretariat's calculations based on data of Statistics Denmark.

Spill-overs to the rest of Denmark

The strong position of Copenhagen has important ramifications in the rest of the country. This is not self-evident: many city-regions in the OECD are doing well without necessarily benefiting the rest of the country. These benefits can flow both via economic linkages and via scientific co-operation.⁹

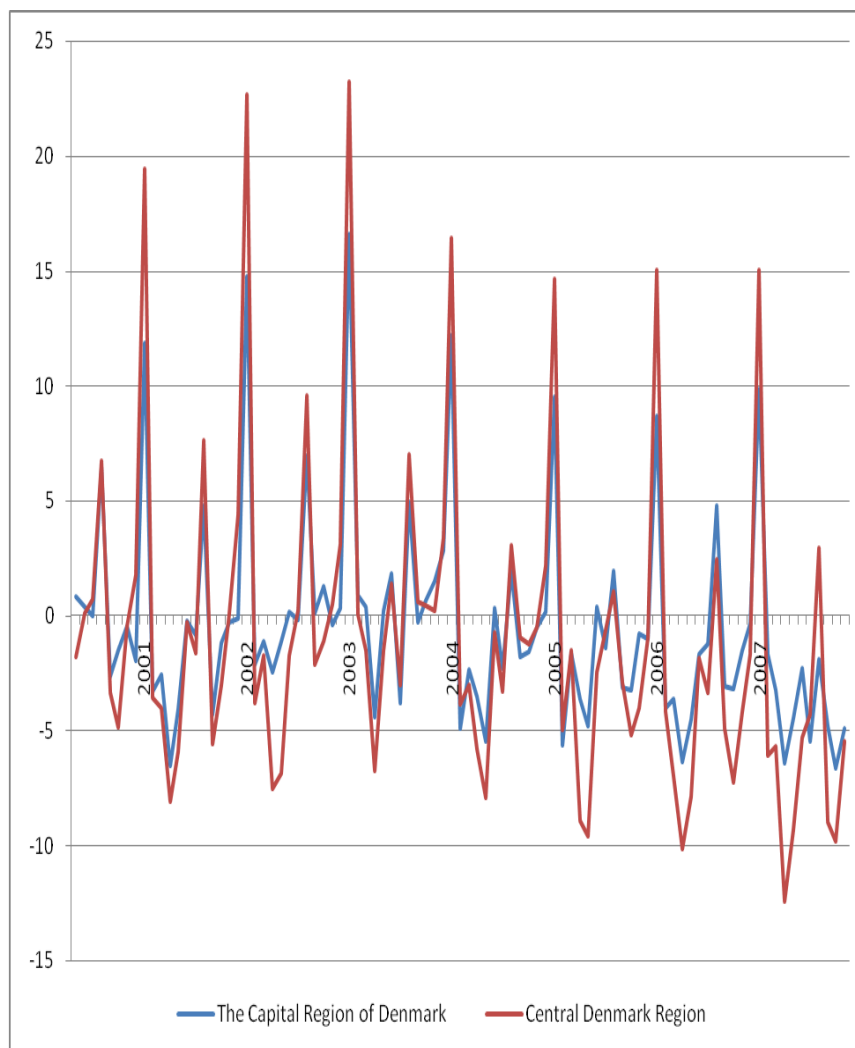
i) Economic linkages. There are strong economic linkages between regions in Denmark. For every 100 jobs created in Copenhagen via direct

investment from abroad, 20 jobs are indirectly created elsewhere in Denmark, whereas for every 100 jobs created in the rest of Denmark indirectly 7 jobs are created in Copenhagen (Copenhagen Economics, 2004).¹⁰ Another study has measured what the regional impact would be of the abolition of tolls on the Great Belt bridge, which links Sjaelland to the island of Fyn and to mainland Denmark. This study gives an indication of the regional economic linkages between Sjaelland and the rest of Denmark (Madsen and Jensen-Butler, 2004). The result of the zero-toll on the bridge would have positive impacts on price, demand and income not only in Copenhagen, West Sjaelland and Fyn, but also in Southern Jutland and West Jutland, indicating how interrelated these economies are.

A comparison of the business cycles of Copenhagen and other Danish regions also suggests that they are strongly integrated. The monthly fluctuations in unemployment in the Capital Region and other regions in Denmark, such as Central Jutland, show a remarkable similarity (Figure 1.8). Two regions could of course theoretically have exactly the same sector structure without their economies being integrated, but considering the difference in economic specialisations between Copenhagen and other regions, differently timed changes in monthly employment rates would have been expected. This is however not the case; the similar movements in these rates indicate that both economies are largely integrated and interdependent. A similar interdependency is seen in other business cycle indicators, for example, bankruptcy rates. Analysis of the development of annual GDP growth shows that the Capital Region is acting as a regional engine of growth: in the periods where the business cycle turns from one phase into another (1999-2000 and 2002-03), the national cycle lags behind Copenhagen's, indicating a close correlation between the impact that the cascading effects of changes in business cycles in Copenhagen have on the rest of the country (Figure 1.9).

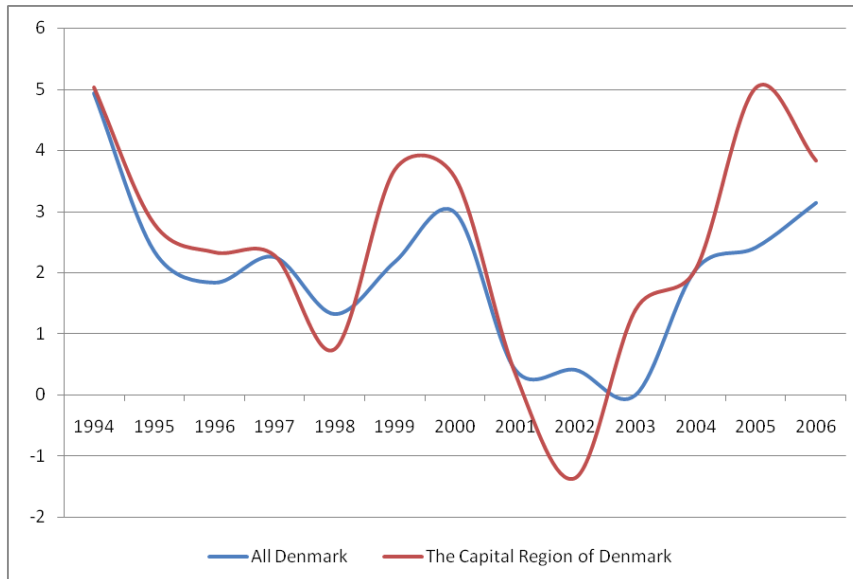
Analysis of the spillovers from sectors, such as tourism, shows that Copenhagen's economy has a wider regional impact. Copenhagen has a large share of tourism revenue, but its effects on the city economy are relatively limited when compared to the local economic impacts that tourism elsewhere in Denmark has. This can be explained by the regional spillovers from tourism to Copenhagen; more than half of the employment connected to tourism is in-commuters, and only 83% of the local private consumption generated by tourism has been shopped for in Copenhagen; so there are commuting and shopping leakages to a wider regional area (Zhang *et al.*, 2007).

Figure 1.8. Monthly unemployment mutations 2000-07



Source: OECD Secretariat's calculations based on data of Statistics Denmark.

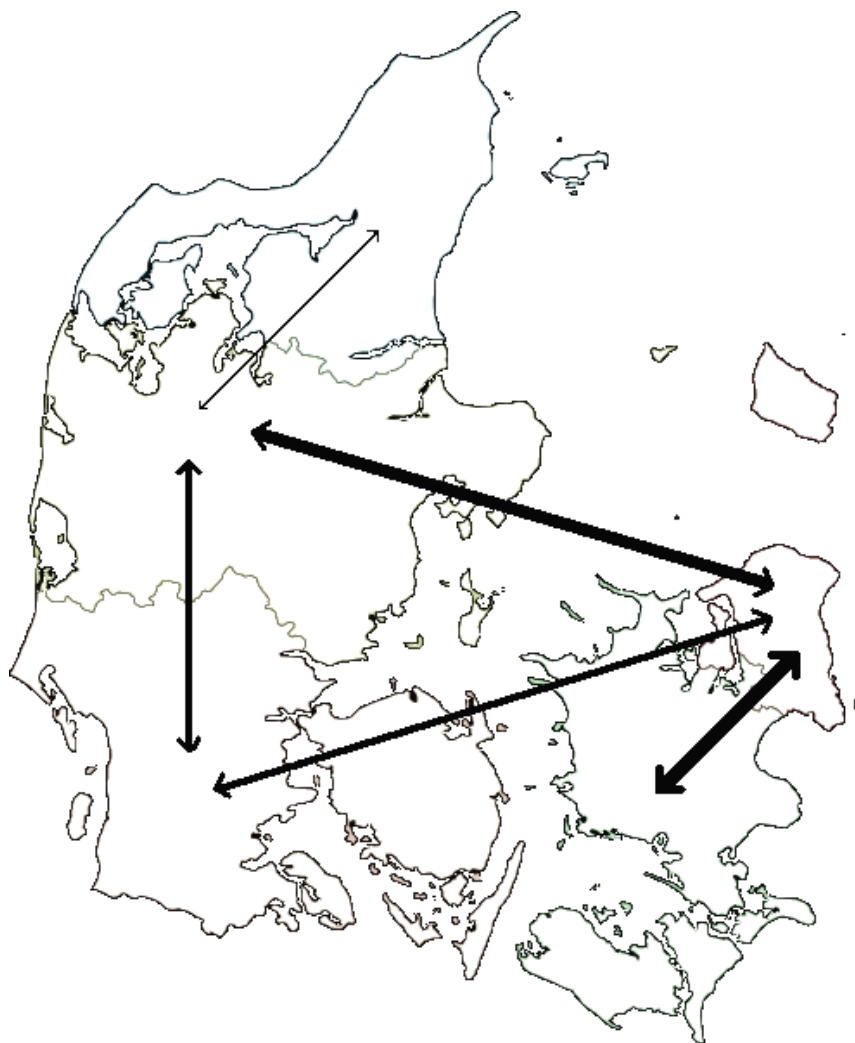
Figure 1.9. Annual GDP growth in Copenhagen (Capital Region) and Denmark



Source: OECD Secretariat's calculations based on data of Statistics Denmark.

ii) Knowledge linkages. There are strong inter-regional links in Denmark via scientific co-operation. This becomes apparent when looking at linkages via co-patents (Figure 1.10). These links illustrate that the Capital Region is strongly linked to the whole of Sjaelland, as well as to mainland Denmark. Institutes in the Capital Region had in 2004 68 co-patents with those in mainland Denmark, as compared to 47 with those in the Sjaelland Region, which only has one university (Roskilde University). The most important links with mainland Denmark are with Mid Jutland, the least important with North Jutland. The Capital Region is as important for Southern Denmark as is its neighbouring region Mid-Jutland.

Figure 1.10. Co-patents between regions in Denmark (2004)



Source: OECD Secretariat's calculations on the basis of OECD Patent Database. The thickness of the arrows represents proportionally the extent of scientific co-operation via co-patents between regions in Denmark.

1.2 Profile of Copenhagen's economy

Copenhagen has a diversified, open and service-based economy. Copenhagen has relatively high import and export shares, and its economy is diversified in several sectors, most of which have relatively stable markets that are moderately exposed to risks of global price fluctuations. Several of its strong sectors use relatively few highly technological inputs. Manufacturing has decreased over the last decades as important source of value added, especially in Copenhagen. Among cities in Europe, Copenhagen has now the lowest employment share in manufacturing (13%) and the largest employment share in the services sector (86%).

Sectors in the Capital Region with large employment shares are business services (17% of regional employment), wholesale/retail (15.8%) and several public services (13.2% in social institutions, 8.5% in education and 8.2% in public administration). Most value added per worker is generated in smaller economic sectors such as finance and transport, which have also shown the highest growth rates in value added over the last decade (together with the wholesale sector) (Table 1.4). As compared with the Capital Region, the city of Copenhagen has a higher employment share in business services, public administration and culture, and a lower share in wholesale and social institutions. Many people in Copenhagen work in small and medium-sized enterprises. Denmark has a large number of small and medium-sized companies. In the manufacturing and services sectors in 2005, small enterprises (with less than 50 employees) accounted for 97% of the total number of firms. Denmark has relatively fewer micro firms (between 1-9 employees) and a relatively high share of medium-sized enterprises (50-249 employees). Firm size in Copenhagen as compared to Denmark as a whole is roughly similar. Copenhagen has however a moderate number of large multinationals, as compared with several other cities in the OECD. Two of the Fortune Global 500-firms in 2008 were located in Copenhagen: the logistics firm Møller-Maersk and the financial institution Danske Bank Group. This number is smaller than in several similar-sized cities such as Zurich, Munich, Brussels, Amsterdam and Stockholm.

Table 1.4. Employment and value-added of main economic sectors in the Capital Region (2005)

	Employment share (%)	Share of regional value added (%)	Value added per worker	Growth in value added 1995-2005 (%)
Business services	17.0	14.1	405	-7.8
Wholesale/retail	15.8	19.7	607	25.9
Social institutions	13.2	5.8	215	-6.0
Education	8.5	5.5	315	13.0
Public administration	8.2	7.9	472	19.5
Culture	8.0	6.1	374	-7.5
Health	6.9	4.6	324	6.4
Transport	6.1	11.4	916	83.9
Finance and insurance	5.3	11.1	1022	68.7

Source: Based on data from Statistics Denmark

As compared to Denmark, Copenhagen features the highest degree of regional specialisation in Denmark. However, Denmark as a whole has a low degree of regional economic specialisation when compared to other OECD countries. In 2003, the score for economic specialisation in Denmark was 0.21, against 0.31 for the total of OECD countries and 0.62 for Korea, which showed the highest degree of regional specialisation for all regions of the country. Copenhagen is relatively more specialised in financial services and business services than the rest of Denmark. On some of the largest economic sectors, such as wholesale, public administration and health, the level of specialisation is similar in all regions in Denmark. The sectoral specialisation of Copenhagen in regard to the rest of the country is not substantially different from other urban areas in the OECD (Table 1.5). When Copenhagen is compared with those metropolitan areas that (like Copenhagen) also have the highest rate of specialisation in their country, it appears that most metropolitan areas have an overrepresentation of financial services, business services and transport and communication. In comparison with these metropolitan areas, Copenhagen stands out in that its underrepresentation in agriculture and mining is less extreme than in other metropolitan areas,¹¹ and relatively less specialised in financial and business services and transport.

Table 1.5. Economic specialisation indexes of selected OECD metropolitan areas by comparison with their national average in 2005 (a value of 1.00 represents the national average)

	Agri- culture	Mining	Manu- facture	Energy	Con- struc- tion	Whole- sale	Hotels Restau- rants	Trans- port	Finan- cial ser- vices	Comm- ercial ser- vices	Public admini- stration	Health
Copenhagen	0.21	0.46	0.63	1.01	0.87	1.05	1.14	1.20	1.58	1.47	1.02	1.01
Vienna	0.05	0.07	0.57	1.15	0.88	1.11	0.87	1.30	1.72	1.82	1.19	1.33
Brussels	0.04	0.20	0.44	1.42	0.52	0.92	1.17	1.30	3.25	1.21	0.98	0.83
Prague	0.53	0.18	0.63	0.95	1.01	1.10	1.09	1.28	1.63	1.66	1.13	0.96
Athens	0.08	0.10	1.07	0.85	1.04	1.15	0.72	1.28	1.50	1.46	1.09	0.97
Oslo	0.02	0.24	0.62	0.46	0.73	1.16	1.05	1.21	1.67	1.66	0.91	0.91
Lisbon	0.11	0.22	0.56	1.23	0.90	1.14	1.11	1.56	1.94	2.14	1.54	1.10
Paris	0.10	0.43	0.65	1.09	0.74	0.95	1.26	1.30	1.79	1.56	0.99	0.85
Budapest	0.27	0.42	0.72	0.57	1.03	1.16	0.99	1.22	1.47	1.74	0.95	0.93
Seoul	0.54	0.67	2.30	1.85	2.22	2.43	2.17	2.38	2.48	3.12	1.95	2.12
Madrid	0.09	0.39	0.67	1.14	0.89	0.96	0.88	1.40	1.52	1.61	1.31	0.98
London	0.12	0.25	0.48	0.42	0.73	0.85	1.04	1.29	1.95	1.60	0.78	0.76

Source: OECD Secretariat's calculations based on data from OECD Metropolitan Database, using functional metropolitan areas. Inclusion of metropolitan areas based on data availability.

Biotechnology is one of the leading economic sectors in Copenhagen. It is one of the economic sectors that appears systematically in studies that have been written about clusters in the Copenhagen metropolitan region.¹² Despite the heterogeneity of these studies, they present a fairly consistent picture of economic specialisations of Copenhagen (Table 1.6). Although some of the methods are more reliable than others, and although one needs to be careful to interpret similarities between different studies based on interviews with (probably the same) experts as confirmation of earlier findings, there seem to be common elements in all the studies. A complex of specialisations and sub-specialisations is mentioned that are connected to health and life sciences: pharmaceuticals, medical equipment and biotechnology. In addition to that, there are several creative sub-sectors that seem to represent specialisations, such as film, architecture and gaming. Other specialisations that are mentioned several times but not consistently are tourism, IT services, logistics, food and technological niches.

Table 1.6. Overview of studies on clusters in Copenhagen (Capital Region)

Study by:	Number of Danish clusters	Number of Copenhagen clusters	Copenhagen clusters	Definition of cluster	Methodology in selection of clusters
Ministry for Trade and Industry (2001)	29	6	Business tourism Health care Film/TV Food PR/Communication Pervasive Computing	Self-definition	Interviews with 75 experts
Ministry for Trade and Industry (2002)	16	6	Pharmaceuticals Pharma-trade Architecture/engineering Film/Video Medical equipment Electronic equipment	343 ISIC-branches	The 343 branches are ranked according to an agglomeration index and an economic performance index. The 17 branches with highest scores on performance- and agglomeration index were selected.
Oxford Research (2003)	n.a.	18	PR/Communication Imaging/vision/3D Venture capital E-learning Film/TV Bioinformatics Optical communication Plastic production Sensor technology Nano technology Aerospace Design/Architecture Wireless communication Bio-medical Hearing aids Logistics/air transport Diabetes Business tourism	Statistical analysis and self-definition	Interviews with experts to come to 94 clusters; reduced to 18 clusters via 6 filters
Copenhagen Economic s (2006)	26	11	Pharmaceuticals Film/TV IT services Medical Chemicals Business services Publishing IT Software Knowledge service Telecommunication Tourism	Statistical analysis and self-definition	200 globally oriented businesses clustered to 26 on the basis of common characteristics

Study by:	Number of Danish clusters	Number of Copenhagen clusters	Copenhagen clusters	Definition of cluster	Methodology in selection of clusters
FORA (2008)	n.a.	13	ICT Financial services Construction Business Services Entertainment and Leisure Life Science Transportation and Logistics Processed Food Mechatronics Fashion and Design Power and Energy Plastics Chemical Products	Not specified	Not specified

Denmark has a strong export position in several economic sectors, most of them not in knowledge-intensive sectors. Although Denmark ranks as the world's 27th largest economy, it ranks high with regards to export in several sectors. Strong exporting sectors of Copenhagen are: transport and logistics, business services, agricultural products, processed food, biopharmaceuticals, production technology and medical devices (see Table 1.7).¹³ Economic specialisations in which many people are employed but in which Copenhagen has a relatively weak exporting position are tourism, IT, entertainment and publishing. Copenhagen's strong exporting sectors correspond with the relatively low exports in knowledge-intensive sectors. Reflecting the lower importance of technology-intensive industries in Denmark, exports of high and medium-high technology manufactured goods are smaller in Denmark compared to the OECD average. In 2005, high and medium-high technology intensive industries represented 45% of Denmark's total exports of manufactured goods and primary products, which is lower than the OECD average (65%). High technology only represents a small surplus in Denmark, while it shows a comparative disadvantage in the export of medium technology goods. Although process innovation and non-technological innovation form part of the strong exporting performance of Copenhagen firms, its relative underrepresentation in knowledge-intensive sectors might pose a challenge to its long-term competitiveness. Given the impact of the global financial turmoil and tighter credit conditions, exports are projected to be weak during 2009, and leading businesses are expected to cut back investment.

The cities similar to Copenhagen with many strong exporting sectors are the main cities in Europe that compete for scarce talented employees and

capital. As Table 1.7 shows, the main competitors of Copenhagen are Milan, Lyon, Randstad, Paris and Barcelona. Cities that to a lesser extent compete with Copenhagen are London, Stockholm, Vienna, Antwerp and Seville. In the smaller exporting sectors such as production technology and medical devices, Copenhagen is in competition with Stuttgart, Frankfurt and Karlsruhe.

Table 1.7. **Main exporting sectors in Copenhagen**

Sector	National rank in world export	Main competing cities in Europe	Export value
Transportation and logistics	10	Athens, Bergen, London, Paris, Randstad, Vienna, Hamburg, Lyon, Marseilles, Gdansk, Seville, Oslo	17 089
Business services	15	London, Oxford, Manchester, Randstad, Stockholm, Milan, Madrid, Birmingham, Vienna	13 562
Agricultural products	14	Randstad, Seville, Barcelona, Valencia, Eastern Netherlands, Southern Netherlands, Warsaw	8 288
Processed food	10	Randstad, Antwerp, Lyon, Rennes, Nantes, Milan, Barcelona, Regensburg, Paris	5 954
Biopharmaceuticals	12	Basel, Paris, Rome, Frankfurt, Milan, Barcelona, Lyon, Antwerp, Berlin, Stockholm, Milan, Stuttgart, Bologna, Venice, Tubingen,	6 559
Production technology	18	Karlsruhe, Dusseldorf, Turin, Munich, Frankfurt, Bern	4 220
Medical devices	15	Freiburg, Paris, Lyon, Karlsruhe, Tubingen, Bern, Zurich, Munich, Frankfurt, Stuttgart	2 097

Source: Secretariats analysis on the basis of data from Harvard International Competitive Cluster Project and European Cluster Observatory

Biotechnology is one of the knowledge-intensive sectors in which Copenhagen is internationally competitive. Copenhagen's position reflects well on Denmark's scores in biotech indicators, for example with regards to the product pipeline of public bioscience companies, in which it scores sixth in the world. The regional biotechnology cluster in Lund/Medicon Valley, part of which is located in Copenhagen, scored high on the number of dedicated biotechnology firms and on life scientists working in the region in 2000, but less well on venture capital available for biotechnology: at least eleven cities scored better on this – even though Danish venture capital is intensively concentrated on life science business, biotech and pharmaceuticals, which receive almost half of Danish venture capital investment (Valentin *et al.*, 2008).

International orientation of businesses in Copenhagen

Copenhagen does not rank as one of the world's "global cities". A considerable amount of academic papers have been devoted to determining

the most global cities of the world. Underlying this research is the notion that globalisation and economic restructuring have led to specialisation of economic functions, and that certain cities have managed to dominate global economic activity in certain sectors. A classic example is the finance sector, in which London, New York and Tokyo have become the prime global cities (Sassen, 1991). Although these analyses do not assess urban competitiveness *per se*, the global position of a city has economic relevance: global cities concentrate the activities in places where the highest value added is generated and more easily attract highly skilled foreign workers. Methods that have been used to rank global cities include the presence of the largest global firms for advanced services and their different regional offices over the different cities in the world. Copenhagen is not one of the key global cities: neither in the first tier, of London and New York, nor in the second, which include Frankfurt and Paris, nor the third tier, which includes Amsterdam, Brussels and Zurich. Copenhagen in this world city network has been described as an important “outer” European city (Taylor and Derudder, 2004). Copenhagen ranks as the 47th most globally connected city, far behind Amsterdam, Stockholm and Dublin, but before Hamburg and Munich.¹⁴

Businesses in Copenhagen are less internationally oriented than in several other metropolitan areas in the OECD. A study of Nordic cities shows that internationally oriented industries in Copenhagen account for a slightly lower share of employment than in Stockholm, Helsinki, Oslo and Hamburg (FORA 2008). Another indication of internationally strong specialisations can also be acquired from the presence of offices of global services firms. In a ranking of the top 50 cities that have global services firms with most international offices, Copenhagen scores 47th. In the finance and law sectors, Copenhagen is not even in the top 50. It does, however, rank in accounting (24th) and advertising (13th).

Table 1.8. Presence of offices of international advanced services firms in selected OECD metropolitan regions

Rank	Total	Accounting	Advertising	Finance	Law
1	New York	London	London	London	New York
2	London	Dusseldorf	New York	New York	Washington, DC
3	Paris	New York	Brussels	Hong Kong	London
4	Hong Kong	Paris	Madrid	Singapore	Los Angeles
5	Tokyo	Tokyo	Sydney	Tokyo	Paris
6	Los Angeles	Toronto	Toronto	Frankfurt	San Francisco
7	Singapore	Chicago	Milan	Paris	Hong Kong
8	Frankfurt	Milan	Paris	Zurich	Brussels
9	Milan	Sydney	Los Angeles	Sydney	Moscow

Rank	Total	Accounting	Advertising	Finance	Law
10	Sydney	Washington, DC	Singapore	Madrid	Tokyo
11	Brussels	Atlanta	Stockholm	Milan	Chicago
12	San Francisco	Brussels	Amsterdam	Taipei	Warsaw
13	Washington, DC	Frankfurt	Copenhagen	Mexico City	Frankfurt
14	Madrid	San Francisco	Istanbul	Seoul	Singapore
15	Toronto	Amsterdam	Dusseldorf	Sao Paulo	Miami
16	Zurich	Dallas	Melbourne	Buenos Aires	Milan
17	Moscow	Hamburg	Prague	Jakarta	Bangkok
18	Mexico City	Hong Kong	Sao Paulo	Kuala Lumpur	Budapest
19	Chicago	Johannesburg	Zurich	Los Angeles	Dallas
20	Sao Paulo	Los Angeles	Barcelona	Moscow	Prague
21	Taipei	Montreal	Hong Kong	San Francisco	Beijing
22	Bangkok	Berlin	Bangkok	Toronto	Madrid
23	Amsterdam	Boston	Budapest	Bangkok	Sydney
24	Jakarta	Copenhagen	Frankfurt	Geneva	Barcelona
25	Melbourne	Madrid	Mexico City	Manila	Boston
26	Prague	Melbourne	Montreal	Shanghai	Houston
27	Seoul	Mexico City	Beijing	Chicago	Mexico City
28	Warsaw	Munich	Caracas	Johannesburg	Rome
29	Buenos Aires	Osaka	Jakarta	Melbourne	Stockholm
30	Barcelona	Seoul	Manila	Prague	Taipei
31	Budapest	Stockholm	San Francisco	Santiago	Amsterdam
32	Dusseldorf	Zurich	Santiago	Barcelona	Istanbul
33	Miami	Jakarta	Seoul	Caracas	Jakarta
34	Santiago	Rome	Taipei	Amsterdam	Sao Paulo
35	Beijing	Sao Paulo	Tokyo	Beijing	Atlanta
36	Johannesburg	Santiago	Warsaw	Brussels	Berlin
37	Kuala Lumpur	Houston	Buenos Aires	Houston	Buenos Aires
38	Stockholm	Kuala Lumpur	Hamburg	Warsaw	Caracas
39	Manila	Moscow	Johannesburg	Budapest	Geneva
40	Caracas	Singapore	Kuala Lumpur	Miami	Manila
41	Istanbul	Taipei	Miami	Istanbul	Melbourne
42	Dallas	Bangkok	Moscow	Montreal	Minneapolis
43	Montreal	Buenos Aires	Shanghai	Munich	Santiago
44	Geneva	Caracas	Chicago	Rome	Toronto
45	Shanghai	Geneva	Boston	Boston	Zurich
46	Boston	Miami	Dallas	Dusseldorf	Dusseldorf
47	Copenhagen	Minneapolis	Geneva	Osaka	Johannesburg
48	Hamburg	Barcelona	Minneapolis	Dallas	Munich
49	Houston	Beijing	Munich	Hamburg	Shanghai
50	Rome	Budapest	Rome	Washington, DC	

Source: Data from Globalisation and World Cities Research Network, Department of Geography, Loughborough University, www.lboro.ac.uk/gawc/.

Several cities of comparable size can claim to be considerably more global. Metropolitan areas need not necessarily be large to have a strong global presence, as is illustrated in the case of Brussels, Amsterdam, Zurich, Geneva and Dusseldorf. Not only do they have a more global presence in general, they also have more sectors in which they are more global: all of them rank in the top 50 in all four sectors that were studied; Copenhagen only in two. Other northwest European cities, in addition to Amsterdam, that appear more global than Copenhagen, are Stockholm and Hamburg, which both appear in the top 50 of three sectors. What is more, these competitor cities not only have more sectors in which they are global, they also are more global in the sectors in which Copenhagen is most global: Amsterdam and Hamburg score higher in global accounting; and Stockholm and Amsterdam score higher on global advertisement. This is of relevance for the attraction of foreign investment and highly skilled labour, as will be shown below. Business activities of global services firm also provide important links with other global cities. When a client contacts a professional services firm in Copenhagen, there is an 87% probability that the firm has an office in London, as well as New York, Toronto, Sydney, Milan, Stockholm, Madrid and Paris. The highest probability that a firm in a foreign city would also have an office in Copenhagen is in Stockholm (61%), followed by Hamburg, Atlanta, Dusseldorf, Minneapolis, Amsterdam and Barcelona.¹⁵ These economic relations between global services firms suggest that there are important economic links between Copenhagen and these cities.

There are indications that business in Copenhagen has become less internationally oriented over the last decades, by comparison with other metropolitan areas in the OECD. When looking at links between global advanced producer firms, some observers conclude that Copenhagen lost global economic standing over the period from 2000-04 (Taylor and Aranya, 2007). This relative loss in its international position is particularly clear in certain economic sectors: global competition has had a severe impact on Denmark's finance industry. International finance has undergone extreme specialisation: the functions that generally generate the highest value added have become increasingly concentrated in the past few decades in a top tier of cities, leaving the other functions to lower-tier cities. Intensified competition and industrial development among middle- to lower-tier cities resulted in greater spatial differentiation, marginalising some cities. In 1980, only three vertical tiers of cities can be identified in the world of international finance. This has increased to seven tiers by 1998. Copenhagen, which formed part of the third tier in 1980, had fallen back to the sixth tier by 1998. Amsterdam, Luxembourg, Milan and Paris, which were in the third tier in 1980, managed to remain in this tier (Poon, 2003).

Potential of a more integrated Øresund economy

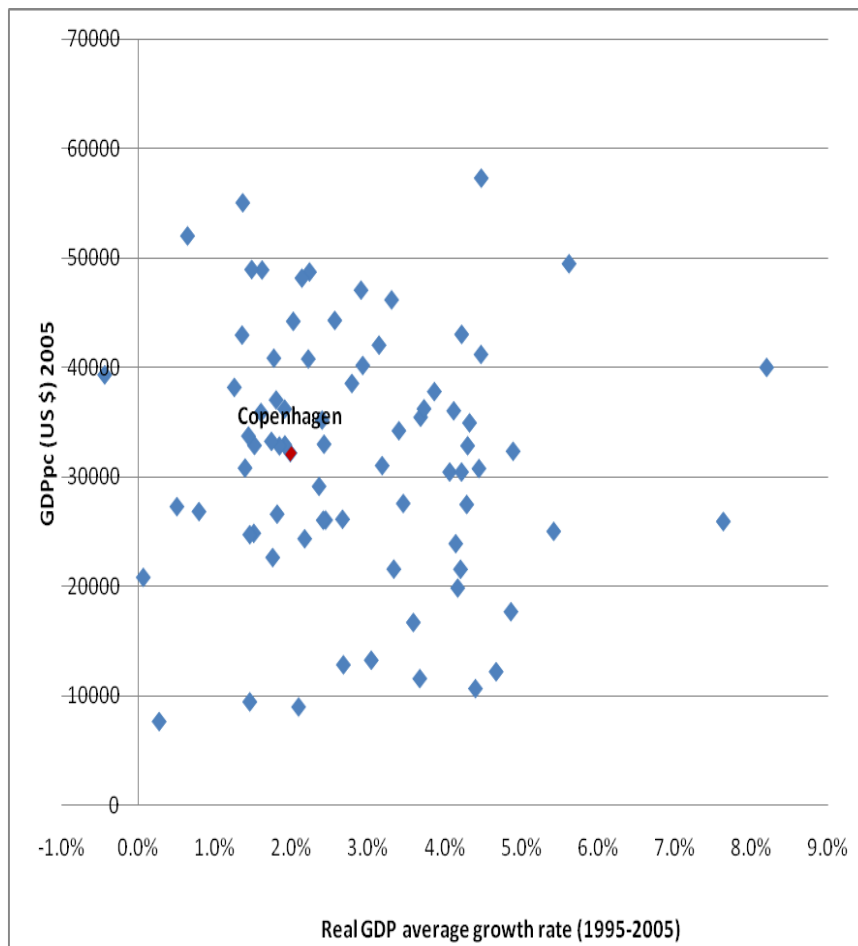
The creation of the cross-border Øresund area has been described both as a gigantic social experiment (Maskell and Törnqvist, 1999) and as an interesting bench test for regional integration within the European Union (OECD, 2003). There is little precedent for a merger of two regions, and the embeddedness of the two regions in their national institutional arrangements makes it difficult to predict whether integration into one functional region is feasible, and how quickly it can be accomplished. A clear increase in cross-border commuting in the Øresund Region has run parallel to university co-operation in the Øresund University, which has received both attention (OECD, 2003, and OECD/IMHE, 2006) and acclaim (as expressed in a recent RegioStar EU award to the Øresund Science Region). Within the Øresund Region, a considerable overlap of economic and public functions offers the potential for economies of scale and specialisation. A more functionally integrated Øresund Region could also provide the critical size that is needed for certain urban amenities and knowledge spillovers that could attract international business.

1.3 The performance of Copenhagen

Copenhagen scores reasonably well on many economic indicators...

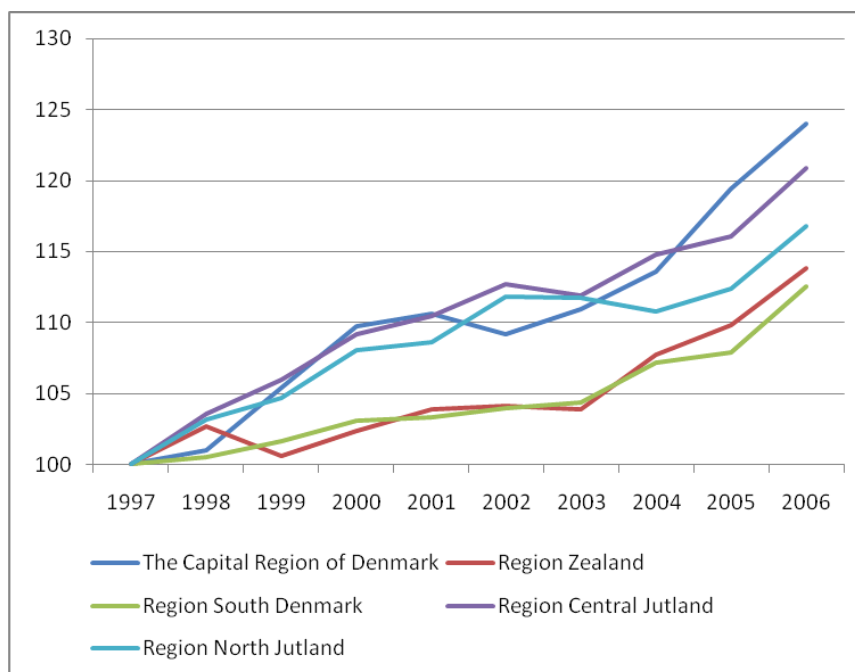
Copenhagen has average regional GDP per capita and moderate annual growth rates. The average GDP per capita in Copenhagen in 2005 was US\$ 32 200, considerably lower than several US metropolitan areas, but reasonably high compared to other European metropolitan areas, even though several of them had higher GDP levels, such as Stockholm, Dublin, Paris and Vienna. The real annual growth rate over 1995-2005 has been moderate in Copenhagen (2.0%), considerably lower than those of several cities with similar or higher levels of GDP per capita (Figure 1.11), such as Dublin (8.2%), Stockholm (4.5%), Houston (5.6%) and Washington DC (4.5%). Within Denmark, Copenhagen has experienced the highest growth rate: over 1997-2006, Copenhagen's average annual growth rate was around twice as high as the slowest-growing region in Denmark. Regional disparities between the Capital Region and other areas has gradually increased since 2004, although the differences in growth rates between the Capital Region and regions such as Central and North Jutland were limited from 1997-2006 (Figure 1.12).

Figure 1.11. **Regional GDP (2005) and average real annual growth in GDP in OECD metropolitan areas (1995-2005)**



Source: Data from OECD Metropolitan Database

Figure 1.12. Economic growth in Danish regions (1997-2006; index=100)



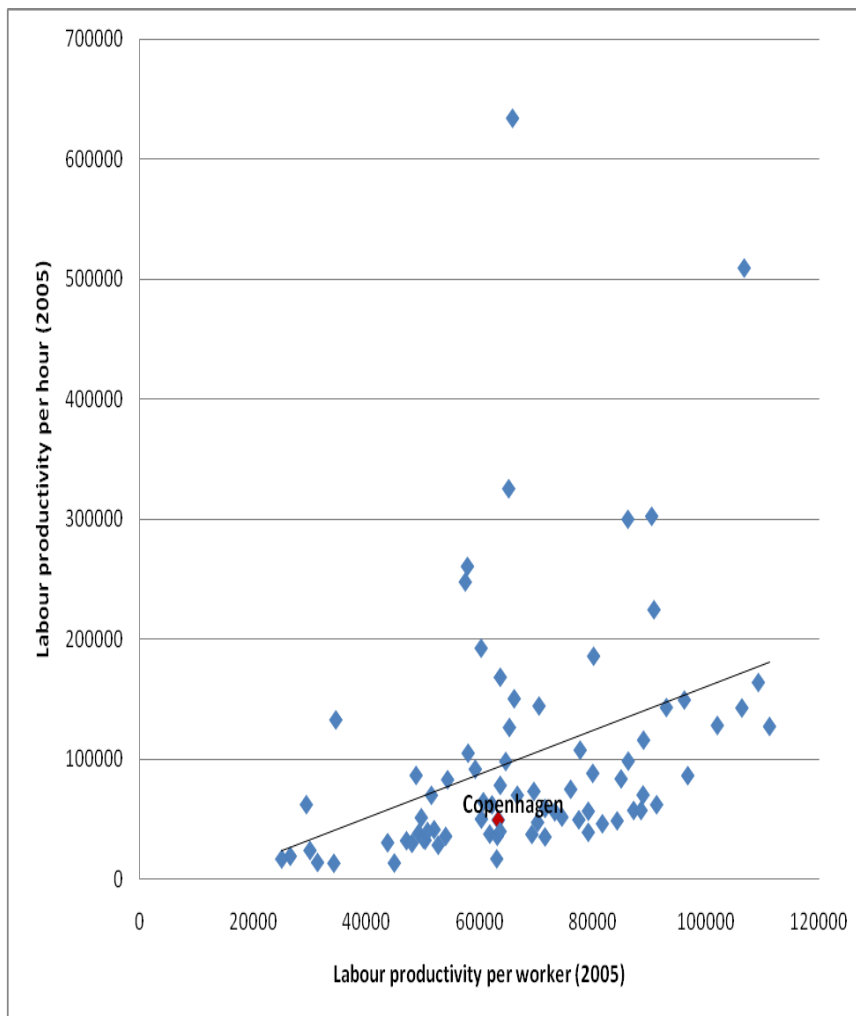
Source: Statistics Denmark

As Copenhagen has a relatively high cost of living, its position may be overestimated. Comparing the economic income produced in cities in the OECD is more complicated than for countries, because purchasing power differs by city. Comparing cities by using national purchasing power parity (PPP) indicators could thus overestimate the income of cities with relatively high costs of living. When regional GDP per capita is corrected for regional cost of living (as expressed in comparative studies on costs for expats, as conducted by Mercer Consulting), Copenhagen's relative position rates slightly lower. Copenhagen shares this characteristic with other expensive cities such as Oslo, New York and London.

In terms of labour productivity, Copenhagen scores reasonably well, both on productivity per worker and per hour, as compared to other metropolitan areas in the OECD. Several metropolitan areas, for example, Paris, Munich, Lyon, Vienna and Stockholm, are, however, doing better (Figure 1.13). Copenhagen rates highly on other labour market indicators. It has a high participation rate, of around 77%, it has high job turnover, and it has low unemployment (5% in 2007). Labour market performance in the

Capital Region is similar to the average in Denmark, but the city of Copenhagen scores slightly less well, with somewhat lower participation rates and higher unemployment rates. As Denmark enters the inevitable period of economic slowdown, it faces severe capacity pressures and wages rising much faster than warranted by productivity growth.

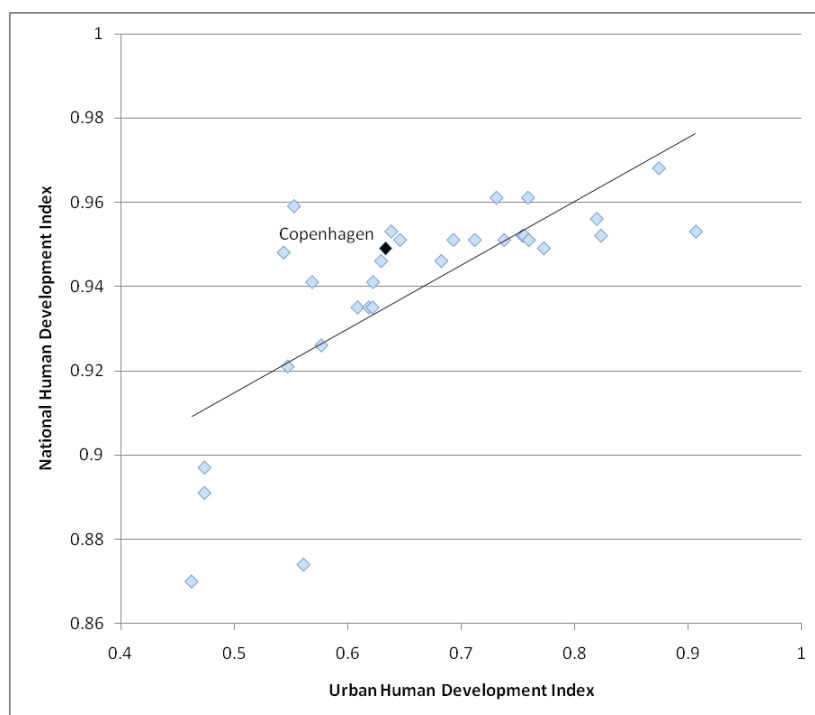
Figure 1.13. **Regional labour productivity in OECD metropolitan areas (2005)**



Source: Secretariat calculations on the basis of OECD Metropolitan Database

If a broader definition of economic performance is used, Copenhagen scores slightly less well. On the basis of similar criteria as the Human Development Index, an Urban Development Index could be constructed to measure well-being in OECD metropolitan areas, using regional GDP, higher education attainment and age-adjusted mortality rate. Copenhagen scores average on this aggregate index, mainly due to relatively average scores on higher education attainment and age-adjusted mortality rates (Figure 1.14). The relative average performance of Copenhagen is mirrored by the relative average performance of Denmark, at least when compared with its Western European peers, on the United Nations Human Development Index, where it ranks 14th (UN, 2007).

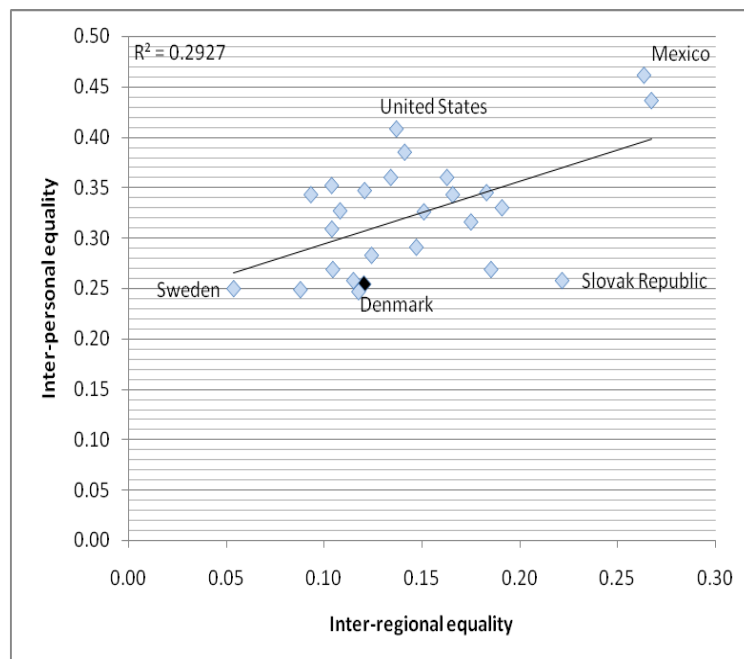
Figure 1.14 Urban development index of selected OECD metropolitan areas



Source: OECD Secretariat's calculations on the basis of data from OECD Regional Database and UNDP 2007. Three indicators were combined: regional GDP per capita, age-adjusted mortality rate and higher education attainment. These values were expressed using a methodology similar to the one used in UNDP's Human Development Reports. Data for 2005 were used.

The economic performance of Copenhagen, good overall, does not appear to come at the expense of interregional inequality. Denmark is one of the countries where GDP is most evenly distributed, and the variation in GDP growth rates across regions in Denmark is limited. Many OECD countries have larger regional growth disparities. Regional differences in labour productivity in Denmark are the lowest of all OECD countries, together with those of Sweden. Regional disparities in unemployment rates in Denmark are lower than the OECD average, and the range in labour force participation rates across regions is very small. Together with countries such as Japan and Sweden, Denmark belongs to a group of countries that have low interregional and low income inequality. These two forms of inequality are not necessarily related (Figure 1.15). In some countries, income inequalities are small, but differences in regional GDP are large; this appears to be the case in the Slovak Republic. In other countries, such as Greece, the differences between regions are relatively small, but income disparities are relatively high. Equally, as for example in Mexico, there are countries where both interregional and income inequalities can be high.

Figure 1.15: **Interregional and income equality (Gini coefficients, 2005)**



Source: Data from *Regions at a Glance 2007* (OECD, 2007) and *UN Development Report 2008*

...but is only moderately successful in attracting firms, talents and tourists

Copenhagen has been able to attract considerable foreign investments, but their economic impact has been limited in comparison with other OECD metropolitan areas. Over the period from 2001-06, Copenhagen proved particularly successful in attracting headquarters; in Western Europe, only London and Paris attracted more. Copenhagen also had a strong showing in attracting marketing and sales departments (120 projects over 2001-06), although Stockholm attracted considerably more (206) in the period. With regards to attraction of R&D centres, Copenhagen is also doing better than several other OECD metropolitan areas (19 projects over 2001-06) (FORA, 2008). Business services and life sciences are the main areas of foreign direct investment in Copenhagen; most life science investments are devoted to head offices or sales and marketing, whereas R&D investments are directed primarily towards business services and IT. The impact of foreign direct investment in Copenhagen on employment creation is relatively low: every foreign investment project in Copenhagen and Stockholm created around 20 new workplaces, whereas the figure is more than 100 in Amsterdam and Hamburg (FORA, 2008). This indicates that the investments involved per project tend to be lower in Copenhagen (as well as in Stockholm) in comparison with those for competitors in northwest Europe. This could be due to the fact that much of this investment is in (regional) headquarters and sales and marketing, rather than in more capital-intensive manufacturing and research and development. Leading business leaders consider Copenhagen to rank only 25th among European cities as far as business is concerned, according to Cushman & Wakefield (2007).

Copenhagen scores relatively low as regards attracting foreign talent: below the OECD and EU 15 average, according to IMD (2006). Immigration to Denmark is limited, as is its share of foreigners with higher education (6% in Denmark, against the OECD average of 12%) and the number of foreign students enrolled (only 4%, by comparison with Switzerland's figure of 13%). This topic will be further discussed in Section 1.4 below. Copenhagen is equally moderate in attracting foreign tourists. In a European study of cultural tourists – both domestic and international – respondents were surveyed about their favourite cultural destinations in Europe. Copenhagen ranked 20th among 22 cities, although above Helsinki and Stockholm (ATLAS, 2007). Copenhagen has seen an annual growth in tourist visits of 5% in the last decade, surpassed only by Barcelona, Prague, Rome and Berlin. Nevertheless, it scores only 14th among European cities for tourist stays, far behind large cities such as London and Paris, obviously, but also behind smaller cities such as Dublin and Vienna. A significant part of tourism to Copenhagen arrives via cruise ships: 285 such ships arrived in

Copenhagen 2005, bringing 380 000 visitors. Copenhagen has a good record of attracting international conferences. It ranks eighth among major European cities, holding more than London, Madrid and Stockholm. Over the last decade, however, the growth in the number of conferences organised has been very slow.

1.4 Determinants of urban competitiveness

Copenhagen's performance on key determinants for urban competitiveness is addressed in this section. Availability of skilled people, good innovative capacity and entrepreneurship are essential in increasing labour productivity; urban amenities, including infrastructure and environmental quality, help to attract highly skilled people.

1.4.1 Human skills

One of the robust findings in study of the economies of cities is the positive impact of human capital on urban economic performance. The rate of higher education appears to be crucial, although the educational system as a whole also plays a part, from primary to secondary education and vocational training, because the number of highly qualified people depends on those who pursue their education after secondary education.

Higher education

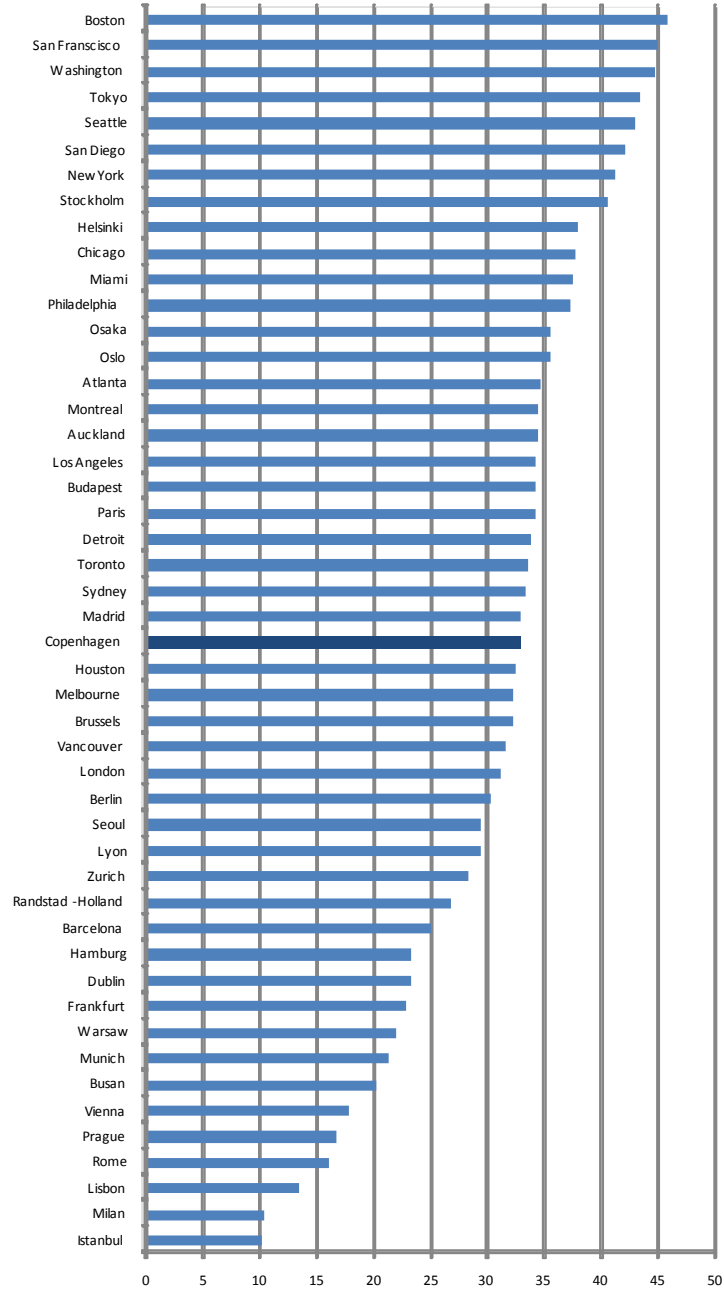
The rate of higher education of Copenhagen's population is average when compared to that of other OECD member countries: out of 44 metropolitan areas in the OECD, Copenhagen ranks 25th. Although Copenhagen's population is well-educated by comparison with, for example, Munich, Randstad and Barcelona, it falls behind that of many American metropolitan areas, as well as below Stockholm and Helsinki (Figure 1.16) – even though its population of between 25 and 64 years has spent the highest number of years in education: 13.4 years against an average of 11.9 years in the OECD. This might raise questions about the effectiveness of the Danish education system and the incentives students are given to finish their education efficiently and with a qualification. The progress in human capital formation in Denmark has been surprisingly slow. Among 25-34 year olds, only 86% have at least upper secondary education, the lowest level among the Nordic countries. Denmark has a very large variation in the regional student enrolment rate compared to other countries, which may be a reflection of the fact that universities in Denmark, unlike in most OECD countries, are concentrated in a few regions, most notably the Capital

Region. The variation in tertiary education attainment across regions in Denmark is however below the OECD average. This may indicate that students migrate to other regions after attaining their degree (OECD, 2007).

There has been concern about dropouts from the educational system. Completion rates in higher education are low: between 40% and 75% of students enrolled complete their bachelor's degree, according to some studies (OECD, 2005);¹⁶ and between 70% and 75% according to others (Danish government, 2006). This is a low percentage, especially given that only a small proportion of the age group (18%) enrolls at university and that Denmark offers the most generous student financial support in the world (free education and up to six years of grants to support living costs) (OECD, 2005). Projections show that – without policy changes – around 95% of the pupils leaving primary school in 2005 will have started further education, but that only 79% will complete it; only 48% are expected to have attained a tertiary education by 2030, and less than 30% a vocational degree (Uni-C Statistik, 2007). Furthermore, deficits are projected in areas that are key to future competitiveness, such as science. Proficiency in science among 15-year-olds in Denmark is relatively low, and the number of science and engineering degrees as a share of new degrees is below the OECD average and falling (OECD, 2008).

The age at which Danish students finish their studies is particularly high. The combination of high taxes in Denmark and the generous student grants encourages students to take extended breaks between secondary and tertiary education and to prolong their studies once they have started. The median age for students starting tertiary education in Denmark is around 23 years, one of the highest in the OECD. Around 40% are still enrolled six years later. This reduces lifetime earnings, leaving fewer years in which the acquired skills can be exercised in the labour market, and much of this loss is carried by public finances in foregone tax revenue. Reducing delays before the beginning of study could help to reduce dropout rates; starting late is correlated with a higher propensity to fail to complete tertiary programs where skills such as mathematics are required (OECD, 2006).

Figure 1.16 Rates of higher education in selected OECD metropolitan areas (2004)



Source: OECD Metropolitan Database

Education and skills

Education outcomes in Copenhagen are comparatively weak. This can be concluded from the OECD/Programme for International Student Assessment (PISA) study of 2000, which the City of Copenhagen conducted again in 2004 and 2007 for all public schools and for a range of private schools. The trend for Denmark as a whole is reflected in the scores of Copenhagen: relatively many poorly performing students in all three areas tested: reading, science and mathematics (Egelund and Rangvid, 2005; Egelund, 2008). Students in Copenhagen score above the national average when results for immigrant children are excluded, except in mathematics, in which Copenhagen falls slightly below the average. The difference among schools in Copenhagen is significant. Four schools in Copenhagen show an average for reading skills that is above Finland's national average (Finland being the best performer in the PISA study), while 15 schools fall below Brazil's national average (Brazil being the country with the worst performance). One of the basic problems in post-compulsory education with a vocational orientation is a lack of apprenticeships (OECD, 2006).

There are large disparities in the performance of Danish and immigrant students. Immigrant students in Copenhagen score approximately 100 scale points below Danish students on the PISA scale, which means that only 15% of the Danish students are at a level that is lower than the average for immigrant students. The performance of immigrant students is particularly weak in science. The share of Danish students without functional reading skills in the PISA study was 18%. In Copenhagen, the figure is 24%, with 14% of Danish students and 51% of immigrant students showing poor reading skills. Differences in socio-economic status account for only 50% of the ethnic test score gap. Differences between schools account for a substantial additional portion of the ethnic gap (about 30% for reading scores and somewhat less for mathematics and science). The performance of immigrant students could therefore be linked to ethnic segregation at school level. Despite comparatively low income segregation, ethnic segregation in Copenhagen's schools comes close to the high segregation levels of many US cities. Today, almost 30% of all students attend schools that can be classified as almost all native-born Danish – and one out of five students attends school with a majority of immigrant students. Only a minor part of this can be explained by differences in socio-economic background (Rangvid, 2006).

Educational segregation might have an impact on dropout rates of immigrant students. Children of immigrants enter upper secondary education at almost the same rate as those of Danish origin. The lower attainment level is mainly attributable to higher dropout rates among children of immigrants. The dropout rate of immigrants from vocational

education is almost 66% – compared to less than 30% for persons of Danish origin. Family background partly explains the dropout rate in academic upper secondary education, but not in vocational education.

Shortage of highly skilled labour

Unemployment in Copenhagen is very low, although the figures conceal some unused potential. The unemployment rate in Copenhagen stood at 5% in 2007, the lowest rate in more than three decades, and continued to decrease well into 2008, reaching a monthly unemployment rate of around 2% in the summer of 2008. Few metropolitan areas in the OECD have lower unemployment rates. The combination of low unemployment rates and high participation rates suggests that the labour force is well-utilised. The participation rate in Copenhagen was almost 80% in 2005; the seventh-highest participation rate among 78 metropolitan areas in the OECD. High participation rates can be explained by increased female labour participation rates, in part supported by government policies that include child care facilities and the right to maternity leave until children reach 9 years old.¹⁷ The female participation rate in Copenhagen in 2005 was ranked 2nd out of 39 metropolitan areas in the OECD. Certain demographic groups could, however, be better used, in particular elderly people, some of those receiving disability payments and immigrants (see also section below).

Labour market shortages in Denmark have made hiring more difficult in the last few years. Hiring problems are reported in certain health professions, the welfare sector, hotels and restaurants and graphic design. A further tightening of the labour market is forecast in Copenhagen, with projections through 2015 predicting shortages of doctors, nurses, school teachers, and social and health care assistants (Madsen and Lundtorp, 2006). This could lead to increased mobility in the regional labour market, but given the tight labour market nationally, this will probably not bring much relief. A shortage of 14 000 qualified engineers is estimated by 2020 (Ministry of Science, Technology and Industry, 2007). Although the Øresund Region could provide some workers, labour market shortages are also predicted at the Øresund level. In Copenhagen, labour market shortages could lead to losses in contested markets, such as tourism and product technology, and reduce its capacity to innovate. Although the global financial and economic crisis is expected to increase Denmark's unemployment rate, no easing is expected in the above-mentioned sectors.

Øresund as part of the solution

Cross-border commuting in the Øresund Region has dramatically increased over the last decade, but can only to a limited extent solve labour market shortages in Copenhagen. Net inflow of commuters from southern Sweden (Skåne region) to the Capital Region was 2 000 in 1997, growing to 14 500 in 2007. This is comparable to net commuting from the municipality of Roskilde (in the Sjaelland region) into the city of Copenhagen. Cross-border commuting in the Øresund Region is relatively limited by comparison with commuting in the Øresund Region from within Denmark; the net inflow of commuters from the Sjaelland region into the Capital Region, for example, was 66 200 in 2007. No recent data is available for cross-border commuting in Europe, but a glance at the data from 1999 show that cross-border commuting flows in Øresund in 2007 are modest (Table 1.9).

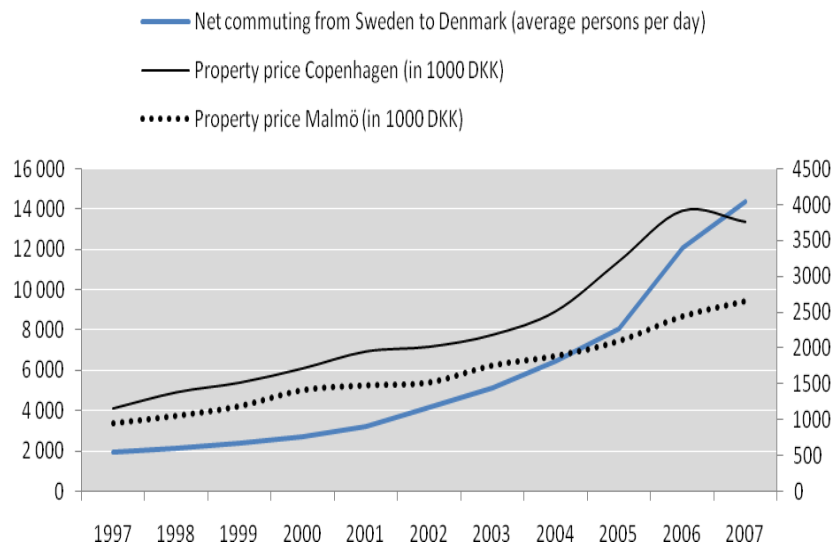
Table 1.9. **Cross-border commuting in Europe**

	Number of commuters	Share in total regional employment (%)
Luxembourg (with Belgium, Germany and France)	79 200	4.73
Germany-France	61 700	2.50
Germany-Netherlands	33 100	0.76
France-Italy	27 900	1.10
Belgium-France	24 400	0.88
Belgium-Netherlands	22 900	0.67
Germany-Austria	21 000	0.96
Denmark-Sweden (2007)	14 500	0.65
Ireland-UK	11 500	1.42
Belgium-Germany	6 300	0.67
Spain-France	4 100	0.17
Spain-Portugal	4 000	0.15
France-UK	2 700	0.28
Denmark-Germany	2 500	0.76
Italy-Austria	1 900	0.22
Finland-Sweden	900	0.41

The recent rapid increase in cross-border commuting from Sweden appears to be driven by cheap housing prices and lower automobile taxes in southern Sweden, as well as higher wages in Copenhagen. A strong correlation is suggested between net commuting from Malmö to

Copenhagen and housing price differentials between the two cities, a dynamic that is probably also reflected in commuting patterns from Sjaelland to the Capital Region. Strong growth in commuting flows began in 2004, when the difference between housing prices in Copenhagen and Malmö rose to 60% (Figure 1.17). This correlation makes it difficult to extrapolate the commuting trends: one would expect net commuting growth from southern Sweden to decrease if property prices equalise. Around 55% of commuters from south Sweden into Copenhagen are Danish, around 45% Swedish.¹⁸

Figure 1.17. Trends in net commuting from Malmö to Copenhagen and housing price differentials (2000-07)



Source: Based on data from Orestat. Net commuting is indicated on the left vertical axis, and the property prices in the city of Copenhagen and the city of Malmö are indicated on the right vertical axis.

Under-utilisation of immigrants

As far as immigrants are concerned, aggregate employment figures are not favourable in Denmark. The employment rate for native-born Danes was around 78% in 2005, but the figure for those born abroad was 56%, and 51% for those born in non-OECD countries (OECD, 2007b).¹⁹ In few other OECD countries is the difference between employment rates for immigrants and for the native-born as great as in Denmark. Employment probability for immigrants with more than 15 years of residence is about 5% lower than that among the native-born in Germany and Austria, more than 10% lower in France in Belgium, and 18% lower in Denmark. These unfavourable outcomes are partly linked to the fact that a larger share of Denmark's immigrants come from non-OECD countries than is the case in other OECD countries. However, even for immigrants from OECD countries, the figures are well below those for the native-born.

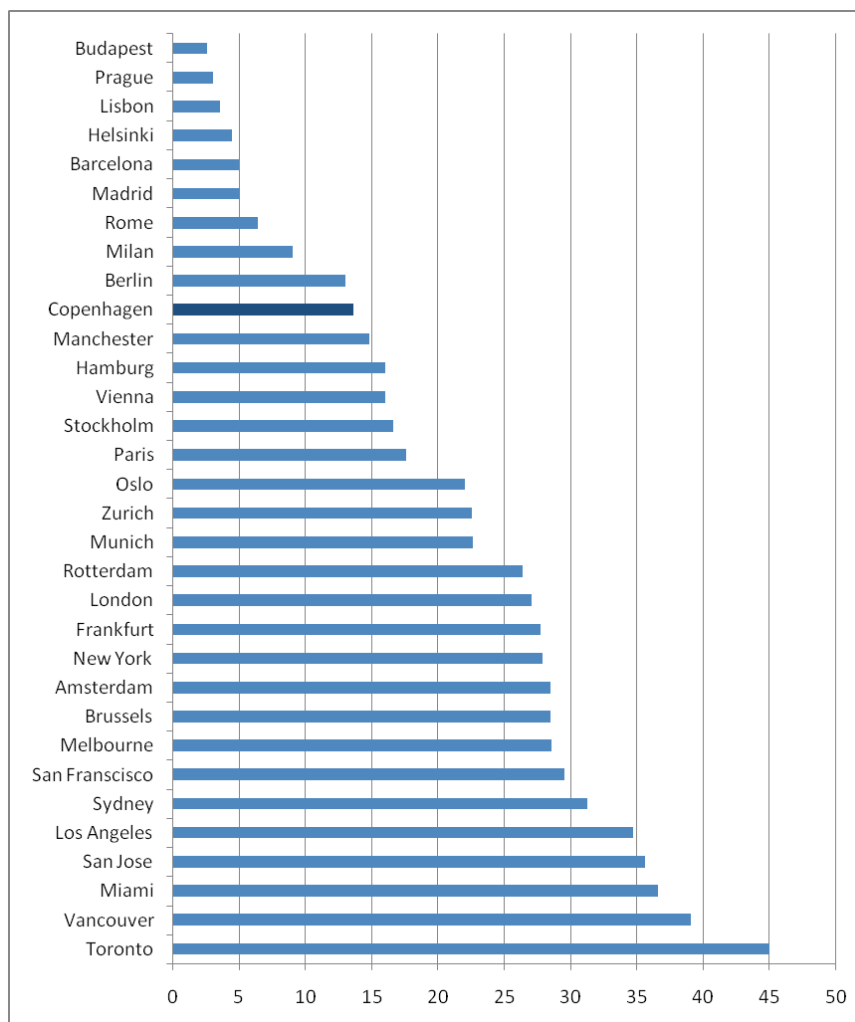
Although immigrants in Denmark are less well educated than the native population, they appear to be better qualified than those in other countries. Immigrants are somewhat overrepresented at both ends of the skills spectrum. In comparison with several European countries that had "guest worker" arrangements in the 1950s and 1960s, Denmark has a relatively large proportion of immigrants with tertiary education. Differences in educational attainment are unlikely to account for the observed unfavourable employment outcomes. Moreover, across all education levels, Denmark has large disparities in the employment of immigrants as compared to the native-born. The gap in employment rates between highly skilled native-born and foreign-born workers is even higher (19%) than the gap for low- (15%) and medium-skilled workers (15%) (OECD, 2007b).

There are indications that the skills of immigrants in Denmark are under-utilised. Among wage earners with at least a vocational education or higher, 25% of male non-Western immigrants are "over-educated", that is, performing a job beneath their skills level; the same applies for 15% of native Danes. The skills of an over-educated worker are under-utilised; over-education can be thought of as a form of skill-related underemployment. Thirty percent of immigrants who acquired their education abroad are performing jobs below their qualifications. Danish labour market experience appears to be very important in reducing the likelihood of becoming over-educated. Years spent in the country without accumulating labour market experience do not improve an individual's chance of finding a job commensurate with his or her education (Nielsen, 2007).

Under-utilisation of immigrants is a challenge especially for Copenhagen, considering their higher proportion of the population. Within the metropolitan area, the city of Copenhagen has the most foreign citizens in absolute terms, although in relative terms, the surrounding municipalities of Ishøj (14.2%) and Albertslund (11.4%) have a larger proportion of foreigners, as against 11.3% in Copenhagen. Figures for the other large Danish cities are much smaller, with 6.2% in Aarhus, 6.0% in Odense and 4.3% in Aalborg. Some of the municipalities surrounding the city of Copenhagen in the west and south, such as Ishøj, Albertslund, Brøndby and Høje-Taastrup, have the highest share of non-Western immigrants. The city of Copenhagen and Frederiksberg have the largest share of Western foreign citizens, together with Gentofte and Lyngby-Taarbæk, municipalities to the north of Copenhagen.²⁰

Copenhagen's rate of foreign-born population (13%) is modest compared to that of other metropolitan areas in the OECD (Figure 1.18), for example, Toronto (45%), Geneva (39%) and Amsterdam (29%). Other Scandinavian cities, such as Stockholm and Oslo, also have more foreigners (17% and 22%), while several cities in southern and eastern Europe have considerably lower proportions of foreigners. The four largest concentrations of foreigners in Copenhagen are from Turkey, Pakistan, Yugoslavia and Iraq, but they form a relatively small part of the total foreign population, in sharp contrast to several cities in France and the United Kingdom, where the four largest groups can constitute from 60% to 70% of the total foreign urban population.²¹

Figure 1.18. Share of foreign-born population (% of total population)



Source: Data from GW Center for the Study of Globalization (www.gstudynet.org). Data refer to Metropolitan Statistical Areas for US cities, Census Metropolitan Areas for Canadian cities and to municipal boundaries for the other cities. Data are from 1998 (Brussels), 1999 (Paris), 2000 (Helsinki, Rome, Milan, Zurich), 2001 (Budapest, Prague, Manchester, Vienna, Stockholm, London, Frankfurt, Melbourne, Sydney, Vancouver, Toronto), 2002 (Lisbon, Barcelona, Madrid, Hamburg), 2003 (Berlin, Munich), 2004 (Oslo), 2005 (Rotterdam, New York, Amsterdam, Los Angeles, San Jose, Miami) and 2006 (Copenhagen).

Attraction of high-skilled people

Denmark has fewer international students than many other OECD countries, with only 4.4% in tertiary education in 2005, against 6.7% in the OECD as a whole. Copenhagen scores somewhat higher than the national average, and the University of Copenhagen includes 6% foreign students, but this is still low from an international perspective.²² The IT University of Copenhagen, with 32% foreign students, is an exception, but its student body represents a very small part of students in Copenhagen. A similar pattern can be found with respect to foreigners engaged in research: foreigners' participation in advanced research programmes was 6.9% in Denmark, but 16.5% in the OECD countries as a whole. The increase in the number of foreign students has been slower than on average in the OECD: the share of international students in Denmark has increased 35% over the period from 2000 to 2005, as compared with 49% in the whole of the OECD (OECD, 2008). Inflows of foreign students appear to be important in attracting highly skilled people: research on the United States over the period 1971-2001 suggested that the number of foreign students is an important predictor of subsequent migration (Dreher and Poutvaara, 2005). This is all the more important for Denmark and Copenhagen given the labour market shortages.

Copenhagen attracts relatively few foreign workers by comparison with other cities in the world. Its share of foreign population is relatively low and dominated by non-Western immigrants who came to Denmark as refugees or in the context of family reunification, rather than because of their skills or the needs of the domestic labour market. The flows of highly skilled immigrants into Copenhagen are limited. The current relative inflows of foreign nationals into Denmark are close to the average in the OECD, an inflow of 39 immigrants per 1 000 of population in 2006. Recent years have seen an increase, with a 21% growth in inflows over 2003-06, as compared with only 5% in the OECD as a whole. The inflow to Denmark in 2006 amounted to 21 700 people, but not all of these were admitted for work-related reasons. Although this inflow is higher than in previous years, it is lower than the inflow before 2003 (OECD, 2008).

Relatively few of the foreigners that Denmark attracts are highly skilled. Although the number of work permits has increased over the last decade, and inflows of immigrants are directed more towards labour market needs, the share of high-skilled labour flows remains average, with many of these permits given within the construction sector. Denmark's share of immigrants with tertiary education is 19%, as compared with 25% in the OECD as a whole. Among OECD countries, Denmark has one of the lowest rates of employed professional and technical migrants as a percentage of total employed professionals and technicians (OECD, 2008), and is not among

the countries that attract the most high-skilled immigrants, such as the United States, United Kingdom, Canada, Ireland, Mexico, Luxembourg, Switzerland and Australia. As mentioned above, Denmark has a large disparity in the unemployment rates of immigrants relative to the native-born population (twice as high). The relatively limited importance of Copenhagen as a hub for highly skilled workers is illustrated by its ranking by the number of international offices of the leading 15 global executive search firms. In 2005, Copenhagen was ranked 11th among European cities; and similar-sized northern European cities such as Amsterdam and Stockholm ranked higher (Faulconbridge and Hall, 2008).

Studies suggest that high taxation and a relatively closed business culture may be deterrents to highly skilled foreigners. A recent study concludes that taxation plays an important role in determining where Danish migrants go and where migrants to Denmark come from (Nielson, 2007). Another factor that helps attract highly skilled labour is the possibility of career advancement. Since Copenhagen has a relatively small number of large internationally oriented companies, fewer career possibilities exist for internationally oriented foreign workers. Moreover, the corporate world in Denmark has been observed to exhibit “small world characteristics”: a network of directors of firms closely connected through board affiliation (Sinani *et al.*, 2008). A study of highly skilled foreign labour found that a third of the foreign workers in the survey considered that Danes were not particularly open or accommodating towards them, both in the private and professional contexts (Oxford Research, 2007).

While there are so far no indications of a brain drain, recent trends give reason for concern. According to recent studies, the outflow of highly skilled Danes is balanced by a comparable influx of highly skilled foreigners (Socialforskningsinstituttet, 2007), and 70% of highly skilled Danes who leave the country come back within five years (Globalization Committee, 2006). However, the number of Danish temporary workers in the United States is approaching the total amount of work permits that Denmark gives out annually.²³ There are indications that more Danish students going abroad stay abroad, and migration of Danish PhDs is increasing (Villesen, 2008). Recurring survey results show that approximately 10% of PhDs leave the country to work abroad within 18 months of earning their degree. PhDs in natural sciences head the list, with a mobility rate of around 18%. It appears that PhDs employed abroad return to Denmark after a number of years; on average only 50% return after five years abroad (OECD, 2005).

Numbers for Copenhagen seem to indicate a small net inflow of foreigners, although it is not clear whether this presents a brain gain. Over 2000-07, 12 570 foreigners per year on average came directly to the city of Copenhagen (and Frederiksberg); in the same period, around 11 775 people

left Copenhagen to go to a foreign country. This has left Copenhagen with a net annual inflow of around 800 people, without taking into account inter-regional migration flows within Denmark. Large net outflows from Copenhagen went to Sweden (probably attracted by cheaper housing) and the United Kingdom over 2000-07; while in the same period, Copenhagen witnessed a net inflow from several countries, mostly from Germany, Poland, India and China.²⁴ No information is available on the qualifications of these people. It is important to note in order to avoid brain drain, the skill level of incoming migrants should be at least similar to those of Danes leaving the country. We have not been able to establish whether this is the case, but as labour markets for talented people have become increasingly global, it is growing more likely that talented Danes will migrate to global cities that are prominent in certain economic sectors, for example, to London in global finance.

Universities in Copenhagen and the Danish education system

Copenhagen's institutes of higher education include five universities, ten schools of fine arts and culture and numerous university colleges. Of these universities, educating around 65 000 students per year, two are broad multi-faculty universities, three are single-faculty universities and one is a business school. The Øresund Region includes 12 universities, around 150 000 students, 12 000 researchers and 6 500 PhD students (Øresund University, 2008). Main institutes in Copenhagen are the University of Copenhagen, the Copenhagen Business School and the Technical University of Denmark. The University of Copenhagen is the oldest university, with a very broad range of disciplines. The university awards more than 2 000 degrees each year, including 450 degrees in the humanities and 500 in mathematics, chemistry, computer science, geography and biology. Copenhagen Business School awards around 800 degrees per year, of which 90% are masters in economics and business administration. The Technical University of Denmark awards about 700 degrees per year (OECD, 2005). A university reform has merged several universities into larger ones.

The multi-faceted tertiary education system is considered to contribute to the competitiveness of the Danish labour market. Universities have much flexibility in the types of courses they can offer. The Danish tertiary educational system includes several highly differentiated streams, including short, medium and long tertiary education courses. Short tertiary education primarily leads to specialised degrees supplementing professional education. Most of these programmes target the private sector and are characteristically development-based. Medium tertiary education primarily targets professions in the public sector. Programmes are typically development-based and research-related. Long tertiary education targets specific job functions on

both the public and private sector. Programmes are typically research-related. The short tertiary education programmes are rather unusual; and not available in many OECD countries (OECD, 2005). Feeding into the tertiary education system is a differentiated system of upper secondary education. This system consists of basically two strands: the general upper secondary education – consisting *inter alia* of the gymnasium and secondary technical school – and vocational upper secondary education, partly organised along professional lines, such as agricultural education, maritime education, social and health education, etc. Developments in secondary education evidently translate into the extent and types of human skills available in Copenhagen. Recent projections indicate that more pupils are choosing subjects in which labour shortages exist. The share of upper secondary students choosing natural science, technical science and health is expected to increase from 12% to 25% from 2007 to 2009, which might translate into higher applications for science and technology studies at universities.

Performance of universities in Copenhagen

Universities in Copenhagen are up to international standards. Three universities figure in international university rankings: the Copenhagen University, the Technical University in Lyngby (around 10 kilometres to the north of Copenhagen) and the Royal Veterinary and Agricultural Institute in Frederiksberg²⁵ (Table 1.10). The Royal Veterinary and Agricultural Institute has been part of the University of Copenhagen since 2008 and is now called the Faculty of Life Science under the University of Copenhagen. The highest ranking is achieved by Copenhagen University; depending on the ranking method, its rank varies from 46th to 99th university in the world. The Technical University ranks between 151st and 306th in the world, and the Royal Veterinary and Agricultural Institute does not figure in all rankings but manages to achieve positions in some. From the European perspective, the University of Copenhagen scores well: it is for example the 8th European university in the Academic Ranking of World Universities by the Shanghai Jiao Tong University. The University of Lund in southern Sweden scores slightly less well than the University of Copenhagen: it ranked 97th in the 2008 the University of Shanghai ratings and 122nd in the 2007 Times Higher Education Supplement (THES) ratings.

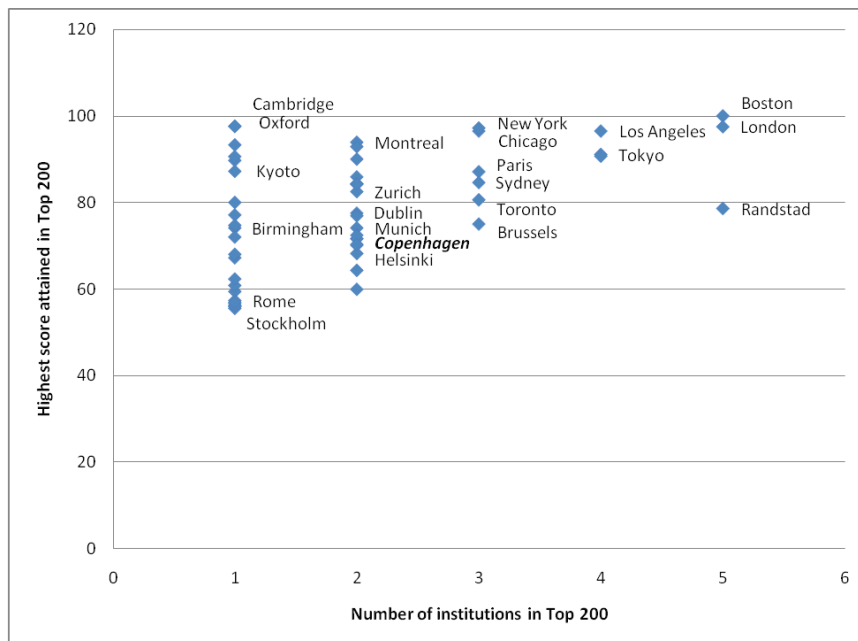
Table 1.10. **Copenhagen universities in international rankings**

Universities/rankings	Shanghai	THES	ENSM	Taipei	Wuhan
Copenhagen University	46	93	60	86	99
Technical University	151	130		306	208
Royal Veterinary and Agricultural				405	376

Source: Shanghai 2008, THES 2007, ENSM 2007, Taipei 2007, Wuhan 2007

This number of high-quality institutes is reasonably high compared with many cities. If one maps the cities that have institutes in one of the rankings (the THES ranking), only a limited amount of metropolitan areas in the world score better than Copenhagen in having more than two high-ranking higher education institutes (Figure 1.19). Metropolitan areas with many high-ranking universities are Boston, London, Randstad, Los Angeles and Tokyo. One must nuance these findings, since the size of metropolitan areas and the institutes differs – and since having several small high-quality institutes is not necessarily preferable to having one bigger one. At the same time, it indicates the variety and choice that inhabitants of a metropolitan area have when choosing a top-rated university. If the Øresund Region were included in this figure, it would have been in the selective category of metropolitan areas with three top-rated universities, because Lund University would have to be added to the institutes in Copenhagen.

Figure 1.19. **Quality and quantity of world-class higher education institutes in a selection of OECD metropolitan areas (2007)**



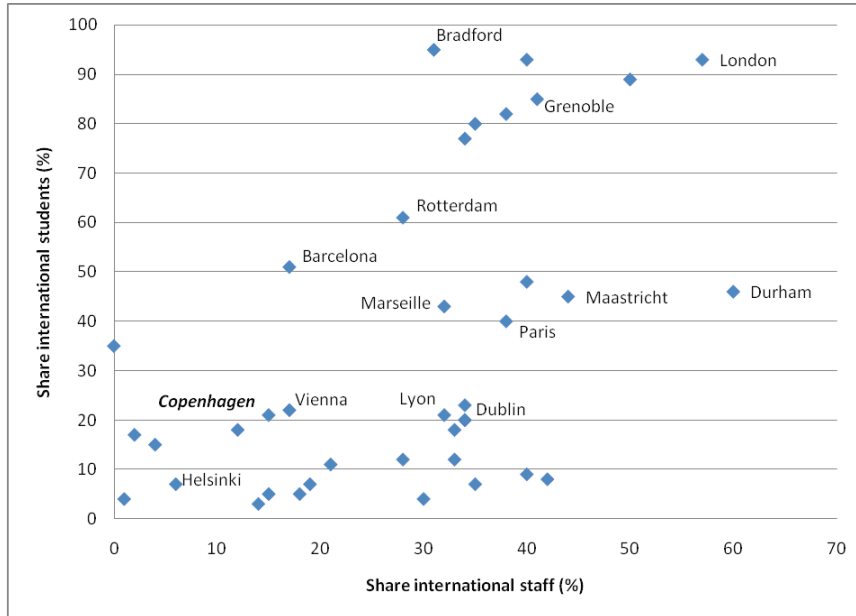
Source: Based on data from the Times Higher Education Supplement ranking of 2007. A score of 100 is the highest that a university can receive, indicating excellent quality.

The assessment of the quality of science, technology and business education at Copenhagen's universities is mixed. Copenhagen University

figures in the THES rankings of 50 best universities in social sciences (45th position), but not in life sciences, natural sciences and technology. Copenhagen however scores well on life science indicators in the University of Shanghai rankings. European rankings of natural science disciplines allow a more precise benchmarking in fields such as biology, chemistry, physics and mathematics. Copenhagen University scores well in both biology and physics, but has strong competition from universities in several European cities, such as Oxford, Cambridge, London, Leiden, Leuven, Munich, Stockholm, Vienna and Zurich (CHE Excellence Ranking, 2007). Copenhagen has a relatively good reputation, but not an outstanding ranking in business education. Copenhagen Business School figures in some global rankings of business schools, but not in all.²⁶ All in all, it is difficult to establish whether universities in Copenhagen are particularly advanced in the subjects that are most relevant to some of the leading economic clusters in Copenhagen, such as life science and business administration.

The share of foreign students and foreign university staff is relatively limited. As has been reported in the *OECD Review of Higher Education in Denmark*, Danish higher education has expanded its international connections, but overall cross-border flows could be considerably higher, as is illustrated by the experiences in other OECD countries (OECD, 2005). This moderate degree of internationalisation is confirmed when focusing on business education, a sector that is arguably one of the best suited to offer education on a global market. The Financial Times' Top 40 of masters in management provides a comparison of business schools in Europe. Copenhagen Business School appears to be less internationalised than many other business schools (Figure 1.20). It is not surprising that business schools in the United Kingdom have the most international composition of staff employed and students enrolled, as they are considerably less hampered by language barriers. However, it is clear that several cities in France (Paris, Grenoble, Marseille and several others), Netherlands (Rotterdam, Maastricht), Spain (Barcelona) and Austria (Vienna) manage to offer masters in management with a more international outlook. At the same time, the student body and staff is more international at Copenhagen Business School than in Helsinki, Stockholm and several other cities.

Figure 1.20. Share of international staff and students at European business schools



Source: Based on data from the Times Higher Education Supplement ranking, 2007

1.4.2 Innovation

Copenhagen scores average on innovation indicators

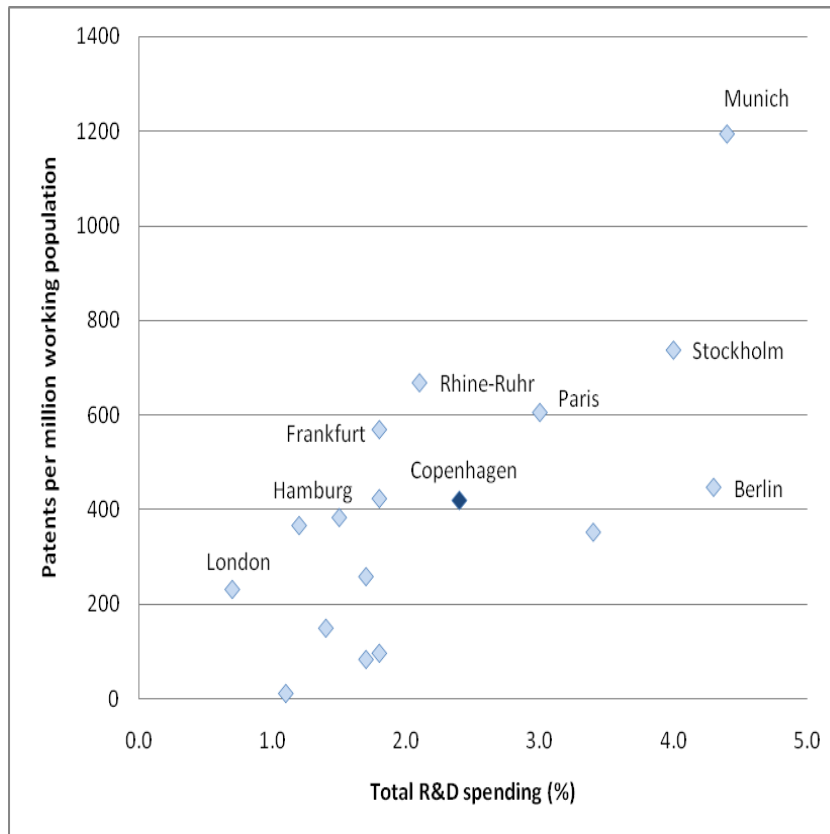
Copenhagen scores relatively high on total R&D expenditure. A large share of Danish research and development is based in the Capital Region. More than 70% of private R&D funds in Denmark are spent in the Capital Region; and 64% of public R&D. Not surprisingly, there is a concentration of public researchers in the Capital Region. Two-thirds of the annual research projects in natural and health science are registered in the Capital Region, and more than half of the researchers in the Danish health care system work at the hospitals in the Capital Region. Around 2.4% of total regional GDP in Copenhagen is spent on R&D, reflecting a relatively higher contribution of private R&D than public R&D. According to FORA, public R&D expenditure in the Capital Region amounted to approximately 1.3% of GDP, whereas private expenditure amounted to 3.2% of GDP in 2003

(FORA, 2008). This is in line with national data; Denmark's business R&D is high and exceeds the rate in the United States, although it is lower than in Sweden and Finland. Similarly, several metropolitan areas spent more on research and development: Copenhagen scores considerably behind cities like Munich, Berlin and Stockholm, which all spend at least 4% of their gross regional product on research and development (Figure 1.21). To sustain this research and development, a considerable number of PhD students are needed. In this respect, Copenhagen scores less well than several other OECD cities. In Helsinki and Stockholm, between 7% to 8% of university students are pursuing PhD degrees; in Copenhagen, the figure is 3% (FORA, 2008).

Copenhagen scores average on patents, employment in high-tech manufacturing and services. On all these indicators, Munich, Stockholm, Berlin and Paris score better. The average number of patents in Copenhagen in 2002 was 420 per million working population; this is twice the number of London and Barcelona, but half of the figure for Stockholm and a third of the figure for Munich. The share of employment in high technology sectors in Copenhagen was 5.7% in 2006; an average score compared with other European capitals, but considerably lower than Stockholm (9.2%) and Madrid (7.6%). The share of employment in medium high-tech sectors is average as well (28.5%), and considerably below Berlin (51.6%) and Munich (48.9%). These average scores correspond with observations for Denmark as a whole. In terms of knowledge-intensive services, Denmark appears to perform less well than other OECD countries: the share of knowledge-intensive services in Denmark is about 15%, while it is 20% for the whole OECD area (OECD, 2008).

There are indications that Copenhagen scores well on non-technological and process innovation: 70% of large firms have introduced non-technological innovations (OECD, 2008). Denmark has a large number of firms developing new ideas and products. Danish firms also perform very well on non-technological innovation, such as on marketing and organisational innovation. In addition, the gap between the innovation potential of large and small firms is less pronounced in Denmark than in other countries, suggesting that small Danish firms are more advanced in developing non-technological innovations (OECD, 2007). These observations also apply to firms in Copenhagen. Entrepreneurship in Copenhagen is geared towards new product-market combinations, as well as to use of the latest technology (Acs *et al.*, 2008). The high degree of non-technological innovation corresponds well with the high concentration of global advertising firms found in Copenhagen (see Section 1.2).

Figure 1.21. **Patents and R&D spending in selected OECD metropolitan areas (2002)**



Source: TNO (2007), Randstad Monitor 2007, Delft

There is potential for more commercialisation of research in Copenhagen. Most takes place in the Capital Region, where 62% of the technology transfer staff is located and 70% of the commercialisation costs are sustained. Denmark's Technical University has a relatively large technology transfer staff (13.4 full-time equivalents), as do Copenhagen University (9.5 fte) and the Capital Region (8 fte). As a result, most of the inventions, patents and licenses are generated in the Capital Region (see Table 1.11). The number of patent applications filed in the Capital Region is more than twice that in all other regions in Denmark. Denmark has a relatively high geographical concentration of patents compared to the OECD average. Patent applications are concentrated in urban areas, more so than in

most other OECD countries (OECD, 2007). Despite the importance of Copenhagen for the commercialisation of Danish research, the relations of universities with the business sector in Copenhagen are uneven. A survey carried out by FORA in 2008 indicated that the Danish Technical University and the IT University had a strong focus on interaction with the business community regarding the vocational relevance of educational courses, and that the Danish Technical University was engaged in extensive knowledge-sharing with businesses. The University of Copenhagen, however, scored poorly to average on university-industry collaboration indicators (FORA, 2008). Health, as researched by hospitals, is an important research area in Copenhagen; it has seen strong growth since 2000 and benefits from Denmark's extensive registers, which collect health and socio-economic data. Although the health sciences perform well in Copenhagen as compared to elsewhere in Europe, the career possibilities for young researchers are limited, forcing them to leave the field.

Table 1.11. Share of Capital Region in commercialisation of research

	Capital Region share (%)
Inventions	50
Patent applications	54
Licenses	58
License income	77

Source: Statistics Denmark

Potential to be realised in the Øresund Region

The Øresund Region has great potential for synergies, but increased physical accessibility *per se* is not sufficient to realise the benefits of cross-border co-operation. This potential is to a large extent still unrealised with regards to innovation in the region. Scientific cross-border co-operation in the Øresund Region is still limited, by comparison with co-operation of actors in Copenhagen with those in other countries and in Stockholm. This can be illustrated by the regional distribution of co-publications in the Øresund Region. Co-authors in international joint publications are represented by scientists from a range of countries, particularly from Germany, the United Kingdom and the United States. About one-third of the firms have one or more publications with co-authors from outside Europe, while only one-fifth of the firms are involved in cross-border Danish-Swedish co-publications. Among the publications by the Danish Medicon Valley firms and co-authors in Sweden, around 40% are collaborations with co-authors in Stockholm, and 50% of co-publications with Swedish Medicon Valley firms and co-authors in Denmark are in the Copenhagen Region. Although global co-operation is common in many universities,

these figures also indicate that scientific co-operation between Denmark and Sweden is not concentrated in the Øresund Region. The relatively limited scientific co-operation in the Øresund Region could be explained by the different national innovation systems and different regional economic profiles. Denmark tends towards incremental product innovations, while the Swedish innovations system has been described as more advanced in process innovation, thanks to the dominance of large firms and heavy investment in R&D at the national level (Coenen *et al.*, 2004). Although these differences may complicate co-operation, they also suggest that there is a wide potential for synergies.

The effects of proximity have not yet come to fruition. The larger size of the Øresund Region would suggest a higher place on different rankings, for example when it comes to innovation, but the effects of closer proximity might be more important to create real value-added (Matthiesen, 2000). The fixed link between Copenhagen and Malmö/Lund has made the Øresund Region one of the leading locations in the biotech sector. Greater size does however not necessarily mean better performance; when there is no co-ordination of activities, overlap rather than complementarity may be the result. In the biotech-pharma sector, Copenhagen and Skåne are said to be substituting rather than complementary, and some of the research carried out is redundant (Sornn-Friese and Sorensen, 2005). Despite its leading position in bio-medical research, the Øresund Region could do even better.

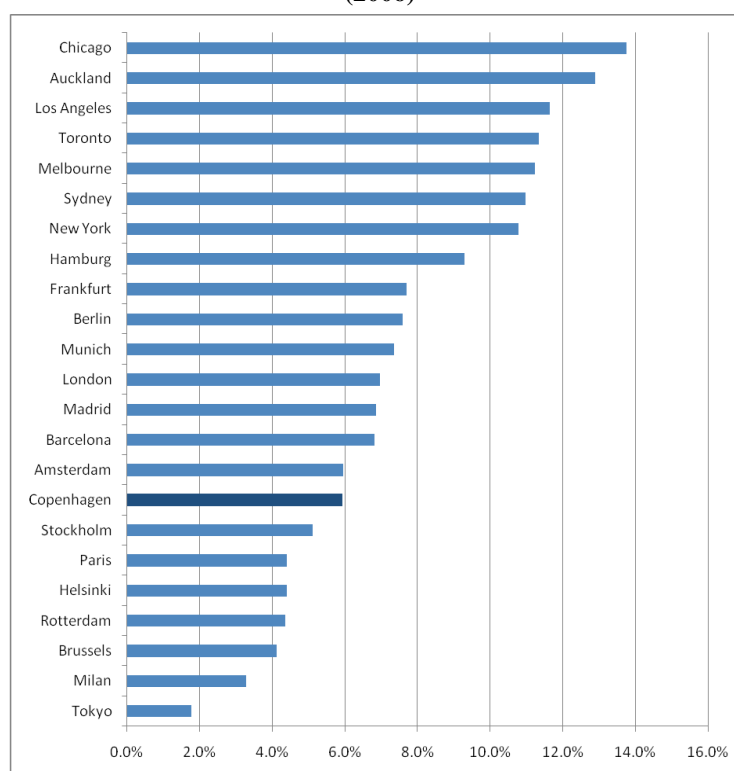
Scientific co-operation between Copenhagen and southern Sweden is nevertheless growing. If scientific co-operation in the Øresund Region is considerably greater in 2002-05 than it was in 1994-1997, co-operation has also grown with the United States, United Kingdom and Germany, albeit at a slower pace. Co-authorships of the Øresund Region with Germany and the United Kingdom are five times more frequent than between the Danish and Swedish part of the Øresund Region; and eight times as high as with the United States (Hansen and Hansen, 2006). The Øresund Science Region was awarded the EU Region Star award in 2008.

1.4.3 Entrepreneurship

The entrepreneurship rate in Copenhagen is relatively low by comparison with a selection of metropolitan areas in the OECD, such as Chicago, Auckland and Los Angeles. Among European metropolitan areas, Copenhagen ranks lower than Hamburg and Frankfurt, but higher than Milan and Brussels (Figure 1.22). Of the European countries, Denmark has one of the highest numbers of new firms relative to the stock of existing companies, but it has fewer high-growth entrepreneurs. High-growth small and medium enterprises (SMEs) often introduce and commercialise radical innovations, which are then refined and mass-produced by larger companies.

Several OECD countries score better on shares of high-growth entrepreneurs. The United States, for example, has twice as many growth entrepreneurs: 4.4% to Denmark's 2.9%. Around 47% of the high-growth entrepreneurs in Denmark are located in the Capital Region.²⁷ Copenhagen is the most entrepreneurial region in Denmark. The Capital Region has more entrepreneurs per inhabitant, higher start-up rates, slightly higher growth entrepreneurship rates and considerably higher global orientation. The survival rate of start-ups in the Capital Region is however lower: 78.8% to the national average of 80.6%. Start-ups in the Capital Region also show lower growth in number of employees (Table 1.12).

Figure 1.22. Entrepreneurship rate in selected OECD metropolitan areas (2006)



Note: These data show early-stage entrepreneurial activity rates from metropolitan areas for which sufficient data were available. These areas include suburbs and reflect labour market areas. Early-stage entrepreneurial activity is defined as nascent entrepreneurship (involved in setting up a business), and the rate of owner-managers of a new business (*i.e.* businesses that have existed for up to 3.5 years).

Source: Acs *et al.*, 2008

Municipalities in the Copenhagen metropolitan region score well in national entrepreneurship benchmarks. All 98 municipalities in Denmark have been benchmarked on different aspects of entrepreneurship. Municipalities in Copenhagen rate the highest for entrepreneurship. Thirteen of the 20 highest-ranked municipalities are in Copenhagen. The municipality with the highest entrepreneurship ranking is Horsholm, a suburb to the north of Copenhagen; the city of Copenhagen ranks second, and Frederiksberg third. Among the indicators taken into consideration are start-up rates, growth entrepreneurship rates and global orientation. The city of Copenhagen ranks first when it comes to global orientation and second with respect to start-up rates; it scores slightly less well on the indicators for growth entrepreneurship: 7th regarding the share of enterprises with more than 60% turnover growth in three years; and 11th with regards to enterprises that grew to over 20 employees in three years (REGLAB, 2007).

Table 1.12. **Entrepreneurship in the Capital Region in comparison with Denmark (2001-03)**

	Capital Region (%)	Denmark (%)
Entrepreneurship rate	5.3	3.9
Start-up rate	10.2	8.4
Survival rate	78.8	80.6
Growth entrepreneurship rate	3.7	3.6
Global orientation	29.8	25.7
Growth of employees	9.7	12.9

Source: Danish Enterprise and Construction Authority; www.regionalt.dk. The entrepreneurship rate refers to the share of entrepreneurs in the total population. The start-up rate in this figure refers to newly created businesses as a percentage of total businesses in an area.

The entrepreneurship rate among immigrants is relatively low. Self-employment is often used by immigrants as a means of escaping marginalisation in the labour market, but the self-employment figures for immigrants are comparatively low. Although there are no formal obstacles to self-employment in Denmark directly related to immigrant status, it may be more difficult for immigrants to obtain loans. This is probably related to the fact that most immigrant entrepreneurs start up in sectors with low entry barriers and intense competition, such as restaurants.

Generally supportive conditions for entrepreneurship

Denmark is one of the easiest places in the world to do business. It ranks first in the business environment ranking of the Economist Intelligence Unit and fifth in the World Bank's Doing Business ranking. Denmark has the

fewest procedures in the world for obtaining licenses, requires the fewest days to arrange for exports and imports and does not have any firing costs. Starting up a business in Denmark takes only six days and does not entail any costs (World Bank, 2007). Product markets are generally open and highly competitive, and the product market environment provides ample opportunity for Danish entrepreneurs.

The availability of financial resources for the business sector in Denmark is good. Creditworthy businesses with reasonable collateral, which includes many SMEs, seem generally able to find loan capital and fund their operations, while established businesses can also access markets elsewhere in the EU or wider international markets. Risk capital investments have increased, but remain below the investment levels of leading OECD countries. Business taxation is quite competitive from an international perspective. One issue, however, is the impact of the marginal tax wedges for workers in the top tax bracket, which is one of the highest in the OECD.

The average office rent in Copenhagen is one of the lowest in European cities, EUR 255 per square metre per year. This is less than half the amount in Oslo or Dublin, a third of the figure in Paris and less than a quarter of the figure in London. The most expensive office space location in Copenhagen ranks only 30th in a ranking of the most expensive locations in each country (Cushman & Wakefield, 2008). Copenhagen has one of the lowest vacancy rates for office space in Europe (4.3%). This indicates an efficient use of available office space, but also that there is limited capacity for accommodating immediate demand. Low supply levels in the central business district and the harbour area of Copenhagen have forced prospective tenants to look further afield for suitable properties. As a result, rental levels in the secondary cities of Aarhus and Odense increased by 9% and 11% over 2007 (Cushman & Wakefield, 2008). Although retail locations in Copenhagen are less expensive than in many other cities worldwide, Copenhagen's most expensive retail location nevertheless comes in 17th in a ranking of most expensive retail locations worldwide, above cities such as Amsterdam, Oslo, Brussels and Stockholm. Vacancy rates on Copenhagen's prime locations can be as low as 1% (Cushman & Wakefield, 2007).

Potential remains, however, for an improvement of the framework conditions for entrepreneurship. High income taxes are a disincentive to entrepreneurs. The results of the 2007 Entrepreneurship Survey show that Denmark, like most European countries, does not have a real culture of entrepreneurship. With regards to the education that promotes entrepreneurship, Denmark occupies only an average position among OECD countries, both in lower and secondary education and in higher education.

1.4.4 Urban amenities

Housing

Housing prices in Denmark have risen dramatically since 1995, although they have fallen by 15% since 2006. Mainly due to population growth, migration, and low interest rates on loans, housing prices in the Capital Region increased considerably from 1995 to 2006, especially in the northern and central municipalities. Prices of owner-occupied dwellings in Copenhagen quadrupled from 1997 to 2007 (Figure 1.25) and rose even higher in such areas as Amager and Sydvestkvarteret (City of Copenhagen, 2008). Consequently, residents generally perceive their city as a place where it is difficult to find good housing at a reasonable price (Figure 1.24). Affordability may have also been reduced by national factors, particularly the availability of interest-only mortgage loans in Denmark. Low rates have allowed average mortgage debt levels to rise throughout Denmark, and the income needed to service mortgages did not keep pace (OECD, 2005).²⁸ Currently, the falling prices and the expectation of future price drops have contributed to a more restrictive lending policy from real estate credit institutions. Owner-occupied flats constructed during 2006-07 are now difficult to sell even at reduced prices. The construction of additional housing will probably be curtailed until developers rent existing stock and recoup some of their losses.²⁹ While housing costs have fallen from their peak in 2006, developers are constrained to construct moderately priced units, particularly given the impact of global financial turmoil, which is projected to result in a sharp contraction of housing construction.

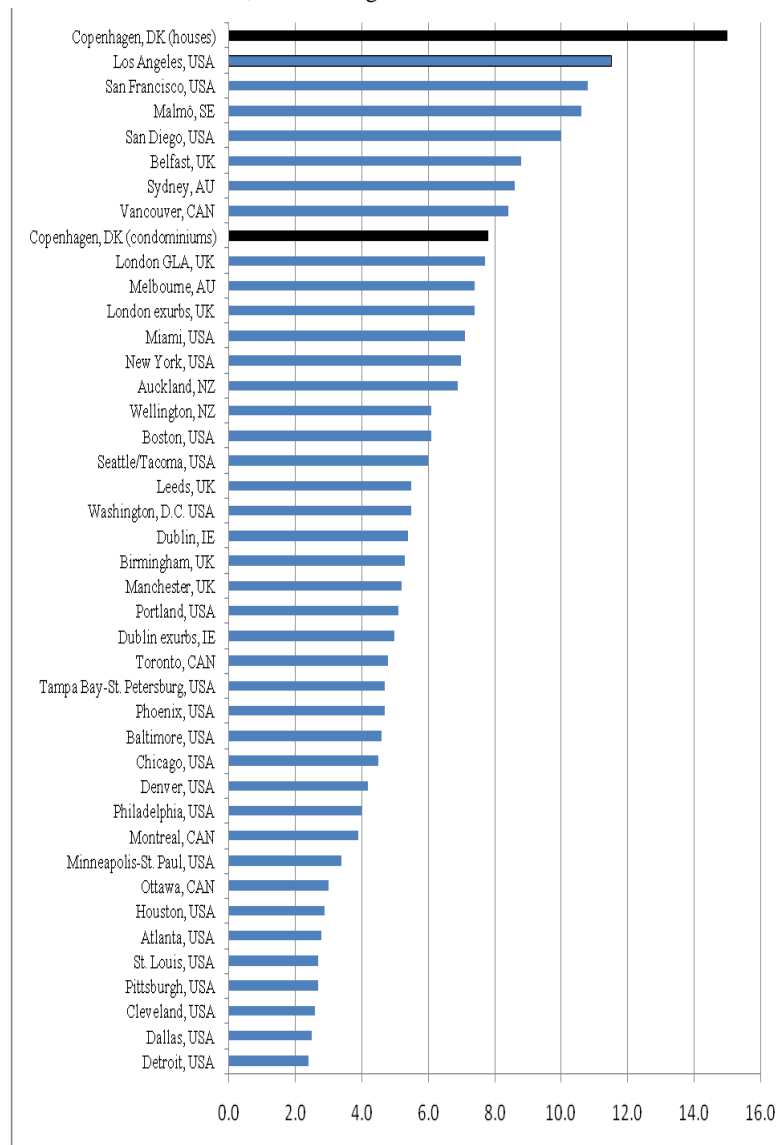
Compared to other large cities in the OECD, indicators suggest that Copenhagen homeowners pay a high cost for housing relative to their income. The “median multiple” constitutes one standard tool to measure income affordability; it measures the ratio of median house price to the median household income in a city. The “median multiple” facilitates comparisons though it is by no means the only affordability indicator in use.³⁰ Typically those economies where individuals need over five times their annual salary to buy a home are ranked “severely unaffordable”, which is followed by “seriously unaffordable” (4.1 – 5.0), “moderately unaffordable” (3.1 – 4.0), and “affordable” (3.0 or less) (Demographia, 2008). Using this methodology, the area could be characterised as “severely unaffordable” with high rates in the City of Copenhagen (15.0) and Malmö (10.6). Nevertheless, additional caution is warranted when interpreting and drawing conclusions from this data. The “median multiple” does not take into account house and lot size differences despite wide international variation.³¹ This is a critical omission given that the average size of dwellings in Denmark, averaging 109.6 m² per dwelling, is the highest

recorded in the OECD (OECD, 1999). Likewise, owner-occupied housing in the City of Copenhagen has on average 3 rooms compared to the international standard of two bedrooms. Smaller condominiums are predictably more affordable in Copenhagen, with a median multiple of 7.8. In addition, the “median multiple” index neglects to integrate mortgage interest rates and transportation costs whose variability affects the cost of housing.³² Perhaps most important, the “median multiple” does not take into account the cost of rental units or social housing, which provide a significant part of housing in Copenhagen.

The ratio of the ownership housing market to the rental housing market in Copenhagen is low. The percentage of owner-occupied dwellings is low in the city of Copenhagen, at 16.5% of dwellings in 2006.³³ This is low from an international perspective and also considerably lower than the share of owner-occupied dwellings in the Capital Region (35.7%) and the national average (47.4%) (Statistics Denmark, 2006). Among OECD countries, Denmark’s urban population is one of those most strongly associated with a low home ownership rate (OECD, 2007). Over the period from 1995-2006, the share of rented dwellings decreased in all parts of the Capital Region: the majority of new dwellings in the region were sold as owner-occupied, and a large number of rented dwellings were sold to private housing societies. The main stock of private rented housing was built before World War II. As a general rule, private rented housing is smaller and poorer, and rarely suitable for families with many children (Kristensen, 2002). Copenhagen is one of the few major cities in Europe that continues to institute rent control, and 48.4% of municipal residents live in publicly rented units or private housing societies, as compared with the national average of 24.9% (Statistics Denmark, 2006). Since 1991, private housing has no longer been rent controlled.

Figure 1.23. **Share of median house prices to median household income in selected cities in the OECD (Third Quarter, 2007)**

Copenhagen municipality compared to cities in Australia, Canada, Ireland, New Zealand, United Kingdom and the United States.



Notes: Median house prices relate to a two bedroom, one bathroom single family house, 3rd Quarter 2007. The following units of analysis were used: Australia: Capital city statistical areas with over 50 000 population; Canada: Census metropolitan areas (CMAs) over 100 000 population; Ireland: Dublin Region (former Dublin Country) and markets over

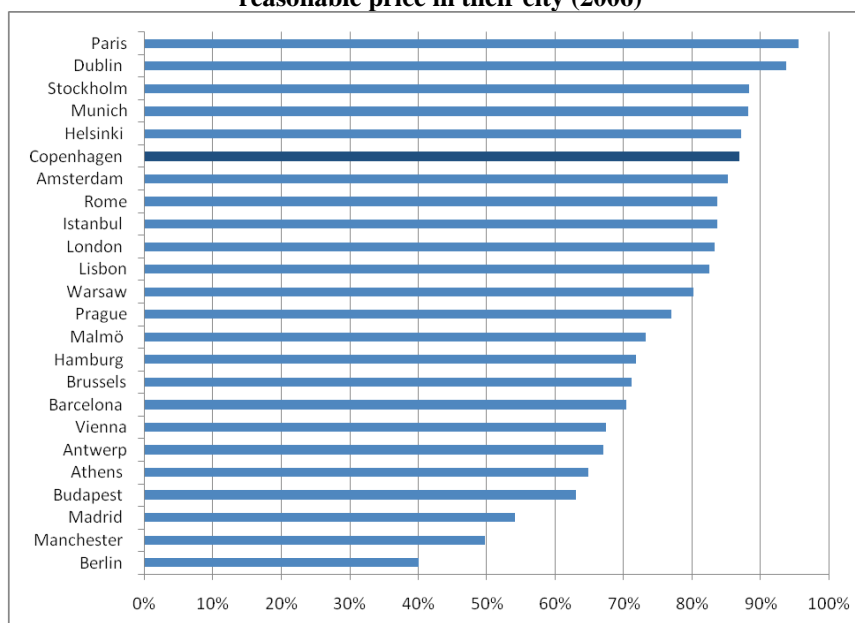
50 000 population; New Zealand: Metropolitan areas over 100 000 population; United Kingdom: Urban areas over 150 000 population; United States: Metropolitan statistical areas (MSAs) over 400 000 population.

1. The median income data for Copenhagen (DKK 226 200) is derived from Statistics Denmark and is from 2007. It corresponds to *København by* (municipalities of Copenhagen, Dragør, Frederiksberg and Tårnby). Statistics Denmark records median income statistics for Region Hovedstaden, København by, and Københavns omegn; it does not keep measure median income for the Municipality of Copenhagen alone. The 2007 third quarter median housing price corresponds only to the Municipality of Copenhagen (Københavns Kommune) and amounted to DKK 3 400 000 (Realkreditrådet, 2008). This price corresponds to villas and terraced houses (*parcelhuse* and *rækkehuse*). The 2006 average quarterly median condominium (*lejligheder*) price corresponds only to the Municipality of Copenhagen (Københavns Kommune) and amounted to 1 772 500.

2. The figures for Malmö are annual figures for 2006.

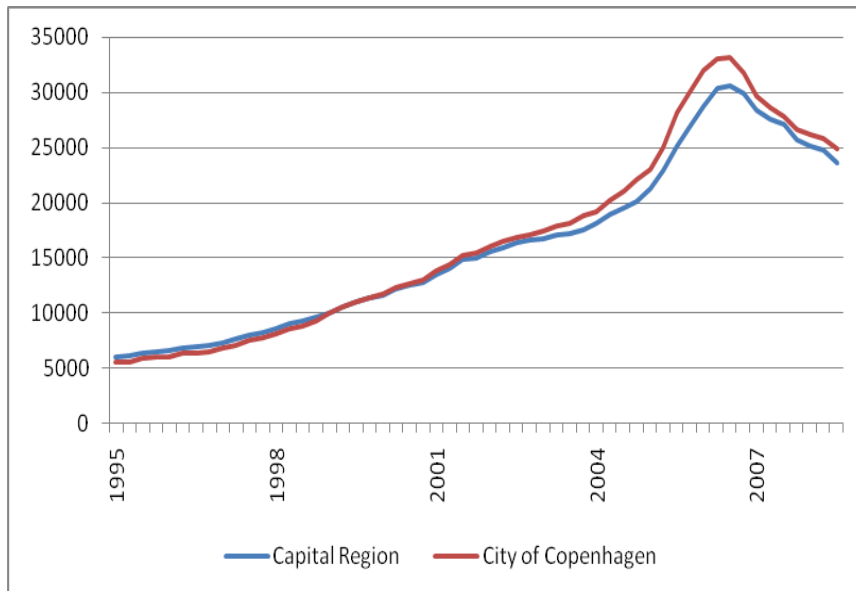
Sources: Information on Australia, Canada, Ireland, New Zealand, United Kingdom and the United States was compiled by Demographia (2008). Principal sources include AMP Banking (Australia), Australian Bureau of Statistics, Bank of Ireland, California Association of Realtors, Canada Mortgage and Housing Corporation, Canadian Home Builders Association, Canadian Real Estate Association, Central Statistics Office Ireland, Chambre Immobilière de Québec, Communities and Local Government (Ministry), United Kingdom, Department of the Environment, Heritage and Local Government (Ireland), Domain.com (Australia), Housing Industry Association (Australia), John Burns Real Estate Consulting, Land Registry of England and Wales, National Association of Home Builders (USA), National Association of Realtors (USA), National Statistics (United Kingdom), Property Council of Australia, Permanent TSB (Ireland), Real Estate Board of Winnipeg, Real Estate Institute of Australia, Real Estate Institute of New South Wales, Real Estate Institute of New Zealand, Real Estate Institute of Queensland, Real Estate Institute of Western Australia, Reserve Bank of Australia, Reserve Bank of New Zealand, Residential Property Council, Division of the Property Council of Australia, Royal Bank of Canada, Royal LePage Real Estate Services (Canada), Statistics Canada, Statistics New Zealand, United States Department of Commerce: Bureau of Economic Administration, United States Department of Commerce: Bureau of the Census, United States Department of Housing and Urban Development, University of Ulster, Urban Development Institute of Australia. Data from Denmark derived from Statistics Denmark (2008), data for Malmö from Statistics Sweden (2006).

Figure 1.24. Percentage of respondents who somewhat disagree or strongly disagree with the statement that it is easy to find good housing at a reasonable price in their city (2006)



Source: Eurostat

Figure 1.25. Owner-occupied home prices in Copenhagen and the Capital Region 1997-2008



Source: The Association of Danish Mortgage Banks (Realkreditrådet), 2008

Copenhagen faces a deficit of housing and high maintenance burdens from its ageing housing stock. In 2005, it was estimated that the metropolitan area needed 75 000 new dwellings by 2017 in order to comply with the projected housing demand (*Hovedstadens Udviklingsråd*, 2005). Though the construction sector is set to meet this goal – it currently produces approximately 7 000 housing units per year in the Copenhagen region – it is doubtful that it can do so in a way that reinforces Copenhagen's density and curbs mounting urban sprawl. Historically, because of the expansion of homes and the union of previously separated apartments, density decreased in Copenhagen from 1960 to 1990 (Kenworthy et al., 1999). Today, its population density is half that of Vienna, Munich and Berlin and one quarter that of Paris. Beyond the task of building new housing stock in a sustainable fashion, the region confronts the problems of maintaining ageing and antiquated housing stock. More than 65% of the city of Copenhagen's dwellings were built before World War II, compared to approximately 25% in the rest of Copenhagen and 15.2% in the rest of the Capital Region. Though the number of dwellings without a bathroom or toilet has been halved in the last 20 years, 12% have no bathroom, a rate triple the national average. Significant work lies ahead in

ensuring that these 38 000 dwellings have adequate facilities that meet building codes.

Figure 1.26. **Copenhagen's layout**

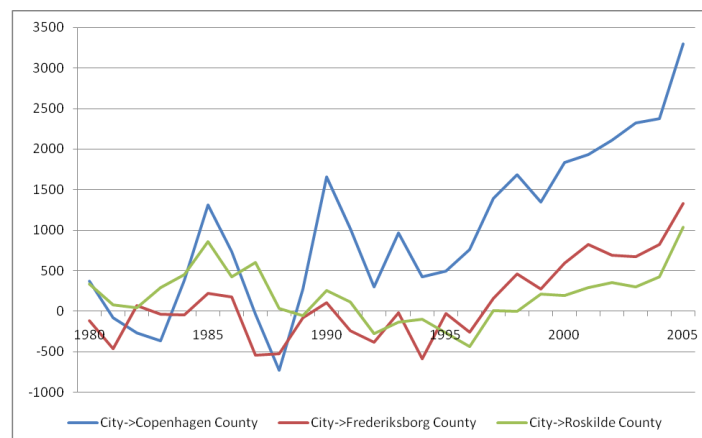


Despite declining unemployment rates in recent years, there are a number of neighbourhoods in Copenhagen with concentrated poverty and unemployment, often concentrating large numbers of refugees and immigrants. These distressed areas house a large percentage of residents who are disconnected from labour markets and dependent on cash benefits or state support. In these enclaves, residents lack the social networks to connect them to employment, hampering their cultural and economic assimilation into Danish society. In at least four Copenhagen neighbourhoods, including Mjølnerparken, Aldersrogade, Tingbjerg/Utterslevhuse and Akacieparken, at least half of the residents are unemployed. Nevertheless, spatial segregation in Copenhagen is relatively limited from an international perspective and does not approach the level of ghettoisation of other major cities. The segregation index in Copenhagen is lower than in most UK cities and in Antwerp (Musterd, 2005).³⁴ In terms of ethnic segregation, immigrants from non-Western countries are over-represented in the southwestern suburbs and under-represented in the affluent suburbs north of Copenhagen, where immigrants from Western countries are over-represented.

A substantive net migration out of the city of Copenhagen into neighbouring areas has occurred over the last 25 years. This outmigration benefits homeowners, who typically spend less in these areas; in April 2007, BRF Kredit reported that families earning DKK 500 000 gross a year would have 37% more for disposable income if they chose to live in Western Sealand instead of Copenhagen.³⁵ The centrifugal force of the regional housing market has had cascading effects, prompting migration from the outer ring of Copenhagen to areas in the exurbs. This outmigration has accelerated during the last decade (see Figure 1.27). This has been the case for migration from the city to surrounding areas within the Capital Region

(such as the former Copenhagen County and Frederiksborg County), as well as for migration to areas now in the Sjælland region, such as the former Roskilde County.³⁶ Given lower prices in Malmö and surrounding Swedish areas, after the construction of the Øresund Bridge, approximately 3 000 people have moved from Copenhagen to Malmö each year (Andersen, 2007). Of particular concern are the numbers of families that are leaving Copenhagen: 55% of the couples who decide to leave the city of Copenhagen have children.³⁷ Without sufficient workforce housing in Copenhagen, the city's ongoing problems recruiting for jobs in the social care sector, day care centres and primary schools are likely to increase. If households in the middle-income group continue to move away, it will be even more difficult to fill municipal positions in the City of Copenhagen and to prevent social polarisation. The potential for workforce housing policies to remedy this situation will be explored later in this Review.

Figure 1.27. Net outmigration from the city of Copenhagen to surrounding counties, 1980-2006



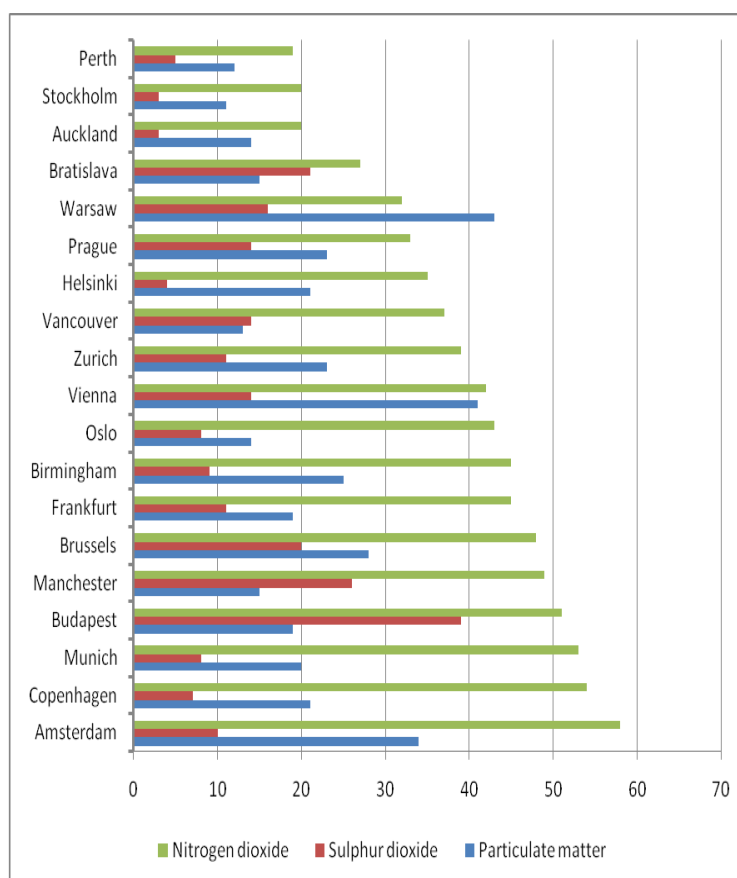
Source: OECD Secretariat's calculations on the basis of data from Statistics Denmark

Environmental quality

Copenhagen's air quality is not among the best in selected OECD cities. Copenhagen has one of the lowest sulphur concentrations, but with regards to the concentrations of nitrogen dioxide and particulate matter, many similar-sized cities in the OECD of fewer than 2.5 million inhabitants are doing better (Figure 1.28). Even large cities such as Paris, London and Frankfurt have managed to achieve lower concentrations of particulate matter (PM). In 2005, the limit for daily average value for PM₁₀ (50 µg/m³) was exceeded 64 times in the city of Copenhagen, 29 more than the EU permitted threshold (*Teknik og Miljøforvaltningen KK*, 2007). Though

progress has been made – the levels of total suspended particulate matter and PM10 have fallen threefold since 1988 in some locations – current PM10 levels have remained relatively unchanged since 2004 (City of Copenhagen, 2008; *Danmarks Miljøundersøgelser*, 2007).³⁸ A large portion of this ultrafine particulate pollution derives from traffic and wood burning.

Figure 1.28. Concentration of sulphur, particulate matter and NO₂ in selected OECD cities



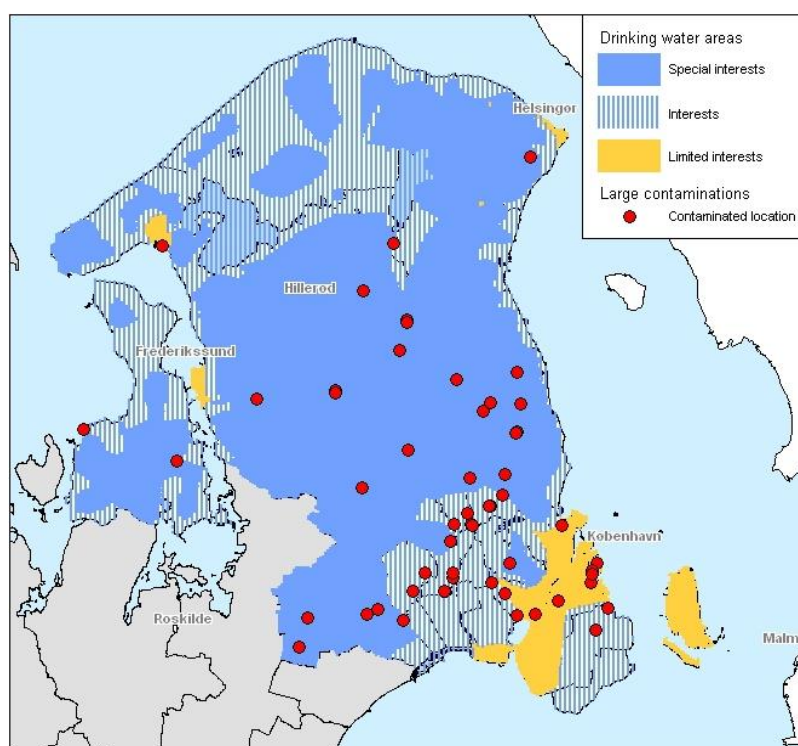
Sources: This is a selection of cities in the OECD with fewer than 2.5 million inhabitants. NO₂ measurements for cities in the OECD derive from OECD Environmental Data Compendium 2002, EEA (AirBase), and national statistical websites (cited in OECD, 2005). They refer to 2002. Data on particulate matter concentrations are from Pandey *et al.* (2006) (cited in World Bank, 2007). These data refer to 2004. Data on particulate matter from Copenhagen was taken in 2007 and is an average of annual figures from three air quality monitoring stations (H.C. Andersen Boulevard, Jagtvej, and H.C. Ørsted Inst.), according to *Danmarks Miljøundersøgelser* (2007).

Copenhagen has however managed to realise a 25% reduction in carbon dioxide over the last 15 years, due to renewable energy, energy savings and the district heating system. A large share of Denmark's energy consumption (18%) is derived from wind energy, from the wind turbines on Middelgrund, an area just outside the harbour of Copenhagen, and other sources. Copenhagen is renowned worldwide as a pioneer in wind energy production. In 1990, less than 2% of its total production of electricity came from wind energy. By 2006, that had quadrupled to nearly 9%, thanks to tax breaks on capital investment, mandated targets, preferential pricing and a ban on nuclear power generation. Much of Copenhagen's solid waste is recycled (32%) and a large part (62%) of the remainder is incinerated.³⁹ Finally, the city operates one of the most sophisticated, environmentally friendly heating systems in the world. Waste heat from incineration plants and power plants is pumped through a 1 300 km network of pipes straight into 97% of citizens' homes. In 2005 the entire district heating system replaced the equivalent of 290 000 tons of oil annually, i.e. it prevented 950 040 tons of CO₂ emissions. The city of Copenhagen, representing 70% of the system, replaced the equivalent of 203 000 tons of oil and prevented the emission of 665 000 tons of CO₂ (City of Copenhagen, 2007).⁴⁰

Copenhageners enjoy reasonably high water quality and consume fairly low amounts though water sources are vulnerable to leakage from contaminated sites. In terms of water quality, Copenhagen data from the Copenhagen Department of the Environment shows that drinking water is of high quality, with all natural, chemical components (sodium, potassium, hydrogen carbonate, iron, etc.) within acceptable water quality criteria (City of Copenhagen, 2008). Given the lack of international standardisation on these measurements, it is not possible to assess how Copenhagen compares with other cities. The city of Copenhagen has invested significant effort in cleaning its harbor and making it a safe place to swim. Today it has a municipal salt water swimming pool and several accompanying facilities, including a sand beach. The Capital Region has several contaminated soil and water areas. Field investigations conducted by environmental specialists in the regional government have identified water contamination in at least 3 000 sites.⁴¹ Of these, the regional government identified 50 heavily contaminated areas where the cost of cleanup would exceed DKK 10 million (approximately EUR 1.35 million). These sites include former steel works, oil refineries, wood preservation facilities, landfills, metal industries, chemical production plants, dry cleaners and gas works. A wide range of pollutants are found in the soil and groundwater at the sites, including hydrocarbons (oil, gas), chlorinated solvents, phenols, metals and pesticides. If the contaminants in these sites leak into underground aquifers, water quality will be compromised, especially given that 75% (80 million m³) of the total annual water consumption in the Capital Region is extracted from

the region's groundwater aquifers.⁴² Currently, however, groundwater in the Capital Region is generally of a very good quality, and the groundwater typically only requires simple water treatment (aeration and sand filtration) to make it potable and compliant with Danish quality standards (Region Hovedstaden, 2007).

Figure 1.29. Heavily contaminated sites in the Capital Region, 2007



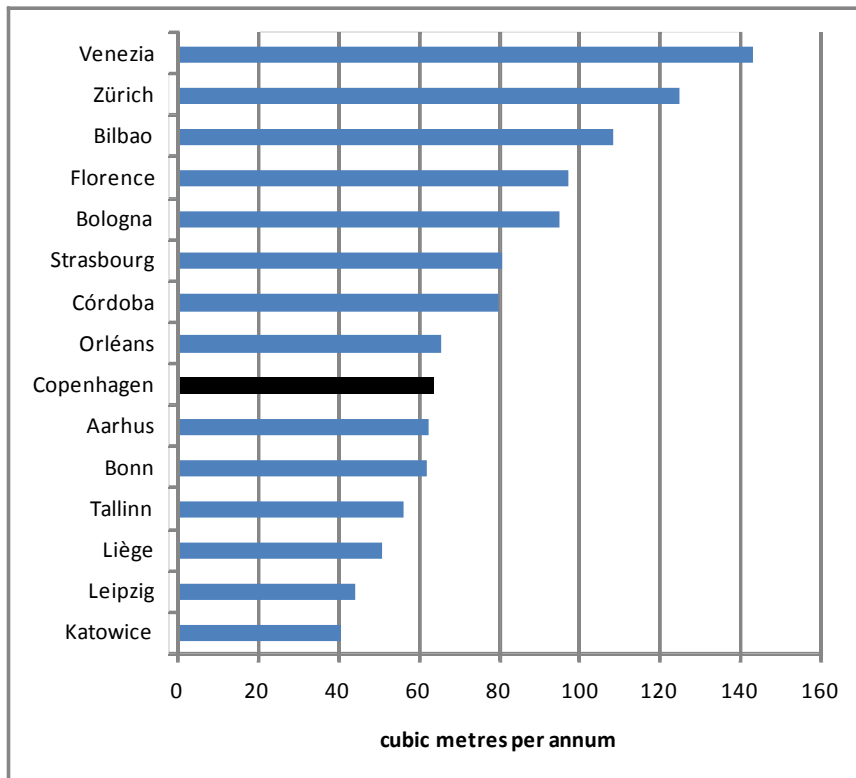
1. The red dots represent 50 heavily contaminated spots defined as those where the estimated costs of cleanup exceed DKK 10 million (approximately EUR 1.35 million).
2. For water management purposes, the Capital Region is divided into different areas based on the value of the groundwater as a source of drinking water. These areas, also shown on the map, are “areas of “special interest”, “areas of “interest” and “areas of “limited interest”. The areas of “special interests” are those in which the ground water is easily extractable and naturally of very good quality. The areas of “interest” have extractable ground water of fair to good quality. In the areas of “limited interest” the natural ground water quality is often poor, and the water may also be difficult to extract from the aquifers – for example due to low transmissivity.

Source: Region Hovedstaden (2007)

Residents of Copenhagen consume a fairly low amount of water compared to other EU cities of comparable size, thanks partly to increased pipe maintenance and declining leakage throughout the water network. Since at least 1989, Copenhagen has also instituted customer-targeted water conservation campaigns and systematic monitoring and raised the price of water. In 2004, average water consumption was lower than in Florence or Bilbao, but higher than in Bonn or Leipzig.

Figure 1.30. **Water consumption per capita, 2004**

Select EU municipalities with between 250 000 and 499 999 inhabitants



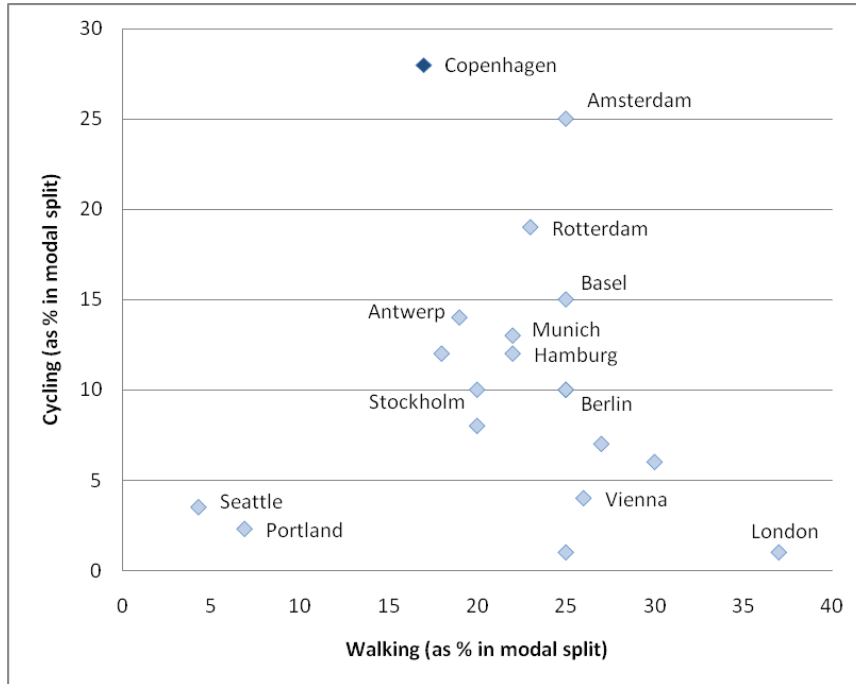
Source: Directorate-General for Regional Policy at the European Commission and EUROSTAT (2008)

While Copenhagen is at low risk of coastal flooding, it is vulnerable to storm surge events associated with storms in the Baltic Sea and rising sea levels from climate change. The combination of an extreme storm with

rising sea levels (which could rise by 40 to 130 centimetres by 2100) could have an amplitude of 190 to 280 centimetres above the current mean sea level. One recent team estimated that an increase of 50 centimetres in the water level over the next 50 years would cause total losses amounting to EUR 2.0 billion.⁴³ These economic losses, though significant, would remain manageable by the local economy and are not comparable to the level of devastation of a Katrina-like event, whose likelihood in Copenhagen has a probability largely below 1 out of 1 000 years (Hallegatte *et al.*, 2008). The last flood in Copenhagen occurred in 1872.⁴⁴

Copenhagen is renowned for being the “City of Cyclists”, due to its large number of cycle tracks and high bicycling rate. With a cycle track network of over 300 kilometres, the City of Copenhagen has invested considerably in improving cycling conditions. For example, in 2002, one-third of the budget for road construction was earmarked for cycle tracks, reinforced cycle lanes, and the opening of new routes (City of Copenhagen Cycle Policy 2006-2012, 2002). Although some smaller and medium-sized cities in Europe, such as in Groningen or Münster, sometimes have higher percentages of bicycle use, among large OECD cities, Copenhagen has one of, if not the highest, rates of bicycle use. In 2006, 36% of Copenhageners bicycled to work, and the City of Copenhagen is attempting to raise this to 50% (City of Copenhagen, Bicycle Account, 2006). In addition, Copenhagen can also pride itself on a considerable percentage of trips made by walking, although relatively low in comparison with the benchmark cities (Figure 1.31). As there are concerns about comparability of the data on this subject, Figure 1.31 must be interpreted with caution. Moreover, data on many cities are lacking, but it seems that this can be explained by the marginality of bicycles in the modal splits in these cities. One can assume with some certainty that the metropolitan areas in Figure 1.31 are at the forefront as regards bicycle use.

Figure 1.31. **Walking and cycling as share of modal split in selected OECD cities**

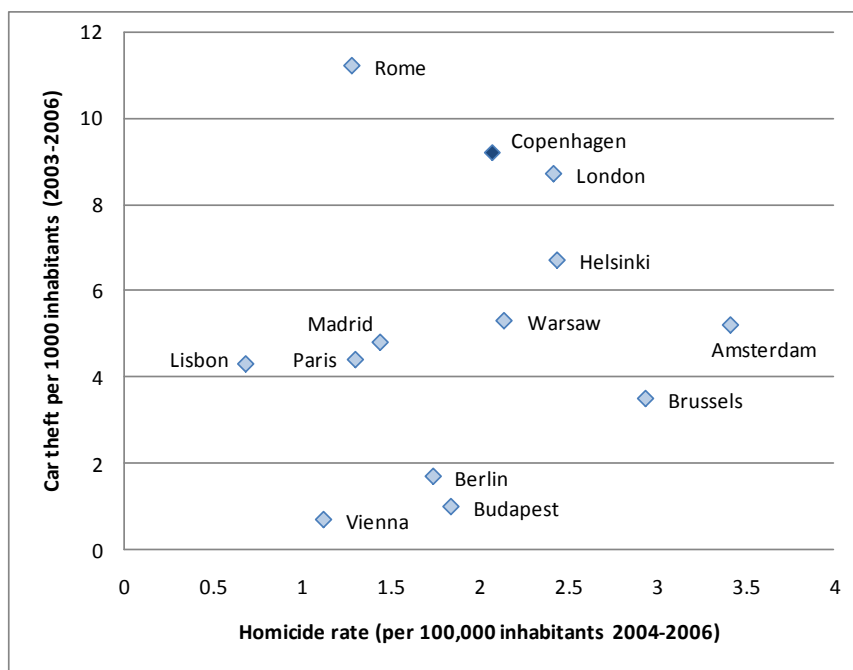


Source: Apel, 1999, Krag, 2003, GTZ Breithaupt, 1998, GTZ Breithaupt, 1997, OVG, 2000, Carter, 1995. The unit of analysis is the city.

An average score for urban crime

Copenhagen has relatively high crime rates. Its car theft rates stood at around 9 per 1 000 inhabitants over 2003-06, one of the highest rates in selected European capitals, and higher only than Rome. Its homicide rate over the same period was around 2 per 100 000 inhabitants over 2004-06, an average figure in comparison with other European capitals (Figure 1.32). Crime rates in urban areas in Denmark are slightly higher, but Denmark has one of the lowest regional differences in crime rates, as well as murder rates. There are indications that violent, gang-related, crime in Copenhagen has increased recently: in the first half of 2008, 23 shootings were reported, against 22 in the whole of 2007.⁴⁵

Figure 1.32. Crime rates in selected OECD cities (2003-2006)



Source: Data from Eurostat, Urban Unit. Cities are defined by municipal boundaries

Other urban amenities

Around 93% of the citizens in Copenhagen are satisfied with the access to “green spaces such as public parks and gardens”, according to a survey of the European Commission (2007) on the perception of quality of life in 75 European cities. The percentage of nature and coastal areas in the Capital Region (27% of the land use) is however not as high as that of some other metropolitan areas, such as Barcelona, Stockholm and Helsinki. However, the proximity of green areas to the Copenhagen metropolitan region is an advantage. It only takes 20 minutes from the city centre by train to reach forests and beaches of the best quality. Almost half (48%) of the population in the Capital Region have access to green areas within a distance of 500 metres, 32% have access within 500 to 1 000 metres, and the remaining 20% have access within a distance of more than 1 000 metres (corresponding to a walk of more than 10 minutes).

Copenhagen benefits from a fair share of urban amenities. Copenhagen has some fine cultural institutions, such as museums, theatres, galleries and the recently constructed opera and library. A new theatre (Skuespilhuset) recently opened, along with a state-of-the-art concert hall in the Ørestad. The neighborhood of Christiania is often proclaimed for its public art and Bohemian atmosphere. Much care has been devoted to providing high-quality public space throughout Copenhagen, for example by gradually making the historical centre of Copenhagen car-free (Gehl and Gemzøe, 2002). The satisfaction of Copenhageners with their urban environment was reflected in the above-mentioned European Commission survey, which documented that 60% were satisfied with the “quality of public transport” and 70% were satisfied with “health care services offered by hospitals”. Copenhagen has a share of Michelin-starred restaurants per capita that is above the average for OECD metropolitan areas. Residents in Copenhagen enjoy a high level of human development and gender equity. Gender equity in Denmark also scores highly: though Denmark still needs to make progress in pay equity, women receive 73% of the salary for the same work than men do, higher than several countries in the OECD, including Switzerland (63%), Germany (58%) and Italy (47%) (United Nations Development Programme, 2007).

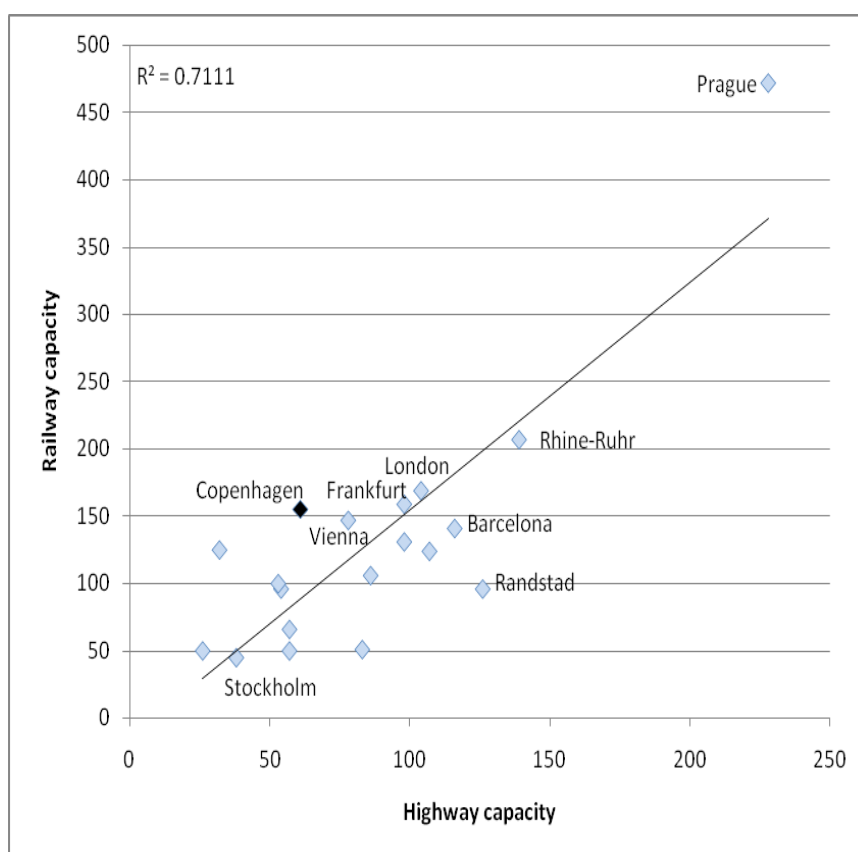
1.4.5 Transport infrastructure

Copenhagen has good transport infrastructure, with a capacity that compares well with other European cities'. Although one would expect railway and highway capacity to substitute each other to some extent a comparison of capacity in large cities in Europe shows that they are positively correlated (Figure 1.33). Copenhagen appears to have a relatively more developed railway capacity. The capacity of the railway network, defined as the number of meters of railway track per 1 000 inhabitants, is high in Copenhagen in comparison with many European cities. Highway capacity is average in Copenhagen, but lower than several European cities, such as Randstad, Barcelona and London.⁴⁶ Road efficiency in Copenhagen appears not to be particularly high. This indicator expresses how many passenger kilometres are travelled annually per kilometre of road. Several European cities score higher on this score.

There are some signs that public transit capacity is saturated. In terms of rail, capacity on the regional train line (S-line) appears almost fully used according to the Ministry of Transport and Energy, and the rail capacity on remaining rail lines is strained. Seven out of the ten sections of railway lines carrying over 200 trains every day are located in Copenhagen (Statistics Denmark, 2008b). In particular, the radial network puts pressure on the central Boulevard line. This concentration results in major operational

challenges, such as delays and cancellations; in 2006, 10.8% of all S-line departures were delayed and 3.5% were cancelled. At the same time, passenger figures for the S-train (regional train) are predicted to increase by 34% by 2020. Despite the expected gap in supply and demand, government has been investing in the road network much more than in rail network, and this disparity is increasing.⁴⁷

Figure 1.33. **Railway and highway capacity in selected OECD metropolitan areas (2006)**



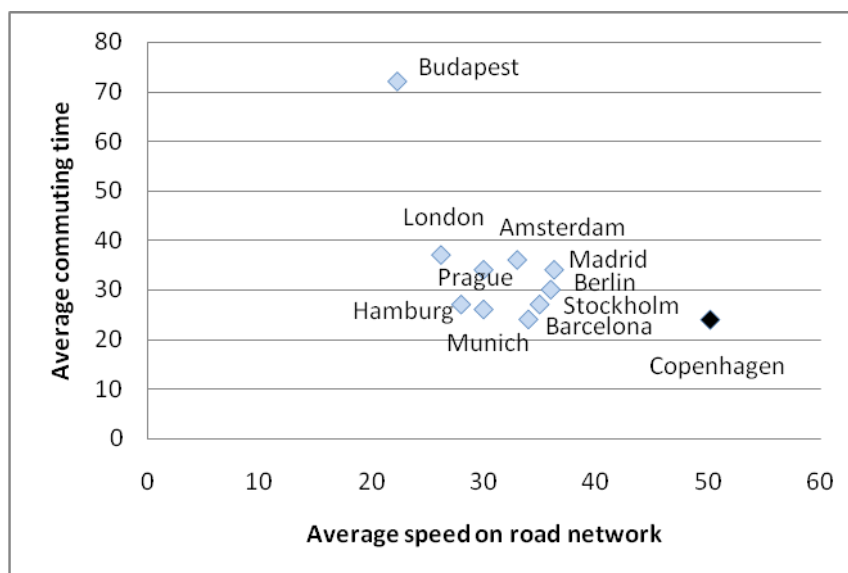
Source: TNO (2007), Randstad Monitor 2007, Delft. The unit of analysis is the metropolitan area.

The automobile far outstrips other modes of transport in the wider Copenhagen metropolitan area. Public transport accounts for only around

15% of all trips within the metropolitan area, while automobiles account for 82%. The use of the car has increased in the past decade, even though Copenhagen has maintained a low car ownership rate.⁴⁸ A relatively high share of commuters uses cars to commute within Copenhagen. The German metropolitan areas of Hamburg, Munich and Berlin show higher car-use shares, but many other European metropolitan areas, such as Madrid and Stockholm, rely less on cars to commute. The growing population, changing commuting patterns, growing purchasing power, and the prevalence of an automobile culture contribute to increased use of cars. The modal split within the city of Copenhagen is markedly different. It is generally one-third by bike, one-third by public transit, and remaining one-third by car.

Increased car usage raises concerns about congestion. The City of Copenhagen perceives congestion as a serious bottleneck, though the level of congestion does not seem as high as the other European cities. One indicator of urban congestion is the average speed on urban roads. The Copenhagen metropolitan region is doing particularly well in this respect, with an average speed estimated between 42 km/h and 50 km/h,⁴⁹ whereas the average speed in other European metropolitan areas ranges from 22 km/h to 36 km/h (Figure 1.34). Average commuting time in Copenhagen is lower than all other major European metropolitan areas. However, the increasing popularity of the car as the preferred mode of transport has contributed to declining traffic speeds, which dropped the average peak-hour speed of cars within the city of Copenhagen from 33 km/hour in 1995 to 27 km/h in 2005 (Capital Region of Denmark, 2008). Congestion in the Capital Region rose by 10% in 2007, and the costs of the congestion in the area is estimated to be EUR 1.2 billion per year in 2007 (Nielsen and COWI, 2008). It is further estimated the cost of congestion will reach EUR 1.5 billion per year in 2015, even taking all the planned infrastructure development into account (Capital Region of Denmark, 2008). Nevertheless, this estimation is based on the opportunity costs of people stuck in traffic and does not take into account such factors as the effects of Copenhagen's noise pollution.⁵⁰

Figure 1.34. Congestion in selected OECD metropolitan areas (2005)



Note: The figure indicates the average speed per hour (km/h) on the urban road network and the average commuting time in minutes.

Source: TNO (2007), Randstad Monitor 2007, Delft

Thanks to its airport, Copenhagen represents a gateway between Scandinavia and the rest of Europe. Copenhagen Airport is the largest and busiest airport in Scandinavia and an important link to other parts of the world. A well-connected airport is critical in attracting international businesses. Copenhagen Airport has received several awards for its amenities. In terms of passenger traffic, it is the 14th largest airport in Europe and the leading airport in Scandinavia.⁵¹ In January 2008, it serviced 130 international routes and 9 national routes. With regards to airline connectivity, Copenhagen scores between 16th (Choi *et al.*, 2006) and 24th position in terms of the number of airline connections it has with other cities (Derudder *et al.*, 2007). Even though it is relatively weak when it comes to transatlantic flights, it offers a large diversity of European destinations (58), with more than one flight per day. In this respect, it ranks sixth in Europe, after Amsterdam, Paris, Frankfurt, Munich and Brussels. The growth in international passengers has been rapid, from about 6 million in 1996 to more than 9 million in 2006 (Statistics Denmark, 2008). Copenhagen airport is located just six kilometres from the city centre of Copenhagen, with good access by public transportation. The completion of the Øresund Bridge

cemented the airport's role as a regional hub. The airport is now linked to Denmark's railway system through Copenhagen and to the Swedish railway system through Malmö. Of the passengers flying out of Copenhagen Airport in 2006, 17% were Swedes.⁵² The largest operator, Scandinavian Airways (SAS), plays a key role in maintaining international and intercontinental routes. Copenhagen has shown a relative decline in airline connectivity since the 1980s; according to some observers, Copenhagen has recently declined in intercontinental air traffic density (Matsumoto, 2007). Its position as one of Northern Europe's most important airport hubs is however in question, and the number of transfer and transit passengers has decreased in the past three years. Concerns persist over an eventual merger of SAS with another carrier and what this would imply for Copenhagen's position as a European hub. Copenhagen is not connected to Europe's high-speed railways, which puts it to some extent at a disadvantage to other European metropolitan areas. The development of a fixed link between Sjaelland and Germany via the Fehmarn Belt Link (see Section 2.6) could connect Copenhagen to the European high-speed railway network.

Shipment and logistics are among Denmark's most important exports, but the port of Copenhagen has been overshadowed as a port and logistics complex by South Jutland, which has become a specialised hub for goods and shipment. However, since 2001, to improve international recognition and ensure effective management, the ports of Copenhagen and Malmö have come under the management of one organisation, the Copenhagen Malmö Port Authority (CMP). The CMP is equally funded by the Copenhagen Port Authority (owned by the City of Copenhagen and the Danish central government) and Malmö Port Authority (consisting of the City of Malmö and private entities). The Copenhagen-Malmö port aims to be the regional hub port for the Nordic and Baltic regions, given its strategic location. A number of international firms, including Toyota, Sony and Roland, have already located their main distribution centres in the port. In addition, the Port of Copenhagen has recently become a cruise destination, and 25% of the tourists to the city are cruise visitors.⁵³ Planned development of the Northern Harbour district will increase the attractiveness of the port, with its new cruise docks and new cruise terminal. For logistics and tourism, access to the Northern Harbour via the road and railway network is very important.

1.5 Conclusion

Copenhagen's economy has performed reasonably well in the last decade, but has grown only at a moderate pace. Its tight labour market is a constraint on growth. Although labour participation rates are high, certain groups have not been well integrated into the labour market, such as

immigrants and students, who enter the labour market only at a late age. Attraction of highly skilled foreigners has been limited. In addition, Copenhagen scores only average on many innovation indicators, suggesting that its capacity for innovation could be strengthened. Finally, Copenhagen's urban attractiveness could be further improved, for example with regards to environmental quality and housing, two determinants of urban competitiveness where policy interventions may be called for.

NOTES

- 1 Annex 1 presents the analytical framework for the Metropolitan Review. It defines urban competitiveness and sets out its most important determinants based on a review of the empirical evidence in the current academic literature.
- 2 The OECD regional typology distinguishes between three types of regions: predominantly urban regions, predominantly rural regions and intermediate regions.
- 3 Intermediate areas are areas in which 15% to 50% of the population lives in a municipality with a population density of less than 150 inhabitants per square kilometre. See OECD (2006b) for a more detailed description of the classification of regions in the OECD.
- 4 Considering distances and existing infrastructure and excluding the population of Copenhagen itself.
- 5 The OECD methodology to define functional metropolitan regions takes into account population size (a minimum threshold of 1.5 million inhabitants), population density (more than 150 inhabitants per square kilometre) and commuting flows, as an indicator of whether urban areas represent a contained labour market, that is, areas where commuting within the region is considerably higher than between it and the surrounding areas. The technical expression of this last criterion is that the net commuting rate of the area does not exceed 10% of the resident population. A net commuting rate higher than 10% indicates that the functional area is indeed larger, and that other areas must be included in the definition of the specific area until the net commuting rate no longer exceeds 10% (OECD, 2006).
- 6 These are Copenhagen county, Frederiksborg county, Roskilde county, Vestsjælland county and Storstrøms county.
- 7 In some municipalities in Sjaelland, this percentage is even higher: the municipality of Lejre, for example, displays a commuting flow to the Capital Region that represents around 45% of its workforce.

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- 8 Copenhagen metropolitan region could in fact be considered third in this ranking, since Randstad-Holland does not constitute a functional metropolitan area (OECD, 2007).
 - 9 Another way in which other regions can benefit from wealth created in Copenhagen is through redistribution of income across regions via equalisation schemes. As will be shown later, this is also practiced in Denmark.
 - 10 Copenhagen is here defined as the former HUR-area.
 - 11 Although the less extreme under-representation in mining in Copenhagen might be partly explained by assignments of production to headquarters located in Copenhagen but produced elsewhere, there is no reason why a similar effect would not hold true for the other metropolitan areas in the figure.
 - 12 Considering its relative lack of economic specialisation, a remarkable amount has been written about economic clusters in Denmark. Many studies have been carried out by the Ministry of Trade and Industry, which released a report in 1994 in which Denmark's eight main industrial strongholds were presented, and which continued to conduct studies on clusters in Denmark (Ministry of Trade and Industry 2001, 2002). Other studies were made by research institutes in Denmark and commissioned by the Greater Copenhagen Council and the Capital Region (Oxford Research, 2003; Copenhagen Economics, 2006; FORA, 2008). These studies deal with economic specialisation, rather than with clusters in the classical sense, as defined by Porter (1990). Regional economic clusters are in this definition characterised by at least three elements: they have a certain size, specialisation and focus. The European Cluster Observatory operationalised these criteria by giving a star to regional clusters that are in the top 10th percentile of employment of a given cluster category (size), to regional clusters that have at least twice more employment within a given cluster category than the average of all regions would suggest given their size (specialisation) and to regional clusters that reach the top 10th percentile of all regional clusters in Europe sorted according to this measure (focus). All regional clusters are thus listed that have received one, two or three stars. In Denmark, no distinction has been made between different regions, so that the whole of Denmark is considered to be a region in their study. Denmark does not have three-star regional clusters, reflecting the relative lack of specialisation in Copenhagen, but has four two-star clusters and 26 one-star clusters.
 - 13 These exporting sectors were selected as follows. Among the 20 economic sectors with the largest absolute export values in Denmark, those ten exporting sectors were selected in which Denmark had the highest ranking in world exports.¹³ From these ten sectors, those were

excluded in which Copenhagen has a relatively low location coefficient, as they do not present a particular Copenhagen specialisation; seven economic sectors remain. In all these seven exporting sectors, Denmark ranks between 10th and 20th position; this is a position considerably above what might be indicated by the size of its economy.

- 14 Based on data from www.lboro.ac.uk/gawc.
- 15 Data from Globalisation and World Cities Research Network, www.lboro.ac.uk/gawc/.
- 16 Allowing for those who transfer to another course within their university or another university.
- 17 Human Development Report of 2007/08 by the UNDP ranks Denmark 10th among 136 countries in terms Gender Development Index (GDI) and ranks it fourth among 93 countries in terms of the Gender Empowerment Index (GEI). GDI evaluates the difference of performance between male and female, compiling some indicators, including income, life expectancy, education. GEI is calculated based on indicators such as the participation rate of women in parliament, management posts and high professional posts.
- 18 Data from Orestat.
- 19 In 2008, the Jyske Bank found an employment rate among non-Western immigrants of 53% in 2007 and of 65% for non-Western second-generation immigrants (Jyske Bank, 2008).
- 20 Data from www.noegletal.dk.
- 21 Data from www.gstudynet.org.
- 22 Data from www.ku.dk.
- 23 Temporary Danish workers to the United States amounted to around 16 000 people in 2005 and 2006, whereas the number of total work permits granted in Denmark was 21 000 for the same two years (data from Yearbooks of Immigration Statistics 2005 and 2006 of US Homeland Security; data for Denmark from OECD, 2008).
- 24 Data from Statistics Denmark.
- 25 There are several worldwide rankings for universities. The Academic Ranking of World Universities by the Shanghai Jiao Tong University analyses 3 500 universities and ranks 500 universities. It takes into account the quality of the education, size, research output, impact and prestige. Citations in natural sciences journals and the number of Nobel Prize winners and Fields medalists (in mathematics) are weighted relatively heavily in this index. The Times Higher Education Supplement

ranking rates 200 universities worldwide. Indicators that are weighted relatively heavily in this index are the academic reputation, as reviewed by 1 000 academic peer reviewers, and proxies for scientific output (citations) and quality of education (ratio of students to staff). The Professional Ranking of World Universities by the École Nationale Supérieure des Mines de Paris intends to measure the performance of each university by looking at the labour market perspectives of its alumni. Its main criterion is the number of CEOs of Fortune Global 500 firms who studied in each university. The Performance Ranking of Scientific Papers for World Universities by the Higher Education Evaluation and Accreditation Council of Taiwan reviews production of scientific papers. It uses three criteria: research productivity, research impact and research excellence, using bibliometric methods, to analyse and rank the production of scientific papers of the top 500 universities in the world. The Research Centre for Chinese Science Evaluation of the Wuhan University ranks universities based on essential science indicators. It takes into account number of publications and frequency of citations in more than 11 000 journals around the world, in 22 fields of research.

- 26 It does not figure in the Wall Street Journal ranking of 25 best non-US business schools, nor in the UTD Top 100 Worldwide Business Schools, which is based on research contributions. In other rankings, the Copenhagen Business School occupies a rather modest position. It scores 41st in the Global Business School 2007-2008 ranking of the Aspen Institute (and sixth in Europe), and 37th in the Financial Times Top 60 of graduate business schools in Europe. The Financial Times also publishes rankings of the different programs of the business schools, in which the Copenhagen Business School ranks 21st for its Master in Management and 62nd for its Executive MBA programme. European cities that score considerably better in business education are Paris, London, Madrid, Randstad (Rotterdam), Brussels (Leuven), Milan, Zurich (St. Gallen) and Stockholm. Copenhagen Business School does not figure in the international top 100 of MBAs of the Economist Intelligence Unit, since it does not offer a full-time MBA.
- 27 Calculations by the Danish Enterprise and Construction Authority, based on data from Statistics Denmark.
- 28 Among EU countries, Denmark has some of the highest housing prices: 28.6% of a typical household's consumption was spent on housing in 2003. Only Spain and Sweden spent more of their income on housing (Boverket, 2005). A wide number of economic factors may have increased the price of housing and constrained the supply for the low-income market, including households' ability to borrow, conditions affecting the supply of new or refurbished housing, choices concerning how much to spend on housing relative to other goods, and the

distribution of housing prices, housing quality and income (Quigley and Raphael, 2004).

29 This section benefits from the comments of Christian Deichmann Haagerup at the Danish Building Research Institute.

30 Housing statisticians have not achieved consensus on income affordability. In the United States, for instance, Gan and Hill (2008) discuss three different indexes produced by the National Association of Realtors (NAR), US Department of Housing and Urban Development (HUD) and the National Association of Home Builders (NAHB). They write, the “NAR index measures the ratio of 25 percent of median monthly income to the monthly repayments on a fixed-rate mortgage on the median house at current interest rates. The HUD index measures the ratio of median family income to the income required to qualify for a conventional mortgage on the median valued house sold. The NAHB index measures the fraction of dwellings sold that could be purchased by the median household with 28 percent of household income.” Gan and Hill develop new statistical tools to measure purchase and repayment affordability, which the “median multiple” does not capture.

31 Demographia (2006) acknowledges this shortcoming of their methodology,

“[C]aution should be employed in comparing Median Multiples between countries, due to substantial differences in average house and lot size...For example, according to national reporting agencies, the average new house constructed in Australia and the United States is approximately 2,200 square feet (over 200 square meters), including both detached houses and multiple units. New house sizes are nearly as large in New Zealand (1,900 square feet or 175 square meters), while new detached houses average 1,900 square feet (175 square meters) in Canada. However, new average house sizes are less than one-half that size in United Kingdom, (815 square feet or 76 square meters)...Moreover, new UK houses are the smallest in the former EU-15, while new Irish houses rank ninth in size among the 15 nations. Houses in Australia, Canada, New Zealand and the United States have increased substantially in size in recent decades...New house sizes have dropped more than 30 percent in the United Kingdom since 1920... In fact, average house lots are much larger in the United States (and Australia, Canada and New Zealand) than in the United Kingdom. In the United States, new detached houses are built at 2.7 per acre (6.6 per hectare). In Australia, new detached houses are being built at 5.5 per acre (13.3 per hectare). By comparison, in the United Kingdom, new houses were built at an average of 16 per acre (40 per hectare) in 2005.

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- 32 One notable exception is the Housing + Transportation Affordability Index, which takes transportation costs into account. It was applied in 51 metro areas in the United States after being jointly developed by the Center for Neighborhood Technology and the Center for Transit Oriented Development (CTOD) (Center for Neighborhood Technology, 2008).
- 33 The current share according to the city of Copenhagen is 19%.
- 34 The segregation index for the lowest income quintile in Copenhagen was 4; while it was around 35 for the Antwerp poor and between 15 and 25 for most unemployed people in UK cities (Musterd, 2005).
- 35 Likewise, in August 2005, BRF Kredit, a Danish credit association, documented that a family of two teachers living in Copenhagen would have had to earn DKK 105 000 more a year if it was to have the same disposable income as the Danish average.
- 36 The city of Copenhagen lost 13% of its population and expanded its urban area by 25% from 1960 to 1990 (Kenworthy et al., 1999). The most important motive for internal migration in Denmark is housing (40%), which is more frequently the case than in other Nordic countries (Lundholm *et al.*, 2004).
- 37 It is also alleged that families leave Copenhagen because they are able to find higher quality and more spacious homes outside the city.
- 38 The figures refer to the average of annual figures from three air-quality monitoring stations (H.C. Andersen Boulevard, Jagtvej, and H.C. Ørsted Inst.).
- 39 In 1997, Denmark became the first country in the world to ban the landfilling of incinerable waste. The Amagerforbrænding incineration plant was the first plant in Denmark engaged in combined heat and power production. It treats waste from 535 000 inhabitants and 36 000 companies and institutions located in five municipalities of Greater Copenhagen (Copenhagen, Dragør, Frederiksberg, Hvidovre and Tårnby), and supplies heat and power to approximately 140 000 households in Greater Copenhagen. The excess electricity is exported to the rest of Zeland (sometimes to Sweden). Each year, the Amagerforbrænding plant treats 390 000 tonnes of municipal waste and produces 2 930 TJ of heat and 211 000 MWh of power. Most of the residues from the incineration process are recycled (4 400 tonnes of scrap iron and 73 500 tonnes of slag). Only 17 800 tonnes of residues from flue gas cleaning are disposed of in landfills. The plant is owned by the five municipalities from which it collects waste. It also operates nine recycling stations (Kleis and Dalager, 2004; I/C Amagerforbraending, 2006, cited in OECD, 2008). As regards recycling in general, in 2004 56% of waste in households, industry, and construction and demolition was recycled (City of Copenhagen, n.d.).

- 40 The Copenhagen district heating system captures waste heat from electricity production, which is otherwise released into the sea, and channels it back through pipes into peoples' homes. The system maintains water temperature providing homes with cheap heat from a waste product. A number of key factors have made this system successful, including:
- *Tax Incentives:* In the mid-1980s the Federal Government introduced tax incentives on fuel for electricity plants. They paid less fuel tax if they used CHP (in some cases this amount equated to less than 50% tax incentive). This enabled the companies to sell heat to consumers at a lower price.
 - *Planning regulations:* In 1979, a new heat supply act was implemented which started a heat planning process in the municipalities – this enabled municipalities to dedicate a certain area to district heating, and make it mandatory for households to connect to district heating. While consumer choice was removed, costs to consumers were reduced.
 - *Pricing:* The price for district heating is highly competitive with other forms of energy. CTR's heating price, which is a pool system price, is identical for all five municipalities, and has basically been kept at the same level throughout the whole of the project's lifetime. Annual costs per household are half that of oil, for example. Based on average consumption of 18.1 MWh/year per home (130 m² in size), district heating is DKK 11 342 (EUR 1 500) compared to individual oil heating of DKK 22.000 (2,900 EUR). This is a saving of DKK 10 658 (EUR 1 400) (City of Copenhagen, 2007).
- 41 In the same study, scientists identified approximately 1 850 sites where contamination was suspected, but not verified through field investigations. Within the Capital Region, there may be as many as 35 000 sites that could be contaminated from previous industrial activity and other kinds of businesses (Region Hovedstaden, 2007).
- 42 The remaining 25% is supplied by ground water from other parts of Zealand.
- 43 In more cataclysmic predictions, Hallegatte *et al.* (2008) forecast that with a 50 centimetre sea level rise, these losses would increase to EUR 3.8 billion, a 90% increase. For the 100-year event, losses are estimated at EUR 2.2 billion in the absence of sea-level rise. Losses would reach EUR 4.1 billion with a 50 centimetre sea-level rise, also a 90% increase, and EUR 5.7 billion with a 1 metre sea-level rise, a 160% increase.

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- 44 *Københavns Energi* (Copenhagen Energy) is conducting a series of analyses concerning adaptation of water, rain patterns, risk of flooding and improved use of water resources. *Københavns Energi* has started a dialogue with the city of Copenhagen concerning these issues.
- 45 Information from <http://nyhederne.tv2.dk/krimi/article.php/id-9713070.html>.
- 46 Railway and highway capacity per inhabitant in part reflect the relatively low density of the Capital Region.
- 47 The investment was DKK 905 million for rail and DKK 2 971 million for road in 1996, compared to DKK 948 million for rail and DKK 8 882 million for road in 2006 (Statistics Denmark, 2008).
- 48 Car ownership rate is 308 cars per 1 000 people, the lowest percentage among the major European cities. The highest share is in Brussels, with 551 cars per 1 000 people. The high registration fee contributes to the low ownership. The registration fee is 105% of the value up to DKK 74 000 and 180% of the value over DKK 74 000. In addition, VAT of 25% is payable on the total value of the car, including the registration fee.
- 49 The estimation of 42 km/hour is from the Danish Ministry of Transport (OTM 5.0 model), whereas the estimation of 50 km/hour is from Spiekerman, as quoted in TNO (2007).
- 50 In Copenhagen alone 40 000 homes are exposed to severe noise pollution with readings in excess of 65 dB. This figure includes 5 000 homes that are exposed to particularly harmful noise levels in excess of 70 dB. In recent years the City of Copenhagen has spent around DKK 5 million on pilot projects in neighbourhoods with particularly high levels of noise pollution.
- 51 In relative terms, Copenhagen is one of the airline hub cities: its share of hub passengers as compared to total number of passengers is substantial. Copenhagen ranks 17th in this respect: 30% of its passengers are hub passengers, a share comparable to that of Zurich or Amsterdam. More than 60% of these hub passengers are connected in their own region; this is 36% for Zurich and 19% for Amsterdam (Derudder *et al.*, 2007).
- 52 Region Hovedstaden (2007): Notat: Foreløbige resultater af udredningsarbejdet om den trafikale infrastruktur i Region Hovedstaden.
- 53 In 2005, 285 cruise ships docked at the Port of Copenhagen and approximately 380 000 guests visited the City of Copenhagen.

Chapter 2: Policies to strengthen competitiveness

Several challenges for Copenhagen have been identified in the first chapter: a shortage of highly skilled labour, an average performance in innovation and some issues regarding urban appeal. Many of these challenges can be addressed through public policies at the national, regional or local level. This chapter assesses the policies in place to strengthen the competitiveness of metropolitan Copenhagen. This assessment includes regional and urban policies in Denmark and continues with an analysis of policies on spatial planning, labour, education, innovation, housing, infrastructure and sustainability.

2.1 Regional and urban policy

Regional policy in Denmark has been decentralised since the 1990s...

Regional policy has for long been a responsibility of the central government in Denmark. From the late 1950s till the early 1980s, the proclaimed objective of regional policy was to promote equality between different parts of the country with regard to economic welfare, especially between the urban centres and the rural periphery. From the mid-1980s, the assumptions underpinning national regional policy changed. The case for this shift was primarily couched in economic terms, as a mobilisation of regional resources in support of a more general attempt to improve the international competitiveness of Danish firms.

Since the 1990s, the central government has withdrawn from implementation of regional policies. All the central government schemes for regional policy were terminated in 1991, and since then, the main components of spatial economic policy have been a host of sub-national initiatives and the European Structural Funds. The central government abandoned its role of redistributing private economic activity between the regions and instead adopted a position limiting its direct role in regional development to ensuring that business development programmes were made available in every region. From the early 1990s, all the regional

governments and the majority of local governments engaged in stimulating indigenous economic activity, promoting employment within their areas and securing a higher level of taxable income. Danish regional policy has been described as a form of decentralised industrial policy, and economic growth and competitiveness has almost exclusively been pursued by a network of small single-function development bodies (Halkier, 2004).

From the early 1990s, Denmark adopted the cluster approach to regional economic development focusing on large sectoral clusters (building/construction, bio-health, ICT and food). This policy concentrated on more specific industry clusters, such as industrial design. Clusters, as a policy instrument, are now lower on the national agenda, but regional-led initiatives have been pursuing clusters through “regional growth environment” programmes, described as “a co-operation between companies, research and educational institutions, distributors of technological knowledge and other relevant actors” (Jensen, 2004: 3). A regional growth programme was funded by central government from 2002 (DKK 10 million per county over three years) with funding matched by regional collaborators.

...and urban renewal policy has become less top down-oriented and more area-focused

Over the last decades, urban renewal policy in Denmark has undergone substantial change. Since the beginning of the new millennium, it has involved local stakeholders and citizens, and used targeted and holistic, rather than universal, sectoral programmes. Increasing use is made of inter-governmental contracts as a form of policy regulation. An example of this new approach is the neighbourhood improvement scheme, *Kvarterloft*, launched in 1997 to solve a wide range of problems in selected neighbourhoods in different parts of the country.¹ It builds on new forms of citizen participation and the involvement of business, organisations and local associations, with the comprehensiveness of urban problems as a starting point, and thus requires close co-operation between the different authorities and sectors of public administration. Specific targets are established through consultation between central and local governments; funding takes place in so far as progress is made. There has been a strong emphasis on inspiration and learning processes. Specific area-based initiatives were acknowledged as experimental. Many resources were put into relatively few projects, to serve as examples for later projects. The experiences of the *Kvarterloft* programme have been incorporated into the Urban Renewal Act of 1998. The vision of an urban renewal was pursued through promotion of quality in urban living, via densification, regeneration,

traffic and environment planning. The focus has also been on the urban centre, with an emphasis on avoiding urban sprawl. In addition to the regeneration and environment programmes, more traditional central methods, such as strict land use planning regulations, have been used to achieve these objectives.

Despite the holistic nature of urban renewal in specific areas, national policies for urban development have become more sectoral. Since 2001, the national responsibility for urban development has been divided between different ministries. When the Ministry of Urban Affairs and Housing was abolished in 2001, responsibility for urban renewal policy was transferred to the Ministry for Refugees, Immigrants and Integration, giving rise to more focus on ethnic segregation in cities (Jorgensen and Aero, 2008). This ministry implements seven area-based renewal projects in the city of Copenhagen. Other urban policies under the jurisdiction of Ministry of Urban Affairs and Housing were transferred to different ministries, including the Ministry of Environment (planning) and the Ministry of Welfare (overall economic and institutional framework for municipalities and regions). A comprehensive set of urban development policies were thus split up into urban issues assigned piecemeal to different ministries.

Regional development policies have recently received new impetus...

The regions that were created in the 2007 structural reform (the Capital Region being one of them) have been granted with the responsibility to develop regional economic development policies. This has taken the form of two initiatives: the development of business development strategies by Regional Growth Forums in each region² and a Regional Development Plan for the region. Regional Growth Forums are platforms in which regional players from business, trade unions, higher education and local government are represented. The forums act as a stimulus for regional innovation by advising the region on the allotting of support and subsidies to projects within the field of regional business development and innovation. The Regional Growth Forum develops and decides on a regional Business Development Strategy, accompanied by an action plan. The Strategy constitutes the basis for the Growth Forum's allocation of EU-Structural Funds (Target 2) and regional funds for business development. Although the subsidies and project money represent a small part of the budget of regional governments, they have a certain leverage size for stimulation of certain activities and developments that fit well into the framework of the business development strategies for the region. The Business Development Strategy of the Capital Region was released in 2007. In addition, there is a Regional Development Plan, developed by the region in co-operation with the relevant regional stakeholders. This plan contains the regional vision on the

main challenges for the region and goes well beyond regional economic development. The Regional Development Plan is not an instrument that has the power to impose directives; its purpose is to create a dialogue among municipalities and other stakeholders in the region. The first Regional Development Plan for the Capital Region was released in the summer of 2008, with a focus on infrastructure, education and the environment. The dialogue leading up to the release of the plan has resulted in a common feedback of municipalities in the Capital Region to the national Commission on Infrastructure.

These policies attempt to align bottom-up and top-down dynamics. Regional Growth Forums take national government strategies into account, in particular the Globalisation Strategy put in place by the central government in 2006. There is an arrangement for alignment with national targets: goals are agreed with the central government and expressed in partnership agreements between the central government and Regional Growth Forums. A similar approach is in place for the Regional Development Plans. Since regional governments are mainly responsible for health care, they do not have the power to change much themselves in the framework conditions for economic development in the region. Responsibilities for labour market, housing, transport, innovation and business development are in the hands of municipalities, in many cases in conjunction with central government. This means that the regional development is an exercise in co-ordination; the Regional Development Plan for the Capital Region has been subject to an extensive consultation process with the municipalities in the region, central government and regional actors including citizens, since the implementation of the plan will be dependent on their co-operation.

...but the new framework raises concerns

Copenhagen's pivotal role for Denmark is left implicit in the current policies. The national government has in the past given essential support to development trajectories for Copenhagen. Examples of this are the support for the building of the Øresund Bridge, which links the Capital Region to the south of Sweden, and co-funding of urban regeneration projects, of which many were in Copenhagen. At the same time, national support for strengthening Copenhagen's competitiveness has been complemented by an increased focus on inter-regional equity. Danish policy documents acknowledge the important role that urban areas, and Copenhagen in particular, play for national economic growth. The 2006 National Planning Report states that cities play a key role in the knowledge economy and that a competitive Capital Region is prerequisite for Denmark's development, and also underlines the need to strengthen the

competitiveness of the Capital Region. The 2005 Government Platform-document, however, stresses the need for a balance between growth areas and peripheral areas. It is currently unclear to what extent the central government is willing to allow differentiation between regions and whether it continues to see Copenhagen as pivotal for the economic development of Denmark as a whole.

There is only limited co-ordination between the different cities in Denmark. Closer economic co-operation between Copenhagen and Denmark's major regional cities could bring greater economic benefits to them all by exploiting their current and potential economic linkages. In England over the past few years, a dialogue has developed between London and the major regional cities (Core Cities) on how to realise their collective economic potential. This may offer some lessons to Copenhagen and Danish regional cities on how they might collaborate with each other to better exploit their different economic roles and create stronger economic growth individually and collectively (Box 2.1). There is a co-ordination forum of main cities in Denmark, called the "six-cities co-operation", a forum of the six largest cities in Denmark: Copenhagen, Aarhus, Odense, Aalborg, Esbjerg and Randers. This forum has so far been mostly an arena for the exchange of experiences and data collection in areas such as economy, budgets, health care and infrastructure. In addition, there is a project to involve the large cities in the branding efforts connected to the Copenhagen Climate Summit. Although this forum is an interesting platform for co-operation, more could be done, including increasing the visibility of links between cities and the co-ordination of economic functions. It is the primary responsibility of the authorities of the different cities in Denmark to engage in a similar dialogue, but the national government could also play a facilitating role in this. The absence of a national urban policy in Denmark and a vision of the role of cities in Denmark certainly does not help to create links between cities that would help to co-ordinate their functional economic responsibilities.

Box 2.1. Economic linkages between cities: the case of London and core cities in the UK

In England, urban and regional policy has undergone major changes since 1997. The emphasis is now on cities and regions building on their own assets and opportunities to strengthen local productivity and competitiveness in the global economy, rather than relying on the redistribution of national economic growth from more prosperous regions like London and the Southeast. In 1997, the Core Cities Group (covering England's eight major regional cities – Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield) was founded. Its aim is to strengthen and promote the role of the Core Cities and their city-regions as drivers of regional and national economic growth. They have always recognised, however, the special role that London plays, as the national capital and as a world city, in the UK economy. Similarly, London appreciates that strong regional capitals can help it to grow sustainably, so there has been a mutual interest in understanding better how their economic roles can complement each other, to encourage growth in the cities and their wider regions. In 2002, the Core Cities, together with the main economic departments of central government, the Government Offices for the Regions and the Regional Development Agencies, formed a Core Cities Working Group. This explored the policy changes and practical actions needed to enable the major regional cities to fulfill their potential as drivers of regional and national economic growth. A key commitment was to develop the Core Cities and their regions as “additional cylinders to the United Kingdom's economic engine, giving London more space to excel in the functions only a global city can bring to the United Kingdom”.

In 2003, the Core Cities, with the Greater London Authority, commissioned a research study on the current and potential future linkages between London and the Core Cities (Simmie *et al.*, 2005). The report, completed in 2004, provided a robust analysis of economic opportunities and comparators, and provided useful pointers to the issues that the central government and the cities themselves needed to address to realise their potential and help to deliver the government's regional economic performance target. (The overall goal of this target was to reduce the persistent gap in growth rates between the English regions.) The report confirmed that London's pre-eminence in business and financial services is based on its role as a global centre for trading, but also identified strong financial sectors in some of the Core Cities that have potential to grow further. It touched on broader opportunities for collaboration by London and the Core Cities, particularly the importance of increased investment in transport infrastructure to support competitiveness, and the need for strong city governance and decentralised powers to take and implement strategic decisions and be more outward-looking and entrepreneurial. The scale of the challenge facing the Core Cities in maintaining and improving their position is huge, given that most lag economically behind London and the Southeast. That said, London's role as a global city is seen as an opportunity, not a constraint on the

Core Cities' efforts to drive up their economic performance. London's successful bid to host the 2012 Olympics, for example, was widely welcomed by the Core Cities, which are keen for businesses in their cities to exploit the opportunities this offers.

The Greater London Authority (GLA) has publicly recognised the mutual interdependence and benefit that exists between London and other cities in the United Kingdom. In spite of the economic downturn, London remains a net contributor to the national economy. The report disproved the view that London's growth comes at the expense of the rest of the economy or that the rest of the United Kingdom is somehow entirely dependent on London's success. A prosperous London and prosperous regional cities are seen as essential to secure a strong national economic performance. London remains a net contributor to the national economy. Over the ten years between 1994 and 2004, the GLA estimated that London contributed between GBP 35 billion and GBP 89 billion more in tax to the UK economy than it received in public spending (Greater London Economics, 2005). Their analysis shows that London's tax export to the rest of the country is greater when London's economy is flourishing. This benefits the rest of the country, by helping to fund better public services. Investment in London to support its continuing economic vitality thus not only benefits London but the United Kingdom as a whole.

London's economic specialisation, with a much larger concentration of financial, professional and business services and a smaller manufacturing and public sector than for the rest of the United Kingdom, allows London and the wider United Kingdom to gain a mutual benefit from inter-regional trade. London's pre-eminent position as a world leader in financial and related business services links it to all major regions of the global economy. This benefits the United Kingdom, because London acts as a gateway for investment and people, both international migrants and tourists. London's international services are available to help businesses across the country and are an asset to all cities and regions.

It remains to be seen whether regions have enough sticks and carrots to stimulate municipalities in their region to help in implementing the regional visions. As mentioned above, regions do not have many instruments to stimulate municipalities to co-operate in implementing one vision for the region. The regional government level has in this respect been weakened by the structural local government reform of 2007, which took away the formal regional planning capacities that would have made it easier to anchor a regional vision in policy. Since municipal policies have externalities (positive or negative) in many cases, over- or under-investment is likely to occur when no effective co-ordination mechanism exists at the regional level. Although one could argue that the fiscal equalisation scheme (as described in Section 3.3) provides such a mechanism, it is a very implicit arrangement, whose intricacies will only be understood by a few

technicians. Since the Structural Reform of 2007, the central government has had the responsibility for the development of the Finger Plan and regional planning in Copenhagen.

Regional spatial planning

The history of land use planning in Denmark is connected to the history of development of Copenhagen metropolitan areas. The first spatial plan for Copenhagen was the Finger Plan of 1947: the urban form it proposed was in the form of a hand: an urban core at the centre, with four nodes as the fingers along which further urbanisation was to take place. The space in between the fingers was supposed to remain green areas. The Finger Plan aimed to address the main trend of suburbanisation and far-sightedly linked the land use and public transportation. The Preliminary Outline Plan of 1960 first introduced the concept of multiple centres in the metropolitan area. The Structure Plan of 1972 strengthened the concept and identified four nodal centres. The Regional Plan of 1989 developed the concept of a multi-centre into a network structure directly linking many centres. At present, Copenhagen has 49 nodal stations and 82 other stations with high-standard railway service as future location centres for offices and services buildings.

Since the first Finger Plan, spatial plans of Copenhagen have consistently promoted the clear demarcation of urban and rural land. One of the rules for maintaining a compact urban structure is the principle of accessibility, *i.e.* the rule that large office workplaces with more than 1 500 square meters of floor space and big impacts on traffic will generally have to be located within 600 meters (ten minutes on foot) of the closest station. All government tiers are involved in the spatial planning of Copenhagen. The vision of the national government is expressed in the 2006 National Planning Report, in addition to the Spatial Planning Act. The 2007 Finger Plan and municipal plans set the frame for physical planning in the region. The 2008 Regional Development Plan of the Capital Region sets out the vision for overall development. The 2007 City Planning Strategy Paper does this for the City of Copenhagen.

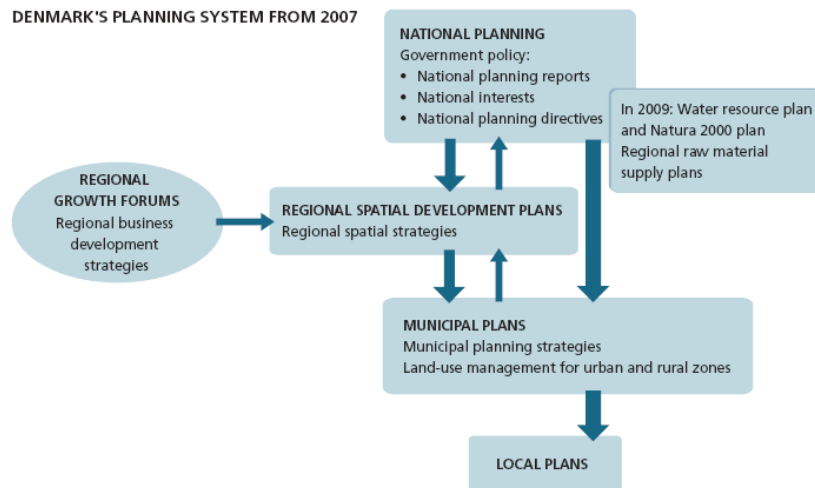
The Finger Plan has been successful, but has not prevented urban sprawl. Land use planning in Copenhagen has been successful in keeping large green wedges between the urban fingers. Due to population growth and outward development of economic activity, however, the fingers have become much longer and “fatter” than originally intended. The original Finger Plan provided for industry to locate at the transitional place between palm and finger, because the planners thought that these locations were in the best position to take advantage of the ring road and railways. However, large industrial areas and regional centres have progressively been

established in the fingers themselves.³ Some governmental policies also contributed to the expansion and extension of the fingers. The government promoted the decentralisation of the capital's governmental functions and administrative offices. The headquarters office of the Capital Region is not in the city centre of Copenhagen, but in the municipality of Hillerød, 30 kilometres north of Copenhagen. These developments made the fingers fatter. Now the fingers are even reaching large towns that were formerly independent.

The 2007 Finger Plan tries to accommodate the expansion, setting out town fingers with potential for new urban areas and requiring municipal plans to contain provisions for phased development of the new urban zone. At the same time, the Finger Plan intends to revive the principle of proximity to railway stations that was introduced in 1989 but weakened by a lack of regional political commitment during 1990s. However, the plan does not show clear initiatives for concentrating activities and population in the palm area at a regional level. This conflicts with the reality of land use potential of the city of Copenhagen. There are undeveloped areas that provide the possibility of building some 17 million square metres, which corresponds to approximately 50 years' construction for diverse businesses.⁴ An additional sixth finger has emerged, the Øresund Bridge to Malmö, reflecting the continuing increase of commutes from Malmö.

The structural local government reform of 2007 marginalised the regional spatial planning function. An inherent element of the Danish spatial planning system has been its co-ordination of spatial plans at three government tiers: national plans, regional plans and municipal/local plans. Vertically, the lower-level plan had to mesh with the higher-level plan, keeping consistency between each plan. Horizontally, the spatial plan had to be co-ordinated with other plans at each level, and regional spatial plans had to be co-ordinated with regional development plans at the regional level. The structural reform changed this system and transferred the spatial planning of the regional level to the central and municipal governments. In Copenhagen, the co-ordinating role of the Greater Copenhagen Authority (HUR) was transferred to the Ministry of the Environment. The national government now has the power to veto lower-level plans.

Figure 2.1. Denmark's planning system from 2007



Source: Ministry of the Environment (2006), The new map of Denmark – spatial planning under new conditions; the 2006 national planning report – in brief.

2.2 Visions for the region

There are several strategic documents expressing a vision for Copenhagen. The City of Copenhagen has developed a City Development Strategy 2005-09, as well as a City Development Strategy Paper 2007, which forms the basis for the City Development Strategy 2009-14. Every municipality in the Capital Region (and Denmark) is obliged to draw up such a development strategy. The Growth Forum of the Capital Region delivered a Business Development Strategy in 2007, and the Capital Region presented its Regional Development Plan in the summer of 2008. These proposals all took into account the national globalisation strategy, the central government's vision for future economic development. The Spatial Planning Act stipulates that municipalities are obliged to co-ordinate their City Planning Strategies with the Regional Development Plans. Because the Regional Development Plan was delayed, municipalities in the region have not been able to align it with the Regional Development Plan.

i) Central government. In 2006, the central government formulated its strategy for Denmark in a global economy. The key goals in this strategy

were strong competitiveness and strong cohesion, to be achieved by world-class education, research, entrepreneurship and innovation. Among the quantifiable targets were a goal of 50% higher education attainment, 3% of GDP on R&D expenditure and the largest number of business start-ups and high growth start-ups in Europe. The globalisation strategy mentioned 350 specific initiatives. Copenhagen was not specifically mentioned in the document, but an action plan was drawn up in which the initiatives were outlined in more detail and funded. The national government and the regional Growth Forum of the Capital Region have made an agreement on partnership for growth for 2007-09. The agreement is to link the national globalisation strategy and regional growth strategies, and the agreement contains initiatives from both strategies.

ii) *The City of Copenhagen.* The City of Copenhagen formulates in its *City Development Strategy Paper 2007* its ambition to grow intelligently. Its development strategy stresses sustainability, affordability, accessibility to the water and economic dynamism. In the *City Development Strategy 2005-2009*, eight “creative zones” were selected in which conditions were adapted for creative industries. The need for clear international branding was emphasised. City Council decisions that were in line with this strategy included the creation of a one-shop stop for business, reduction of red tape, more affordable housing and the creation of a think-tank that would devise proposals to turn the city of Copenhagen into one of the leading knowledge cities. The foreign investment attraction agency Copenhagen Capacity, covering the whole Capital Region, has published its own assessment of Copenhagen’s particularities that can be summarised as “you can have it both”. According to this assessment, the uniqueness of Copenhagen lies in its ability to combine productivity and quality of life, economy and ecology, technology and design, etc.

iii) *The Capital Region.* A Regional Business Development Strategy for the region, called “Partnerships for development of knowledge, growth and welfare” has been made by the Growth Forum of the Capital Region in 2007. Members of this Growth Forum are representatives of business, trade unions, academia and regional and municipal government. Growth Forum initiatives are co-ordinated with national initiatives via the Danish Growth Council. The ambition expressed in this strategy is that in 2015, the Capital Region should be Northern Europe’s most attractive metropolis for living, work, study, doing business and visits.

The Business Development Strategy provides an analysis of strengths and challenges on the basis of which several actions are formulated. Its assessment of the strengths of the region stresses its skilled population, education and research, flourishing clusters and its user-driven innovation. It suggests that the values and work methods in Copenhagen are characterised

by openness, quality consciousness, employee-driven innovation and critical sense; qualities that are described as difficult to emulate and attractive for innovative foreign companies. Challenges that are identified are diverse and include growth entrepreneurship, regional collaboration, knowledge sharing between the research and business community, the region's image, housing infrastructure and labour market shortage. On the basis of this assessment, several actions and 33 initiatives were formulated, ranging from cluster development, a centre for user innovation and more scientific conferences to a feasibility study on holding the Olympics in Copenhagen. Collaboration in the context of Øresund is supported as a means of reaching some of these goals.

The Capital Region presented its Regional Development Plan in 2008, called "The Capital Region of Denmark – an international metropolitan region with high quality of life and growth". This plan was submitted for debate and hearings to citizens, public authorities and civil society organisations in the Øresund Region. The vision for the Capital Region expressed in the document is to be one of the leading European metropolitan regions, characterised by a green profile, efficient traffic-related infrastructure, education for all, attractive business conditions, diversified cultural and leisure amenities and an international perspective. This includes the ambition to be the greenest capital of Europe. Its assessment of qualities of the region echoes the "you can have it both" strategy suggested in the so-called Copenhagen Brand Book (which aims to describe the profile of Copenhagen for foreign high-skilled labour): the Regional Development Plan aims at a combination of high quality of life and high economic growth. It focuses heavily on three themes: transport infrastructure, education and the environment. It repeats the actions from the Business Development Strategy, which it considers to be the region's strategy for improving business conditions.

These are all laudable initiatives: much energy has been invested in the assessment, and a wide range of actors has been involved. Strategies like this can help to create a common vision, shared by the relevant stakeholders, that can focus financial resources on the most crucial bottlenecks. All of these strategies are aware of the challenges that globalisation poses to Copenhagen, and they attempt to formulate holistic visions to deal with them. Three questions are relevant in order to assess their success: do they provide one common vision; is this vision well-conceived; and will this vision be implemented? The last question will be answered in the different sections of Chapter 2 of this Review. The first two questions will be answered below.

Although the different strategies do not conflict with each other, they are cumulative rather than share the same focus. In combination, they provide a

fair list of actions to be taken, but it is not always clear what the urgent priorities are. They are comprehensive, in that they mention all the elements that could possibly bring their vision closer, but are not necessarily holistic. Although “you can have it both” might express neatly the sentiment of many people in Copenhagen and could be a viable strategy to combine several policy aims, there are policy trade-offs in certain areas. One of these trade-offs is maintaining a welfare state (with correspondingly high taxes), versus fostering a more entrepreneurial city (and country). In many cases, these trade-offs are slightly more subtle, in that the accumulation of policy goals may dilute political attention and funds from the key determinants of Copenhagen’s competitiveness, such as the attraction of highly skilled labour. Becoming the environmental capital of Europe, for example, may be a laudable goal, but its relevance for attracting highly skilled foreign labour will be limited. Recent campaigns to attract international businesses and tourists do not preclude the attraction of highly skilled foreign labour, but they can be of only modest importance if they are not explicitly and simultaneously geared towards that goal. Stimulating creative sectors in Copenhagen may be a way to make Copenhagen more attractive, but it is not clear that the stimulation package has been designed with the demands of highly skilled foreign labour in mind. Finally, although the overall visions formulated are ambitious in scope, they are less far-reaching in their actual targets. A global instead of a European benchmark might have expressed more vision.

A key challenge for Copenhagen is the shortage of highly skilled labour, as was argued in Chapter 1. Although this is mentioned in the different strategies, it is not clearly identified as the force that should drive the region’s main initiatives. As mentioned above, strategies for solving the shortage of skilled labour should focus on making better use of the current population, such as getting students to work earlier, making better use of immigrants’ capabilities, but also by attracting highly skilled foreigners. Competition for these highly skilled foreigners is intense and can be considered global. The ambition to be the most attractive metropolis in Northern Europe is somewhat modest, considering the global scale of flows of highly skilled labour. The strategic visions do not explicitly celebrate the innovative effects of cultural diversity, as for example Toronto has done in its economic competitiveness strategy. The following sections will focus on the main sectoral issues mentioned in these strategies, in order to assess the implementation of the strategies for the metropolitan area.

2.3 Skills policies

Recent labour market reforms by the central government have aimed at even further increasing the participation rate, in order to resolve current and future labour market shortages. In 2006, the Danish government and various parties concluded an agreement on a future reform of the Danish welfare state. Measures in these packages included targeted job training for those who have been unemployed for long periods, partnerships between companies and the state or municipalities; and additional job advisers in municipalities. Incentives for elderly workers to work have increased, disabled persons can now work without losing their pension entitlements, part-time workers get better access to full employment, and foreign workers can more easily enter the country after the simplification of the Green Card process and the introduction of Job Cards with fewer restrictions. Continued focus on lifelong learning and plans to reduce high school dropout rates are also intended to reduce labour market shortages. Lifelong learning is a central component of the Danish public sector's Quality Reform. Partnership agreements on business development between the central government and the regional growth forums are also strongly geared towards education and training. The city government launched a strategy in 2006 aimed at strengthening primary education.

Many of the recent national government ambitions in education stem from the *Globalisation Strategy*. This document, released in 2006, expressed the ambitions of the national government to prepare Denmark for the future. Several of its 350 specific recommendations are in the field of education and training, on the grounds that world-class education was considered to critical for Denmark's competitiveness. The main targets formulated in this respect were the attainment of at least upper secondary education by 95% of all young people, higher education for 50% of all young people and excellent performance of students in reading, mathematics, science and English.

These goals also formed part of the partnership agreements between the central government and the regional development forum for the Capital Region. Upgrading of the workforce was considered to be of great importance for economic growth. Although the region has limited responsibilities within the field of education, it has the authority to fund education initiatives. The region is moreover responsible for the implementation of EU Structural Funds in the region. For this reason, education forms part of the Regional Development Plan of the region, drawn up in collaboration with municipalities, educational institutes and business. The Capital Region has formulated some goals that are even more ambitious than the national goals, such as higher education for at least 50% of the

population. The partnership agreement also focuses on increasing the number of doctoral students.

Education is one of the priorities for the City of Copenhagen, expressed in the “Better Learning for all” strategy launched by the City of Copenhagen in 2006. This strategy was intended to strengthen the public elementary schools in the city and to make sure that children in Copenhagen are among the best in Denmark in reading, mathematics and science. This was to be achieved by a programme to strengthen standards, safety, integration and well-being for Copenhagen’s children over a three-year period. Elements in this programme are better school management, early discovery of vulnerable children via day care institutions and a more even distribution of immigrant children over the city. In addition, three schools in Copenhagen were, as a pilot project, appointed as “whole day schools”, that is, schools open to children of age 8 through 16 that, in addition to the regular education programme, offer training in sports, music and arts.⁵ A centre for guidance has been established to provide guidance to young people regarding their educational and professional choices, in order to reduce dropouts.

Higher education policies

Certain constraints complicate the task of universities in Copenhagen. As mentioned in Chapter 1, students graduate relatively late, and the dropout rate is high. Universities in C

openhagen are of reasonably high quality, but they are not among the top universities in the world, and their international orientation could be improved upon.

The national government is aware of these problems, as demonstrated by the goals formulated in the *Globalisation Strategy*. These challenges have been mainly addressed through institutions of higher education. Since 1999, university development contracts between the national government and the universities have served as a tool to describe the core tasks of the university in consultation with the ministry. A second generation of these contracts has been in place since 2004. These contracts are an instrument by which universities can assess their progress in strengthening their contact with society, and their co-operation with other universities, research institutions and businesses. Key indicators include international student mobility, student success rates, quality and dissemination of research and commercialisation and patenting of research.

University funding provides incentives for student efficiency. Universities are to a large extent funded according to the “taximeter principle”; that is, according to credits that students have earned by passing

exams. This system gives universities a stake in making sure that their students succeed in their studies. Universities with motivated and qualified students who complete their studies and pass their exams in the prescribed period of time obtain the highest grants.

The key challenges facing Copenhagen's human capital formation can however only be addressed by addressing the question of the grants system for students. As mentioned earlier, higher education in Denmark is free and students are awarded grants to support their living costs for a maximum of six years. Students are not obliged to start their higher education studies immediately after secondary school. This leads to considerable delays before students start their education, and results in graduation at a relatively late age. The result is a shorter period of availability on the labour market in comparison with other OECD countries, and increased dropout rates. Since the grants offer students support for a longer period than is strictly necessary to finish a course of study, many are tempted to take additional courses, which can arguably be considered education consumption rather than an investment in skills that are in demand on the labour market. As education is free, students have fewer incentives to choose a study that correlates with labour market needs.

Denmark's generous grant system and free education discourage international mobility. For a person who has studied in Denmark, it pays to move abroad and work in a country that has lower tax rates for high-income earners. For highly skilled foreigners, Denmark's high marginal taxes could be especially unattractive considering the large tuition debts they may have accumulated from studies at top US universities (OECD, 2006). This places Copenhagen at a disadvantage by comparison with other OECD metropolitan areas.

Despite many laudable efforts, universities in Copenhagen could do more to stimulate the global outlook of their student population. Several universities have attempted to increase accessibility for foreign students. The University of Copenhagen, for example, offers more than 500 individual courses in English at either bachelor (BA) or master (MA) level each semester. These courses are open to Danish and international students in all of their eight faculties. The IT University of Copenhagen offers interaction with Chinese students. In general, however, universities in Copenhagen have not engaged in strategic global interactions to attract new international students. There are few joint studies with renowned foreign universities or institutes in emerging markets.

Further co-operation within the Øresund Region, via the Øresund University, could prove beneficial. The university is a voluntary organisation of 14 higher education institutions in the Øresund Region,

whose aim is to construct a bottoms-up cross-border region in order to become more internationally competitive. This project has rightly been described as unique and innovative, with the potential to become a significant engine of growth for both Denmark and Sweden (OECD/IMHE, 2006). The partnership network of the Øresund University will however have to be more inclusive and operational in a practical sense. There is room for more integration between the different institutions in terms of design and delivery of teaching and learning programmes, research projects and innovation and entrepreneurship initiatives. Students could be engaged more by regional internships, teaching and research projects and by increasing student mobility through supporting student travelling costs (OECD/IMHE, 2006). Internationalisation strategies could beneficially be pursued from an Øresund angle.

Education of immigrants

The national government and the City of Copenhagen have recognised the need for better educational performance by immigrants. Immigrant students are at least as well provided as the native-born with traditional school resources such as class size, teacher-student ratios, language lessons per week, physical and educational infrastructure, and computer access at school. This reflects the compensatory allocation of resources in the Danish school system for schools with large numbers of immigrant students. Attracting and retaining qualified teachers to disadvantaged schools has become increasingly important in a labour market as tight as the market for teachers in the Capital Region. This could be accomplished by increasing the return for taking a job in these schools (*e.g.* by a mark-up in wages). The leeway provided by national regulations for such policies is, however, currently limited.⁶

Immigrant children have few incentives to perform. Teachers' academic expectations, encouragement and pressure to achieve are less favourable at schools attended by immigrant students. Peer composition at schools attended by immigrant students is potentially less conducive to academic achievement (Rangvid, 2006). Strengthening the culture of achievement at schools with high concentrations of immigrant students is a promising approach for reducing gaps, as well as tackling the segregation of ethnic minorities at the school level.

Segregation at schools is related to spatial segregation. In Denmark, each public school has a fixed catchment area, and in principle, the local schools recruit their pupils from the surrounding residential neighbourhoods and should have the same ethnic profile as the residential population. However, students can apply to enrol to any other public school in the

municipality, which in principle must take in students up to the limits of their capacity. If the school is oversubscribed, admission is based on place of residence, and those living within a school's catchment area are given first priority. Students can also opt for a private school, of which almost 80 are spread over the city. This option is frequently exercised: one out of four students attends private schools. Fees are low, as private schools are subsidised by the states, and therefore, choosing private schools is a potential option for most families (Rangvid, 2006).

Relatively more Danish than immigrant families are opting out of local schools. If all students living in a catchment area attended their local school, the highest percentage of immigrants at schools in Copenhagen should be 63%. However, as a result of school choice options, the percentage of immigrants is 94% at the school with the highest concentration of immigrants. Looser links between residential choices and eligibility of public schools might make it more attractive for well-off Danish families to locate in neighbourhoods with higher immigrant concentrations and make it easier for immigrant children to go to schools in other neighbourhoods.

The City of Copenhagen recently established a promising initiative to stimulate more mixed schools. This programme, the Copenhagen Model for Integration, uses quotas to make sure that schools that have a low percentage of ethnic students reserve a certain number of places for students from catchments with a high ethnic concentration (Box 2.2). Free busing to the new schools is provided. A second objective of the programme is to make schools that have high numbers of immigrant students more attractive to native Danish households. The pilot programme started in 2006 is gradually being rolled out. Meanwhile, this initiative has coincided with more transparency as regards data on the schools. In 2007, the City of Copenhagen published its quality report of the public schools within its boundaries. For each public school in Copenhagen, a quality report is now publicly available that evaluates schools on a set of performance criteria (Municipality of Copenhagen, 2007).

Box 2.2. Copenhagen Model for Integration: Immigrants and the schooling system

The aim of the Copenhagen Model for Integration is to create a more even distribution of bilingual students across Copenhagen schools. The programme followed two surveys regarding the position of parents of bilingual children, which showed that immigrant parents had positive attitudes towards enrolling their children in schools with only a small percentage of immigrant children, whereas native Danish parents were hesitant about enrolment of their children in schools that were dominated by immigrant children. The programme contains two main elements. First, it offers immigrant students from certain school districts the possibility of enrolment in schools with predominantly native Danish students. Second, it aims to make schools with a high percentage of immigrant students more attractive to native Danish parents and students. The Copenhagen Model for Integration is carried out by the Children and Youth Administration of the City of Copenhagen.

The programme started in 2006, when 85 immigrant children from districts with large concentrations of ethnic minorities (Tingbjerg, Voldparken, Indre Nørrebro) began their schooling in districts where only a small percentage of the students are immigrants (Brønshøj-Husum, Østerbro). The programme has been extended since, and other districts are now included. From the school year 2008/2009, 13 schools in Østerbro, Vanløse, Brønshøj, Nørrebro and Amager will be part of the initiative to reserve seats for bilingual students from other districts. Ten schools in Valby, Nord Vest and Amager are involved in the initiative to keep native Danish children in schools with a large share of immigrants. (Source: *www.tosprogede.kk.dk*). Since 2004, there has been an increase of 185 bilingual pupils in kindergarten and first grade. At the ten schools mentioned, the total share of bilingual pupils has risen from 494 to 1 102, an increase of 608 bilingual pupils.

Lackluster scores on the OECD/PISA Study in 2000 and 2004 initiated an *OECD Review of Compulsory Education* recommending that student assessment be enhanced, school management strengthened and teacher training become more specialised (OECD, 2004). It was determined that more frequent systematic evaluation of student achievement would help to identify learning problems at an early stage, and that encouraging teachers to specialise would help raise their professional competences and benefit subjects like science. In spring 2008, an agreement was reached between City of Copenhagen, the University of Copenhagen and University Colleges Denmark in the Capital Region about the creation of three special flagship schools for Copenhagen. On 1 August, 2009, on a DKK 3.5 million budget, the three special schools will open, including a language school, natural science school and a musical-creative school staffed by specialists, with the

intention of developing and spreading of best-practice initiatives to the other schools.

Labour market integration of immigrants

Recent proposals by the central government have focused on better integrating immigrants into the labour market. Rather than targeting initiatives on social and other problems, programmes have been adjusted to take better account of the capabilities of the job seeker and to emphasise the job seeker's own responsibilities. Benefit levels have been reduced, special wage subsidies have been introduced and an integration exam is now mandatory for immigrants. Municipalities play an important role in this initiative, and are required to offer newly arrived immigrants an introduction programme that is expected to last three years. Expenses are reimbursed by the state.

From 1999 on, Denmark's municipalities have had full responsibility for implementing policies aimed at integrating new immigrants into the labour market. These policies have been benchmarked. The relevant benchmark indicator (either for at least 26 weeks, or for at least eight weeks) is based on the period from the date when an immigrant gets a residence permit until the date he or she becomes self-supporting. A short average period for becoming self-supporting in a given municipality may indicate a successful municipal integration policy, and a longer period a less successful municipal policy. The benchmark study corrects for effects that have nothing to do with efficiency of policies, such as unfavourable general conditions in the municipality, for example a high local unemployment rate or unfavourable conditions among the local immigrant population. It turns out that these effects have a large impact on the differences between municipalities: between 46% to 60% of the different municipal outcomes is explained by these different factors. Although the indicator is not a very precise measure of the degree of success of municipal integration policies, it can nevertheless give some indications as to which municipalities have been doing well.

Several municipalities in the Capital Region scored well on the benchmark. Of 72 municipalities in the study, six of the ten that performed best were from the Capital Region (which includes 29 municipalities) and two were among the ten worst performers.⁷ The city of Copenhagen scored well in this benchmarking exercise, ranking 21st and 12th on the two indicators. Whereas it took on average 38 months in Denmark as a whole to integrate an immigrant into a self-supporting activity of at least 26 weeks, it would have taken one month less in Copenhagen, all things being equal – and three months less in Frederiksberg (Gortz *et al.*, 2006).

Evaluation of labour market integration measures in Denmark shows that relatively few instruments have an impact on labour market integration. In fact, education and workfare programmes seem to delay rather than enhance integration, probably due to the fact that immigrants have less time to look for a job if they are under full-time activation (Clausen *et al.*, 2006). The only measure that resulted in a significant improvement appeared to be enterprise-based job training: an increase in the average number of days in private job training of 1% was associated with a reduction in the average duration for starting employment of about five days (Heinesen *et al.*, 2004). However, only very few immigrants have profited from private job training.

Although Danish fluency increases an immigrant's chances of being employed, the current policies stress this too much. Speaking the host country language admittedly has a stronger impact in Denmark than elsewhere. Constant and Schulz-Nielsen (2004) show that fluency in Danish increases the chances of employment by a factor of about 3 to 4, substantially higher than the figure for Germany. Language training remains the most important expenditure on integration in Denmark. Empirical analysis shows, however, that immigrants' chances of becoming self-sufficient are greatly reduced while they are participating in a language course (Clausen *et al.*, 2006). This may indicate that language training in Denmark is provided above an efficient level.

An infrastructure exists for the assessment of foreign qualifications, under CIRIUS, an agency under the Ministry of Education. In 2004, five regional knowledge centres for the assessment of the skills and qualifications of immigrants were established by the Ministry of Employment in co-operation with the confederations of employers and trade unions. The task of these centres is to assist employers and municipalities in the general assessment of immigrants' skills (practical competences rather than formal qualifications). The assessment, generally conducted in the workplace, is aimed at facilitating a potential employer's evaluation of foreign qualifications. All persons with foreign qualifications are entitled to have their qualifications assessed by CIRIUS, and these services are generally provided for free. These centres also assist municipalities in their integration efforts, in helping to find employment that matches the immigrants' competences.

Attracting highly skilled people...

Many cities and countries are engaged in a race for talent. Attractive immigration destinations, such as Canada, Australia and the United Kingdom, have created what has been labeled "competitive immigration regimes" (Shachar, 2006), immigration programmes designed to attract

highly skilled migrants. Such programmes have recently been introduced in Netherlands, France, Norway, Sweden, Ireland and Germany.

Denmark also has the ambition to attract more labour immigrants. To achieve this, the central government has launched several initiatives in recent years, including special tax incentives for highly qualified immigrants who stay for a limited time in Denmark. In 2002, a Job Card plan was introduced to facilitate recruitment of people with professional qualifications that are in short supply in Denmark. Students from a range of post-secondary institutes can extend their residence permits for three months after termination of their studies in order to seek a job in Denmark. A national action plan for global marketing of Denmark included an effort to strengthen Denmark's profile as a country for international students and three Work-in-Denmark centres were opened in 2008, one in the Capital Region. In addition, the central government formulated an East Agreement, which relaxed the requirements for workers from the 10 new EU member states to come to work in Denmark. Most of these initiatives, however, have only moderately increased the attractiveness of Copenhagen, considering the programmes designed by other OECD countries.

Denmark has introduced a new points-based "green card" scheme to attract highly skilled immigrants, which came into operation in October 2007. Points are accumulated based on salary, qualifications and a shortage list. The plan allows skilled migrants to stay in Denmark and apply for jobs for up to six months. In addition, the existing Job Card scheme was expanded in 2007, with more occupations added to the list open to third-country nationals.

Although there are tax arrangements for highly skilled foreigners, these have their drawbacks. The tax code in Denmark includes an option for approved researchers and key employees recruited abroad to opt out of the income tax system for three years, in favour of paying a flat rate of 25%. While this is a step towards addressing the problem, the scheme seems to be narrowly conceived and more general approaches are warranted, since it provides little help in retaining skilled Danes who might be tempted to migrate. Furthermore, the target group is R&D employees, mainly scientists. Specialists in areas such as finance, management and marketing, as well as entrepreneurs, may find it difficult to obtain approval. In addition, the three-year limit necessitates more staff turnover than may be desirable and works against long-term planning and investment.

Conclusion

The availability of highly skilled people can be influenced by policies in several respects. One of the levers is provided by the higher education

system. One of the constraining national framework conditions is the grant system for students, which discourages students from becoming rapidly active on the labour market and making efficient study choices. Universities could do more to internationalise their student population, so that a larger pool of potential foreign talent becomes available. Co-operation at the Øresund University might have to become more operational in order to reap concrete benefits like economies of scale; internationalisation is an issue on which co-operation is possible.

More highly skilled labour can also be freed up by making better use of the skills of current immigrants. The City of Copenhagen has pursued different strategies for improving labour market integration of immigrants, for example, with the Copenhagen Model of Integration. Active labour market programmes do not always seem to be effective in enhancing labour market integration. Limited use has so far been made of enterprise-based job training, which appears to be a promising instrument for dissipating employers' hesitations about foreign qualifications and labour market experience outside Denmark. The reform of the law on active labour market policies in 2007 has made it possible for local governments to form partnerships with private companies in the area. As a result, the City of Copenhagen has increased its focus on enterprise-based job training; this focus could be intensified.

Finally, more highly skilled people could be recruited from outside Denmark. Although several elements have been put in place, such as the Green Cardplan and tax arrangements for highly skilled foreigners, these policies are not as compelling as those in many other OECD countries. A more active approach is required if substantially more highly skilled people are to be recruited. Although national framework conditions play an important role, regional and local authorities could also do more, for example by stressing more actively the importance of attracting talent and the economic advantages of cultural diversity, as the city of Toronto does in its city strategy visions.

2.4 Innovation policies

The higher education and research sector in Denmark has recently undergone large-scale consolidation, with the merging of several institutions. The aim of this consolidation was to strengthen the sector, increase collaboration with business and enhance Denmark's ability to attract international research funding. As a result, 25 research institutes were merged into 11, and two-thirds of public R&D is now concentrated in three universities, two in Copenhagen (Copenhagen University and Technical University) and one in Aarhus. This concentration of institutes may increase

the effectiveness of innovation, provided that the economies of scale connected to this operation are exploited.

Recent policies in Denmark and the Capital Region have stressed the importance of knowledge dissemination. Several networks and institutions have been created to stimulate better utilisation by the private sector of research conducted at universities and public research institutes. Knowledge dissemination is a central element of the Danish Agency for Science Technology and Innovation's action plan, "Innovation Denmark 2007-2010". One of the initiatives in this action plan is the creation of the so-called Advanced Technology Groups: institutions responsible for knowledge transfer to SMEs. This is part of a broader initiative to encourage commercialisation of innovative ideas and research through closer co-operation between start-ups, research and capital providers. The national government co-funds eight of these "innovation environments"; four are located in the Capital Region. The central government backs an investment company, Vaekstfonden, which invests in unlisted Danish companies, mainly high-tech companies, and venture funds. Over the last decades, several "triple-helix networks" have been formed. Within these networks, business, public authorities and research institutes collaborate on innovation and the commercialisation of public research. An example is the strategic co-operation of the Capital Region with the University of Copenhagen and the Danish Technical University.

An important instance of university-industry co-operation is in the life sciences. A central player in the co-operation between universities and industry in this field in the Capital Region is Novo Nordisk. This enterprise is the dominant player in the network and is connected to the life sciences in all the major universities in the Øresund Region. The Capital Region and Copenhagen University Hospital co-operate with research institutions and private business to implement the region's vision for world-class research and patient treatment in the region. At present, career possibilities for young researchers in the health sciences in Copenhagen are limited, and many leave the field. More flexible employment structures in universities and hospitals that allow for career enhancement, could solve this problem. Technology transfer from hospitals has been stimulated by TECTRA, a unit within the Capital Region that consists of eight full-time staff members. A new innovation and support unit for hospital research was established in 2008 whose main task is to help hospital researchers with fund raising, in an attempt to increase use of EU funds. In addition, the Capital Region, together with the Danish Technical University and the University of Copenhagen, established an EU office in Brussels in 2008 responsible for research and innovation.

Several initiatives have been taken to increase commercialisation of research, most notably via university patents and science parks. Denmark implemented a Law on University Patenting in 2000, which, in response to the Bayh-Dole reform in the United States, transferred to the employer university the rights to patents on inventions made by Danish university scientists, alone or as participants in collaborative research with industry. This commercialisation is facilitated by university technology transfer offices, which have been set up in all the universities in Copenhagen. In addition, a national Network for Technology Transfer, whose members include universities, research institutes and the Capital Region, helps public researchers commercialise their inventions, by developing methods and exchanging their experiences. The network also includes a patent exchange, which can be used to match private enterprises with public inventions. University-industry collaboration is also stimulated through industrial PhD Fellowships, collaborative research projects involving universities and private enterprises that aim to give researchers insight into the business aspects of research and innovation. Industrial PhD fellows divide their time between the university and the company.

Universities and other organisations in Copenhagen have also been setting up science parks to increase start-ups and the commercialisation of research. Around 20 business incubators in the Øresund Region (for example the Symbion and Scion-DTU science park in the northern part of Copenhagen) act as an intermediary between public research institutions and key industrial clusters in the region. Symbion, which occupies premises of 20 000 square metres, offers a range of in-house consulting services and advice, focusing particularly on business plan development and capital infusion. Its mission is to help commercialise innovative and high-tech projects in the fields of IT, telecommunication, biotech, pharmaceuticals and the medical sector. Symbion hosts around 90 companies, giving them access to a wide network of existing companies in the targeted industries. Scion-DTU is Denmark's first university-based research park, housing 175 businesses and more than 3 500 employees working in biotechnology, medical technology, IT and related high-tech areas. Based on two different locations on the campus of the Danish Technical University, Scion DTU offers facilities for all phases of a start-up business – from start-up to commercially mature research companies.

The results of the efforts to promote university patenting and science parks have been mixed. Valentin and Jensen (2007) found that domestic academic contributions to Danish dedicated biotechnology firms declined as an effect of the Law on University Patenting and that only a minor part of this decline has reappeared as inventive capability in university-owned patenting or in the formation of university spin-offs. As a likely explanation,

they suggest that exploratory research fits poorly with the requirement in the law for *ex ante* agreement of intellectual property rights. The complementarity of university-industry co-operation was affected by the introduction of contractual principles in which the interest of the universities' technological transfer offices did not necessarily overlap with those of the researcher. Although many successful start-ups have been located in science parks, it is doubtful whether wider regional effects have been reached. An assessment of the Symbion science park, for example, determined that it had relatively little communication with the higher education institutes in Copenhagen. Although interaction did occur, it was not systematised and institutionalised. Student awareness of Symbion was found to be low, and commercialisation of research as a career option was not well-considered (Hansson *et al.*, 2005). The Hansson study suggests that the establishment of institutions such as Symbion has, contrary to the original intent, ensured less interaction between higher education and industry.

These mixed results are not surprising in the light of experiences elsewhere in the OECD. Research on US universities suggests that increased university patenting is correlated with a slower pace of knowledge exploitation, especially in technology areas that rely heavily on science inputs – suggesting that university patenting may indeed be hindering or at least slowing industrial innovation (Fabrizio, 2007). A wide range of evidence appears to support the finding that science parks have no significant effect in supporting entrepreneurship, innovation, employment growth in high-tech sectors, research productivity and technological spillovers (Tamásy 2007, Siegel *et al.*, 2003, Shearmur and Doloreux, 2000). Comparative data indicate that potential exists for improving commercialisation of universities in Copenhagen, and there appears to be increased policy awareness of these issues. Meanwhile, it is not clear whether the instruments currently being used to increase commercialisation have had the desired impact.

University-industry co-operation can be further improved within the framework of the Øresund Science Region, within the Øresund Science Region and the Medicon Valley Alliance, for example. The Øresund Science Region is a regional development project that facilitates platforms for triple helix-co-operation in several regional clusters, such as ICT, food, environment, logistics, digital entertainment, nanotechnology and culture. Medicon Valley Alliance is the cluster organisation for the life science cluster in the Øresund Region. One initiative by the Øresund Science Region to increase the collaboration between science and industry was a series of Øresund contracts, developed on six broad sectoral fronts, as a way to foster network building. Although they appear to have strengthened and expanded

a number of industrial research networks, their effect on the regional innovation system of the region was found to be very limited, partly because their design was complicated and not well adapted to regional circumstances (Faugert *et al.*, 2004). Possible avenues to explore might be collaboration between the Øresund University and Øresund Region on a common strategy for university-industry co-operation, for example by streamlining the activities of the different science parks. Better clustering of similar start-ups could arguably stimulate further integration of research activities and rationalise duplications.

Research funding

Innovation in metropolitan areas is influenced by the quality of research, and research funding is of critical importance. Denmark has a two-tier system for resource allocation for research. The first tier is the basic grant, allocated by the different ministries directly to the institutions. The second tier includes resource allocation from the National Research Councils, strategic research programmes, R&D funds from the different ministries, private funds and firms. The basic research grant is allocated as a lump sum to the institutions and to a large extent calculated on an incremental basis. Basic grants are not dedicated to specific activities; distribution of the grants is relatively permanent and based on precedent. New research grants to universities are increasingly distributed according to models relying on activity parameters. An essential part of the second tier is the research council system, in which several research councils subsidise research: more “bottom up” research is being subsidised by the Danish Research Council for Independent Research, governed by researchers, and the independent Danish National Research Foundation. Top-down, politically prioritised funding is implemented by the Danish Council for Strategic Research, governed mainly by private sector members. In addition to the universities’ research activities, 11 applied research institutes in Denmark (GTS institutes) play an important role in research, employing a total of 3 000 people and with a turnover of around DKK 2.4 billion. About 11% of their income comes from performance contracts with the Board for Technological Service. The other 89% of income comes primarily from industry.

The first tier funding of research lacks incentives for efficiency and the second tier is not transparent. Although the basic research grants can secure long-term planning of universities, they appear to lack incentives for efficiency, relevance and societal impact. As they are mostly based on historical allocations, no mechanisms are in place to ensure that the institutions producing the highest quality of research are rewarded. Although the second tier provides a multi-faceted perspective on research priorities, it represents complicated arrangements that can easily become opaque and

bureaucratic. First-tier funding for research will as of 2010 be allocated according to new performance indicators, including bibliometric research indicators aiming at measuring the quality of research.

Conclusion

The focus of policy in innovation has been on the commercialisation of research, primarily through university patenting and science parks. Given that the effectiveness of both these instruments is in question, some reconsideration is warranted. The Øresund Science Region could benefit from further rationalisation of the commercialisation of research. Incentives for quality of public research and development appear to be linked to the funding mechanisms for public research.

2.5 Entrepreneurship policies

Entrepreneurship plays an important role in generating economic growth in cities. This section describes the main actors in entrepreneurship policies in Copenhagen and their vision and policies; it also assesses their policies and the critical issues in the regional governance of entrepreneurship.⁸

Responsibilities of the main actors

The Regional Centre of Growth in the Capital Region or Business Link Greater Copenhagen Area is an important actor in business services, employing around 25 people on a budget of DKK 20 million in 2008, primarily via a state grant. The main tasks of the centre in the Capital Region are to provide information, advice and mediation, as well as the administration of projects financed by the EU Structural Funds, the Capital Region and others. Information is provided via a website, a hotline and meetings organised by the centre, and advice through guidance, mentoring, coaching and networks. Mediation is conducted through private advisers, public organisations and banks. Important projects initiated by Business Link Greater Copenhagen Area are the Copenhagen Innovation Centre and the Fashion Accelerator.

The Capital Region mainly provides visions and funding. Regional visions for the business area are formulated in the Regional Business Development Strategies and are drafted by regional growth forums in which representatives of business, education and government participate. In line with that vision, regions fund different business development projects. The Capital Region, for example, supports the Copenhagen Innovation Centre and the Fashion Accelerator, a project of the Business Link Greater

Copenhagen Area funded partly by the region and partly by EU structural funds. The Capital Region does not exclusively fund projects proposed by the Business Link Greater Copenhagen Area, since it considers that general entrepreneurship projects should be carried out by the centre but that projects that are more sector-specific should be generally carried out by other actors. Projects funded by the Capital Region without the involvement of the Business Link Greater Copenhagen Area are science parks such as Symbion for ICT and the Copenhagen Biotech Science Park, which both supply specialist knowledge on domains such as patents.

In 2008, the City of Copenhagen established a business centre to replace one co-founded with the municipality of Frederiksberg, offering free advice to entrepreneurs on setting up businesses, taxes, planning and finance. The amount of advice is determined in the individual case. A hotline and website have been in place since 2007; business services include network arrangements and courses. The Copenhagen business centre currently has seven advisers who have assisted 1 200 entrepreneurs in the first six months, and from 2009, will operate on an annual budget of DKK 9 million. Special priorities for the business centre are creative and ethnic entrepreneurs. In 2009, the centre will open a one-stop-shop for entrepreneurs and SMEs, and there are plans to have tax and police officers seconded to the centre.

Offering local business services is not mandatory, but of the 29 municipalities in the Capital Region, 25 offered such services in 2008, up from 18 in 2007, (*Væksthus Hovedstadsregionen*, 2008). Those that do not offer services are mostly residential areas from which residents commute to Copenhagen and other economic centres within the Capital Region. These municipalities are to some extent free-riding on services provided in the other municipalities, as local business services have indicated that they will not refuse to service entrepreneurs from the other municipalities.

Visions and policies of main multi-level governance actors

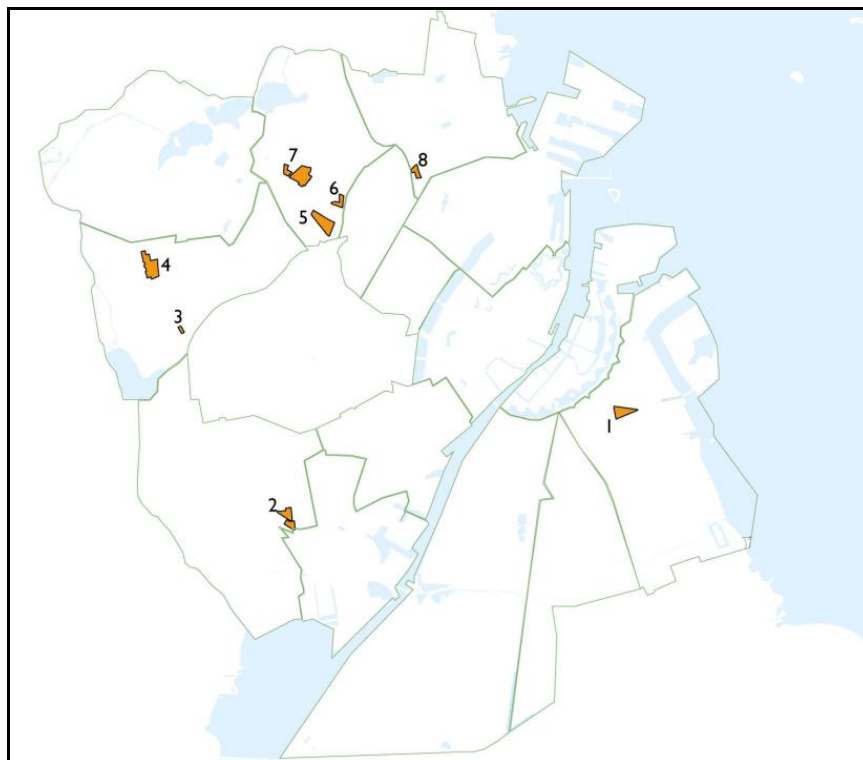
In 2006, the central government formulated its strategy for Denmark in the global economy, with key goals of strong competitiveness and strong cohesion, to be achieved by world-class education, research, entrepreneurship and innovation. Among the quantifiable targets were 50% higher education attainment, devoting 3% of GDP to R&D expenditure and the largest number of business start-ups and high-growth start-ups in Europe. An action plan was drawn up outlining the initiatives in more detail and funding them. The national government and the regional Growth Forum of the Capital Region made an agreement on partnership for growth for 2007-09, to synchronise the national *Globalisation Strategy* and regional growth initiatives.

The priority on high-growth entrepreneurship is reflected in regional strategic visions. The regional Business Development Strategy, “Partnerships for knowledge, growth and welfare”, mentions high-growth start-ups as an important challenge, in particular knowledge-based high-growth start-ups, considering the high density of knowledge institutes in the Capital Region. The Capital Region sets itself the target of becoming Northern Europe’s most attractive metropolis in 2015, with respect to quality of life, education, work, doing business and tourism. Priorities in this plan are infrastructure, education, recreation, the environment and a favorable climate for business. The Capital Region aims to be the greenest capital of Europe and envisages becoming a Northern European logistics and trade hub. Economic clusters that will be stimulated are information technology, interactive entertainment, mobile and wireless communication, the biomedical cluster, movie industry, fashion, environment and energy technology, and foods and nutrition.

The City of Copenhagen shares the ambition to create favourable conditions for start-ups and has formulated the creative sector as a priority for business development. The City Development Strategy Paper 2007 stresses sustainability, affordability, accessibility to the water and economic dynamism. In addition, the City of Copenhagen relaxed regulations for businesses with the project “Gearing Up Copenhagen” in 2007, with the aim of securing deregulation and easing business creation by establishing a single entry point. A more permissive approach was taken to events and concerts in the public spaces in the city, as well as flexible stalls and outdoor service from restaurants and cafés.

The City Development Strategy 2005-09 designated eight creative zones where affordable working space would be made available. These zones, part of the port area, adjacent to the new Opera House, and the Vesterbro meat processing district, are identified as incubators for creative industries.⁹ These areas are located at the border of the dense inner city and old industrial city fringe, with mixed-use buildings of varying size that are in need of refurbishment and reuse (Figure 2.2). This zoning initiative, using lower plot ratios as a planning tool, has sought to provide flexible workspace opportunities for creative and other small businesses, whilst retaining the industrial heritage and light industrial space.

Figure 2.2. Creative zones in Copenhagen



Source: The City of Copenhagen.

Assessment of sub-national policies

Although there are some collections with good practices in sub-national business policies in Denmark (Reglab, 2007; Teknologisk Institut, 2007), there are no systematic evaluations of local business development policies and instruments. This makes it difficult to judge what has been the value-added of which local business services in the past and hinders the implementation of evidence-based policies. Data are currently collected both by the Business Link Greater Copenhagen Area in the Capital Region and the City of Copenhagen on use of their services, and a large evaluation set-up is being constructed for the Regional Centres of Growth.

Creative entrepreneurship

Preliminary evaluation of the creative zones in Copenhagen suggests that five of the eight have experienced growth in creative business activity, whilst the remaining three zones have not attracted or retained firms (City of Copenhagen, 2007). Growth is taking place particularly in advertising, design and architecture, but it is not clear how these creative zones relate to the wider city and the Capital Region's creative production and cultural consumption clusters. Although the city is seen as "one cluster" (Creative Forum), creative quarters and clusters (*i.e.* networks) are likely to exist, whether formally or informally, and this will be important in encouraging innovation, prioritising sectors over time and for policy interventions and targeted investment that create knowledge spillovers.

A creative economy baseline mapping might help to highlight where spatial clusters and production/supply chain links are strong, and where barriers and gaps exist in growth opportunities and infrastructure. Similar detailed studies have underpinned creative industry strategies and support programmes in London, Toronto and Berlin, and helped make the case both politically and with industry, to counter suggestions that the combined creative sector is neither robust nor substantial enough to warrant economic development and prioritisation (Evans, Foord and Shaw, 2005).

Although the focus on creative industries could help foster entrepreneurship in Copenhagen, a more focused approach could be beneficial. There is a "lack of consistent, co-ordinated data and intelligence – making policy development difficult" (NORDEN, 2007). This is echoed in the recent *Creative, Competence, Competitiveness in the Danish Experience Economy* study (CBS, 2008). Existing employment and economic data often use overlapping combinations (*culture, creative, content, experience economy*), and especially more micro-level analysis is required. There is therefore an urgent requirement for useful and disaggregated ("bottom-up") data and knowledge of the city-region's creative industry firms, employment and structures, including their location, business development needs, and the production chains that operate between them and the wider economy. This evidence, when available, will highlight clusters on a geographic, sectoral and market basis and inform development planning and enterprise support measures.

Synergies between sectors

A lack of cross-disciplinary activity in the Copenhagen area appears to exist between arts and design on the one hand, and research, technology and other economic sectors on the other hand. The Danish government provided

financial incentives and funding to promote design between 1997 and 2001, including support of the Danish Design Centre. These incentives have not continued, although education, industry and public award and event programmes have, including INDEX, Design Centre programmes and the Centre for Research in Design (opened in 2004 at the School of Architecture Copenhagen, establishing design programmes in universities and art and design institutes).

How far the creative sector engages with the commercialisation of research is, however, unclear. This relates to where art and design education and vocational training are located and supported within higher education institutes and specialist institutions; how creative enterprises access and engage with the institutional innovation system and resources (such as licensing, legal expertise, R&D, prototyping); and how innovation spillovers are identified and developed between large (private and public) and micro enterprises.

Many synergies could however be exploited. Examples elsewhere of cross-over applications between cultural and other growth sectors include arts and health (*e.g.* facility design, therapy) and technical or “smart” textiles for use in health treatment and diagnostics. Considering the strong biotechnology and health cluster in Copenhagen, one would assume a potential for synergies that could be realised with further co-operation. A recent example is the collaboration between the Centre for IT and Architecture at the Royal Danish Academy of Fine Arts, and the Textiles Futures Research Centre at CSM, University of the Arts London, offering a joint three-year international doctoral (PhD) studentship based in Copenhagen and London. This model might be expanded into other creative/convergent technology fields through collaborative university research and development, including creative firms and larger companies. This should foster and develop the synergies with established clusters in biotechnology and health, and between micro and larger firms and institutions/universities.

Ethnic entrepreneurship

The city could intensify its targeting of entrepreneurship policy towards immigrants. Their reticence to grow from sole trader, micro enterprise and “lifestyle” business, and to take on employees, suggests a cultural constraint upon entrepreneurship. This is something that could benefit from incentives (finance, training, employment) and other models of business growth, for example SME clusters/action groups, but also from greater diversity in the business culture, which could be provided by international and migrant workers/groups. Access to employment, start-up and enterprise support may

therefore be targeted at these groups, which may lack access to cultural and financial capital and the networks available to Danes. Ethnic entrepreneurship is a policy priority for the City of Copenhagen: from 2005 onwards, outreach counselling has taken place in the business centre operated with the city of Frederiksberg. The Copenhagen Business service centre has continued the effort and focuses on outreach counselling for women from ethnic minorities.

Critical issues in regional governance of entrepreneurship

1) Co-ordination between levels of government

The current system demands co-ordination between Regional Centres of Growth and a municipality. The split in the responsibility for high-growth entrepreneurs (Regional Centres of Growth) and other entrepreneurs (municipalities) makes co-ordination between Regional Centres of Growth and municipalities essential if overlap is to be avoided. Referrals to the other organisation if an entrepreneur does not fit the target group would suggest consensus on the main point of entry for entrepreneurs. In practice, different models are being applied in different regions, depending on local circumstances. The Regional Centre of Growth of Mid-Jutland is strongly aligned and co-ordinated, given its long history of strong local involvement in business services, the service provision of municipalities.

Such co-ordination appears to be less developed in metropolitan Copenhagen, even though some co-ordination meetings are organised. Both the Business Link Greater Copenhagen Area and Copenhagen Business Centre appear to aspire to be the main entry point for entrepreneurs. The Business Link Greater Copenhagen Area currently seems to be the actual entry point for most questions (through its hot line) and refers entrepreneurs to the Copenhagen Business Centre if necessary; the Copenhagen Business Centre refers growth entrepreneurs to the Business Link Greater Copenhagen Area. The Copenhagen Centre is clearly building up expertise in the areas it considers priorities for the city (ethnic and cultural entrepreneurship) and would understandably be tempted to retain its clients in these areas even if they have clear high-growth perspectives. As both the Business Link Greater Copenhagen Area and the Copenhagen Business Centre are new organisations, their relative functions have not yet become clearly defined. They seem to some extent be competing for similar clients, but their relatively limited capacity may give them an incentive to refer to each other clients they consider less interesting or promising.

Not much functional overlap seems to exist in practice between the Business Link Greater Copenhagen Area and the Copenhagen Business centre; their specialisations could in the future create some kind of an institutional equilibrium, but this is not an automatic process. The institutional setting is too new to be able to give a fair judgement on the delivery of business services. As long as functional co-ordination between the two organisations has not been made explicit, it will remain unclear to entrepreneurs which organisation is responsible for which tasks. This lack of co-ordination is compounded by the fact that Copenhagen, as the largest municipality in Denmark, is not represented in the board of the Business Link Greater Copenhagen Area.¹⁰ Another challenge to co-ordination might be the use of sectoral expertise that will be built up elsewhere in Denmark. Since several economic sectors in Copenhagen are also present in other regions, it would make sense to find mechanisms for knowledge-sharing cutting across regional boundaries.

Apart from the Capital Region, which does not cover the functional area of the greater metropolitan area of Copenhagen, there is currently no institution providing horizontal co-operation in the metropolitan area of Copenhagen. It is difficult to see how the region could provide this metropolitan co-ordination. The task of regions that comes closest to regional co-ordination is in regional economic development co-ordination, through the Regional Growth Forums, which play a role in articulating regional needs and policy directions. Business, education and regional government are represented, and co-ordination with municipal governments in the region takes place. Considering the lack of instruments in fields instrumental to regional development, Regional Growth Forums do not seem *ex ante* to have enough leverage for the co-ordination of many different and sometimes conflicting interests in Copenhagen.

One vehicle for co-ordination could be the letters of agreement between Regional Centres of Growth and municipalities. These letters currently express which organisation is responsible for which target groups. As such their coverage is marginal, and they do not give much guidance about grey areas or a common understanding on priorities for the area concerned. These letters of agreement might be used as a vehicle of co-ordination between Regional Centres of Growth and a municipality: the process leading up to the agreement could inform the Regional Centres of Growth about different local contexts and specificities that could be expressed in its overall goals and targets. Future contracts between national government and Regional Centres of Growth could leave more room for regional differentiation, for which the co-ordination process between Regional Centres of Growth and municipality could provide input.

A current constraint in business services seems to be the fragmented demand for consulting and training in the consolidated private market. Provision of services that are responsive to demand would permit specialist services to be bought on the private market, rather than being offered in-house. Current demand is too fragmented to interest the private market. A public intermediary, however, could possibly co-ordinate the demand for certain specialised business services in the private sector. Depending on the rate of demand for these services, this intermediary role could be taken up at the regional level for those services for which enough effective demand exists, and at the national level for those services for which demand is relatively limited and geographically spread out.

2) Coherence of policies

The Centre of Growth model is applied uniformly across the country, but it is in some respects less suitable for Copenhagen's situation. The national government contracts with the regional growth houses are similar for all five Regional Centres of Growth: they define the same target groups and performance criteria for every region. Much of the knowledge-intensive and creative sectors are concentrated in Copenhagen, where employee growth is often not a measure of success. Many knowledge-intensive firms often expand in terms of turnover, and creative businesses often use networks and sub-contractors, rather than employing new staff. Given that one of the criteria in the performance contract of the national government with the Regional Centres of Growth is an increase of start-ups with high employee growth, the Regional Centre of Growth of the Capital Region has an incentive to target entrepreneurs that are not necessarily those the City of Copenhagen wants to target. As Copenhagen faces increasing labour shortages, there may be less need in the Capital Region to focus on start-ups with strong employee growth.

It is not clear that Copenhagen's priority of cultural entrepreneurship is shared by the surrounding municipalities. In a survey of Danish municipal cultural policy rationales, only 18% identified economic development (rather than social development) as the primary aim of their culture-led strategies for regeneration, and fewer Copenhagen municipalities prioritised economic development compared with other regions such as Aarhus (Bayliss, 2004). The policy of Copenhagen appears to be at odds with the local level in terms of culture-led regeneration and creative enterprise. Consistency across levels of government is however important, as creative clusters have regional spillovers (Box 2.3).

Box 2.3. Regional spillovers of creative clusters

Economically, the scale of clusters are seen as important, since it is at the wider region (rather than at the inner-city or Capital Region levels alone) that innovative production and R&D clusters operate most successfully and competitive advantage can be sustained. For example, London's global role as creative (industries) and culture city is maintained with the support of regional clusters outside of the Capital Region. Whilst the creative economy slowed down in the early 2000s in London, the creative economy actually grew in the surrounding Southeast region, which also serves as the prime labour market, commuter area, market catchment and production base. Examples include film and television (studios), manufacturing and overspill workspace. It is also in this region, the Thames Gateway, with improved connection to the Continent (CTRL) that housing growth areas are located. This city-region hub and spoke and polycentric creative and production cluster is also a feature of creative cities such as Berlin (Brandenburg), Milan (Lombardy, Emilia Reggiano), Paris (Ile de France), San Francisco/Oakland, Scotland (six cities) and the Greater Amsterdam region.

3) *Future sustainability*

The funding of the Regional Centres of Growth after 2010 has yet to be finally negotiated. Serious concerns exist over the devolvement of funding to municipalities after 2010. One possibility is that the block grant from the central government to municipalities would be increased by the amount that corresponds to the present level of funding for the centres. Some caution is in order here.

The City of Copenhagen has been investing in the development of a new business centre that is tailored to its policy priorities; so it might be less inclined to fund a Regional Centre of Growth with different priorities, and synergies between the two organisations might not be clear. Other municipalities, moreover, might have less incentive to fund the Regional Centre of Growth, more specifically the couple of municipalities that currently do not have a business centre. Business services seem to be relatively unimportant for them, or are taken care of by other municipalities. The interplay of actors is to some extent more intense in Copenhagen than in other regions, as the area is relatively more fragmented than other metropolitan areas in Denmark and has more areas with a clear residential function that have a limited interest in business services. A better view of the positive effects of the Regional Centre of Growth will probably increase acceptance among the municipalities. Although it is early to measure the total effect of the Regional Centres, a planned evaluation in the beginning of

2009 will provide some first indications. A thorough evaluation of the performance of the Regional Centres of Growth by 2010 before the end of the transition period is warranted given concern over the devolvement of funding of Regional Centres of Growth to municipalities after 2010.

Conclusion

Entrepreneurship policies in Copenhagen have so far had mixed results. There are no clear indications of the creative zones; relatively few synergies between sectors have been reached, and ethnic entrepreneurship still remains limited, despite policy attention. The creation of Regional Centres of Growth has created co-ordination challenges that might be addressed with a second generation of letters of agreement between Regional Growth Centres and municipalities.

2.6 Infrastructure policy

Land, air and marine transport networks intersect in Copenhagen, but Copenhagen also connects the Baltic Sea and Atlantic Sea on trade routes between European Continent and the Nordic countries. The development of smart transport infrastructure is important for urban competitiveness, not only to capitalise on the transit needs and further economic growth but also to mitigate burden of transit on the environment. Reflecting these concerns, the 2008 Regional Development Plan of the Capital Region centres on transportation as one of the three main issues. The Øresund committee is also focusing its lobbying effort on transportation issues. To accommodate further growth of the metropolitan area, Copenhagen will need to build further upon its strengths in internal and external accessibility. Qualitative and quantitative development of transportation infrastructure is indispensable.

The history of transportation infrastructure development in Denmark has been the effort to overcome the isolation of an island country. Since the 1930s, Denmark has built many important bridges and connected the major islands. A comprehensive motorway network plan took shape in the 1960s, when the so-called “Big H” structure was introduced. Major achievements in improving the accessibility of Copenhagen have been the construction of the Great Belt Link and the Øresund Link. Since 1997, Copenhagen has been connected to mainland Denmark via the Great Belt Link, which connects Sjaelland via the island of Fyn to Jutland. Since 2000, Copenhagen has been physically linked to southern Sweden (the Skåne region) via the Øresund Link. These efforts to link the islands of Denmark will continue with the construction of the Fehmarn Belt link, which is currently under way

and which will link the Danish island of Lolland with the German island of Fehmarn, thus substantially reducing the travelling time between Copenhagen and mainland Germany. It is expected to be completed in 2018.

Denmark's domestic transportation system is well developed. Currently, its main transport infrastructure consists of the road network, railway network, 23 airports including Copenhagen Airport, and 120 seaports (Statistics Denmark, 2008). Road and railway network form the shape of the "Big H". A well-developed and high-quality transportation system of roads, railways, airports and ports has given Denmark a top ranking in the IMD's World Competitiveness Yearbook and in the World Economic Forum's Global Competitiveness Report for several years. The challenge will be to strengthen external links with Nordic countries and European continent.

A recent achievement in the Copenhagen metropolitan area is the opening of the metro system. In 1992, the Danish Parliament permitted the construction of a metro railway infrastructure and the development of a new district (Ørestad) in Copenhagen. Metro construction started in 1994, and the first phase was completed and opened to the public in 2002. The continuing construction expanded the metro system, including the link between the city centre and the international airport in 2007. Currently, the city ring line is being constructed and will be completed at 2018 at the earliest. When the city ring is finished, 85% of all traffic destinations in the city centre will be within 600 metres of a Metro or S-train station. The metro is fully automated and operated from a computer centre in Ørestad. The automation enabled high frequency of as much as 100 seconds of interval during rush hours and two to three minutes during off-peak hours. The system is stable, with 99% of trains on time in 2007. Construction costs are financed by user fees and proceeds from real estate development abutting the metro line, making the project financially self-supporting (Box 2.4). Some studies show the impact of the metro opening on transportation in Copenhagen as positive in terms of traffic growth, inducing more long-distance travel. The metro opening also caused some modal change. The metro carried around 40 million passengers in 2007. The Metro Rail conference, consisting of experts from metro systems around the world, awarded the Copenhagen Metro the "Best Metro" award in 2008. It is reported that the experts highly evaluated its operational reliability, the speed of the new line to the airport, the system's safety level, and the growing passenger rating.

Box 2.4. Ørestad development-Integrating infrastructure, land use development and financing

The Ørestad area is located about 2 kilometres from the city centre of Copenhagen. The area to be developed is about 600 metres wide and 5 kilometres long. The area has good access to Copenhagen's city centre, Copenhagen Airport and Malmö in Sweden by means of motorway, national railway and the newly developed metro. The national government and municipality government of Copenhagen established the Ørestad was owned 45% by the national government and 55% by the municipality of Copenhagen.

The basic scheme of the development is integration of infrastructure development, real estate development and financing. The ODC took over the Ørestad land from the owners (national and municipal government) and raised loans on domestic and international capital markets. The Danish government and the municipality of Copenhagen assumed joint liability, to improve its credit ranking. The money borrowed allowed the ODC to construct infrastructure including the metro extension line. After the newly developed infrastructure increased the value of the land, it sold the land to developers, capturing the increased value to repay the loans. Operational profits of the metro and increased real estate taxes also contribute to repaying the loan. The ODC estimates that the metro will be free of debt 30 years after its completion.

Ørestad is developing as planned, attracting both public and private sectors. Copenhagen University, the IT University and Denmark's Radio relocated to the area. Major companies such as Ferring Pharmaceuticals, Atkins, Dell and Masterfoods also established offices there. In March 2004, 146 000 square metres of shopping centre were opened, and by the end of 2006, approximately 1.6 million square metres (of floorage) had been sold, corresponding to 52% of the overall site. The average price per square metre has been increasing over the years and is expected to increase further. The new town of Ørestad will expand over the next 20 years to an area of 310 hectares, providing 60 000 jobs, 20 000 education places and 20 000 dwellings.

Based on the experience, the ongoing construction of a new city ring line has also been financed by a package of city development projects and a capital investment from Copenhagen and Frederiksberg of EUR 1 billion.

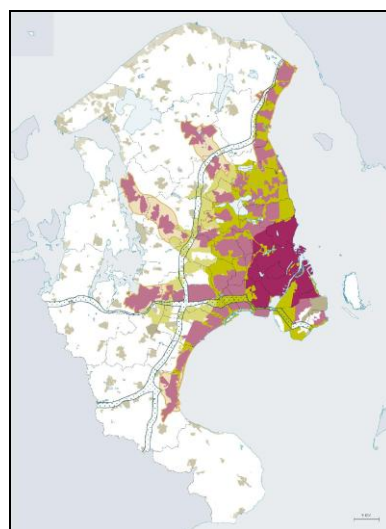
Relation with the Finger Plan...

The transportation structure in the metropolitan area has been developed to support the vision of the Finger Plan. It consists of radials and rings of railways and roads. The radials extend from Copenhagen's city centre to the cores of fingers such as Koge, Roskilde, and Frederikssund, etc., and the rings consist of four circular road links and one railway link. The ring network connecting each finger farther away from the city centre lacks mass transport and is generally served by S buses. The outward expansion of the Copenhagen metropolitan area entails the following challenges in the transportation structure that will affect the structure of the Finger Plan.¹¹

Figure 2.3. The finger plan in theory in 1947



Figure 2.4. Urban settlements and the finger plan in 2007



Source: Regional Planning Committee for Greater Copenhagen (1947) and City of Copenhagen (2007).

The palm and finger structure supported by the radial network naturally entails congestion at the centre. A particular problem in the transportation railway network is the Copenhagen Central Station and several other core stations, such as Norreport. This is a risk for whole transportation system. In Tokyo, where the risk of earthquakes is large and political and economic functions are highly concentrated, the concept of redundancy was incorporated in the national spatial plan in the late 1980s. This meant designing infrastructure and public spaces to avoid system breakdown in case of the destruction of some sections in a disaster. The current mono-centric structure of Copenhagen's transportation system could jeopardise the total transportation system in the case of an emergency. To deal with overcrowdedness of some points and decrease emergency risk, relief stations or bypass routes could protect the centre of Copenhagen. Among them, development of relief stations and a harbour tunnel that would establish an eastern ring connection could provide benefits. Effective centre management would contribute to a stable and effective transportation structure, while

dealing with the expected increase of passengers and goods. Such changes would involve not only quantitative investment but also network design.

In the past decade, cross-traffic between fingers through ring roads has grown by as much as 40%. This increased cross-traffic puts a burden on the environment. However, the increase and expansion of the ring road infrastructure would lead to further development between fingers, and attract more activities and population in those areas, most likely conflicting with the design of the Finger Plan, which called for a clear demarcation of urban and rural land. The introduction of mass transport (railway and metro) between the fingers will be difficult to sustain financially, as the population density of the suburbs cannot ensure enough passengers. Even if the government could fund the expense of construction, the operational expense could not be sustainably covered. The cost of construction and operation would increase if ring railways are constructed far from the city centre, because the length of the arc would be longer. One project aimed at solving regional congestion is the redevelopment of the Nordhavnen quarter of Copenhagen. The City of Copenhagen and the central government have jointly created the company “Copenhagen City and Port Development”, currently redeveloping a 200-hectare area of Nordhavnen, to create a district with 40 000 inhabitants and 40 000 jobs a few kilometres from the city centre. This urban development project is seen as a means to combat the tendency toward rising commuter traffic in the region by creating local housing and jobs.

There has been a huge increase of traffic between the centre of Copenhagen and places far away in the fingers. In the past decade, traffic on the radial roads has grown by approximately 20% to 30%, and car commutes from Sjaelland have especially increased. Commutes between the rest of Sjaelland and metropolitan area have increased more than 30% (inbound) and approximately 20% (outbound). To accommodate the increased demand of the highway network, the National Road Directorate is about to expand capacity to eight lanes on the South motorway to Koege and West motorway to Roskilde. A completely new highway to Frederikssund is also under consideration. Even though the expansion of the routes solves the problem in the short run, demand management through land use planning or congestion charging would be necessary in the long run. Members of the Economic Council, an advisory body of the Danish government, recommended in 2008 that traffic problems in the region be solved by development of the road network, along with an introduction of a congestion charge, while in the long run, spatial planning should contribute to solving traffic problems in the region.

The Øresund Link has not been designated as a “finger”. However, the relationship with Skåne has been increasing by way of Øresund Bridge and

might be regarded as an emerging sixth finger. It is estimated that the population of the Øresund Region will grow by approximately 200 000 in 20 years. Accompanying the population increase and possible economic integration, it is also estimated that car traffic across the bridge will increase from an average of 18 500 vehicles per day in 2007 to 49 000 vehicles per day in 2025 and that the number of daily commuters across Øresund will increase from 17 600 individuals per day in 2007 to approximately 56 000 in 2025.¹² Commuting will, according to these expectations, account for half of all passenger car traffic on the bridge in 2015. The current situation, with higher wages in Copenhagen and lower housing/living costs in Skåne, will lead to the emergence of one functional area sooner or later. Rush-hour traffic will be the most urgent challenge. The bridge itself is likely to support the increase of passengers for the coming decade, while the roads and rail in Copenhagen might run into difficulties dealing with the additional traffic, for example in the connection with the city centre and with the airport, as the arrangement of the Øresund Link required each country to take independent responsibility for domestic access to the link. The central and local government could profit from taking some measures to counter the bottleneck.

To face the challenges, the Capital Region's Development Plan, in accordance with the Finger Plan, promotes expansion of public transport in densely populated areas and on the large approach roads. This is a step in the right direction, but a solution from supply side, through increase of transportation capacity, should be linked with the demand side, through land use planning that influences transportation needs. Transportation planning should be clearly co-ordinated with land use plans such as the Finger Plan. Since transportation infrastructure planning falls under the jurisdiction of Ministry of Transport, while spatial planning is under the Ministry of Environment, both ministries will need to co-ordinate to achieve effective and efficient regional structures.

...requires more integrated transport planning

At the national level, it is not clear how to prioritise infrastructure development among many transportation mode and regions. National Transport Agreements intend to prioritise investments in road and rail infrastructure. Agreements in 2003 and 2005 focused on congestion relief and international links. The 2006 agreement focused on restoration of the rail network and new road construction. For the coming government investment plans, the national government established the Infrastructure Commission, whose task is to assess key challenges and potentials towards 2030, present strategic options and priorities, give advice on public-private partnerships (PPPs), environmentally friendly transportation and evaluate organisation for physical planning. The Commission issued a report in 2008,

but it does not have clear prioritisation of infrastructures and does not cover every mode of transport. Because a seamless intermodal transportation network affects the competitiveness of logistic sector, which many economic sectors depend on, the national government could benefit from a tool for co-ordination and prioritisation of every mode of transport, in accordance with business requirements.¹³

Institutional fragmentation of the metropolitan region poses a significant challenge, making an integral vision on transport modes and their connection difficult. Currently, no integrated transportation infrastructure system exists; several actors within the transportation field need to co-operate with each other. National and municipal governments are responsible for roads, based on the Danish Roads Act. The national government is largely responsible for the commuter train (S train) and regional trains. The national government, City of Copenhagen and the City of Frederiksberg own the metro based on separate legislation. However, a regional co-ordination mechanism is beginning to emerge. Since 2007, a single operator (Movia) has managed the public bus service in Sjaelland. It is owned by the two regions (the Capital Region and Sjaelland region) and the municipalities, who nominate the nine members of the board. This operator has full responsibility for total planning, including the pricing scheme, while each of 47 municipalities in the coverage area has responsibility for the operation and financing of bus service within the administrative boundary. Evidence suggests that this financing makes it difficult to agree on collective initiatives, such as marketing, because all costs have to be borne by the regions. Integrated transportation planning is increasingly necessary at the metropolitan level, as the development of each mode affects the others. Decision-making should be co-ordinated at strategic and operational level. Beyond the Copenhagen metropolitan area, cross-border co-ordination of transportation planning will also increasingly become necessary.

Congestion charge in discussion

Reflecting the regional scale of the congestion problem, congestion charges have been discussed extensively in the Copenhagen area over the last decade. Congestion charges have been introduced in several cities all over the world. Singapore has long and comprehensive experience and London, Oslo and Stockholm have followed suit. Like many cities in the OECD, Copenhagen is reflecting on the introduction of some form of congestion charges. Several surveys and analyses have been carried out that suggest a strong basis for decision-making on this matter. Different layouts of toll rings, multi-cordon systems and kilometre-based charging using GPS have been investigated and compared through field experiment (Rich and Nielsen, 2007).

Box 2.5 Some examples of congestion charges in OECD countries

Road pricing is a programme whereby the government directly charges users for using a congested section of a transportation network during a congested time. Road pricing attracts more attention because of the rather recent introduction of congestion charges in London and Stockholm. The purpose of the congestion charge is not only financing and funding road infrastructure but also introducing demand management in transportation system. By charging for use of the congested section and hours, government can deter drivers from using those sections. Reducing the impact of the congested traffic on the environment and health is often an additional objective. Governments often use revenues generated by the charge for the expansion and improvement of mass transit network.

The case of London has been widely analysed in public policy debate. The following conditions made the implementation feasible in the context of London.

- Severe transportation bottlenecks in the city centre: road congestion was severe, while the expansions of roads were extremely difficult because of the already crowded built environment.
- Transportation structure (cars and other modes of transport): Relatively good alternatives to private cars existed, such as walking, cycling, taxi, bus, and subway. Only about 10% of peak period trips were made by private car. Many of the automobile commuters were living outside the city. The city did not have much residential population inside the area compared to the outer area. While a wide array of people benefited from the congestion decrease, the people who elected to pay the congestion charge were limited.
- Political will: The leadership of Mayor Ken Livingstone was strong and consistent through the process. He also integrated the congestion charge into the wider scheme of London Plan and Mayor's Transport Strategy, to make his claim convincing and appealing.
- Legislative support from the national government: The national government provided the Greater London Authority (GLA) with the authority to introduce the congestion charge through the Greater London Authority Act of 1999 and Transport Act of 2000.
- Extensive public consultation: The GLA ensured understanding and support of the public and business in the decision-making process.
- Appropriate institutional setting: A professional team in Transport for London supported the management of system.
- Technological development: Technological development and the accompanying price decrease of facilities for congestion charge management made the implementation feasible.

In designing a detailed scheme of congestion charge such as the area and time covered, vehicle type charged, price level and structure (flat, gradual or variable), discount and exemption, policy makers should analyse the following fundamental issues;

- Geographic structure of the city and the congestion analysis: Where is the congestion severe? Area (polygon) or main avenues (line)? Are there any physical alternatives, such as road expansions? What is the residential density in the area? Who contributes to the congestion in the city? Do most residents or commuters live outside the city?
- Impact on economic efficiency: How much will the congestion charge improve traffic conditions in terms of time and money? What are the impacts on business?
- Financial sustainability: Will the revenue raised afford the initial costs and operating expense?
- Distributional effect: Given that exemptions and discounts usually accompany such plans, the distributional effect is usually complex. Who will benefit and lose from the introduction of the plan? Are the impacts progressive, regressive or neutral?
- Impact on general national and local finance: Impact on fuel tax, parking revenue if managed locally, cost of parking enforcement, etc. Which sector of national and local governments increase or decrease the fiscal balance?
- The possibility of improving alternative modes of transport in advance of the introduction of the congestion charge: How and how much can it mitigate the impact of the congestion charge?
- Possible impact on the surrounding area: How much and where will the through-traffic go? How much additional parking should be supplied close to the boundary? What are land use impacts?
- Impact on environment: Given that climate change is an increasing concern, governments are highly likely to add the environmental consideration in the congestion charge scheme. Will the congestion charge contribute to the decrease of CO₂ emissions or worsen them by increasing through-traffic?

London: The GLA originally introduced the London Congestion charge covering the parts of Central London in February 2003, and extended the area into part of West London in February 2007. The extension increased the resident coverage from 150 000 to about 230 000. The main objectives of the charge are to reduce congestion, and to raise funds for investment in London's transportation system. The charge was originally GBP 5 a day, but was later increased to GBP 8 a day. An entity called Transport for London (TfL) manages the charging system. The TfL estimated that the level of traffic of all vehicle

types entering the central Congestion Charge Zone was consistently 16% lower in 2006 than the pre-charge levels in 2002. TfL also reported improvement of air quality in the zone. TfL's annual report for 2006-7 shows that revenues from the congestion charge were GBP 252.4 million over the financial year (8.5% of TfL's annual revenue). It spent more than half the revenue on the operating costs of the charging system. After deducting the operating costs and the other charges, net income was GBP 89.1 million. Law requires that the TfL spend all net income raised through the charge on reinvestment in London's transportation infrastructure. The TfL invested about 80% of net income in bus network improvements. As a result, new routes were introduced and existing routes extended, and frequency of service increased. As a result, bus use increased in the central London Area.

From October 2008, the GLA will introduce a completely new charging structure. The new system will charge cars based on potential CO₂ vehicle emissions. Cars and certain pickup trucks will be charged GBP 25 a day, while low-emission cars will be free of charge.

Stockholm: Stockholm introduced a congestion charge on a permanent basis in August 2007, after a seven-month trial period between January 2006 and July 2006. The charged area covers Stockholm City Centre. The trial was successful, with reduced traffic and improved air quality. Before the national government made this decision, municipal governments held a referendum regarding the permanent introduction of the congestion charge. The result in the municipality of Stockholm was 53% support for the charge. However, the surrounding municipalities unanimously disapproved of the introduction of the charge, voting against it by between 54.1% and 70.4%. Many residents in the surrounding municipalities commuted to the congestion charge area and were heavily influenced by the charge. After the referendum, the government took the result in the municipality of Stockholm into consideration and implemented the congestion charge.

The national government introduced the congestion charge as a tax and has managed the revenue. The government will use the revenue entirely for new road construction in and around the Stockholm area, including the construction of a new major bypass road, while the government spent all the revenue on public transport in Stockholm during the trial period.

Norway: Congestion pricing in Norway is different from that in London and Stockholm, and is levied as tolls in the main corridors "ring road" rather than as an area-based charge. Though it was initially intended to raise revenue to finance the ring road, it created the same impact as a congestion charge. The revenue has also provided funds for improvements in public transport and environmental projects.

Singapore: Singapore has the world's most sophisticated and long-standing congestion charge system, thanks to the small geographic area of the city state (42 kilometres east to west and 23 kilometres north to south) and to the strong political will of the dominant political party. The fare is automatically charged depending on the time, place and vehicle type. This is the most developed type

of demand management tool in the world, linking the demand for the road to the supply of the road (road capability of achieving reasonable automobile speed).

Nagoya (Japan): The city of Nagoya, headquarters of one of the biggest automobile companies, Toyota, decided to make an experiment of a congestion charge for a trial period from October to December, 2008. The aim was to decrease congestion and CO₂ emission. Car usage accounts for 42% of all transportation modes in the city. By 2030, the city wants to decrease the percentage to 35%, by increasing the use of public transportation. The city plans to return a portion of parking fees to drivers, while giving no return to the illegally parking cars and through-traffic cars. This return is pending agreement from the residents of the charged area. This is the first experiment of a congestion charge in Japan and will be a touchstone for other Japanese cities.

Costs of congestion charges are considerable, but recent experiments show net benefits for Copenhagen. Experiments conducted in Copenhagen suggest that congestion charges would have led to reductions in congestion in Copenhagen had it been introduced in 2005, ranging from a reduction of 0.2% in the small toll ring to 7% under the kilometre-charging system. An analysis in 2008 by KommuneForum, a group of municipal representatives in the Capital Region, showed that the introduction of congestion charges in 2010 could reduce traffic in the payment area by 15% (KommuneForum, 2008). Different charging schemes affect the origin-destination pattern differently. Cordon-based charging efficiently reduces the traffic across cordons, but tends to leave internal traffic unchanged (Schönfelder, 2007). Introduction in 2005 would have resulted in negative internal rent as congestion in Copenhagen was modest (Rich and Nielsen, 2007). Reflecting increased congestion and increasing traffic streams into Copenhagen, calculations in 2008 pointed to a net benefit of DKK 1.5 billion per year if congestion charges had been introduced in 2010 (KommuneForum, 2008).

Political support for congestion charges exists in the city of Copenhagen and 15 neighbouring municipalities (known as “The Forum of Municipalities”), but is lacking among other relevant actors. The current Lord Mayor of Copenhagen has been a strong advocate for road charging, supported by a majority in the City Council. The kilometre-based tariff system is considered to be the most favourable option, but its technology is considered to be risky. In order to introduce a charging system as quickly as possible, the municipality has favoured a toll ring. According to Danish law, road charges are considered a general tax and therefore have to be decided by the national Parliament, which has so far opposed road pricing, despite the strong support of some members.

There seems to be popular support for road charging. Opinion polls show that the local population is predominantly in favour of road pricing,

not only in the city of Copenhagen but in the rest of the metropolitan area. An opinion poll conducted in 2008 among 750 people indicated that between 65% and 80% of the citizens in the Capital Region consider that introduction of congestion charges would be positive, if congestion was reduced and if the benefits were used for investments in infrastructure and public transportation in the region. A majority of road users in Denmark consider variable taxes on car driving more acceptable than fixed ones (Herslund, 2005). A central issue in the Danish debate is that road pricing should not be an additional tax, which would contradict the central government's promises. One way out of this would be to reduce fixed car taxes or fuel taxes. Another issue is that if only Copenhagen introduced road pricing, this would mean redistribution from Copenhagen to the rest of the country. One solution would be to let Copenhagen and its neighbouring municipalities obtain the revenue so that they could use it to reduce municipal taxes or improve the transportation network, as happened in London.

Make better use of the Øresund Link

The Øresund Link has been in operation since 2000. This 17-kilometre link between Copenhagen and Malmö consists of an elevated bridge, two connecting bridges and a tunnel. The bridge contains two railway tracks and two-lane motorway carriageways. The main objective was to bring greater regional integration between Copenhagen and Malmö. The impact of the bridge was so large that it reduced travel time between Denmark and Sweden about 60 to 90 minutes. The project was not financed by taxes and was supposed to be self-financing. In 1992, the governments of Denmark and Sweden established a private special purpose vehicle (SPV), *Øresundskonsortiet*. Its responsibility was to plan, design, construct and operate the project, which was to be environmentally sustainable, technically feasible and financially reasonable. Denmark and Sweden retains a 50% share (DKK 50 million) in the consortium.¹⁴

Øresundskonsortiet had net liabilities of DKK 19.6 billion when the bridge was completed in 2000. Sources of loan repayments comprise tolls paid by road users, income from the railway users paid by the Danish National Railways Agency and the Swedish national rail administration at a fixed annual fee, and income from the sale of optical fibre capacity. *Øresundskonsortiet* has a right to set the tariff for the use of the link. The link's long-term profitability is the key objective in setting the tariff, but the tariff was intended to be in line with the existing ferry services on the sound, *i.e.* not so low that the ferry service will compete with the fixed link. Total revenue is based on the tariff levels, general traffic development, transfer of traffic from the existing ferry service and newly generated traffic. Price

elasticity of short-distance local traffic is usually higher than long-distance international traffic. Despite the positive traffic trend and recent favourable interest rate level, the repayment period has been extended because the average toll charge was lower than planned. The latest forecast from autumn 2007 assumes that the Øresund Bridge will be paid for after approximately 30 years of operation (Øresundbron, 2008).

Box 2.6. Risk and merit structure of Øresund Link PPP model

Øresundskonsortiet had net liabilities of DKK 19.6 billion when the bridge was completed in 2000. Because of the size of the debt, even minor fluctuations in interest rates and foreign exchange rates significantly influence the total amount, and the project has a high risk. Financial management is particularly dependent on general market trends.

Both the Danish and Swedish governments have assumed responsibility for the general risks, including not only weather and geological risk but also risk caused by the requirement for environmental and safety standards. Both governments gave guarantees to the bonds issued by the SPV in the domestic and international capital market. They gave lenders the right to require immediate repayment of a loan, if *Øresundskonsortiet* ceased to exist as an independent company. In exchange for assuming these risks, this public-private partnership (PPP) scheme afforded the governments several advantages that a purely private infrastructure project could not have offered:

- The highest possible long-term credit rating on the debt (Standard & Poors; AAA), resulting in lower financial costs.

*This rating was higher than the each country's rating, as the lenders judged that the joint guarantee would be stronger than a individual guarantee.

- Long-term financial picture

**Øresundskonsortiet* sets the financing plan, based on the relationship between the economic situation, traffic development and interest rates.

- Project flexibility, in contrast to locking in the project at a very early stage.

There are indications that the Øresund Link is underexploited as a source for creating a functionally integrated area. Despite increased use of the Øresund Link, amounting to an average number of 97 000 travellers crossing the Øresund in 2007, the functional integration of Copenhagen and

southern Sweden remains fairly limited. This could be considered to the detriment of both areas. Considering the clear price elasticity that exists for the bridge tariffs, reconsidering the constraints for setting tariffs could favour the functional integration of Øresund Region. Planning of infrastructure is in the hands of two authorities in two different countries and at different levels. Consistent planning on both sides could prove beneficial.

The Fehmarn Belt Link

One of the biggest cross-border infrastructure projects today is the bridge across the Fehmarn Belt. Both Germany and Denmark agreed in 2007 to build a bridge over the Fehmarn Belt between Puttgarden in Germany and Rodbyhaven in Denmark. The bridge will include a double-track railway and a four-lane highway and is expected to be open for public traffic in 2018. The preparatory work, planning, approval, construction, financing, ownership, operation and maintenance of the bridge are provided by a Danish-owned company. The toll station will be on the Danish side; toll rates are to be oriented in accordance with the price of ferries crossing the Fehmarn Belt. Denmark will receive the revenues from the bridge company and cover possible losses. Denmark has also reserved the right to use toll revenues to finance certain infrastructural projects in the hinterland.

Infrastructure in the Danish hinterland is the exclusive responsibility of Denmark. The construction of the road between Sakskøbing and Rodbyhaven as a four-lane highway should be finished by the time the bridge opens, and the train connection should also be finished by then (Ringsted – Rodbyhaven, Vordingborg – Storstrømsbroen and Orehoved – Rodbyhaven). However, the railway connection between Ringsted and Copenhagen, which could facilitate transportation of 50 000 people to and from Copenhagen per day, is still under consideration. If the sufficient link between Copenhagen and the Fehmarn Link is not established, the link will not actualise the potential to connect the Europe continent and Nordic countries. For Germany, the same holds true: the connection of the hinterlands with the new bridge is the exclusive responsibility of Germany. The plan assumes an upgrading of the narrow two-laned bridge from the island of Fehmarn to the continent, road construction between Heiligenhafen and Puttgarden, and upgrading of one-tracked railway connection between Lübeck and Puttgarden, as well as between Bad Schwartau and Puttgarden. However, some of this will not be upgraded until seven years after the construction of the bridge, which will negatively affect the performance of the Link. Denmark and Germany plan to submit a joint application for funding for the bridge under the European Commission's TEN (trans-European networks) programme. TEN funding is foreseen not only for

bridge construction but for studies to estimate the bridge's potential benefits. Further co-operation between both countries is desirable.

Unlike the Øresund Bridge, this new bridge will not provide a better connection between urban regions like Copenhagen and Malmö, but will interlink rural areas in Denmark and Germany. Its basic function will therefore be that of a transport lane, providing a better connection between Germany, Denmark and the rest of Scandinavia. The more rural areas of Jutland will be the primary beneficiaries of a successful regional integration, as well as the regions most directly concerned: Ostholstein (Germany) and Storstrøm (Denmark). In the long run, there are wider economic effects of the Fehmarn Belt Link (see Box 2.7). Once the connection between Fehmarn Link and Copenhagen is accomplished, it will have a strong impact on regional economic structure of Denmark, through the connection with European high-speed network (TGV). Through-traffic is highly likely to increase and cause more pressure in the city centre of Copenhagen. To assure smooth transportation of goods and people, establishment of Ring 5, connecting Sjælland and Helsingør and the physical link between Helsingør and Helsingborg, will be necessary in the long run. Connection to the northern Europe through Hamburg, Hannover and Bremen and development of the Nordic triangle among Copenhagen, Stockholm and Oslo would be facilitated, to the advantage of Copenhagen. Two important key points in the logistic sector, Copenhagen Airport and Port of Copenhagen/Malmö, still have abundant space to accommodate new companies that require vast land.

Box 2.7. Estimated effects of the Fehmarn Belt Link

One of the first studies, undertaken in 1999, for assessing the economic impact of a fixed Fehmarn Belt link considered three scenarios: (1) a fixed link with a four-lane highway and two railway tracks, (2) a fixed link with a two- or three-lane highway and a single-track railway line, and (3) a fixed two-track railway link with shuttle trains for cars and lorries.¹ According to the study, net employment effects of the project (without multiplier effects) are approximately 1.280 (scenario 1), 1.310 (scenario 2) and 1.280 (scenario 3). Given the regional distribution of these increases in jobs, Copenhagen stands to gain the most (between 300 and 360 jobs), together with Hamburg (between 250 and 350).

A study undertaken in 2004 by Copenhagen Economics and Prognos² indicated that a new bridge will be faster and more flexible than using ferries, so transportation frequency will rise and provide incentives for commuting, more cross-border activities and perhaps migration. For companies, the bridge will provide better access to the neighboring market, and lower transportation costs will make business more profitable, increase production and benefit both sides of the bridge. According to a cost-benefit analysis, the construction and

operation of the bridge will generate a net gain of about EUR 1.9 billion over a period of 50 years. The most substantial impacts will occur in the direct vicinity of the bridge; regions that will experience the greatest impact will be Lübeck and Kiel on the German side (four times the regional GDP) and Lolland-Falster on the Danish side (more than four times the regional GDP). Sjælland will also benefit from the new infrastructure, while Fünen and Jutland will be unaffected. According to this study, positive effects will be felt as far as Örebro in Sweden (700 kilometres to the north) and Hesse in Germany (600 kilometres to the south). These considerations take into account the argument that employment in the ferry service industries will decline. There will also be a loss of maritime-related jobs.

According to a second study by Copenhagen Economics and Prognos³ in 2006, the following sectors will benefit most from the new infrastructure: construction (direct effect), tourism (increased potential and competitiveness), export-oriented SMEs (transport costs will decrease and there will be positive stimuli to cluster health care and medical technology). To realise these benefits, a common strategy should be developed. For Storstrøms in Denmark, the transport and logistics industries appear to have limited possibilities for developing into a large cluster, but business and employment in other sectors will increase, such as metals, paper and agriculture. Positive effects are expected through the improved use of German clusters and knowledge institutions that deal with seeds, vegetable fibres and composites, as well as the fields of environment, energy and waste. Benefits are also expected from increased tourism activities, especially if a common strategy can be developed with Ostholstein. According to the study, tourism could increase by 20% as a result of the fixed link. Day-to-day commuting across the Øresund, however, is not expected on a large scale. With regard to Ostholstein, broad development in the health care sector is expected, as well as some growth in tourism. Moreover, a fixed Fehmarn Belt link will offer new prospects for the port of Puttgarden. Situated at the intersection of the Kiel-Baltic seaway, it may be able to develop into a more competitive maritime business location.

Notes:

1. BMVBS/Germany and Trafikministeriet Denmark: Kocks Consult GmbH, Institute of Shipping Economics and Logistics Bremen and Carl Bro A/S Consulting Engineers Glostrup: *Investigation of Socio-Economic and Regional Consequences of a Fixed Link Across the Fehmarnbelt*, 1999.

2. Copenhagen Economics and Prognos, *Economy-wide Benefits: Dynamic and Strategic Effects of a Fehmarnbelt Fixed Link*, 2004, at www.bmvbs.de/Anlage/original_950362/Economy-wide-benefits_-Dynamic-and-Strategic-Effects-of-a-Fehmarn-Belt-Fixed-Link_-June-2004.pdf.

3. Copenhagen Economics and Prognos, *Regional Effects of a Fixed Fehmarn Belt Link*, 2006, under: www.bmvbs.de/Anlage/original_950359/Regional-Effects-of-a-Fixed-Fehmarn-Belt-Link_-February-2006.pdf.

The consequence of the Fehmarn Belt link will also be a reduction in the “cost-distance” that separates Copenhagen and Hamburg, reducing the time and the cost required to move people and goods between the two cities. The primary theoretical impact will be a finer differentiation of the two cities with regard to their specialisation. Hamburg’s strengths are in media, publishing, high-level management services, and aerospace, while Copenhagen is competitive in design, architecture, biopharmaceuticals and food processing. Closer proximity would suggest that each city reduces its activity in the other’s areas of strength and becomes even more competitive in its areas of strength. However, both Copenhagen and Hamburg are second/third tier cities and each has aspired, for two decades, to be the “metropole of the North,” that is, the bridge city between the Nordic area and the European continent. The city of Hamburg is however considerably larger, which could bring more critical mass to this competition. Given the mix of this metropole function and the increased specialisation of the two cities, neither will necessarily suffer negative consequences from this infrastructure initiative. The challenge will be to design a response to this initiative that will enable the city to realise the potential benefits from it. The recent co-operation of the Capital Region with Hamburg is a good starting point for strategy making on both sides.

Innovative ways of funding and financing are required through improved governance

Large-scale projects involving the central government made the most of the market mechanism. Both big link projects, the Great Belt Link in 1992 and Øresund Link in 1998, used the public-private partnerships (PPP) model. How to divide responsibility, risk and benefit have always been key questions for public-private partnerships, and the Fehmarn Belt project is to be financed under this model. In the Ørestad district development, the national and municipal government co-operatively financed the subway infrastructure by developing and selling off the abutting land. However, for a solely municipal government policy proposal, the central government is opposed to the use of the market mechanism. The introduction of a congestion charge is pending and the municipality’s capacity to borrow is limited, as shown in Chapter 3. Central and local governments should co-operatively build a framework so that local governments can more easily fund and finance their projects.

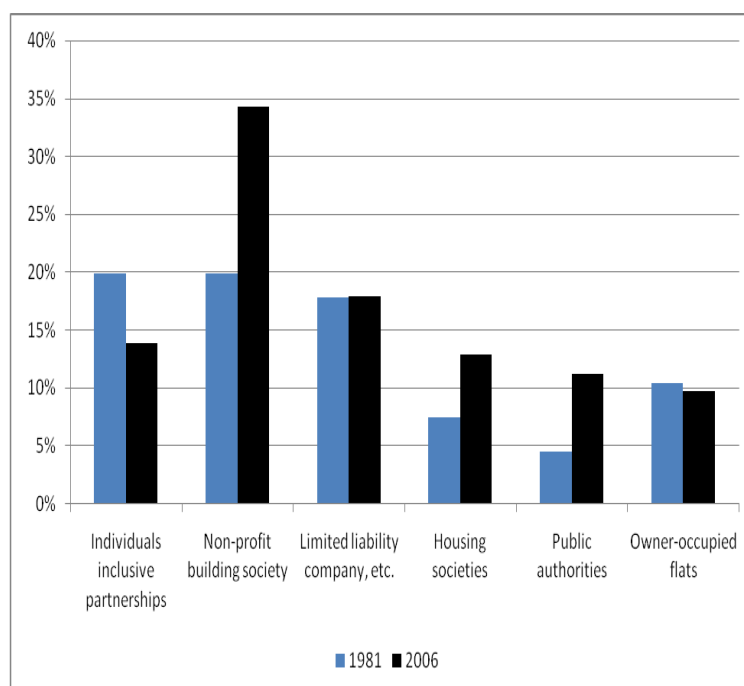
2.7 Urban amenities

2.7.1 Housing and urban renewal

Housing construction stands at a minimal level, and developers are having difficulty providing the number of dwellings to meet projected

housing demand. In 2005, it was estimated that the metropolitan area needed 75 000 new dwellings by 2017 to meet housing demand. While the total stock of homes has remained relatively unchanged since 1981 – only 13 787 additional units were built¹⁵ – tenure in the Copenhagen metropolitan region has shifted away from individual partnerships and owner-occupied flats towards non-profit building and housing societies (Figure 2.5). These changes, coupled with increasing housing subsidies, have solidified Denmark's reputation as the most regulated housing sector in the Nordic region. Indeed, 2.7% of Danish GDP is devoted to housing expenditures or foregone property tax, compared with the lower rates of Norway (1.5%) and Sweden (0.8%) (Erlandsen *et al.*, 2006). A confluence of factors – recent price increases, long waiting times for social housing, and lagging construction – has created a situation in which an average family with an annual income of DKK 600 000 must move 50 kilometres away from the city centre to find housing they can afford with room for children.

Figure 2.5. Ownership trends in Copenhagen metropolitan region: 1981, 2006



Notes: Copenhagen metro region includes Copenhagen, Frederiksberg, Copenhagen County, Frederiksborg County and Bornholm (excluding Christiansø).

Source: Statistics Denmark (2008)

Local and national housing policies have been the subject of considerable debate, and are often linked to economic, transportation, and infrastructure issues.¹⁶ The migration of many families to the suburban areas has contributed to an increase in congestion, and though the data is somewhat anecdotal, there is concern that some of the workforce may be pursuing employment in other cities. Evidence suggests that the lack of availability of moderately priced housing stock may be taking its toll. Throughout cities in the OECD, some employers have found it difficult to recruit for particular occupations in high-priced locations and have responded by moving elsewhere, with negative development outcomes for residents in the shunned locations – and presumably, efficiency losses due to a reliance on second-best locations. Other costs may stem from labour turnover and the associated additional recruitment and training costs (Berry, 2008). For example, a study in Cambridge, UK, which experienced a huge increase in land prices from a technological boom, showed that 80% of the 160 employers interviewed reported difficulties in recruiting new staff and 50% had difficulty keeping them (Morrison, 2003). Though the migration of the city of Copenhagen's key workforce is occurring on a relatively small scale today, trends show an out-migration to Malmö and beyond.

Though the government of the city of Copenhagen has acknowledged the importance of an aggressive policy for affordable and family-based housing, the pace of housing delivery has not met demand. Copenhagen's City Council adopted a housing policy that aimed to provide a range of housing to residents through zoning more sites for residential use, co-financing the construction of social housing, urban renewal grants, and the conversion of commercial property for housing (*Boligplan for Københavns Kommune 2005-2008*). In 2005, the "5x5 project" was inaugurated, aiming to guarantee a supply of 5 000 apartments within five years at a monthly cost of DKK 5 000 (EUR 645) to the occupiers. However, as of 2007, only 12 apartments had been constructed. More units are being built in various sites owned by the City of Copenhagen or private developers – Carlsberg, for example, will construct 300 affordable dwellings in its Valby site. However, at the current pace, it will not be possible to meet the goal within five years.

To provide more housing at lower cost, a set of complementary strategies merit consideration. If rigid land use restrictions are kept in place and Copenhagen's economy continues to grow, it is inevitable that the area will evolve into a polynodal region. Commuting and land use data indicate a rapid development of peripheral areas, although job markets are still highly centralised in Copenhagen proper. If Copenhagen continues to develop in a centrifugal direction, additional regional policies are needed, particularly a regional affordable housing policy and improved regional public transit.

Aside from a regional focus, the involvement of the national government is key in building the next generation of Copenhagen's affordable housing stock, given the limited planning powers Danish municipalities have at their disposal to pursue affordable housing. Given this predicament, the next section outlines possible strategies at the municipal, regional, and national levels to facilitate housing production and its diversity.

Increasing the supply of modest cost housing: options at the municipal level

Particular relief is needed for the low end of the rental market. Low turnover rates, long waiting lists, the amalgamation of smaller units into larger units, and the conversion of private rental housing to housing societies have constrained the private rental market. Prices in the city of Copenhagen have increased at a meteoric pace: from 1997 to 2007, the average price for an owner-occupied apartment nearly quadrupled.¹⁷ The question of adequate and affordable housing in the city of Copenhagen occupies a central place in political debate. The City of Copenhagen might consider additional tools that transcend policies in the 2009 City Development Plan:¹⁸ the reduction or elimination of fees for new rental housing, streamlining the development approval process and reducing particular taxes for inexpensive rental developments. Given the slow pace of construction and an accelerating economic recession, governments in the Copenhagen metro region could design policies to reduce the barriers of entry into the homebuilding industry. Facilitating entry has the potential to increase housing production. Research from Vancouver, for example, shows that builders respond to market uncertainty by delaying construction, an effect that is counteracted when there were many other competitors in a locality (Mayer and Sommerville, 2002; cited in Ball, 2006). Finally, the City of Copenhagen could more proactively encourage the development of smaller "accessory dwelling units" commonly known as in-law units, carriage houses or secondary apartments. This could be done through making it easier for owners to construct roof-top apartments, expand existing buildings, and facilitating the conversion of commercial properties into residential buildings (Erlandsen et al., 2006). Such a strategy, though already pursued by the City of Copenhagen, may have particular appeal to outlying municipalities whose homes are generally newer and more prone to accommodate the stress of additional floors and physical alterations.¹⁹

More favourable rental housing construction economies could also be created. The Copenhagen metropolitan region's construction sector has capacity constraints that could be relieved. Part of the increase in the cost of housing relates to the rising prices for electrical work and plumbing, which

increased by approximately 40% from 1993-2002. Government regulation curtails cross-trading, which has left in place a rigid structure in such professions as carpentry and plumbing. For example, currently legislation prohibits a carpenter who installs cabinets to install a kitchen sink at the same time, though this is permitted for a homeowner (Finansministeriet *et al.*, 2004b, cited in OECD, 2005). Lack of competition in the market for building materials may also raise the costs of housing. Danish construction companies are often challenged to provide foreign building materials, given different building material standards across EU countries. The central national government, however, has made progress on this front: a ministerial working group recommended a simplification of approval procedures and an abolition of the requirement to obtain a special Danish approval of certain building materials.²⁰ Increasing productivity of this sector and decreasing home prices on the national level greatly affect the Copenhagen metropolitan region's housing affordability. Copenhagen could prioritise approval of moderately priced rental units by implementing fast-track development reviews of these proposals.

Given the low cost of manufactured housing, municipalities in the Copenhagen metropolitan region might consider encouraging its use on a larger scale. Already the Fund for Cheap Housing (*Fonden for Billige Boliger*) has reduced construction costs by using modular, prefabricated units manufactured in Estonia, Norway, Sweden and Denmark. The most inexpensive units were built for 30% to 40% less than it would cost in Denmark (Scanlon and Vestergaard, 2007). To give developers the possibility of using manufactured housing more frequently, municipalities in the Copenhagen metropolitan region may want to ensure that their zoning regulations or building codes do not place high-quality manufactured housing at a disadvantage. Manufactured housing holds a substantial pricing advantage over traditional housing and may provide greater access for low- and middle-income residents. This could be particularly attractive for smaller "accessory dwelling units" commonly known as in-law units, carriage houses or secondary apartments.

Municipalities in the Copenhagen metropolitan region could catalyse moderate cost developments through deepening partnerships with the private development community. Though municipalities do not have the power to impose inclusionary housing requirements for developers,²¹ the Danish Planning Act and its complementary revisions in 2007 would allow municipalities to encourage moderate cost developments through density bonuses or rezoning to a higher density. These public-private partnerships have the potential to lower the cost of doing business to allow for new construction and to be economically viable. Several countries facilitate increased production of moderately priced housing through explicitly

allowing planning authorities to enter into legal agreements with developers. Such provisions were passed in Section 106 of the UK Town and Country Planning Act (1990) and resulted in a spike in affordable housing production. Through Section 106 agreements, around 12 000 affordable units are being secured each year in the United Kingdom (Monk *et al.*, 2006).

To encourage the development of projects for moderately priced housing, municipalities in the Copenhagen metropolitan region may consider reducing the up-front costs of development appraisals. Often these “soft costs” prevent the development of low-cost housing, as would-be homebuilders fear the significant costs – design fees, appraisals, environmental site studies, legal work, financing consultants – that may not be recouped. Local governments in the Copenhagen metropolitan region can assume this risk by financing the costs of environmental and other studies, either as a grant or seeking repayment at zero or low interest at the end of construction. This assistance could be evaluated by municipal planning departments in consultation with community members and housing providers.

The importance of regional approaches

New housing construction has not been unanimously embraced by municipalities throughout the Copenhagen metropolitan region. A first-time-buyer family with a mean income of DKK 600 000 per year needs to move at least 49 kilometres from the centre of Copenhagen to find affordable and family-friendly housing. First-time buyers, especially young families, are increasingly settling in areas along Copenhagen’s periphery, such as in Sjælland, Lolland and Falster or even Malmö.²² Other communities have not been as welcoming of the “overflow” growth from Copenhagen. The Municipalities of Helsingør and Gentofte, for example, have prevented the construction of new social housing for more than a decade. In the Ishøj Municipality, located in suburban Copenhagen, in the 1990s, the local government resisted what was perceived as an over-concentration of immigrants, many of whom worked in Copenhagen. This issue came to national attention when several immigrants were denied apartments that were initially allocated to them in Ishøj (Vestergaard, 1999). Other municipalities in Copenhagen have been reluctant to develop land for single-family housing in order to head off demands for child care institutions and schools. Municipalities in the Øresund Region are burdened with commuter traffic increases and greater capital costs related to extending roads, water and sewer lines and storm water drainage systems.²³ Although it is polycentric, housing, infrastructure and transport have not been distributed equally throughout the region, and particular municipalities have been

disproportionately affected. This dynamic is ubiquitous throughout city regions, “The co-ordinated development of complementary facilities and amenities may provide a larger variety and higher quality of these on the regional scale...[and] may also require that individual city-regions should make net sacrifices by subordinating their own interests to the greater regional good” (Meijers and Romein, 2003). Despite these widely known disparities, the Copenhagen metropolitan region has not institutionalised a forum for inter-municipal co-operation to correct such imbalances.

The Copenhagen metropolitan region would benefit from the institutionalisation of inter-municipal co-operation to address joint housing and infrastructure projects and address trade-offs and fair distribution. This would allow for municipalities to pool resources for shared facilities, especially infrastructure. Given the abolishment of the conversion fee (*frigørelsesafgift*) in 2004, which awarded rural areas that urbanized, municipalities often do not have the incentives to develop new land plots. To encourage inter-municipal coordination on land use, the central government could consider additional mechanisms for expanding municipalities’ freedom to borrow for financing infrastructure (Erlandsen *et al.*, 2006). Additional reforms are clearly needed to better involve the ring of small-sized municipalities around the Copenhagen core that are often left outside of planning negotiations despite their importance to regional housing markets. The Capital Region, though it has promoted land use at the regional level, has not actively encouraged inter-municipal cooperation. In the future the Capital Region could be a fulcrum for cooperative arrangements as well as informal co-ordination to better synchronize growth, housing, and infrastructure planning in the Copenhagen metropolitan region. To speed up the development review process throughout the metropolitan region, outlying municipalities may benefit from digitising the application process. Already the City of Copenhagen, the City of Frederiksberg and Local Government Denmark have made progress in digitising building applications, which may provide a reference for outlying municipalities.²⁴

Optimizing the central government’s role in housing provision and oversight

Given the fluidity of the labour market and the urban-rural interface in Copenhagen, an evaluation of the regional affordable housing stock could provide the impetus for the development of a regional housing policy. In many respects, this has been the missing level in housing policy in Denmark: at present, the Capital Region does not have any special policies or strategies in the area of housing, though there is nothing to rule out the possibility of this issue being raised. To implement a regional policy, the

Capital Region together with the City of Copenhagen and other municipalities in Copenhagen may opt to follow Vancouver's example and first commission a discussion paper for a Regional Affordable Housing Strategy, which would then inform a debate around a regional housing action plan.²⁵ Critical to the framing of this project is a consideration of the direct effects of growth management and land use planning regulations on the stock of affordable housing.²⁶ Accordingly, such an evaluation would need to take into account such factors as opportunity costs – of using the land for agriculture, the resources used to construct the house, and the cost of infrastructure, *e.g.* schools, police and fire, water and wastewater, and transportation services – the present location value and future location value of a development.

The issue of housing has in many ways been de-institutionalised in Denmark. Since the dissolution of the Ministry of Housing in Denmark in 2001, discussions on housing have been fragmented amidst myriad agencies and ministries. Over the course of the past several decades, the capacity of municipalities to support the development of homes of modest cost has been gradually eroded. The authority of municipalities to support residential building, including providing financial security, is, for example, limited to the options granted under social housing legislation, unless there is a separate legal basis, such as the Danish Integration Act.²⁷ In one sense, Danish municipalities had more planning powers over housing stock before 1958, when the Housing Construction Law was ratified.²⁸

Given evidence of the negative effects of rent control, the Danish Parliament might re-examine the implementation of this policy. The Danish Economics Council (*De Økonomiske Råd*) recently found that rent control was poorly targeted and misaligned with the original equity goals that inspired its creation. The Council argued that “the highest benefits go to high-income groups, while the lowest benefits accrue to middle-income groups” (Economic Council, 2001). Other research in Denmark has documented that household wealth and income are positively correlated with the rent control benefit (Jespersen and Munch, 2001; Munch and Svarer, 2002). Given these inconsistencies, it is appropriate to explore changes in existing rent control practices that would more effectively target the most disadvantaged groups.

The national government could better facilitate the production of moderate-cost housing in the Copenhagen metropolitan region through allocating additional planning powers, especially with respect to limits on collaboration between the government and private developers. One of these powers could include the ability to sell land that would be used for social or moderate-cost rental housing at reduced prices. Unlike municipalities in England, Germany or the Netherlands, such a practice is currently not legal

in Denmark (Andersen, 2008). Municipalities must sell plots through open public procedures at the market price, which imposes significant restrictions on the municipality's possibility of catalysing the moderate cost housing market. Proposals have been created to reform this situation, though change has not occurred.²⁹ The national government may also wish to adjust its fairly centralised system of social housing to accommodate local needs, a topic that is discussed in more detail below.

Social housing at a crossroads

Co-operative housing in the Copenhagen metropolitan region faces multiple challenges. The magnitude of the rise in prices is surprisingly high: prices of co-operative dwellings have risen *fivefold* from 1999 to 2007 in the city of Copenhagen.³⁰ One key reason underlying the spike in price has been the integration of better-quality apartments, as many private and municipal rental properties have been converted into co-operative housing societies, as allowed by the Danish Rent Act.³¹ Other factors include the below-market prices of housing co-operatives and the fact that capital gains are not taxed when co-operative housing dissolves. Consequently, there are instances where co-operatives "dissolve themselves and sell the property, thereby reaping substantial capital gains" (OECD, 2005). A recent national level review of social housing in Denmark, *Den almene boligsektors styring* (2008), identified equally important challenges, including the provision of new stock at affordable prices and the refurbishment of antiquated buildings. The review also stressed the need to create the possibility for local adjustment, which is critical in Copenhagen, where many of the national issues are more acute.

The City of Copenhagen's social housing has made progress in integrating immigrants into Danish society, though continued work lies ahead. The City of Copenhagen has often been challenged to provide social housing to immigrants in economically vibrant areas. Indeed, the City of Copenhagen has five neighbourhoods that the Minister of Social Affairs designated as vulnerable because a high proportion of their residents have little or no connection with the labour market. In an analysis of the first Danish dispersal policy, Damm and Rosholm (2005) found that refugees assigned to areas with lower immigrant concentration had a shorter transition period into the labour market than refugees assigned to immigrant-dense cities. In a hearing during 2006, Copenhagen's City Council recognised the problematic integration policy and concentration of underprivileged groups in certain neighborhoods. Out of this meeting, the City of Copenhagen agreed to reduce the proportion of residents in vulnerable neighbourhoods with no connection to the labour market by 10 percentage points by 2010. Housing need referrals to vulnerable areas and

high-risk areas where more than 40% of the workforce are unemployed have also been stopped. The agreement makes it possible for poor families to obtain housing in neighbourhoods with a more balanced makeup.³² Though these guidelines should be praised, the City of Copenhagen nonetheless lacks a system of monitoring the integration of immigrants into housing. Given the lack of an evidence base, it is difficult to systematically point to best practices in the Copenhagen metropolitan region. Moreover, municipalities in the Copenhagen metro region could more pro-actively fund housing organisations for refugees and immigrants that play a valuable role in meeting specific local needs and tackling social issues in more flexible ways than local authorities are able to achieve. The United Kingdom's Department for Communities and Local Government offers several models that may have traction in Copenhagen (Box 2.8).

Box 2.8. Refugees and social housing provision in the United Kingdom

Government in the United Kingdom often supports initiatives run by independent, charitable organisations that play a valuable role in meeting needs of refugees and immigrant groups. For example, Leeds Canopy Housing Project includes direct involvement by refugee/migrant groups in developing housing solutions as an alternative to the private rented sector. The project acquires and renovates properties for refugee families in the Beeston area of Leeds, which has a lot of vacant property and a growing population of refugees. Volunteers from disadvantaged backgrounds are working alongside refugees to refurbish properties. The skills gained can be used to secure permanent employment in the housing construction industry. The Leeds Canopy Housing Project is another project independent of government funded at least in part by the Housing Corporation and local authorities. The Department for Communities and Local Government (CLG) is not directly involved in funding the scheme but has an interest in collating and disseminating learning and best practices from such projects (Metropolitan Support Trust, 2008).

The "Opening Doors" initiative tests practical ways of meeting the housing needs of newly arrived migrants, including refugees and asylum seekers. Directed by the Housing Associations' Charitable Trust and the Chartered Institute for Housing, the project receives funding from the Housing Corporation and the CLG. It features a review of reports, surveys and local projects and training modules. As a sponsor, the CLG is taking a close interest in the monitoring and evaluation of its work to ensure optimal implementation (Housing Associations' Charitable Trust, 2008).

Source: "New Migrants in England and Their Needs", Metropolitan Support Trust

Given the diversity of the building codes and materials required for social housing in the Copenhagen region, a regional standardisation amongst municipalities may be warranted. Several years ago, an attempt was made through the *Rammeudbud af almene boliger* program, which could be revived and help builders reach economies of scale.³³ Given that the average affordable housing development contains 25 units, developers may be encouraged to become involved if they pool their orders together. This would require increased collaboration between municipalities and the Danish Construction Association, along with standardisation.

Urban rehabilitation

Urban regeneration has excelled with an integrated approach, but commands a limited budget. Neighbourhood regeneration projects were initiated in 1997 as pilot projects in three neighbourhoods in the city of Copenhagen – Kgs. Enghave in Vesterbro, Holmbladsgade in Amager and Femkanten in the north-west – and later extended to the Nørrebro Park Neighbourhood and Kvarterløft North-west. These areas improved and fostered changes that have made the areas more attractive and the citizens' outlook more positive (Danish Building Research Institute, 2008). Future projects will be limited by the Ministry of Welfare's budget, which earmarks a very low amount for urban regeneration. Denmark may be the only country in the OECD where the capital city has more funding for urban regeneration than is granted at the country level. In 2007, the City of Copenhagen had 30% more funds (DKK 294 million) than the entire budget of the Ministry of Welfare's urban regeneration office (DKK 225 million).³⁴ Beyond targeting distressed areas, the City of Copenhagen has supported infill development in areas such as Ørestad. This project entailed the development of approximately 3.1 million square metres on a 5 kilometre strip of empty parcels that were jointly owned by the city and the state.

Governments in the Copenhagen metro region have pursued a successful policy of discouraging the concentration of poverty; additional tools might strengthen these positive trends. Significant work has been devoted to restructuring housing projects that isolated the poor, most notably in Hvidovre's Avedøre Stationby.³⁵ Low-income residents today are encouraged to leave ghettos and relocate into mixed-income subsidised units closer to the city centre. However, the mid-term evaluation pointed to less positive results of the projects.³⁶ A wide range of models could be employed to continue building mixed-income neighbourhoods and avoid a concentration of poverty in one municipality. Possible approaches include "fair-share" housing allocation programs that distribute low and moderate-income stock more evenly throughout a region and thereby relieve distressed areas. While the political context differs from the Danish model, the

regional housing allocation formulas developed in the United States may offer useful tools (American Planning Association, 2003). For example, the Central New Hampshire Regional Planning Commission's (CNHRPC) Affordable Housing Needs Assessment estimates current housing need for low- and moderate-income households through a methodology that takes into account a municipality's share of the region's (1) population, (2) job base, (3) income (measured as the community's share of total wages paid), and (4) total assessed property values (Central New Hampshire Regional Planning Commission, 2000).³⁷ Through implementing such assessments, it will be possible to highlight which neighbourhoods are underserved and which areas have an over-concentration.

Connecting housing production with other goals

The encouragement of compact neighborhoods along high-capacity transportation corridors could be pursued through the utilisation of additional tools. Authorities in the Copenhagen metropolitan region could encourage "transit-oriented development" (TOD) if such projects could prove that they would produce fewer vehicle trips, increase transit ridership, and reduce greenhouse gas emissions from both housing and transportation. A variety of models could be used, such as Portland Metro's provision of grant funding for infrastructure-related portions of a TOD, e.g. storm water, sewer, or utility upgrades. Banks may also wish to contribute through location-efficient mortgages (LEMs), which increase the amount of money homebuyers in urban areas are able to borrow by taking into account the money they save by living in dense, walkable neighbourhoods that are close to public transit. By obtaining a larger mortgage with a smaller down payment, LEMs would award families who want to live in TODs. Essentially this could be achieved by raising the typical amount of standard loan underwriting from 28% to 39% of gross monthly income by recognizing transportation-related cost savings, or in more technical terms, the location efficient value. Application of this policy should, however, carefully weigh the advantages of densification and traffic congestion reduction with its shortcomings, namely higher mortgage default payment rates amongst the LEM borrowers (Blackman and Krupnick, 2001).

Affordable housing developments could better incorporate green building design and green zoning. While the City of Copenhagen has provided informative guidelines for more sustainable buildings, such as web-based tool for sustainable project design (www.kkplanner.dk), the City does not have the possibility of providing tax incentives to green affordable housing developers, which would comprise a stronger incentive.³⁸ While commercial developers in the Copenhagen metropolitan region have built "green buildings," the thin margins of affordable housing developers prevent

them from implementing more progressive designs. This is especially the case for developers that shy away from designs that use geo-thermal heating, green roofs, recycled water and more environmental ventilation systems. Given the old housing stock in the Copenhagen metropolitan region, resources are also needed for renovating and retrofitting mixed-income housing with state-of-the-art environmental and energy design features, especially weatherisation improvements. Municipalities in the Copenhagen metropolitan region might consider requiring insulation tests for rehabilitated stock, which are obligatory for new homes in the United Kingdom (Energy Savings Trust, 2007). Finally, local governments could mandate that new social housing upgrade its environmental criteria by requiring social housing to abide by high green-building standards. Boston, for example, greened its affordable housing programme by requiring that any affordable housing development that receives government support is certifiable at the “silver” level by the US Green Building Council’s Leadership in Energy and Environmental Design (LEED) program. To assist developers, Massachusetts has offered funding to help developers comply with these standards. Through a similar initiative, municipalities could showcase their environmental commitment through affordable housing development.

Future challenges for the Copenhagen metropolitan region

Copenhagen’s population will grow in the next few years. The Øresund Region forecasts predict a growth of 152 000 people in the Swedish side and 75 000 people in the Danish side by 2020 (Statistics Denmark, 2008; Region Skåne, 2007). If the Copenhagen metropolitan region is to remain a diverse area with homes for everyone, there will be a need for changes in legislation that will allow the city to facilitate the development of new housing. Urban renewal will be critical given the mandate to renovate and modernise the city’s old housing stock. The social division of the city will continue to be one of the greatest challenges faced by the region. Its resolution will require changes in legislation that will allow the municipalities in the Capital Region to better assist socially disadvantaged groups and distressed neighborhoods.

2.7.2 Environmental policy and sustainability initiatives

Copenhagen’s environmental policy has solidified its reputation as one of the “greenest” cities in the world. Since 1990, Copenhageners have reduced their CO₂ emissions by 25%, primarily as a result of the operation of the use of cleaner fuels and the efficiency of its district heating system. Equally impressive, 90% of building waste is reused and 34% of

Copenhagen's workforce bicycles to work (City of Copenhagen, 2007). After decades of pedestrian planning and improvement in public space, Copenhagen is often referred to as the most walkable city in Europe. Copenhagen's vibrant pedestrian network includes over 33 000 m² of streets and 66 000 m² of squares. In addition, "Copenhagen's medieval structure and homogenous low building stock help make the most of climate conditions. The physical structure reduces wind and shade and provides good sun access" (Gehl and Gemzøe, 1996). In the wake of these achievements, the United Nations selected Copenhagen to host its 2009 Climate Change Conference (COP15). In anticipation of the conference, a new round of projects has been launched to showcase Copenhagen's commitment to the environment.³⁹ Copenhagen has acknowledged the economic potential of renewable energy industries in creating "green-collar jobs" especially in wind turbines, where Denmark controls 35% of the world market (Confederation of Danish Industries, 2008). In 2008, Monocle Magazine designated Copenhagen as the world's "most liveable" city, which testifies to the large-scale achievements in implementing cutting-edge environmental policies.⁴⁰

The state of environmental policy in Copenhagen and the danger of complacency

Despite the remarkable achievements of Copenhagen, the state of its environment may be compromised by future trends, foremost among them the rise of traffic. Though traffic is low in Copenhagen compared to other cities its size, the high rate of particulate pollution that it produces compromises the health of Copenhageners and the image of the metropole as an "eco city". As stated in Chapter 1, particulate pollution from diesel cars, wood stoves and other materials has produced higher levels of particulate matter than in larger cities such as Paris, London or Frankfurt. Epidemiological research has shown that particulate pollution in Copenhagen is accountable for an additional 780 premature deaths and between 860 to 2 260 additional hospitalisations from cardiovascular disease and respiratory problems per million inhabitants (Danish National Environmental Research Institute and the Institute for People's Health, cited in Capital Region of Denmark, 2008). Other key fault lines in the city's environmental policy include rising contamination in soil, threatened water quality and the absence of green landscaping.

In response to the city's environmental challenges, the city has proactively established environmental targets that should be implemented and expanded. These goals were initially established in "Eco-Metropole: Our Vision for Copenhagen 2015" and are pending implementation per

guidelines in the forthcoming Climate Change Action Plan (2009). The city's ambitious targets, especially with transportation and organic food, are laudable and reflect the administration's desire to decrease air pollution and increase liveability (Box 2.9). However, key commitments remain absent, in particular more conventional targets for water use, the residential sector and government buildings and services. While the Copenhagen Agenda 21 (2004-07) explicitly targeted water conservation, groundwater consumption and water recycling were absent from the Eco-Metropole vision.⁴¹ This is especially problematic given the Danish Meteorological Institute's forecast of temperature increases in Denmark by 3° to 5°C by 2100.⁴² Other cities have offered more refined plans for the residential sector and government buildings. Cape Town's Energy and Climate Change Strategy, for instance, established targets for energy efficiency in municipal buildings and more efficient lighting in households and city-owned housing (City of Cape Town, 2006; OECD, 2008). Equally important given the fluidity of much of the contamination in Copenhagen, additional effort needs to be made to forge such agendas on a regional basis. Promising initiatives exist on this front, *e.g.* the Capital Region's Soil Contamination Strategy (2007) and Copenhagen Capacity/Technical University of Denmark's forthcoming clean-tech cluster project, but additional work with regional air and noise pollution may be required.

Box 2.9. Environmental targets for the city of Copenhagen (2015)

Area	Progress (2007)
<i>Air and noise pollution</i>	
<ul style="list-style-type: none"> • A reduction in Copenhagen's CO₂ emissions by 20% • Copenhageners should be able to sleep peacefully, free from harmful traffic-induced noise. All schools and institutions should be subject to only low traffic noise levels. • The air should be clean enough not to damage Copenhageners' health. 	<ul style="list-style-type: none"> • Copenhagen emits a combined total of 2.4 million tons, or 4.9 tons per inhabitant (2005 figures). • There are no current measurements for traffic noise levels at night. About 40 000 dwellings are subject to excessive noise levels; 10 schools and 20 institutions are subject to excessive noise from street traffic. • In 2005, the limit for daily average value for PM10 (50 µg/m³) was exceeded 64

	times in the municipality of Copenhagen, 29 more days than the EU's permitted threshold.
<i>Transportation</i>	
<ul style="list-style-type: none"> • At least 50% of work or school commutes by bicycle. • Reduction by half of the number of seriously injured cyclists. • At least 80% of cyclists in Copenhagen feel safe and secure in traffic. 	<ul style="list-style-type: none"> • 36% of residents commute to work or school by bicycle. • 118 cyclists were seriously injured in Copenhagen. • Currently 30% of cyclists feel secure in Copenhagen's traffic.
<i>Green space and recreation</i>	
<ul style="list-style-type: none"> • 90% of Copenhageners should be able to walk to a park, beach, natural area or sea swimming pool in under 15 minutes. • Doubling of Copenhageners' visits to city parks, natural areas, sea, swimming pools, and beaches. 	<ul style="list-style-type: none"> • 60% of Copenhageners are able to walk to a park, beach, natural area or sea swimming pool in under 15 minutes. • Copenhageners visit city parks, natural areas, sea, swimming pools and beaches every other day, staying there one hour on average.
<i>Food supply</i>	
<ul style="list-style-type: none"> • At least 20% of the city's food consumption should be of organic food. • • 90% of the food supply served in the City of Copenhagen's institutions should be organic. 	<ul style="list-style-type: none"> • Figures from Copenhagen do not exist, but approximately 7% of Denmark's food supply is organic. • Currently 45% of the food supply served in the City of Copenhagen's institutions is organic.
<i>Waste disposal</i>	
<ul style="list-style-type: none"> • Garbage should be cleared from public streets within eight hours. 	<ul style="list-style-type: none"> • In Copenhagen's inner city, 36 hours sometimes elapse before the streets are cleaned.
<p><i>Source: City of Copenhagen (2007) and Teknik og Miljøforvaltningen KK</i></p>	

A wide range of environmental initiatives could be pursued to bolster Copenhagen's sustainability. These span sustainable transport, urban ecology, energy conservation and environmental governance. To avoid a "wish list" approach, the implications of these improvements would have to be rigorously tested and compared to one another beforehand, using techniques developed in environmental and natural resource economics. This might be coupled with methodologies that are attuned to political conditions and the risk management from climate change, such as those developed in the City of London's Climate Change Adaptation Strategy (2007). Similarly, local governments might more carefully weigh their adoption of environmental projects by taking advantage of the work done at Eurostat, especially its sustainable development indicators (Eurostat, 2007). Finally, initiatives should strengthen existing environmental collaborations, such as the Dogme 2000 co-operation between the City of Copenhagen and six other municipalities.⁴³

Improving sustainable transport and bicycle planning

A large number of low-cost sustainable transit solutions might be considered to reduce single occupant vehicles and carbon emissions from automobile use. Though many policy makers in Copenhagen focus on increasing the modal share of bicycle use or public transit, a wide number of alternative urban transport management solutions may also reduce air pollution. Ride sharing, for example, encourages residents to use carpooling and vanpooling rather than drive alone. While carpooling uses drivers' own vehicles, vanpooling utilises vans that are usually owned by an organisation – a business, non-profit or government agency – and made available for commuting. Ride-share programs typically provide carpool matching, vanpool sponsorship, marketing programs, and incentives to reduce driving. These programs often succeed when employers offer financial incentives such as a cash payment to employees who carpool or a voucher that covers vanpool fees. Other policies that might be considered include car-sharing and charging the most active drivers through mileage-based registration or mileage-based emissions fees. Though modal share statistics would not indicate gains from these initiatives – an equal or larger amount of people would be commuting by cars – benefits would be illustrated through transportation fuel consumption, vehicle pollution emissions and average commute time (Litman, 2007).

Copenhageners would benefit from an extension of the central city's well-designed pedestrian network to outlying areas. Compared to the central city, there is a relative dearth of high quality urban spaces in peripheral neighbourhoods. The City's Traffic Plan could better support pedestrian improvements to these areas by improved lighting, building

façades, and street furniture. Such efforts have the potential to improve walkability and reinforce the attractiveness of Copenhagen (Hrushowy, 2006). Nevertheless, these improvements may entail tradeoffs with public transit use. One study conducted by Næss (2005) suggests that high density communities in the Copenhagen metropolitan region, though correlated with increased walking and bike use, contribute to reduced proportions of public transit use.

Though Copenhagen stands at the forefront of bicycle promotion, changes are needed to encourage additional cycling and connect this activity to the economy. The City of Copenhagen aptly addresses a number of policy goals, including the construction of additional cycle tracks, green cycle routes, bicycle parking, and safety improvements, which transcend the commitments of even the most ambitious cycle-friendly cities (City of Copenhagen, 2002, 2006). Copenhagen is particularly in need of increasing multimodality through combining cycling and public transport. Bicycles are allowed on commuter trains, although safe, covered bicycle parking needs to be expanded, especially if bicycle use is to increase. Second, Copenhagen has not capitalised on its brand as one of the world's best cycling cities. The city has yet to conduct a value chain study on how bicycle tourism links into hotel use, restaurants, merchandise, and the employment of bicycle specialists. The impact of bicycle tourism in many areas without the cachet of Copenhagen illustrates its potential. For example, bicycle tourism in the United States' state of Wisconsin, generates USD 278 million per year (Bicycle Federation of Wisconsin). The Danish Cycling Foundation (*Dansk Cyklist Forbund*) has devoted considerable energy to writing bicycle guides in several languages that have been relatively unincorporated by Copenhagen's tourist office. Third, given the enthusiasm for bicycling in Copenhagen, the city could better encourage private developers to improve cycling infrastructure by illustrating how they influence property appreciation. A growing amount of research shows that homes located near or adjacent to bike trails command high selling prices (Bikes Belong, 2008). Lastly, additional efforts in regional bicycle planning need to be initiated, given the growing urban area of Copenhagen and the strict zone limits of its public bicycle program, City Bikes. Generally speaking, solutions for a regional public bicycle programme would not only benefit cyclists in Copenhagen, but cities that are plagued by similar jurisdictional issues, such as Paris' Vélib public bicycle rental program.

Bicycling could be coupled with national obesity prevention campaigns. Though Denmark should be lauded for its "National Action Plan Against Obesity," this strategy could be improved if it explicitly included bicycle promotion. Studies have clearly shown that people who cycle to work have a 28% lower mortality rate than the population average (Krag *et al.*, 2005).

Denmark's National Board of Health could better promote bicycling use in cities such as Copenhagen through educating the public on the health benefits of bicycling. Public health professionals could also be better engaged in the urban planning arena through participating in zoning decisions, serving on urban planning boards, and incorporating health into urban planning decision-making. Given the Capital Region's mandate for hospitals, regional authorities could potentially play a stronger role in strengthening the interface between bicycle planning and public health.

Enhancing landscape ecology

The demarcation of entire green areas, such as that enshrined in Copenhagen's Finger Plan, could be coupled with improved landscape ecology throughout the urban fabric. Principles of landscape ecology might be better integrated into the siting and design of individual developments to minimise the presence of large areas of paving that are void of trees and vegetation. The tangible forms that these strategies may take are varied. Many cities, such as Berlin and Freiburg, have funded extensive tree-planting programs since the 1970s. New York City has followed this example through the MillionTreesNYC public-private partnership, which enlists citizens to identify areas for tree-planting and volunteer towards the planting of one million trees. This growing urban forest has reduced energy costs, increased storm-water capture, and lessened air pollution (MillionTreesNYC, 2008). Green roofs or *eco-roofs* also hold considerable potential and can be constructed using different designs, such as "roof garden intensive" (deep soil with irrigation) or "green roof extensive" (thin soil without irrigation). Green roofs are used more extensively in cities in Germany, the Netherlands, and Austria, than in Copenhagen.⁴⁴ Linz, for example, frequently requires buildings to compensate for the loss of greenspace through the promotion or requirement of buildings to install green roofs. Since the late 1980s, the City has often paid up to 35% of the cost to install green roofs on private residences and commercial buildings. While in 2009 it will be possible to apply for support for green roof projects through the Eco City Foundation/*Den Byøkologiske Fond*, the city does not have the possibility of providing tax incentives, which would be a strong incentive. Other urban greening enhancements that Copenhagen may more aggressively pursue include shrubbery, green courtyards, greenwalls, urban gardens and the construction of green buildings (Beatley, 2000). The City of Copenhagen could identify the most "green-less" sites through using the Danish Building Research Institute's "biofactor" rating system for urban greenery.

The central square of Copenhagen (Rådhuspladsen) needs to better reflect the region's commitment to environmental health. Currently the

square is nearly void of green landscaping. In terms of temporary use, the square has accommodated parades and football-watching for national Danish teams. Few temporary exhibits, however, have used this space to educate the public on environmental issues. Paris' use of temporary landscaping may provide a useful model for Copenhagen. For one month in 2008, Paris' "Jardin éphémère" or temporary garden comprised nearly 6 000 plants of 52 different species around a 330 m² pond directly in front of City Hall.⁴⁵ This could especially be used to showcase the ecology of Denmark during the COP15 Conference. In the future, urban landscaping could be better integrated into such initiatives as the Copenhagen Urban Space Action Plan (CUSAP).

Reducing energy consumption and waste

Improved energy conservation techniques would be useful to reduce Copenhagen's ecological footprint. "Smart meters" are being rolled out in Denmark that would give customers the chance to monitor their energy consumption in real time. These should be coupled with rates that vary by season and time of the day, rewarding customers who shift energy use to off-peak periods. Consumers might also be given greater choice in how their energy is produced. For example, the Blue Sky program, a partnership between the United States' state of Utah and its consumers, gives residents an opportunity to help increase the demand for renewable energy by paying for the incremental difference between power from market cost energy and wind power and other renewable sources. Through this program, Utah Power purchases 452 megawatts per month of renewable energy, which offsets approximately 3 800 tonnes of greenhouse gas per year (Envision Utah, 2006). Additional programs could be designed in Copenhagen where energy conservation is integrated into urban design, infrastructure planning, and urban regeneration/brownfields redevelopment. London is saving large amounts of energy from construction by mandating that the development of the Olympics site reuse many of the materials from the industrial zone.

Private developers have a key role to play in constructing more energy-efficient buildings. Already the City of Copenhagen through its "Sustainability in Construction and Civil Works" guidebook, has given developers suggestions for environmentally friendly building materials and designs. This is complemented by the Building Labelling Scheme, which is implemented by the Danish Energy Authority. During the design phase, the ecological footprint of new real estate projects could be better minimised through utilising software tools that suggest environmentally-friendly design. For instance, the Danish Building Research Institute's software tools, which integrate sustainable concepts into the design phases. BSim, for example, allows developers to analyze the thermal indoor climate, daylight

conditions, and natural ventilation at the design stage (www.sbi.dk). During construction, developers could further reduce waste by contracting environmentally certified suppliers and by getting technical advice from Copenhagen Energy's consulting service, which they are entitled to receive free of charge.

Improving public reporting of environmental and climate change data

Though City of Copenhagen should be commended for making indicators on climate change public, additional reforms could improve monitoring. The City of Copenhagen has launched a climate web site (www.kk.dk/klima) that could be enlarged to provide an online "greenhouse gas speedometer" that would provide more current data on electricity consumption, water usage and quality, waste disposal, recycling, tree planting and urban landscaping, transport, gas, beach water quality, and total emissions. A useful reference that may resonate in Copenhagen is the "ClimateCam" which tracks consumption data and greenhouse gas emissions for the City of Newcastle, Australia. This is achieved online (www.ncc.nsw.gov.au/environment/climate_cam) and also through the use of billboard which exposes the level of greenhouse gas emissions to the general public.

Box 2.10. ClimateCam in Newcastle, Australia

As the world's biggest coal exporting port, the City of Newcastle Australia set a vision in 1997 to establish itself as an international testing ground for the application of sustainable technology and practices. Newcastle City Council (NCC) has already reduced its own electricity consumption by 40% based on 1995 levels and takes special care to ensure all energy consumption is accurately measured and reported. In 2001 this work led to the development of the world's first greenhouse gas speedometer, www.climatecam.com, which measures and reports the actual greenhouse gas emissions of the City and its community. Newcastle City Council developed the ClimateCam with partial funding provided through a AUSS\$100 000 grant by the New South Wales Environment Trust.

Consumption data and the equivalent greenhouse emissions from electricity are updated hourly and reported online at www.ClimateCam.com and on a huge 500MV electronic billboard in the town centre, and the local NBN television news segment provides weekly updates from ClimateCam about how the city has performed over the past week, month and year. The City of Newcastle's existing local climate action plan was developed in 2001 and will be reviewed in 2009. The aim of this plan was to return the City's greenhouse gas emissions to

2000 year levels by 2008 (2,776,456 tonnes of CO₂). It was estimated that if we took no action and went about business as usual the City's greenhouse gas emissions by 2008 would reach 3,576,755 tonnes of CO₂. The launch of the plan coincided with the development of ClimateCam. ClimateCam is reporting progress towards meeting this target via the www.climatecam.com website.

Instituting environmental governance: interdepartmental, inter-municipal and international initiatives

The standardisation and mainstreaming of environmental monitoring tools could better inform Copenhagen's policy decisions. Though the physical dimension of Copenhagen's green urbanism—from green buildings to sustainable transit—should be commended, improvements can be made to mainstream environmental sensitivity. The absence of environmental monitoring for many projects in Copenhagen has produced a rather limited set of useful data on which to judge the region's sustainability (Lading, 2001). Useful methodologies for environmental assessment, such as life cycle analysis or ecological footprint analysis, have been marginalised. This compares with what Jensen and Elle (2007) term an “islands of sustainability” approach whereby sustainability is “silo-ed” amongst a web of uncoordinated projects and singular events. Given the City's ambitious environmental goals, more sophisticated methodologies need to be mainstreamed to determine their cost and feasibility. Currently the City lacks a common language to discuss sustainability amongst its staff and multiple divisions, let alone with neighbouring cities. The adoption of environmental monitoring would allow the Copenhagen region to build competitiveness by decreasing vulnerability to natural deficits, identify policies for climate change mitigation, and examine the tradeoffs between different approaches to air, water, and soil pollution abatement (Wackernagel *et al.*, 2007). Cumulatively, an integration of these methodologies would also provide more useful data on which to base enforcement. Given the potential of these tools, Copenhagen might consider conducting an audit to identify which barriers preclude the use of such tools as green accounting and ecological footprint analysis. Comparative research in European cities has highlighted a lack of training in such tools along with data gaps where data are not available or accessible (Jensen and Elle, 2007).

The use of an ecosystem-based planning approach would facilitate coordinated inter-municipal action. This is highly important given the urban land conversion of municipalities in the periphery of Copenhagen along with prospective changes to the land and seascape resulting from climate change, particularly rising sea levels. Although Copenhagen's spatial planning is

mandated to integrate respect for nature and the environment, the current planning approach does not fully incorporate the principles of integrated landscape or watershed planning, which are based on the need to preserve and enhance ecosystem functions. Municipal councils are asked to include both the local perspective and the perspective across municipal boundaries in their planning for nature and the environment, and this might fall short of a plan based on an ecosystem approach. For instance, the incorporation of the Water Resource Plan, Natura 2000 and the Regional Raw Material Supply Plans to be completed in 2009 also shows a lack of integrating ecosystem functions and ecological objectives (OECD, 2007).

Improved cross-border environmental is required given the permeation of pollution in the Øresund area. At present, different emissions controls programs exist on each side of the straits that could be better co-ordinated in light of the increasing connectivity between Malmö and Copenhagen.⁴⁶ The Sound Commission provides oversight and helps manage water quality involving a large number of Danish and Swedish municipalities, in a model that resembles the International Joint Commission, which monitors water quality in the Great Lakes region of the US-Canada border. Co-operation – either in the Sound Commission or through the Øresund Commission – should be extended to include climate change mitigation and adaptation.⁴⁷ On a simpler scale, the sharing of geospatial and meteorological information would better inform environmental policy and create more sophisticated Øresund maps for cross-border planning.⁴⁸ The merging of the ports of Malmö and Copenhagen in 2001 also offers a unique position for the region to advance regional green port plans. Such initiatives could entail the passage of a clean trucks programme to curtail the use of diesel-powered short-haul trucks. This may yield large impacts, given that heavy-duty vehicles (HDVs) are responsible for 50% of particulate matter emissions in Copenhagen (Thomsen, 2007). Already, the Port of Long Beach in the Los Angeles area has banned all trucks built before 1988 and passed stringent guidelines that call for truck owners to replace polluting trucks (Port of Long Beach, 2008). Copenhagen-Malmö may wish to follow this initiative, reduce idling of ships or encourage vessels to use of low-sulphur fuels.

Conclusion

A wide range of environmental initiatives could be pursued to bolster Copenhagen's sustainability. Low-cost sustainable transit solutions might be considered to reduce single-occupant vehicles and carbon emissions from automobile use. Improved energy conservation techniques would be useful to reduce Copenhagen's ecological footprint. Improved cross-border environmental policies would be required given the permeation of pollution in the Øresund Region.

2.7.3 Cultural policies

Since the 1990s, Denmark has attempted to use creativity as a competitive strategy. This is reflected in an entrepreneurial approach to development and infrastructure investment, such as the Copenhagen waterfront, cultural flagships (theatre, concert hall, opera house, the Arken Museum of Modern Art, enlarged state art museum, and beach lagoon), the Orestad city extension and metro, as well as the Øresund Bridge. The perspective has shifted from seeing cultural development as a social democratisation and cohesion objective, to economic and employment objectives and related inward investment of tourists, skilled workers and capital through a wider experience and creative economy (Bayliss, 2007). Recent national policy has focused on regional growth and sectoral initiatives, such as the fashion industry. The City of Copenhagen has similar ambitions and targets the creative class: the City Plan Strategy of 2004 mentions that technology, creativity and tolerance are the driving force behind the city's economic growth and development (City Plan Strategy, Copenhagen Commune, 2004).

Municipalities in Copenhagen do not see this in the same way. Municipalities in Denmark still prioritise social and cultural development over economic development. In a survey of Danish municipal cultural policy rationales, only 18% identified economic development as the primary aim of their culture-led strategies for regeneration (versus social development), and fewer Copenhagen municipalities prioritised economic development compared with other regions, *e.g.* Aarhus and Kolding (Bayliss, 2004). Cultural activities seen as important in these cultural policy strategies also rated traditional arts and heritage amenities, *e.g.* libraries, museums, higher than creative industries. National and city policy appears to be at odds with the local level in terms of culture-led regeneration and creative enterprise. Consistency across levels of government is however important, as creative clusters have regional spillovers (see Box 2.3).

Copenhagen has been undertaking major improvements to the range and quality of its cultural facilities since the 1990s, including new architectural flagships and upgrades of existing venues. The hosting of the *European City of Culture* in 1996 acted as one catalyst for this expansion. Generally, this event year was judged to be successful, as well as in comparison with other such cultural events: 670 projects and attendances totalling over 6.9 million. Over 70% of regional residents found many opportunities for a good experience available during 1996, although less thought that the event improved the image of the Capital Region internationally (DNISR, 1997). Coupled with improved transport infrastructure and links, increased visitors to the city have been maintained since 1996 (Palmer, 2004). However, financially, the event returned a deficit of DKK 30 million (EUR 4 million),

with a further EUR 220 million invested in capital/infrastructure projects. Generally, this was due to inaccurate forecasting of expenditure and income, and low sponsor engagement and sponsorship income.

How far the legacy of the event has been incorporated into the cultural infrastructure, marketing and arts scene is less evident a decade later. This in part related to the location of new facilities, but also their programming and connection to the network of creative producers, artists and audiences that support these venues. Transport and pedestrian access to the new waterfront venues is one issue, accessibility is another (the Opera House building is for example closed on Sundays). Both result in under-use and poor connectivity to the city centre and visitor flows. The focus on a culture-based experience economy which seeks to engage the corporate sector in event, entertainment as well as other industries is reinforced through hosting of annual and major events and festivals. In 2009, the City of Copenhagen will host the second World Outgames, the UN Climate Change Conference and a Fashion Summit.

The opportunity to host further major events is under consideration. The Lord Mayor of Copenhagen has announced the possibility of hosting the EXPO in 2020, and some actors are considering whether Copenhagen should become a candidate for hosting the 2024 Olympics. This may build on previous events, notably City of Culture 1996, and regeneration-led event strategies adopted in other city regions. Capacity and infrastructure to support major international events will be of fundamental importance, particularly the spatial scale and identity (Copenhagen, Capital Region, Sjaelland, Øresund), as well as connectivity and the distribution of activity and facilities. Popular support will also be key, as will private sector sponsorship and risk-sharing, given the financial burdens created by many such events, including Copenhagen 1996. The rationale, political, economic and cultural, will also need to be clearly articulated. In regeneration-led projects, critically, legacy planning will be as important as the event theme and delivery itself, as contemporary mega-events such as EXPO, Olympics and City of Culture have shown.

Global events as an urban amenity

Considerable effort has been put into branding Copenhagen internationally. Active work of Copenhagen Capacity (for attraction of foreign direct investment) and Wonderful Copenhagen (for attracting tourists) has increased awareness about Copenhagen among targeted groups. A Copenhagen brand book has been released containing a strategy to attract knowledge workers to Copenhagen, by focusing on knowledge-intensive niches and presenting Copenhagen as a city where interesting work can be

combined with a good quality of life. As these present real assets and characteristics of Copenhagen, they constitute a fruitful basis for successful branding. Attention should be paid to the interference with the Øresund brand. Elements that appear under-exploited are Copenhagen's reputation for environmental sustainability and design.

Future major events (*e.g.* UN Climate Change 2009) could expand on the city's sustainability theme. This could directly engage with the creative sector and artists who could interpret, animate and curate such complex issues. This might also reflect Copenhagen's own legacy such as Christiania, cycling and city/nature. Differentiation from other cities' branding efforts will also require assessment of other cities' strategies, for instance "Oslo: Towards 2020" uses the *blue and green* brand to reflect the city's aspirations for the environment, culture and knowledge.

Although Copenhagen has a strong design legacy, more could be done to emphasise current activity in this field. Showcasing opportunities for small creative firms and artists appear inadequate. Despite its design legacy and strengths, Copenhagen does not provide the trade or cultural venues that reflect their value. City centre retail establishments are limited and tourist-oriented, whilst the Danish Design Centre is too small and does not serve as a design "museum", showcase, or a serious product trade centre such as The Building Centre/New London Architecture. The urban design and architecture of commercial central areas are also losing their design quality and appeal, in comparison with other cities. Cities such as Montreal have appointed a Design Commissioner (and others an equivalent "champion"), and an annual competition and award programme encourages landlords and premises to redesign and promote their building or shop through a route map advertised and promoted by the city, which encourages visitors, media coverage and trade. Support and design controls (*e.g.* frontage, signs) for independent retailers and speciality shops are also essential to maintaining the character and mix, and avoiding the deleterious effects of chain stores.

One potentially powerful way to brand Copenhagen could be by organising a World Expo. The City of Copenhagen, in co-operation with the central government and the Capital Region, has initiated and co-financed a major feasibility study concerning a possible bid for hosting Expo 2020, to be finalised in the summer of 2009. Although the impact of Expos for the host cities over the last decades has been mixed, an Expo might work as a catalyst for regional development. Unlike other mega-events such as the Olympic Games or other sports events, Expos allow for a thematic approach that not only gives the opportunity to associate a city with certain images but to generate the interest of regional stakeholders, and as such might work as a co-ordination mechanism. An Expo could become a vehicle for solving regional challenges such as co-operation between business and research,

inter-linkages between economic sectors and as a way to prove to Denmark at large the relevance of having a global city like Copenhagen.

Box 2.11. Impact of World Expos on metropolitan areas

Optimising the benefits whilst minimising the negative impacts and risks are the twin challenges of organising mega-events. The costs of mega events also fall disproportionately upon public institutions and residents, particularly those located in areas of new or increased activity. Regeneration-led events are therefore primarily judged on their legacy planning and after-use, and in the distributory effects of the resultant costs and benefits. The extent of industry and private sector involvement and financing is also a reflection of the value ascribed to the design and branding concept and organisational effectiveness, with sponsorship, capital and revenue a key measure of industry partnership. Despite the high financial and political costs such events can entail, many cities are still putting themselves forward.

Recent rounds of bidding for the summer Olympics have been dominated by capital cities, one indication of the competitive nature and size (scale, finance) required to mount such competitions (*e.g.* Beijing 2008, London 2012). Expos have a greater representation from regional and provincial capital cities (Figure 1). These “post-modern” Expos, many of which used regeneration as their prime rationale, linked to hi-tech and related infrastructure (*e.g.* transport, office and convention centres), have also produced mixed results. Seville never achieved its site regeneration goals, producing what has been referred to as a “great failure” and a “ghost town”, and Hannover was not judged a financial success and was considered too expensive to visit. Lisbon, on the other hand, eventually produced a mix of reused facilities and spaces, attracting 18 million visitors a year and placing 25 000 residents in new housing. Barcelona’s UNESCO Forum (not a designated Expo) was used to underpin the redevelopment and public ownership of the city extension and to complete the regeneration of the coast and Besos waterfront envisaged as part of the 1992 Olympics.

These event-led regeneration programmes have taken much longer to produce positive impacts, some 5, 10 or 15 years after the event. It makes more sense to see event-based regeneration as one element of a long-term strategy featuring several milestones and events, including annual and more frequent cultural, trade and sporting festivals. Examples of this approach include Glasgow (City of Culture, 1988), Barcelona (Olympics, 1992) and Rotterdam (City of Culture, 2001). The Bureau International des Expositions demands that bids present a thorough and realistic plan for after-use of the Expo facilities.

2.8. Conclusion

There appear to be several strategies rather than one common strategic vision for Copenhagen. Although these visions do not conflict with each other, they do not provide clear priorities on how to improve Copenhagen's competitiveness. An impressive number of strategic policy documents have been published over the last years, at the national, regional and city level. The processes leading up to these documents have increased the involvement of strategic actors in Copenhagen and resulted in some form of alignment. The relative lack of focus in these strategic visions, however, is a lost opportunity to create the sense of urgency needed to mobilise more actors, such as the national government, to strengthen the key determinants of Copenhagen's competitiveness.

Arguably the most important determinant in Copenhagen's competitive position is the availability of highly skilled people. Policies in several fields could be more active and better geared towards this aim. Several actors have responsibilities in this area: national government, regional governments, universities and businesses. Policy areas that merit attention include student grants, less segregation at school level, enterprise-based training of immigrants, internationalisation of higher education and more pro-active attraction of highly skilled people through a more competitive international talent attraction package.

Several policies could contribute to making an attractive case for Copenhagen. Housing policies can ensure that housing remains attractive and affordable; also for workers that provide key public services to the city. Infrastructure policies can make sure that proximity and relative limited congestion continue to be an asset for the region. Fine-tuning of environmental policies could realise Copenhagen's ambition to become the green capital of Europe and provide urban amenities such as clean water and air. Cultural policies and increased ambitions in organising events could bring more cultural amenities that could be appreciated by high-skilled labour. Innovation and entrepreneurship policies continue to be important in increasing economic dynamism and the knowledge-intensive environment that can contribute to productivity.

National policies impose considerable constraints on Copenhagen. Many of the challenges for Copenhagen's future competitiveness are directly or indirectly related to national policy. National immigration and tax policy have had an impact on Copenhagen's attractiveness to high-skilled foreign labour, and housing legislation has made it difficult to solve housing affordability problems. Danish-Swedish differences in national legislation hinder further functional integration of the Øresund Region, and the national parliament has yet to agree to the introduction of local road pricing.

Although these national frameworks are typical in unitary countries like Denmark, it is at the same time evident that Copenhagen's challenges are different from almost all other areas in Denmark: it has more international challenges, more immigrants, more social segregation, more air pollution and more congestion. It is questionable whether national policies allow for enough regional differentiation to allow the City of Copenhagen to tackle its challenges effectively.

NOTES

- 1 Those projects started as pilot projects in three neighbourhoods in the City of Copenhagen – Kgs. Enghave in Vesterbro, Holmbladsgade in Amager and Femkanten in the northwest – and later extended to the Nørrebro Park neighbourhood and Kvarterløft Northwest. These areas were chosen because of different social problems: unemployment, high outward migration, run-down housing and traffic problems. These areas improved and fostered changes that have made the areas more attractive and the citizens' outlook more positive (Danish Building Research Institute, 2008). Significant work has been devoted to restructuring housing projects that isolated the poor, most notably in Hvidovre's Avedøre Stationby, where 6 000 low-income residents live in the area isolated from the outer world. Low-income residents today are encouraged to leave ghettos and relocate into mixed-income subsidised units closer to the city centre.
- 2 There are five regions and six Regional Growth Forums. The island of Bornholm, which forms part of the Capital Region, has its own Regional Growth Forum.
- 3 Each finger develops its own strength. The Koge Finger in the south has attracted manufacturing and distribution/logistic companies because of its excellent transportation infrastructure, including its roads, railway and the port of Koge. The Roskilde Finger in the southwest has hosted research-oriented companies, due to its extensive technological infrastructure, including Roskilde University. The Frederikssund Finger in the northwest is known as “the Silicon Valley of the Øresund Region”, having many information and communications technology (ICT) and biotech/pharma companies. The Hillerød Finger in the north also has many ICT and biotech/pharma companies. The lastly, the Helsingør Finger in the north is also strong in ICT and biotech/pharma, thanks to extensive infrastructure such as its research park, commercial port and proximity to Sweden.
- 4 The City of Copenhagen prioritises development of unused sites on the harbour and river side in the Development Plan.
- 5 The aim is to give vulnerable children the possibility for a coherent everyday life and a place to be when school is over. At the whole day

schools, teachers and pedagogues work closely on pupils' development. The target is to give pupils professional challenges, assistance with their homework, a focus on healthy food and exciting leisure-time activities to strengthen their desire to learn and play, both in school and during their leisure time.

- 6 All teachers in the city of Copenhagen are employed under an agreement between the Children and Youth Administration of the city of Copenhagen, which employs the teachers, and the Teachers' Organisation in Copenhagen. All teachers in the city of Copenhagen are given the so-called Copenhagen wage benefit, which is nationally regulated. Teachers in the "New Wage" programme can, like any other professions, negotiate for individual bonuses. However, only DKK 2 750 per teacher is allocated to the schools for these individual negotiations. In addition, teachers can receive a special duty bonus, a bonus for offering special teaching and depending on their retraining. Only the whole day schools have a special agreement concerning wages, and full-time employed teachers receive a yearly bonus of DKK 26 000.
- 7 The six municipalities in the Capital Region that performed best were Hoje-Taastrup, Helsingør, Albertslund, Frederiksberg and Ishøj; the two municipalities that performed worst were Brøndby and Værløse. These scores ranked the duration of transition towards self-support of formerly inactive persons during at least 26 weeks. The indicator of duration of transition towards self-support for at least eight weeks showed a slightly different ranking, with three of the 10 best-performing municipalities and two of the worst-performing municipalities coming from the Capital Region.
- 8 The assessment of entrepreneurship policies in Copenhagen draws on the Entrepreneurship Review of Denmark (2008b).
- 9 The eight creative Zones are 1) Siljengade, 2) Carl Jacobsen Vej, 3) Kastanie Alle, 4) Skujullhøj Alle, 5) Ornevej, 6) Drejervej, 7) Tomsgårdsvej, 8) Teglvaerksgade.
- 10 Business Link Greater Copenhagen Area has acknowledged this issue; it was expected that the City of Copenhagen would receive a request to appoint an official to the board at the end of 2008.
- 11 The geographic expansion increased the need for transportation, while the development of transportation facilitated further geographic dispersion, reinforcing urban sprawl. A key facilitating factor for urban sprawl was that under normal circumstances, automobiles could reach any point in Sjælland and Skåne from Copenhagen's city centre within 90 minutes. Nielsen and Hovgesen (2004) clearly observed the geographic expansion of the commuting area. They reported generally no growth in commuter

flows in the historical core and concluded that there had been a relative decline in the dominance of the city centre. In response, the importance of the periphery increased. Twelve percent of workers in the Capital Region come from outside the region, of which most come from Sjaelland. Commuting from Skåne has also been increasing. Within the region, 57% of citizens work in a different municipality from the one they live in. Commuting distances have been increasing and are expected to rise (Statistics Denmark, 2008).

- 12 These estimations are based on the assumption of positive regional development, stable economic development in Denmark and Sweden, sustaining current traffic and infrastructure development in Denmark and Sweden and unchanged competitive conditions in relation to ferry services (Øresundbron, 2008).
- 13 In addition to the National Transport Agreement, the national government draws up a transport plan for rail transport every four years, including the contract to the state. The Ministry of Transport could put forward capacity and service plans at regular intervals, based on government investment plans and guidelines for purchasing public service transport. The region has a statutory duty to review the link between future development and government/municipal infrastructure planning.
- 14 This share is only a symbol of the commitment of both countries, because the share capital is equivalent to only approximately 0.25 percent of the debt on the inauguration of the fixed link. This ownership structure makes it possible for the governments to control environment and safety issues.
- 15 In 2006, the total housing stock of the Copenhagen metro region stood at 1 734 315 units, having grown from 1 720 528 in 1981. This includes farmhouses, detached houses, terraced, linked or semi-detached houses, multi-dwelling houses, student hostels, residential buildings for communities and other residential buildings (Statistics Denmark, 2008).
- 16 These include texts from the Economic Council (2001) and a recent national level review of social housing in Denmark, *Den almene boligsektors styring* (2008). The OECD's *Economic Surveys: Denmark* (2005) also called for a reform of the housing sector, arguing "competition is inadequate in the construction industry due to restrictions on who can do what work and because standards for building materials are not harmonised within EU countries. Prices are very high as a result. The markets for rental and co-operative housing are malfunctioning, and rent controls should be removed (with appropriate safeguards and a sensible phaseout period)."

- 17 In 1997, the average price for an owner-occupied apartment was 7 268 DKK per square metre (EUR 975). In 2007, this had increased to DKK 28 391 (EUR 3 810) in current prices, see www.realkreditraadet.dk.
- 18 Amongst other issues, the 2009 City Development Plan will include a (1) revision of the norms for the density of buildings and the amount of open space needed in the city in order to make room for more housing facilities, (2) new policies designed to create inexpensive housing for families of low and middle income, and (3) tools for the promotion of new types of housing for large households and shared houses for senior citizens.
- 19 The City of Copenhagen issued a small handbook in 2003 to explain the possibilities of establishing roof-top apartments and adding extra floors.
- 20 In this vein, the OECD (2005) called upon Denmark “to unilaterally allow the importation of products approved from countries with standards on a par with those in Denmark” (OECD, 2005).
- 21 The Danish Planning Act and its complementary revisions in 2007 did not give municipalities the authority to impose inclusionary housing requirements. These powers, which require developers to set aside a percentage of moderately priced units in new developments, are common planning powers granted to many municipalities throughout OECD countries, which typically require between 10% and 20% of large (usually between 50- and 100-unit) developments to provide affordable housing. Developers are given the option of paying into an affordable housing fund managed by the municipality if they do not wish to include moderately priced units. In return, developers are typically given density bonuses. For example, according to the “Moderately Priced Dwelling Unit Ordinance” of Montgomery County, located on the fringe of Washington D.C., developers of more than 50 detached residential units are required to set aside 12.5% to 15% of all units over 20 years in return for density bonuses of 20% to upwards of 22% (Nelson, 2003).
- 22 An increasing number of Copenhagensers (around 3 000 people per year) have moved across the Sound to Malmö. They generally find more favourable conditions in Sweden, where there is a “much better connection between quality and price for housing in the rental and co-operative sectors, the prices are lower and the quality higher” (Andersen, 2007). Though one could argue that the housing market of Copenhagen spills over to Malmö and vice versa, the co-ordination of cross-border housing and land use is in its infancy worldwide.
- 23 The most complete empirical work on sprawl, “*The Costs of Sprawl – 2000*”, applied scenarios based on estimates of uncontrolled sprawl and controlled sprawl (in which some sprawl was allowed, but overall more

compact, higher-density growth was demanded) for 15 economic areas in the United States. The five-year study found that sprawl could result in USD 227 billion in additional costs to the United States over a 25-year period (Burchell *et al.*, 2002). Researchers found that controlled growth could be achieved with only a 20% increase in density and a 10% increase in floor area ratio for non-residential uses. This produced large cost savings: Burchell's simulations estimated that a saving of 188 300 lane miles of local roads and USD 110 billion could be achieved by 2025 with more compact patterns, a saving of 11.8% in state and local road costs. Water and sewer savings, though significant, were smaller; with compact growth patterns, the combined cost savings of lower tap-in fees and 4.6 million fewer lateral lines would offer infrastructure savings of USD 12.6 billion, or 6.6%, over 25 years (Burchell *et al.*, 2002).

- 24 It is possible to find information, download application forms and information regarding district plans and regulations at: www.kk.dk/Borger/BoligOgByggeri/Byggetilladelse.aspx. The City of Copenhagen has created a webpage called "Det digitale byggeri" ("Digital construction") which helps different actors in the building sector find information and development tools. The links are: www.detdigitalebyggeri.dk/ (Danish) and <http://digitalconstruction.dk/> (English) (Elisabeth Kongsmark, City of Copenhagen, personal correspondence).
- 25 If the governments in the Copenhagen metro region were to go forward, the next step might consist in adopting Vancouver's strategy, which entailed (a) a comprehensive analysis of housing demand and needs across the region, (b) the establishment of regional affordable housing targets by tenure, demographic categories, cost and income ranges, and (c) outlining possible regional implementation strategies (City of Vancouver, 2007).
- 26 Work conducted by DiPasquale and Wheaton (1994) provides an analytical framework for such a study, emphasising the multiple factors that influence housing prices.
- 27 Under social housing legislation, municipalities can grant a basic capital loan (currently 14% of construction costs) and provide a guarantee for the construction of social housing. When granting a basic capital loan and guarantee, the municipality may legally impose requirements with regard to the design and quality of the building, the size of the rent and the letting criteria, for example.
- 28 Before the Housing Construction Law (*lov nr 356 af 27. december 1958 om boligbyggeri*) was ratified in 1958, municipalities could provide economic support for the construction of social housing. Since the ratification of the law, there has been a general acceptance in the legal

literature and case law that municipalities are prevented from increasing the housing supply without having a legal basis.

- 29 A recent proposal called for municipal plots to be sold at a reduced price, but the bill was rejected. The bill reference is “2007-08, 2. samling - B 53 (oversigt): Forslag til folketingsbeslutning om at give kommunerne mulighed for at gennemføre en aktiv boligpolitik, der kan sikre boliger til grupper med lav- og mellemindkomster” (www.folketinget.dk). The City of Copenhagen also requested the State Administration for the Capital Region and the Ministry of the Interior to grant permission for the sale of municipal plots with restrictions on the right of disposal in order to obtain, for example, housing for middle-income residents.
- 30 The City of Copenhagen (2008) explains, “In 1999, a co-operative dwelling of 85 m² located in Copenhagen cost approximately DKK 160 000. Calculations show that a corresponding co-operative dwelling would today cost approximately DKK 980 000. Prices of co-operative dwellings have consequently nearly quintupled during this period. This means that a family without private means will have a total monthly housing cost of approximately DKK 9 500.”
- 31 If a developer sells six or more apartments (or 13 if there is a commercial area in the building), the building must first be offered to its tenants. The price is regulated and often below market.
- 32 In 2006, the City Council concluded a far-reaching agreement with the Federation of Non-Profit Housing Associations in Denmark regarding new letting rules for social housing. Among other things, the new rules mean that people in work or education now have a better chance of obtaining social housing. In addition, job squads have been employed to contact people on cash benefits in vulnerable neighbourhoods and offer them jobs or labour market integration. Financial provision has also been made under the auspices of *Landsbyggefonden* (the National Fund of Housing Associations) for social and preventive initiatives on social housing estates where major problems of an economic, social or other nature have been identified.
- 33 For additional material on this report, see:
www.social.dk/lovgivning/lovforslag/index.aspx?id=c5d6d8bc-1b51-4848-8fc0-5985efae48e5.
- 34 Copenhagen’s urban regeneration budget covers neighbourhood renewal programmes, refurbishment of buildings, and support for paying mortgages on loans taken out in buildings that have been renewed. The budget does not cover social projects often carried out in these areas, such as integration and the support of entrepreneurship.

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- 35 Avedøre Stationsby is a town of 6 000 low-income residents who live in a walled city, inspired by Croatia's Dubrovnik.
- 36 For more details, see www.sbi.dk/byudvikling/byfornyelse/midtvejsstatus-for-fem-kvarterloft/rapportens-konklusion.
- 37 Another example derives from the New Jersey Council on Affordable Housing (COAH), whose formula consists of two categories: present need and prospective need. Present need, in turn, consists of two sub-categories. First, it consists of the sum of the number of deficient housing units occupied by low- and moderate-income households within a municipality (indigenous need). Second, present need reflects reallocated present need, a calculation that allocates the obligation of affordable housing funds to areas with a deficit of low- and moderate-income stock and ensures that distressed areas do not receive more affordable housing funds than the regional average. For example, if a city contains a level of affordable housing that exceeds the average for the region, the excess need is allocated to a housing pool for subsequent redistribution in that region. Prospective need corresponds to the share of total projected households that will qualify for low- and moderate-income housing. The present and prospective needs on the regional level are distributed to the municipal level on the basis of four factors: (1) the municipality's share of regional undeveloped land, (2) equalized nonresidential valuation, (3) change in equalized nonresidential valuation, and (4) aggregate household income differences. To arrive at the allocation for present need, factors (1), (2), and (3) are totalled and then averaged. The resulting figure is the present need allocation factor, and it is applied to the present need total for the region. To arrive at the allocation for prospective need, factors (1), (3), and (4) are also totalled and averaged, and the result is applied to the prospective total need for the region. Between 1980 and 2000, the fair-share housing allocation has made over 60 000 units for low- and moderate-income housing available (American Planning Association, 2003; Council on Affordable Housing, 2001; Meck *et al.*, 2003).
- 38 The "KKplanner" is a digital tool for sus-tainable project design developed especially for use in the City of Copenhagen. The KKplanner contains goals for high-priority environmental impacts and references to auxiliary tools with calculation models. The KKplanner is organized so that the size of the design can be suited to the size and content of the individual project. The KKplanner presents reference environmental priorities and sustainability goals for the following types of projects: housing, day-care institutions, schools, offices, roads and squares, green areas, and courtyards and playgrounds (City of Copenhagen, 2006).
- 39 Copenhagen's City Council decided in 2007 to allocate approximately DKK 150 million to a range of environmental initiatives, including a large

eco-project that will be showcased during UN COP15, the climate change summit conference. One sustainable development initiative included the initiation of carbon-neutral development projects in the Northern Harbour (40 000 new inhabitants and 40 000 new jobs) and the Ørestad, along with the designation of low-energy zones with particularly strong energy requirements. Similarly, funding has been programmed for pilot projects on energy investments in city administration buildings, initiatives for employees of the city administration, and experimentation for hydrogen-fuelled cars and Intelligent Transport Systems (ITS). The City of Copenhagen has also launched a website on climate change issues, www.kk.dk/klima.

- 40 Additional information on the methodology of the rankings can be found at www.denmark.dk/NR/rdonlyres/60B9101D-B656-438E-A755-E441D41E0AA7/0/top_20_cities.pdf.
- 41 Copenhagen Agenda 21 sought to reduce water consumption in Copenhagen from 120 litres per capita per day in 2005 to 110 litres in 2010 (City of Copenhagen, 2004).
- 42 For a summary of this work, see Danish Ministry of the Environment (2008).
- 43 Dogma 2000 collaboration between the City of Copenhagen and six other municipalities is based on three “dogmas”: (1) humanity’s impact on the environment must be measured, (2) public authorities must take the lead by compiling an Agenda 21 plan to improve the environment, and (3) citizens must be involved in the work to improve the environment (www.dogme2000.dk).
- 44 Chicago Mayor Richard M. Daley has also instituted an ambitious green roof program, under which the City’s Cool Roof program subsidises owners to construct a green roof.
- 45 For photos of this temporary park, see www.paris.fr/portail/toutimages/Portal.lut?page_id=7198&document_type_id=5&document_id=55208&portlet_id=16652.
- 46 In Copenhagen, for example, an ambitious program was launched to reduce air pollution that nonetheless lacked the involvement of Malmö. By creating “low emission zones” (LEZs), the programme targets emissions of particulate matter from heavy-duty vehicles (HDVs). Under the programme, HDVs will not be allowed to enter LEZs unless they are equipped with filters (approved by the Danish Road Safety and Transport Agency) which reduce particulate emissions by 80%. The filters will be required on Euro 0-2 HDVs from July 2008 and on Euro 3 HDVs from July 2010, except for vehicles more than 30 years old. In addition, the

Danish Ministry of Environment might require filters on light-duty vehicles (LDVs) from July 2010 (Thomsen, 2007; cited in OECD, 2008).

- 47 The Øresund Environment Academy, a part of the Øresund Science Region, also provides a cross-border forum for environmental co-operation (www.oresund-environment.org/, www.oresundscienceregion.org/sw6563.asp, www.oresundsvand.dk).
- 48 One program that includes such provisions is the “US Mexico Binational Program on Cross-Border Planning and Colonias Management”. The latter entailed a collaboration in 2003 between the US Department of Housing and Urban Development, the US Department of Interior, Geological Survey (USGS) and Mexican partners to create binational Internet-based Geographic Information System (GIS) applications for cross-border regions along the US/Mexico Border (El Paso/Ciudad Juarez, Eagle Pass/Piedras Negras, Douglas/Agua Prieta, and Nogales/Nogales). The “applications provide statistical and spatial analysis tools to plan for future growth scenarios, estimate infrastructure development costs for the colonias, and supply binational demographic census data for economic growth models” (www.hud.gov/offices/adm/foia/majorinformationsystems.pdf).

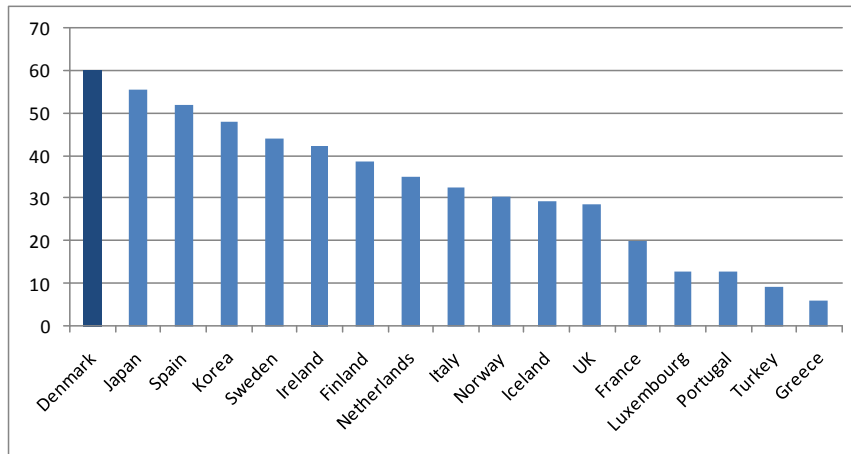
Chapter 3: metropolitan governance in Copenhagen

Governance has an impact on urban competitiveness. Better governance will lead to more effective delivery of public services and implementation of policies that stimulate economic development, such as the ones identified in Chapter 2 of this Review. The Danish population has great trust in government and its capacity to solve problems, and a discussion of governance arrangements is indispensable in assessing Copenhagen's competitiveness. Governments have different functions, all of which impact on a region's competitiveness: they can provide stability and predictability, and protect the rule of law, cherished values and property. Governments can also obstruct economic activity with burdensome regulation and red tape. Metropolitan officials are rarely able to act successfully in isolation; they must find ways to make alliances with and co-ordinate with the relevant actors for the metropolitan area. Important to any governance arrangement is its relationship with the private sector, which can help governments to co-ordinate actors to work toward a more competitive region. By definition, metropolitan governance involves several stakeholders in a multi-level government framework. This chapter assesses this framework and discusses the main critical issues.

3.1 The regional government framework

Denmark is a highly decentralised unitary state. Its high degree of decentralisation is expressed in the variety of public tasks that devolve to local governments and its high percentage of sub-national expenditure: in no other unitary state in the OECD do sub-national governments (both regional and local government) absorb such a large share of the total government budget (Figure 3.1). At the same time, Denmark is a unitary state, and the central government is bound to maintain policy coherence and consistency across its territory. A strong tradition of negotiation underpins this aim of policy coherence. As a consequence, local governments can be seen both as autonomous bodies, dependent on the preferences of their local electorate, and as agencies of the national government for several state functions.

Figure 3.1. Sub-national expenditures as share of total government expenditure in unitary OECD countries (2006)



Source: OECD National Account Statistics

Municipalities form the dominant sub-national government tier in Denmark. They have various functions, tax revenues, a budget almost twice the size of the central government budget and elected leaders. There are currently 98 municipalities in Denmark. The second sub-national government tier is formed by the regions, whose functions are more limited and which have no tax revenues. Their budget is half that of the total municipal budget and slightly lower than the national government budget. There are at present five regions in Denmark.

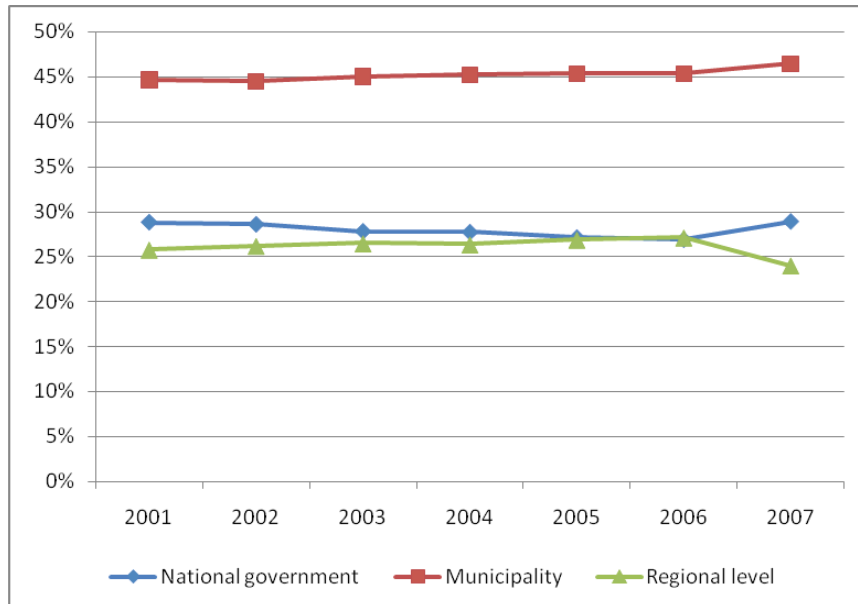
Copenhagen consists of 29 or 35 municipalities, depending on the definition used. The Capital Region is composed of 29 municipalities, including the City of Copenhagen. Copenhagen's functional area (which is not contiguous with an administrative level) includes 35 municipalities. The average number of inhabitants per municipality in Denmark stands at around 55 000 inhabitants, both within and outside Copenhagen, a relatively high figure from an international perspective. The Capital Region is the most populous region in Denmark, with around 1.6 million inhabitants.

This framework is the result of the structural reform implemented in 2007, which was aimed at improving the performance of sub-national governments by increasing their size. At the local government level, this was achieved by a process under which municipalities were requested to cooperate with each other or to amalgamate in order to reach a population of at least 20 000 per local government unit. The resulting wave of municipal amalgamations reduced the number of municipalities from 271 to 98. At the

regional level, the 16 existing counties were replaced by five regions. The rationale for this was that the regional government should focus on the provision of public health services and that it would be necessary to increase the size of regional government units to increase effectiveness. Unlike counties, the regions do not have the power to levy taxes. Some of the counties' responsibilities were transferred to municipalities and the central government.

Local government reforms on this scale are rarely implemented in OECD countries. Amalgamations are usually highly contentious and politically charged. Over the last decades, a significant reduction of regional or local governments in unitary countries has only been observed in Japan, Iceland, Netherlands and Greece, but some of these outcomes were reached gradually rather than immediately. As a result of the reform in 2007, sub-national government expenditure (regional and local government) has decreased (see Figure 3.2). This trend of re-centralisation runs counter to the experiences within most OECD countries. In the last decades, several countries have decentralised considerably, resulting in larger shares of sub-national expenditure. Only Japan, Norway, Ireland and the Netherlands currently have lower sub-national expenditure percentages than they had in 1995. These recent changes to some extent complicate an assessment of governance frameworks in Denmark, as a new equilibrium between actors, in particular in relation to the regions, is currently being established.

Figure 3.2. Expenditure shares of the three government tiers in Denmark (2001-07)



Source: Data from Ministry of Finance

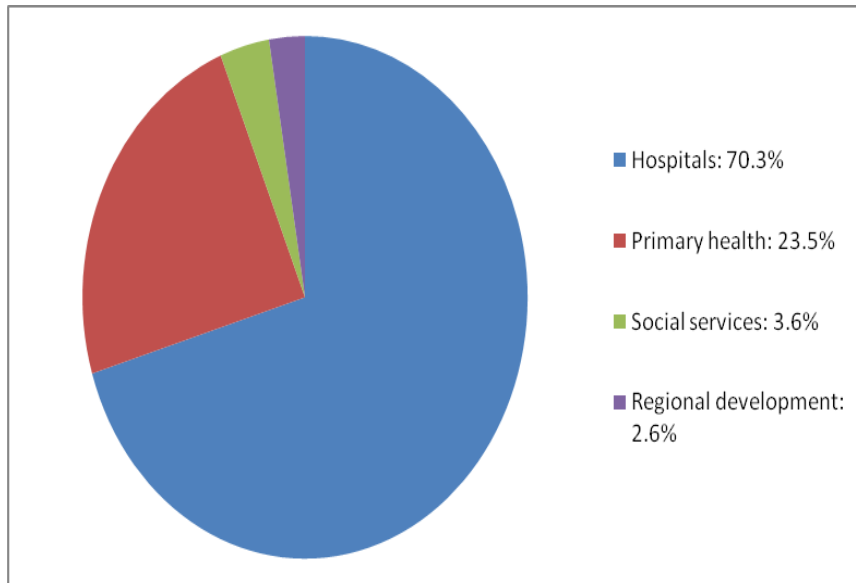
Municipalities supply a comparatively high share of welfare goods and services in Denmark. This has been the case since the 1970s. In addition to the tasks typically associated with local governments in all OECD countries, such as refuse collection and local roads, Danish municipalities are responsible for implementing national welfare policy, including deciding on who is eligible for benefits such as unemployment, health benefits and various social benefits. The most important expenditure items on municipal budgets are education, social services, child care, active labour market policy, culture, local roads and utilities. The regions' main responsibilities lie within the field of health and regional development. The national government has a wide range of responsibilities, including secondary and tertiary education, immigration policies, defense, trade and foreign policies. In certain cases, such as in social services and certain health care services, several government tiers are responsible.

Social services make up most of the budget of the City of Copenhagen. More than half of the budget is spent on social services, such as employment benefits, elder care and child care. A further 30% is reserved for health care

and education. Expenditure for housing and transport constitutes a relatively small part of the budget of the City of Copenhagen. The budget of Copenhagen differs in some respects from the average municipality: its expenditures per capita on social services and employment, as well as on housing, are considerably higher, and those for education, utilities and transport are markedly lower. The municipality of Aarhus spends almost twice as much on transportation and 45% more on education and culture by comparison with Copenhagen (expressed in per capita terms). Other municipalities in the Capital Region spend relatively less on social services and more on education and culture.

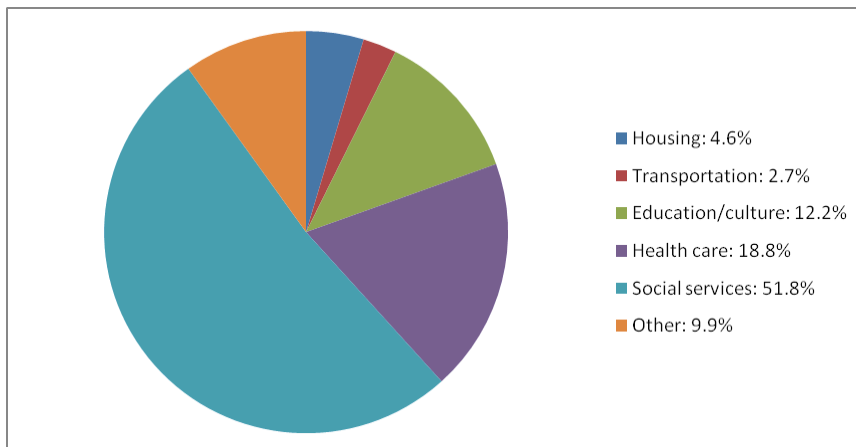
The regions' dominant task is health care, as is shown by the composition of their expenditures. Around 93% of the budget of the Capital Region is spent on health, overwhelmingly on operating costs. A relatively small fraction of the budget of the Capital Region (2.6%) is spent on regional development, 52% on public transport and the rest on business development (14%, mainly tourism and investment promotion), environment (16%, mainly soil pollution and natural resource mapping) and other regional development activities, such as culture and education (8%).¹ Some social services and special education are provided by regions, for which around 3.6% of the Capital Region's budget has been reserved. In comparison with the other regions in Denmark, the Capital Region spends relatively more on health and relatively less on social services and special education. The regions (through their Growth Forums) also distribute EU funds that are available for the Danish regions. The Capital Region will receive DKK 490 million over the period 2007-13 from the EU Structural Funds related to Target 2 (Regional competitiveness and employment) and a total of DKK 833 million for Target 3 (Interreg IV A Öresund – Kattegat – Skagerrak) over the period 2008-13, which are available for Danish, Swedish and Norwegian applicants in relation to inter-regional projects. About 50% (DKK 410 million) will go to the sub-programme Öresund.

Figure 3.3. Main budget items of the Capital Region 2008



Source: Data from Capital Region

Figure 3.4. Main budget items of the City of Copenhagen 2007



Source: Data from the City of Copenhagen

Administrative boundaries do not correspond to functional areas in Copenhagen

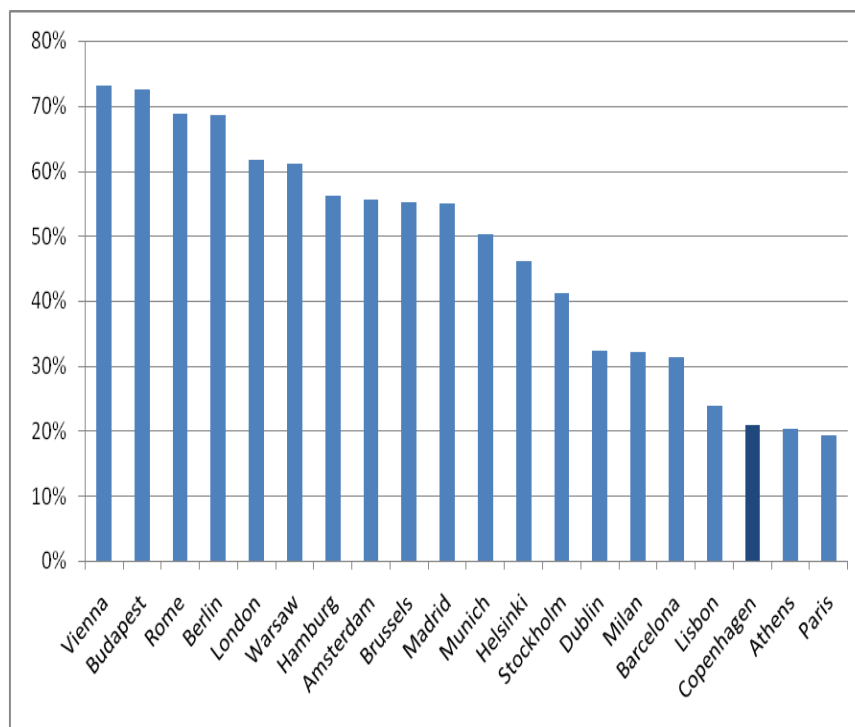
In almost every metropolitan area, administrative boundaries are different from functional areas. Because functional areas can be considered the areas in which people live and work on a daily basis, they are relevant for public policy: they give an idea of the scale of labour markets, housing markets, knowledge spillovers and markets for services of different kinds. It is generally accepted that administrative boundaries will hardly ever overlap exactly with functional areas, as functional areas are dynamic over time and have different sizes for different functions: people might be willing to commute for one hour, but not accept to travel the same time to get a new passport. For goods and services with network effects and externalities, it is, however, desirable that administrative boundaries approximate those of the functional area, as in this way, externalities can be internalised in the decision-making of the unit. If this is not the case, more co-ordination will be needed between sub-national units.

The structural reform has complicated metropolitan co-ordination. To be fair, neither before nor after the structural reform did boundaries correspond to the functional area of Copenhagen. As was mentioned in Chapter 1, this Review considers the functional area of Copenhagen to extend past the boundaries of the Capital Region, on the basis of commuting flows. This functional area also goes beyond the area covered in the Finger Plan, which has served as a planning arrangement for the metropolitan area. Before 2007, the area covered by the Finger Plan consisted of 52 municipalities and five counties. Two of these counties were also municipalities, namely Copenhagen and Frederiksberg. After the reform, the area included 35 municipalities, one region (the Capital Region) and part of another Region (Sjælland). Both situations require co-ordination at a metropolitan level, but one would suppose co-ordination to be easier between five more or less equivalent counties than between one large region and a much smaller region, of which only part belongs to the Copenhagen metropolitan region. However, as part of the structural reform, the metropolitan co-ordination mechanism of municipalities in Greater Copenhagen (known as HUR, the Greater Copenhagen Council) was abolished (see also the section below). A regional government demarcation that followed the functional area of Copenhagen more closely would have taken the whole of Sjælland as one region; this option was not chosen, as it would have created a region that was considerably larger than the other regions. In practice, the whole of Sjælland has been chosen as a unit for co-ordination of traffic (through Movia) and employment (through Employment regions).

Municipal fragmentation in Copenhagen has not been dealt with

Municipal amalgamation was more intense outside Copenhagen. The number of municipalities there was reduced from 219 to 63; within the Copenhagen area (former HUR-area), the reduction was far less radical: from 52 to 35. The agreement between political parties on the structural reform aimed at municipalities with on average 30 000 inhabitants. Since this was mostly already the case, municipalities in Copenhagen had fewer incentives for further amalgamation. As the reform followed a dominantly voluntary logic, the central government did not push for substantial amalgamations in Copenhagen. Consequently, institutional fragmentation at the level of metropolitan Copenhagen continues. One of expressions of this is the existence of a separate municipality (Frederiksberg) within the boundaries of the city of Copenhagen. Another instance is the fact that the population of the city of Copenhagen proper, as a percentage of the population within the metropolitan area, is low, both from a national and international perspective. Only about 21% of Copenhagen's residents live in the city of Copenhagen. In Aarhus and Odense, where suburbs have merged with the core city in recent decades, 45% and 40% respectively of the population of the wider metropolitan area now lives within the boundaries of the city. Comparison with other European cities shows that few cities have the metropolitan fragmentation of Copenhagen. Although the existence of several local government units can stimulate competition between them and lead to more efficient provision of services, local choice, and goods and services adapted to local preferences, serious challenges are associated with fragmentation when sub-national governments have responsibilities for goods and services with externalities such as public transport.

Figure 3.5. **Dominance of the core city over the metropolitan area (in terms of population)**



Source: OECD secretariat's calculations on the basis of the OECD Regional Database

The structural reform has weakened the position of Copenhagen

The City of Copenhagen lost its special position after the reform. As mentioned in previous sections, the structural reform did not solve Copenhagen's problems of co-ordination and fragmentation. In addition, it brought an end to the special position of the City of Copenhagen and of Frederiksberg. Since these were simultaneously both a municipality and a county, they had a wide range of responsibilities. In health care, they jointly established the Copenhagen Hospital Corporation, which was considered to be moderately successful. Its tasks were transferred to the Capital Region. Tasks that municipalities and counties had delegated to the Greater Copenhagen Authority were transferred away, most importantly public transport; part of these responsibilities were transferred to a new company called Movia and regional planning was to a large extent centralised in the

Ministry of Environment. Although the structural reform was presented as a reform to create local units big enough for larger tasks, the City of Copenhagen has in fact lost several of its previous responsibilities. In addition, it became a municipality on a par with the other 97 municipalities, without any special rights or responsibilities. This clearly differs from practices in several OECD countries with dominant cities (Box 3.1). Municipalities in the Capital Region (other than Copenhagen and Frederiksberg) were granted more responsibilities, but they amalgamated to a more limited extent than in Jutland. This calls into question whether their local capacity is sufficient: in 2006, none of the municipalities in the Capital Region was among the ten smallest; today, after the structural reform, half of the ten smallest municipalities are located in the Capital Region.

Box 3.1. Special institutional arrangements for metropolitan areas

Several cities in federal countries are also federal states of their own. This is for example the case for Berlin, Bremen, Hamburg, Vienna and Brussels. In other countries, the capital city has a special status, with an institutional organisation different from other municipalities', for example in the Czech Republic, France, Hungary, Poland, Slovakia and the United Kingdom. Capitals or metropolitan areas may also have a different status, giving them more financial resources and rights or responsibilities. This is for example the case for Tokyo and 17 designated cities that generally have more than 500 000 residents; Seoul and six other metropolitan areas in Korea; 16 metropolitan municipalities in Turkey; cities in the Netherlands with more than 100 000 inhabitants; and the city of Toronto.

3.2 Intergovernmental co-ordination

3.2.1 Metropolitan co-ordination

The national government took many initiatives recognising how important it was for Copenhagen to compete with other European countries during the 1990s. The key elements of this strategy were recommended by an Initiative Group for the Capital Region, formed in 1989 as a reaction to economic decline in Copenhagen in the 1970s and 1980s. This group, composed of regional stakeholders, recommended a number of infrastructural projects, including the Øresund Bridge between Copenhagen and Malmö, the development of Ørestad, the expansion of Copenhagen

airport, a new metro line between the airport and the city centre, the redevelopment of the housing stock, the expansion of the port and the promotion of research and development. The recommendations of the Initiative Group also resulted in the creation of a number of institutions, such as Wonderful Copenhagen for boosting tourism, Copenhagen Capacity to attract foreign direct investment, the Øresund Committee for political co-ordination of the Øresund area, and Medicon Valley Alliance to develop the bio-medical cluster in the Øresund area.² There is no doubt that the formulation of a shared strategic vision for metropolitan Copenhagen, and its subsequent implementation, has been very effective, once the national government recognised the value of Copenhagen and co-operated with regional actors.

The existing vehicle for metropolitan co-ordination was replaced by the Capital Region in 2007. In 2000, the Greater Copenhagen Authority (HUR), consisting of 49 municipalities, was established, with responsibility for regional planning, transport, regional cultural planning, regional business development and the integration of Øresund. The basic structure of the HUR was similar to the Greater Copenhagen Council, which was active in 1970s and 1980s. Denmark's reform of the local government structure in 2007 affected the structure of metropolitan governance, since it abolished the HUR.

The Greater Copenhagen Authority (HUR) suffered from a lack of effective tools to build consensus at regional scale, even though it had the authority to craft a regional plan. It was an indirectly elected body and it lacked its own financial resources. The current Regional Council is designed to overcome the first drawback, because it consists of directly elected 41 politicians, giving it more legitimacy. However, the council has less authority than the HUR, since it cannot impose any kind of action on behalf of the municipalities. Another complication is that the Regional Council relies not only on municipal resources but on national funding. In addition, its coverage area is smaller than the HUR's was.

Several mechanisms exist under which the Capital Region could provide some form of metropolitan co-ordination. The Regional Development Plan of the Capital Region could be considered a strategy for the whole region. Municipalities have been involved in the creation of this plan, so they can claim some ownership of it. The Capital Region also has a Municipality Contact Council (KKR) that is meant to ensure co-ordination between municipalities; and between municipalities and the region. Furthermore, municipalities and other local and regional stakeholders are represented in the Regional Growth Forums. The Capital Region is effectively becoming the vehicle for metropolitan co-ordination after the abolition of the Greater

Copenhagen Authority, representing one of the many models for metropolitan governance within the OECD (see Box 3.2).

Box 3.2. Metropolitan governance in OECD countries

The discussion of how to manage metropolitan regions revolves around a spectrum of models that range from relatively “heavy” to relatively “light” in terms of the scope of the reform they involve. At the relatively heavy end are functional models whereby governance structures are reshaped to fit or approximate to the functional economic area of the metropolitan region. Examples include the creation of a metropolitan government and the amalgamation of municipalities. Several metropolitan areas in Canada, for example, have been subject to amalgamation processes. Among the best-known metropolitan governments are the Greater London Authority, the Stuttgart Regional Association and the Portland metropolitan district.

In mid-position are a wide range of co-operative arrangements through inter-municipal joint authorities, most often on a voluntary basis, such as sectoral or multi-sectoral agencies whose main functions generally include transport, urban planning or economic development. The governance of US metropolitan regions is notable for a profusion of regional special districts: one-third of all local governments in the United States are special districts or school districts. Well-known multi-sectoral inter-municipal bodies include for example the Greater Vancouver Regional District and the agglomeration communities and urban communities in France.

At the light end are informal co-ordination bodies such as platforms, associations or strategic planning partnerships, often relying on existing networks of relevant actors without necessarily following the logic of territorial boundaries. Examples include the association of the Lyon Urban Region and the Ruhr District Association of Local Government Authorities.

*Source: OECD (2006), *Competitive Cities in the Global Economy*, OECD, Paris*

Metropolitan co-ordination by the Capital Region is a delicate task, considering the need for the co-operation of municipalities that sometimes have conflicting interests, and the limited amount of policy instruments at the region’s disposal. The task of the regions that comes closest to regional co-ordination is in regional business development co-ordination through the Regional Growth Forums, which help to articulate regional needs and policy directions. Business, education, labour organisations and local and regional governments are represented and help to co-ordinate with municipal governments in the region. Although the Capital Region does not have many

instruments, it has funds at its disposal for business development projects that are in line with the Business Development Strategy. Considering the limited amount of instruments in fields that are instrumental to regional development, it remains to be seen whether Regional Growth Forums can provide enough leverage for the co-ordination of the many different and conflicting interests in Copenhagen. Regional co-ordination is a daunting task everywhere in Denmark, but it is arguably more challenging in the Capital Region. Not only does the region contain a large range of government actors, including suburban municipalities that in many other Danish areas are amalgamated with the core city, it also has a wider set of relevant regional stakeholders, including several universities and key business sectors. This means that the representation in the Regional Growth Forums is necessarily more diverse and challenges of co-ordination greater.

Governance of public transport in Copenhagen is fragmented. There are several actors, but no clear co-ordination between them. The national rail authority is responsible for national railways and the city-regional trains (S trains). There is a separate metro company owned by the central government, the City of Copenhagen and the City of Frederiksberg. Bus transport and certain regional railways are governed through the company Movia. Movia is responsible for the bus transport in Copenhagen as well as the rest of Sjaelland. It is owned by the two regions (Capital Region and Region Sjaelland) and the municipalities, who nominate the nine members of the board. All Movia's buses are tendered out to private companies. Each municipality pays for the buses that service its roads, and the regions finance the administration of the Movia company, as well as the regional buses.³ The financing model sometimes results in less than optimal planning of bus lines and is a barrier to co-ordination and planning in the long term. To some extent, the number of organisations reflects the increased investment public transport in Copenhagen over the last 15 years, but overall co-ordination between these transport modes could be better developed.

3.2.2 Co-ordination between central government and Copenhagen

The main co-ordination mechanism between the central government, region and municipalities is the annual budget negotiations between the central government (the finance minister), the association of regions and the association of municipalities. These are not purely economic negotiations and address a number of themes and policy areas. A fundamental feature of the devolvement of welfare functions to local government in Denmark is that parliament and government set the political and economic goals, but that the allotment of resources and methods for accomplishing them are put in place mainly on the basis of voluntary negotiations at the local level, and

only to a limited extent on the basis of regulation. Since 1989, this procedure has been codified in an annual negotiation process.

An incentive for local governments to participate in the negotiations with the central government is that this process reduces uncertainty about central intervention in local decisions. The central government has a strong incentive to strike a deal with local government before going to parliament, since prior consent from local government organisations has proven to be a reliable way of getting the proposal approved by the major parties in parliament. The final agreement is a major policy package, which makes it possible to compensate local governments for tight fiscal conditions by granting them influence in other fields. Unpopular adjustments have in the past been traded for more autonomy for local government, reductions of central regulation and block grants rather than specific grants (Blom-Hansen and Pallesen, 2001).

Cross-sectoral issues are difficult to address, which is sometimes a result of silo thinking in the central government – *i.e.* a lack of co-ordination between the line ministries. The government has tried to counter this problem by setting up the Ministerial Committee for Regional Policy. Its mandate is to ensure that activities that serve growth, employment and regional development are co-ordinated. It is headed by the Minister of Economy and Business Affairs and the Minister of Foreign Affairs, Minister of Finance, Minister of Employment, Minister of Education, Minister for Science and Technology, Minister of Agriculture, Minister of Welfare and Minister for the Environment are members. This high-level committee does not, however, appear to play an active role.

Few mechanisms for co-ordination between Copenhagen and the central government are in place. The Regional Growth Forum of the Capital Region has limited decision-making powers and will have to acquire legitimacy to speak for the whole region. The City of Copenhagen and the City of Frederiksberg used to talk separately to the central government, but this has ended since the structural reform of 2007, when they lost their special status as municipalities/counties. They are now represented by the Association of Municipalities, which, as a Denmark-wide organisation, does not take a strong interest in developing the case for particular regions or areas. Co-ordination between the central government and the dominant metropolitan area could be increased by a clear national government programme for the area carried out under the authority of a single ministry, as illustrated by recent developments in the Randstad area (see Box 3.3).

Box 3.3. Relations between metropolitan areas and central government: the case of the Randstad

The Randstad is the urbanised western part of the Netherlands, composed of the four largest cities in the Netherlands (Amsterdam, Rotterdam, The Hague and Utrecht) and several other smaller cities. This polycentricity requires some form of co-ordination, especially since the proximity of the different urban poles results in many spillover effects. Co-ordination could be required in transport and economic development, and also as regards cluster development, higher education, housing and office space, all of which involve numerous government actors. The Randstad falls within four provinces, and 147 municipalities lie within its unofficial boundaries, creating a challenge not with regards to horizontal co-ordination but as regards relations with the central government. A multiplicity of platforms for co-ordination appears in many cases not to have resulted in the required co-ordination. In response to a perceived lack of co-ordination, the mayors of the four largest cities proposed in 2006 to create one province for the Randstad. This proposal provoked a lively debate, underlining both the need for better co-ordination and the difficulty in finding politically feasible reforms.

Following the OECD Metropolitan Review of the Randstad, which was published in 2007, the Netherlands' national government decided to produce a Randstad urgency program, outlining actions to be taken in the short and long term. Key themes in this agenda were accessibility, economic dynamism, quality of life and sustainability, stressing joint responsibility for implementation of the programme. Rather than trying to change government structures, for example by creating a Randstad province, the objective was to find partnerships that will be able to achieve results. A new way of creating the requisite political commitment has been to propose two responsible partners for each project. One central government minister or state secretary and one regional politician are made responsible for the progress of the project. Funds were made available for 33 projects. A Minister for the Randstad has been appointed who will hold the 33 sets of partners accountable for progress on their projects.

3.2.3 Representation of interests of Copenhagen in Danish Parliament

Denmark has a proportional parliamentary system with considerable regional malapportionment. The 179 members of its unicameral parliament, the Folketing, are elected by a two-tier, six-stage proportional representation system. A total of 135 seats are filled by multi-member electoral districts grouped into three electoral regions. The remaining 40 seats are compensatory seats, to guarantee that the distribution of seats reflects not only the dominance of parties in the regions, but is also proportional on a

national level.⁴ This election system via districts leads to some electoral malapportionment: the votes of some citizens weigh more than others'. In a perfectly apportioned system, no citizen's vote would weigh more than another's, as is the case in Israel and the Netherlands, where members are elected in a single national at-large district. In practice, most OECD countries' electoral systems have some kind of malapportionment, like Denmark's. But compared with other unitary OECD countries, the electoral malapportionment in Denmark is relatively high (see Table 3.1).

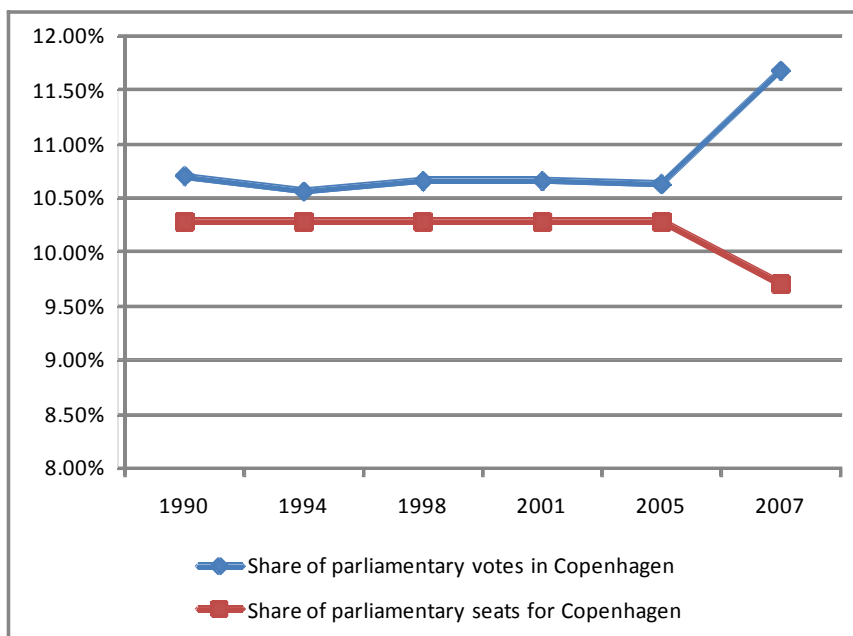
Table 3.1. **Electoral malapportionment in selected unitary OECD countries**

	Malapportionment (%)	Year
Netherlands	0.00	1996
Italy	0.82	1996
Finland	0.88	1991
Sweden	1.10	1998
Slovakia	1.31	1994
Poland	1.74	1997
Ireland	2.55	1992
Czech Republic	2.71	1996
Greece	4.06	1997
UK	4.56	1997
Denmark	5.24	1997
Norway	6.57	1993
France	6.95	1998
Turkey	8.59	1995

Source: Samuels and Snyder (2001)

The under-representation of Copenhagen in the parliamentary system has been slight but consistent over the last decades, but this problem increased after the local government reform in 2007. After the reform, the existing electoral districts and regions were replaced by ten multi-member constituencies, grouped in three new electoral regions. In addition, the method of distributing constituency or district seats changed.⁵ The result of this change is that the relative under-representation of Copenhagen in the national parliament has increased (Figure 3.6). The number of voters represented by one parliamentary seat was 23 764 for Copenhagen, against 19 768 for Denmark as a whole. Areas that are relatively over-represented in parliament are the island of Bornholm and North and South Jutland.⁶

Figure 3.6. Under-representation of Copenhagen in parliament



Source: Based on data from Folketing

3.2.4 Governance mechanisms in Øresund

The Øresund Committee, the actor covering the Øresund Region, consists of political representatives from regional and local authorities in Sjaelland and Skåne (Sweden).⁷ The committee is composed of 36 members, with an executive committee of 12 members. Half the committee and executive committee members are from Denmark, the other half from Sweden. The committee meets at least twice a year, and the executive committee at least four times a year. An annual work-programme constitutes the framework, and the executive committee can establish *ad hoc* political working groups. The committee has a secretariat with a staff of around nine people, who draft and implement policies in close co-operation with their counterparts in the member organisations. The Capital Region of Denmark is responsible for the Danish part of the Øresund Committee.

The responsibilities of the Øresund Committee are delegated by its members. Its mission is to promote deeper co-operation in order to increase economic, cultural, social and environmental well-being for the whole

region. In practice, this means that the committee tries to market the region, strengthen the public rooting of the integration process, stimulate the dissolution of cross-border boundaries and develop visions on several fields. The director of the Øresund Committee also has the responsibility for the staff of the Interreg Secretariat and of ØresundDirect. The head of these secretariats refer to the director in matters that involve staff. Apart from this, the Interreg Secretariat and ØresundDirect are organisations in their own right, financially independent of the Øresund Committee. The Interreg IVA programme for Øresund 2008-13 is a tool for co-operation. The Øresund programme has a budget of EUR 55 million for project co-financing. The members of the Øresund Committee are elected politicians from regional or municipal councils. Øresund issues are sometimes discussed in regional councils but rarely in municipal councils – except in major cities like Copenhagen, Malmö, Helsingborg and Helsingør. It has been observed that there are no political dividing lines in the Øresund except for territorial ones between different municipalities, regional governments and national states (Hall, 2007). The OECD Territorial Review of the Øresund Region (2003) recommended further inclusion of private actors. They are not members of the Øresund Committee – but business organisations/business leaders are members on the boards of Øresund Science Region – and its platforms, like Medicon Valley Alliance and Øresund Logistics.

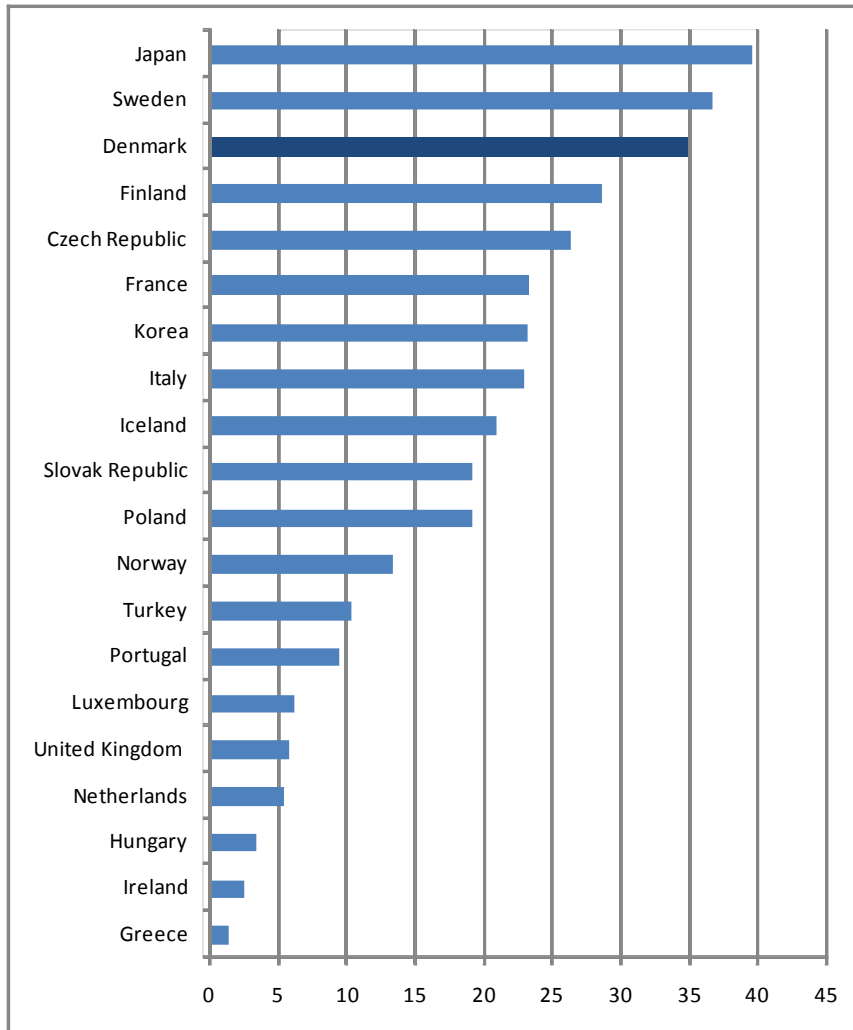
Several steps have recently been taken to increase functional integration in the area, but more could be done. As was mentioned in earlier sections, there continue to be real barriers for cross-border integration that the Øresund Committee has not been able to tackle. In 2007, the institutional structure of the Øresund Committee was strengthened, in parallel with increased focus on policy formulation. This has resulted in a strategic vision for the Øresund in 2008 that will lead up to a common development strategy in the coming years. A project called IBU (Infrastructure and Urban Development) has the purpose of binding the Øresund Region closer together; 30 partners from the Sjælland and Skåne regions and the Capital Region have joined this initiative, which receives financial aid from Interreg Øresund, with a total budget of DKK 29 million. The IBU project is meant to produce a qualified framework for decision-making for both Danish and Swedish authorities in future decisions about common infrastructure in Øresund and urban development initiatives. IBU, among others, will provide analyses of how to create a sustainable transportation system and how to develop the Øresund Region in a sustainable way, and will look at several possible development scenarios for the Øresund Region that will eventually form the basis for a common Øresund Regional Development Strategy (ØRUS). In 2007, the Danish and Swedish ministers of labour signed an agreement to solve barriers for a common labour market. Several cross-border initiatives have been taken, including a special unit of the Danish Tax

Authority, set up to deal with tax issues for employees working in Denmark, but living in Sweden. More of these initiatives would be welcome: national governments in Denmark and Sweden could both benefit from increasing co-operation in the Øresund Region.

3.3 Metropolitan finance

The revenue mix of local governments in Denmark is remarkable. The largest revenue source for municipalities is local taxes. For municipalities in the Capital Region, this represents on average 64% of their income. The main local tax is the income tax, a tax base shared with the national government. The revenues from this tax base compose about 80% of total local tax income. Other local taxes are land and property taxes and a relatively limited local corporate tax. The extent of tax decentralisation in Denmark is extremely great compared with other OECD countries (Figure 3.7). In contrast with many OECD countries, it is not the property tax but the income tax that is the dominant local tax.

Figure 3.7. Sub-national tax revenues as share of total government revenue in unitary OECD countries (2006)

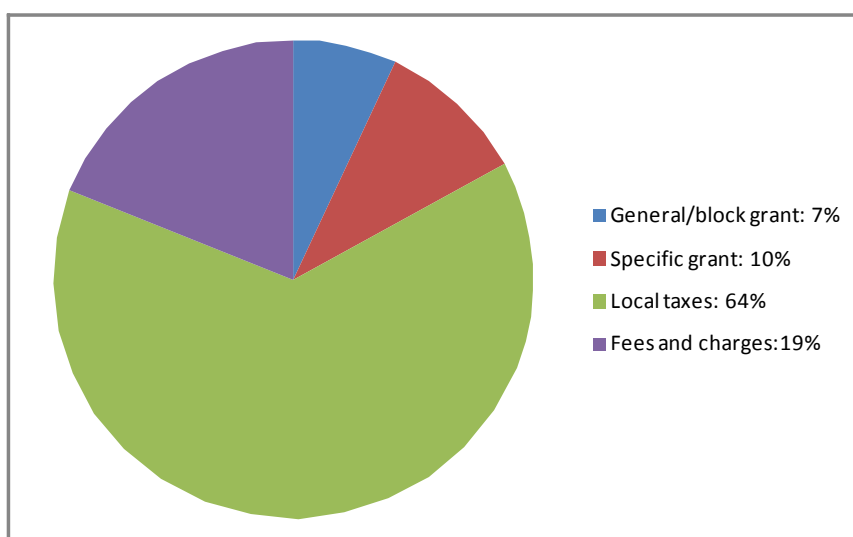


Source: OECD Revenue Statistics

Other large revenue sources are fees and charges, which generate 19% of revenues of municipalities in the Capital Region. These are user fees and charges for public utilities, such as water and electricity. The general principle is that fees and charges in utilities must be similar to the costs of producing the service, whereas some of the fees, such as for child care, are defined by law. Municipalities also obtain revenue from selling land and

providing services to other municipalities. Grants play a relatively minor role in the budgets of municipalities in Copenhagen. Specific grants represent 10% of the budget; these are reimbursements of expenditures in which local governments act as an agent for tasks delegated by national government, such as transfer payments (Figure 3.8). The general grant for equalisation and the block grant are comparatively small for municipalities in Copenhagen; their allocation is based on a variety of criteria, but few strings are attached to them as regards the use of the grants. The City of Copenhagen relies slightly more on grants and less on own tax resources than the average municipality in Copenhagen: 61% of its budget comes from tax revenues and 26% from government grants.

Figure 3.8. Main revenue items of municipalities in the Capital Region (2007)



Source: Statistics Denmark

Regions are financed by grants by national and local governments within the region. The contribution of the national government to the budget of the Capital Region is 77% of its expenditures; municipalities contribute 23%. Part of these grants consist of block grants; a smaller part (14%) of activity-based grants. Regions do not have their own resources, such as regional taxes or fees, unlike the counties that existed in Denmark before 2007.

3.3.1 Fiscal equalisation

Like many OECD countries that are strongly decentralised, Denmark has an equalisation scheme that compensates municipalities with a low tax base and high costs relative to the average municipality in Denmark. A municipality whose estimated expenditure is larger than its estimated tax receipts receives an equalisation subsidy, which is 58% of the difference between the expenditure and the estimated tax revenues. Conversely, if the receipts are higher than estimated expenditures, 58% of the difference has to be paid in equalisation contribution. Funding for the equalisation system, above the contribution stipulated, is provided by the central government. The estimation of revenues and expenditures is carried out by the Ministry of Welfare.

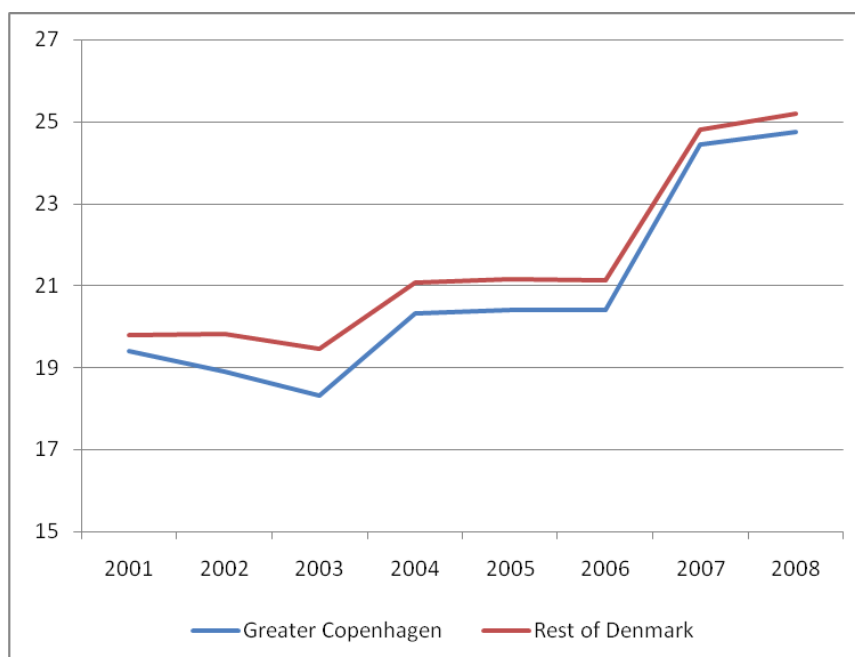
The structural reform of 2007 had an impact on the equalisation scheme, raising the equalisation rate of the national scheme from 45% to 58%, while simultaneously lowering the rate of the Copenhagen scheme from 40% to 27%. The reform also introduced a new equalisation scheme concerning municipal revenue from tax on limited liability companies. If revenue is higher than the national average, the relevant municipality has to pay 50% of the difference between the municipality's revenue per inhabitant and the national average to the municipalities where the opposite is the case. An additional rule was introduced with the purpose of increasing equalisation if the economic growth in Copenhagen outpaces the rest of the country. If the tax base per inhabitant growth rate in Copenhagen is higher than the rest of the country, the equalisation percentage in the general equalisation scheme is increased by one percentage point, calculated from the base year of 2007. In the opposite case, equalisation is not reduced. The general equalisation cannot increase to more than 68%.

3.3.2 Sub-national fiscal autonomy

Although Denmark has one of the highest degrees of sub-central government autonomy over tax rates in theory, fiscal autonomy is limited in practice. With the tax freeze for all government tiers implemented in 2002 by the national government, there is an explicit limit on tax autonomy that means that the average local tax rate is not allowed to increase. This policy was made even stricter in 2005. In addition, implicit sanctions on sub-central governments serve to restrain increases in tax rates. Apart from the tax rate increases that were needed to finance the new functions of municipalities after the structural reform in 2007, the raises in tax rates in Denmark have been relatively moderate: only from 2003 to 2004 was there a significant increase in tax rates (see Figure 3.9). The average tax rate of

municipalities in Copenhagen was slightly lower than the average in Denmark.⁸

Figure 3.9. Average tax rates (%) in Copenhagen and the rest of Denmark (2001-07)



Source: Data from Statistics Denmark

The tax freeze has not been the only instrument to ensure sub-national fiscal discipline. There are constraints on expenditures, deficits and borrowing and expenditure limits for sub-national governments, all of which are negotiated in the annual agreements but are not legally binding. These limits are set for total spending. The annual agreements have for 2008 and 2009 imposed more specific expenditure restrictions, especially on investment in buildings, such as kindergartens and schools. Denmark, like many OECD countries, has a budget balance requirement for sub-national governments that covers both the current budget and the capital account. This requirement is imposed annually by the central government.

Denmark is relatively restrictive with regards to borrowing constraints for sub-national governments. It does not allow borrowing for current expenditure, which is also true of Korea and Spain but not of any other

OECD country. In a majority of countries, borrowing needs prior approval of another government tier, or is restricted to certain purposes. In several OECD countries, there are no restrictions on access to sub-national borrowing. Danish municipalities can in certain limited cases acquire debt for investment. The general law and the yearly agreement between the national government and the municipalities and regions specify the areas where the sub-national governments are allowed to acquire debt. As a general rule, the municipalities are allowed to acquire debt to finance investments in supply companies (like renovation companies, etc.) as long as the expenses and the revenues for these companies are neutral in the long run. The central government uses certain budget safeguards to ensure that revenue fluctuations do not become too large. Danish municipalities can own public enterprises and utilities; there are additional limitations on borrowing by and from these enterprises. Local governments in Denmark used sale-and-lease-back operations to circumvent borrowing restrictions, but the Danish central government has revised its definition of borrowing to include renting and leasing arrangements (Pedersen, 2002). This also prohibits the use of PPPs.

Not surprisingly, Denmark scores very high on several benchmarks for sub-national fiscal discipline. It has the highest score of OECD countries on the Advisory Commission on Intergovernmental Relations (ACIR) index for budget balance stringency, it has one of the lowest scores under the Inter-American Development Bank (IADB) sub-national borrowing autonomy index and one of the highest scores on the OECD composite sub-national fiscal discipline index – and the highest score on its sub-index on budget balance and borrowing constraints.

The econometric evidence on the impact of borrowing constraints on sub-national fiscal policy has so far been limited and mixed, ranging from increased indebtedness, no effects to some effects (Singh and Plekhanov, 2005). Losses in aggregate efficiency are a potential problem with budget balance requirements and borrowing constraints. Hard budget constraints can be too “hard” and discourage investment that is socially efficient (Besfamille and Lockwood, 2004). Significant allocative inefficiencies may occur because a rule that covers total spending may be biased against investment, since capital spending is easier to change than current expenditure in the short term. It has been observed that Danish municipalities, because they are severely constrained by borrowing restrictions, achieve consumption smoothing through adjustments in investment activity (Borge *et al.*, 2001).

3.4 Political leadership

The City of Copenhagen is run according to a modified Committee rule, with shared responsibility for the administration. The city government of Copenhagen consists of the City Council and seven committees: a finance committee and six sectoral committees, each with its own area of responsibility. The city's supreme political authority is the City Council, which consists of 55 members, each elected for a four-year period. The City Council lays down the guidelines for the work performed by the committees and the administrations. The Lord Mayor presides over the Council's meetings. The Finance Committee consists of 13 members of the City Council and is chaired by the Lord Mayor. The six chairmen (called mayors) from the six sectoral committees are *ex officio* members of the Finance Committee, along with six other members of the City Council.

The Lord Mayor has no right to instruct the six mayors, and the mayors of the seven administrations are on equal footing. The members of the sectoral committees are apportioned in proportion to the size of the political party in the City Council to which they belong. The Lord Mayor and the six mayors are full-time politicians and are elected for a four-year period by the City Council proportional to the political party to which they belong. This means that not all of them belong to the majority of the City Council. The administration of the City of Copenhagen is divided into seven administrations, and the responsibility for the administrations is shared by the Lord Mayor and the six mayors, each within their committee-area.

This model is one of three government models that are allowed for municipalities, all embedded in a strong tradition of involving political minorities. Minority influence in the City of Copenhagen is attained through the minority's participation in the mandated sectoral committees (such as education, social services, culture etc.) and by the fact that the committee, not the Lord Mayor or the mayors, is responsible for running the services. The Lord Mayor and the mayors are only responsible for the administration of each of their committee-areas. In the normal Committee rule, adopted in most Danish municipalities, the responsibility for the administration is not shared, and they have no right to more than one full-time politician: the Lord Mayor. In the Magistrate rule, the responsibility for providing services and the responsibility for the administration is shared between the Lord Mayor and a number of councillors (five councillors in Aarhus), elected by the City Council among the members of the City Council for a four-year period and in proportion to the size of the political party in the City Council to which they belong. The principles underlying these government models presuppose a high degree of consensus concerning the issues and that the nature and

volume of these issues are capable of being managed and decided by a committee of part-time politicians.

The government model in the City of Copenhagen is problematic. A minority mayor may very well be responsible for executing a policy that he or she disagrees with and has even voted against in the annual budget process. Compounding this problem is the fact that since the relevant sectoral committee is responsible for running the various departments, there is in effect no division of power between execution and legislative scrutiny. This means that it is difficult for citizens to know whom to hold accountable for policy decisions.

The system is not well adapted to integrated planning and policy execution. The number and subject area of the committees are mandated in law, and the organisation of the city executive reflects this committee structure, while the City Council determines the composition of the committees. This results in a bottleneck largely restricting the flow of information within the organisation to vertical lines of control and putting strains on cross-organisational communication, although many of the areas of local government responsibility are cross-sectoral in nature. In addition, a number of similar tasks are difficult to centralise in order to achieve economies of scale. For civil servants, especially at management level, this can be a difficult hierarchical structure in which to manoeuvre. Misreading a situation can lead to damaged career prospects, which can result in a defensive and risk-adverse culture.

The governance structure also complicates financial transparency and oversight. All mayors are members of the economic committee (chaired by the lord mayor) but there is a lack of co-ordination in fiscal matters and a clear lack of monitoring and control with regards to budget execution. Although all departments and committees must answer questions the economic department may pose concerning the budget, it can be very difficult to monitor budget execution. This can make it difficult to make transparent and timely information available to the economic committee, and the lack of oversight can jeopardise sound fiscal management. The problem is compounded should a number of mayors disagree with the policy or budget they are compelled to implement. This has resulted in a number of cases of severe over-spending.

Ongoing reflection on possible reform is already a subject of discussion. Several alternative governance models have been investigated by the city⁹ that seek to move the governance structures towards a stronger separation of powers and clearer responsibilities. Elements that have been considered are the committee rule model; the parliamentarian model used in Oslo; the introduction of a hierarchy separating the Lord Mayor and the rest of the

mayors; permitting only the economy committee the power to be involved in implementation decisions; and a proposal to guarantee the minority (or opposition) two salaried positions, as head of the accounts committee and of the ombudsman-committee. In Oslo's government model, the City Council appoints an executive council leader who appoints a city cabinet, and City Council committees do not play a role in policy implementation. Some political consensus has emerged on the need to reform the system. In the recent agreement on the municipalities' economy for 2009, it was agreed that an expert group should investigate whether the governance arrangements for the municipalities should be updated, particularly for Denmark's larger cities.

3.5 Local capacity

The City of Copenhagen and the Capital Region are very large employers, with more than 40 000 employees each.¹⁰ A large percentage are employees in the social sectors (health and education), in particular hospital and school workers. Some sector-specific challenges affect these staff that can only be addressed in a global manner, as well as other challenges that affect the management of staff running the city and the region.

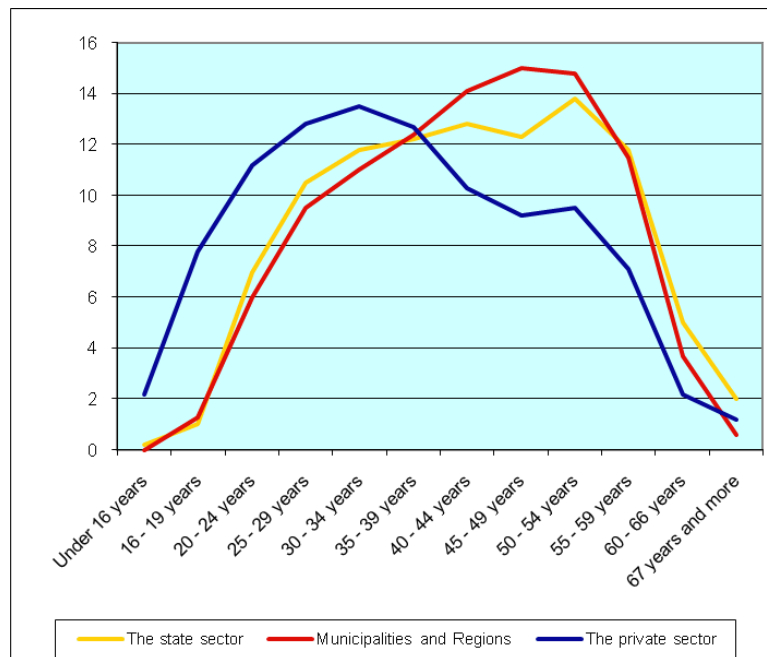
Overall, a high level of consistency appears to prevail in the management of the different sectoral groups employed both in the region and in the municipality, and much emphasis is put on maintaining a common culture and shared values. This is of course a consequence of the multi-level dialogue and negotiation process with unions (see below), but also that of the management structure. In the City of Copenhagen, the seven main administrations each have their own human relations (HR) department, but a central HR unit in the Department of Finance generates ideas and proposals for the budget negotiations for the city, develops managers' skills, proposes policies regarding gender and diversity, and prepares and implements the negotiations with unions. Departments generally do their own recruitment. As for the region, over the 18 months since its creation, a lot of efforts have been made to create "a common HR foundation for the entire region."¹¹

This level of consistency and shared values are strong assets for both administrations, in addition to the noticeably strong emphasis both administrations place on implementing state-of-the-art HR practices, especially in developing staff and improving satisfaction in the workplace. Part of these efforts reflect wider trends in Denmark, which has traditionally attached a lot of importance to developing employees over the long term. These efforts also provide solutions to what both administrations see as their major challenges in human resources management, *i.e.* difficulties in

recruitment, high turnover and an elevated number of days of sick leave. These difficulties are mainly the result of being large employers of relatively high skilled workers in a very tight labour market with very low unemployment levels. This problem is even more acute in the social sectors. The city, for example, reports an average of 1.8 applicants for jobs as assistants in health care for old people, and an average of 2 applicants for jobs as educators in day care.

A shortage of nurses and physicians has appeared in a number of OECD countries and could further deteriorate.¹² In general, employees in the general public sectors and health sectors in OECD countries are ageing more rapidly than employees in other sectors of the economy. In Denmark, sub-national governments will be more affected than the central government by the scale of departures from public service. In addition, large-scale departures will be longer and more sustained – the peak being around 2015.¹³

Figure 3.10. Age distribution according to sector (% , 2001)



Source: Statistics Denmark, StatBank Denmark (employed wage earners distributed by sector, working hours, age and gender), published in *Ageing and the Public Service*, OECD, 2007, p. 106

While international migration may help mitigate this situation in the health sector, it will nonetheless be difficult to implement, and migration of employees in the health sector will remain limited across OECD countries. In addition, the competition for salaries across OECD countries may end up raising public health care costs unsustainably. The solution may lie in the use of a mix of tools that would include improving pay and working conditions, which seems to be at the core of the Danish and regional policy in Copenhagen, and by improving productivity through mixed methods of payment for physicians (activity-related methods of payment and rewards for quality of care), changing conditions of service for nurses, and reviewing the skills mix between physicians and nurses.¹⁴ Finally, officials note some shortcomings in the dialogue between the Department of Education in the national government and the Department of Health on addressing short- and medium-term shortages in the health sector.

Apart from these important sector-specific challenges, and like many parts of OECD countries, the region and the city have put a lot of effort into staff development and into making the public sector an attractive employer. This will be even more important with the implementation of the Quality Reform Initiative proposed by the national government (see below). International studies show that while policies for competency development and improved attractiveness of the public sector are important in the context of tight labour markets, upcoming large-scale departures from public service, and increased competition for the better qualified, these should probably not be stand-alone policies and should be put into the wider HR policy perspective and the wider labour market policies.

In some cases, such an emphasis put on staff development and attractiveness can, in the long run, be costly, and preoccupy the system and staff with their own development rather than with their performance.¹⁵ Both the region and the municipality would do well to remain focused on improving capacity for better performance and measure the results of capacity initiatives. This is all the more important given that research in different countries suggests that high rates of sick leave are partially due to staff losing sight of service performance and spending too much time on paperwork and reporting requirements.

In addition, capacity building/maintenance initiatives should be placed within a wider framework aimed at improving productivity in the public sector. Finland's productivity programme could provide a source of inspiration (see Box 3.4). Finally, in the context of a tight labour market and the relative ageing of society and even more rapid ageing of the public sector workforce, the incidence of changes in the management, competencies and skills, and demographics of public sector workers on the region's labour market must be fully recognised in labour market strategies.

While changing demographics will contract the labour market, especially for skilled workers, the management of public servants, especially in terms of upgrading their skills and competencies, can have a positive influence on the labour market overall. These considerations should be fully recognised in strategic policies for the development of the city and the region. Initiatives already taken in this area are the Regional Development Plan's sections on human skills development in the health sector and projects to increase recruitment from the Swedish side of the Öresund.

Box 3.4. Ageing and the productivity programme: the case of Finland

In only a few years, for the first time in its history, Finland will have more citizens aged over 65 than under 20, and the proportion of this population will increase more rapidly than in most OECD member countries. Compared to other EU countries, Finland will be heavily affected by the ageing of its society. The country has distinguished itself for its level of commitment to improving its ageing policies. In addition, as in other OECD countries, ageing will also affect public sector capacity, with large-scale retirements and an increase in the percentage of older workers already under way.

The Finnish government has undertaken a comprehensive horizontal ageing strategy, encompassing both the public and private sectors, but including a specific policy framework for the public sector. While the two main policy programmes of the ageing strategy – the Central Government Spending Limits, 2006–2009, and the Productivity Programme for the Public Sector, 2005–15 – are often pictured as head-count cut initiatives, their purpose is to adapt human resources in government to the upcoming major ageing challenge. They have also seen the opportunity involved in the imminent large-scale departures from public service for reallocating human resources across sectors and changing the mix of skills. In addition to some staff reduction, the Finnish public sector ageing strategy encompasses systemic reform of both the public service – through staff renewal and workforce readjustments, but also institutional restructuring and reform of public service delivery – and HR policy at the central level, aiming at adapting managerial tools, especially through an active retention policy for older workers and mobility reforms.

The Finnish ageing strategy is based on structural forecasts and a continuing evolution of the delivery of public services. According to the Finnish government's ageing platform – Finland for People of All Ages, launched in 2004 – some of the greatest challenges will be to safeguard and finance current levels of service provision. Large institutional restructuring and reallocations of public expenditures, between levels of government and sectors, have already started, in response to new public service demands. In this respect, Finland is more of an exception than the rule.

Source: Ageing and the public service, OECD, 2007, pp. 120-137

Human resources management in the public sector in Denmark is characterised by the combination of relatively extensive delegation of human resource management in government and strong support for coherence in human resources management (HRM) practices across governments and across government organisations. In this respect, human resources management for the public sector reflects a wider tendency in Denmark to devolve responsibilities but at the same time guarantee coherence and avoid too much differentiation.

Little regulation imposed by national government on regional and municipal governments on how they should manage their staff, apart from regulations affecting the labour market in general, includes private companies. Nor is there direct involvement of national government in establishment control, remuneration (apart from pensions for civil servants, which are regulated at the national level) or management principles. First, the legal rules of employment conditions in the public service are broadly the same across governments in Denmark. As in many other OECD countries, sub-national governments have built on traditional existing employment frameworks at the national level to develop the basis of their employment regulations. Second, a high level of coherence is maintained through informal co-ordination and through the negotiation processes with unions.

The State Employers Authority has an informal and ongoing dialogue with the associations of the municipalities and regions. These two associations act – among other things – as the central employers in the municipal and regional labour markets. In addition, the State Employers Authority is represented on the municipal and regional Boards of Wages and tariffs, which gives the associations of municipalities and regions a mandate to negotiate with unions on these matters. Dialogue and negotiations with unions take place at all levels of regional and municipal bodies in a cascade type of organisation, and processes ensure a high level of co-ordination between agreements at national level and agreements at regional and municipal levels. Finally, the association of municipalities has a mandate to negotiate common agreements with unions (the regional association does not have such a mandate except on a case-by-case basis.) Overall, conditions of employment are relatively similar across levels of government, and union agreements establish minimum salaries for levels and professions.

This is quite a specific model, which presents both advantages and challenges for the city and region of Copenhagen. With most conditions of employment defined through this cross-level of government consultation and negotiation process, the city and region of Copenhagen have little room for manoeuvre on their own on basic employment conditions. As for

remuneration, a focus on connecting salaries and results on the local level has been increasing over the last decade.

The main advantages of the coherence across levels of government are a sense of equity across the public sector, shared values, a common language and culture across the public sector and what seems to be relatively good mobility across governments in Denmark. These are important assets in the management of cross-government policies. More could probably be made of it in Copenhagen with the design of mobility-enhancing schemes that would favor mobility between national, regional and city levels of administration in Copenhagen for general management positions. This specific policy for Copenhagen is justified by the special status of the region and its importance for the country, and is favored by the common labour market between the national government, the city and the region.

Human resources policy in government could possibly be linked more to issues of regional competitiveness, considering the weight of the public sector labour workforce on the general labour market in the region of Copenhagen, and thus on the competitiveness of the region. The type of staff recruited (risk takers, from the private sector, etc.), their management and their incentives, as well as their mobility within and outside the public sector, will not only change the culture of the public service and on public service delivery, but also have an influence on the general labour market of Copenhagen. If these needs were systematically identified, the City of Copenhagen and the Capital Region might pursue policies that differ more from those of other cities and regions than is currently the case.

The Quality Reform, promoted by national government, could be an opportunity for this. First presented in the summer of 2006, it was the object of exceptional negotiations with unions in 2008, and contains 180 initiatives. Its goal is to “ensure that the public sector will continue to be able to deliver high quality services to the citizens, even though the future public sector workforce will inevitably decrease due to demographic changes in the population”. National government will fund part of the initiatives for a total amount of around DKK 10 billion, to be distributed to cities and regions until 2015. While the initiatives are wider than human resources management, and include such themes as improved regulation or the promotion of innovation and user-centric organisation, a large part of the initiatives concern HRM very directly. They include themes such as improving the image of the public employer, the provision of incentives for older workers to stay on, improving the management of competencies, leadership training, and increased training in the social sectors.

This is a very important initiative, since it involves additional funding in an important area for the region. Considering the way it has been

developed, notably by the national government after a large number of consultations, and later on through national negotiations with unions, it involves several challenges. It involves “new money” with shared funding that could easily be spent on projects that would not have been developed if the funding had come from only one source. It is thus important that the value-added of the project be carefully examined. The Capital Region, which is a new institutional structure, will be placed in an even more challenging position, as it will be asked to identify projects and needs quickly. Moreover, the overall Quality Reform might also create long-term financial needs that may not always be sustainable. It is unclear that the initiative is clearly exposed within a framework that aims at improving productivity. A long-term focus on policy performance should be made a central part of the initiative and the performance of each project constantly measured. This will, however, increase reporting requirements. The multi-level government management of this project, and the emphasis put by national government on clear reporting measurement of consequences of the measure, could involve relatively high transaction costs for the region and the city. Every effort should be made to package reforms and streamline processes. In general, it is critical that projects funded through the Quality Reform Initiative be fully part of a clear strategy for the city and the region, and their value-added be fully measured and clearly exposed.

3.6 Civic involvement

Denmark has a long tradition of engaging citizens in policy formulation. This has been the case both for concrete area-based policies, as well as more abstract formulation of strategic visions. Examples of area-based citizen involvement were the North Harbour development and urban regeneration projects. For the development of the North Harbour, meetings were organised with the public to discuss the project before the architectural competition. In this voluntary process, the goals of the initiative were discussed. An urban regeneration project with extensive citizen involvement was the Avedøre Stationby project. Citizens were actively involved in the planning process of the regeneration project. The objective was to get participation by a broad section of the population, not just a few special interests. For that purpose, “ambassadors to ethnic communities” were appointed, to increase awareness among ethnic minorities. Citizens have also been involved in the formulation of the Regional Development Plan for the Capital Region. A random selection of citizens was approached, in order to avoid having the exclusive involvement of representatives of special interest organisations. The Capital Region has an explicit policy, called the “democracy vision”, to stimulate policy dialogues between citizens, users of services and elected politicians. In service provision, deliberate attempts

have been made to be more client-friendly, by developing Citizens Service Centres in various areas in the city that serve as one-stop shops for everything related to the city of Copenhagen.

A variety of private actors is included in the formulation and implementation of policies and initiatives. Entrepreneurs have been invited to think-tanks of the mayor, such as the Creative Forum, the think-tank for labour market developments and the mayor's business forum. Business and trade unions are represented in the Regional Growth Forums. In addition, there has been a tradition of encouraging private and semi-private parties to be the operating actors of certain regional and local policies; as in the foreign investment attraction office Copenhagen Capacity, and the tourist attraction office Wonderful Copenhagen.

3.7 Conclusion

There is no effective governance model for Copenhagen, which is exacerbated by several factors: fragmentation at the metropolitan level, the existence of 29 relatively powerful municipalities, and a core city that is relatively small in relation to the wider metropolitan area. Moreover, the Capital Region does not have many instruments to co-ordinate municipalities, and its boundaries do not in any case correspond to the functional metropolitan area. The internal government model in Copenhagen, which allows all political parties to be part of the city government, complicates effective leadership, and no well-functioning arrangement exists that allows for an area-based discussion on Copenhagen with the central government.

The structural local government reform of 2007 has made matters worse. Although the reform was remarkable from an international comparative perspective, its impact on Copenhagen has not been positive. The City of Copenhagen has become a municipality like any other municipalities: it has lost its special position and some of its responsibilities. The regional level has been weakened; it is now mainly involved in health care; its spatial planning responsibilities have been re-decentralised and its taxing powers have been removed. The previous vehicle for metropolitan co-ordination, the Greater Copenhagen Council, was abolished. Whereas municipalities in most other regions in Denmark merged, the level of metropolitan fragmentation has remained more or less static in Copenhagen. In addition, financial autonomy has been limited drastically in the last few years. National government has now put constraints on local taxation, expenditures, deficits, borrowing and use of alternative financial instruments. These measures for controlling sub-national fiscal discipline are very strict when compared to other OECD countries.

This governance framework poses challenges. Since its problems differ markedly from those of other areas in Denmark, it could benefit from national policies that differentiate according to these regionally differentiated needs or leave enough room for the metropolitan area to pursue its own policies more actively. Neither of these options appears currently to be in place. Considering Copenhagen's importance for the national economy as a whole, all the actors concerned have an interest in making sure that governance frameworks and policies are more conducive to Copenhagen's competitiveness.

NOTES

- 1 In addition, 9% is spent on administration costs.
- 2 The Medicon Valley Alliance was called Medicon Valley Academy when it was established.
- 3 Regional buses are buses that cross municipal borders.
- 4 The other four seats are for North Atlantic MPs.
- 5 From the modified Sainte Laguë method of proportional representation to the d'Hondt, or largest average method of proportional representation.
- 6 Bornholm has 13 984 voters for one seat, North Jutland 18 450 and South Jutland 18 507.
- 7 Eligible for membership are the municipalities of Copenhagen, Frederiksberg, Helsingborg, Landskrona, Lund and Malmö; the regional councils of Sjaelland and the Capital Region and the regional government of Skåne. Government observers from Denmark and Sweden also participate in the committee.
- 8 For reasons of comparison, the tax rates of Copenhagen and Frederiksberg, which had a combined municipal and county tax rate until 2007, have been left out this calculation.
- 9 *Redegoerelse om Koebenhavns Kommunes styreform*, August 2007.
- 10 These numbers are not in full time equivalents. For the City of Copenhagen, the numbers in FTE are 34 000 employees.
- 11 *Annual Report for HR, Capital Region of Denmark*, 2008.
- 12 *Towards High-performing Health Systems: Policy Studies*, OECD, 2004.
- 13 *Ageing and the Public Service: Human Resource Challenges*, OECD, 2007, p.105.
- 14 For full developments on this issue, please refer to *Towards High-performing Health Systems: Policy Studies*, OECD, 2004, pp.167-206.
- 15 *OECD Reviews of Human Resource in Government: Belgium*, OECD, 2007.

Annex 1: Conceptual Framework

This Metropolitan Review of Copenhagen studies the competitiveness of Copenhagen and assesses policies and governance arrangements to strengthen competitiveness. This assessment is used as the basis for policy recommendations on how Copenhagen's urban competitiveness could be further improved. The following introductory chapter presents the analytical framework for the Metropolitan Review. It defines urban competitiveness and sets out its most important determinants based on a review of the empirical evidence in the current academic literature.

Urban competitiveness

There has been a lively academic debate on whether cities compete with each other. Krugman (1990) suggested that firms in regions compete, but that regions do not compete, since they cannot go bankrupt. Urban areas can, however, become depopulated, which could be considered a region's equivalent of a firm's demise. Regions are becoming increasingly important, since they have attributes that could be an advantage or a disadvantage for the growth of firms. In this sense, regions can help firms compete. Since urban regions cannot influence exchange-rate policies, they have absolute rather than relative competitive advantages (Camagni, 2002).

Cities are understood to compete in four basic kinds of markets. They compete for product markets, facilitating the success of the firms located there. The second form of competition is for markets for inward investment, by business and other mobile sources of employment. Competition for desirable residents can bring in more revenues, human capital and talent. And finally, there is competition for recognition and favours from higher levels of government: projects, events and assistance. Places have local, regional, national, continental and global rivals to consider. Global competition does not always predominate. In most places, competition is likely to be most intense in relation to local rivals. Large metropolitan areas are different in that they engage in fierce global competition.

Relevance of urban competitiveness

The competitiveness of urban areas is worth scrutiny, since they are generally more productive than the nation as a whole. There is clear evidence that large urban areas attract increasing shares of wealth, economic activity and skilled workers. Innovation and research is increasingly agglomerated in and around large metropolitan areas. Feldman and Audresch (1999), for example, using a data set of 3 969 US product innovations in 1982 for which the address of the innovating establishment could be identified, found that 96% of the innovations were made in metropolitan areas. This also has implications for regional inequality within countries.

This could be explained by the agglomeration effects of urban areas. Cities offer a range of advantages for firms, including access to a deep labour pool, superior connectivity and a diverse choice of property and suppliers. In a volatile and fast-changing economy, a premium can be put on flexibility and adaptability to shifts in markets and technologies, especially as companies tend to be leaner, more focused on core competences and reliant on buying in goods and services rather than in-house production. Agglomerations enable firms to “mix and match” their various inputs, access scarce resources and adapt their workforce more easily in response to changing business needs. Another advantage of concentration stems from superior flows of ideas and information, resulting in more innovation. Agglomeration is significant for knowledge-intensive functions and technologically advanced activities. These enable high-cost economies to differentiate themselves from their lower-cost competitors by continuing to create more valuable products, processes and services. Proximity is important for creativity and innovation by facilitating communication and sharing of complex ideas between firms, centres of research and related organisations. Cities offer unique benefits to consumers, with spin-offs for growth through business and domestic tourism and the attraction of talent. Some facilities are available in large cities only because they are not available elsewhere.

There is vast empirical evidence for these agglomeration effects. Ciccone (2002) found that a doubling of employment density in NUTS 3-regions in France, Germany, Italy, Spain and the United Kingdom, increases labour market productivity by some 4.5%. Henderson (2003) finds that high-tech manufacturing plants are significantly more productive if other plants in their sector are located in the same county, finding estimated elasticities from 1.2% to 13.5%. Dekle and Eaton (1999) find significant productivity effects in data on Japanese regions, Rice *et al.* (2006) for British regions and Ottaviano and Pinelli (2006) for Finnish regions. Brülhart and Mathys (2008), using a dataset of 245 NUTS 2-regions of 20 European countries

over 1980-2003, confirm the presence of significant agglomeration effects at the aggregate level; their estimated elasticity is 13%. Cross-section regressions suggest that the strength of agglomeration effects has increased over time (1980-2003).

Urban competitiveness has only become more relevant over the last decades, thanks to several factors. Trends towards the cheapening of transport and communications have continued. Rather than reducing the importance of locational assets, they have tended to stress their importance. Empirical work of Gaspar and Glaeser (1998) suggests that telecommunications may be a complement to, or at least not a strong substitute for, cities and face-to-face interactions. They show for example that people who live in metropolitan areas of more than 4 million inhabitants in the United States spend significantly more on telephones than people in smaller cities. They also show a strong correlation between urbanisation and phone use. At the same time, increasing importance has been attached to competition in terms of distinctive product qualities (more than simply price). The major effect has been to increase the importance of the more qualitative sort of urban assets. Increased global trade flows have augmented the position of urban areas as central nodes in global supply chains.

Economic restructuring has made the role of urban areas more important. This is for example evidenced by the effects of mergers and acquisitions. Rodriguez-Pose and Zademach (2003) studied the geography of mergers and acquisitions in Germany during the 1990s and found that mergers and acquisitions are fundamentally large-city phenomena and contribute to the economic take-off of the main German metropolitan areas. The wave of mergers and acquisitions in the 1990s has contributed to a major concentration of firms, company headquarters and economic activity in the key German metropolitan areas. The transactions taking place in the main German cities far outweigh in relative terms all those taking place in other regions. Demographic changes such as smaller households, dual-earner households, busier life-styles, increasing mobility and expansion of demand for higher education also favoured cities.

Trade-offs in urban competitiveness

Although there is some relation between competition on different markets, these forms of competition do not necessarily reinforce each other: being attractive as a location for new businesses does not automatically imply attractiveness for new inhabitants. This means that places have to make choices as to their priorities and choose their specific policies and competitive strategies with an awareness of their relevance to the markets most important for their success. Product market competition will typically

be most important to urban areas: there are indications that variations between cities in the performance of established local firms make the largest contribution to their overall success or failure (Cheshire and Gordon, 1998). Policies that can significantly affect this will have the most potential to contribute to local success.

Many cities that are attractive to firms are not necessarily attractive to households and vice versa. This can be implied from Gabriel and Rosenthal (2004), who constructed and analysed an annual panel of quality of business environment and quality of life measures for 37 cities in the United States from 1977 to 1995. The correlation between quality of business environment and quality of life in their study is only about 5%. These findings suggest that firms and households prefer different cities, consistent with the two groups' different goals. With the ageing of the baby boomers, cities are increasingly sensitive to retirees' choice of location. Cities most likely to be dominated by retirees are those that are less attractive to firms, and more generally, those cities that are attractive to households but that have low housing prices. Retirees tend to seek out cities where local attributes are capitalised into lower wages rather than higher land rents.

Competition between cities can be wasteful, for example in the case of policies to attract inward investment that could yield benefits only for those directly involved in development or new sites, or for non-local firms, which can play off contending areas against each other. Some of these policies will end up incurring costs of one kind or another that could negate the gains the community can expect to make. A more sustainable choice is to identify distinctive strengths that can be developed over the medium to long term. One important distinction to make involves the extent to which a given policy is diversionary: that is, whether it influences the location of a particular activity rather than the overall productivity of resources (Cheshire and Gordon 1998). Strategies that are too localised will lead to unproductive competition between local units, with outcomes at best zero-sum across a wider area, the gains being balanced by losses. These are important reasons for focusing competition at the level of functional urban regions, rather than local areas.

City collaboration can be a solution for wasteful competition. In many cases, the key for generating support for the concept of collaboration between cities is the identification of a shared competitor. By combining two or more cities' critical mass in terms of asset bundles, population, market catchment and economic output, collaborating cities seek to compete at the next level up in the urban hierarchy. Collaboration is more likely to be worthwhile for proximate cities where the potential exists to combine their existing economies to create a single economic space, similar to those of the largest cities. Increased mobility is often seen as the key to improving the

efficiency of the labour market, by opening up a larger, higher-quality labour pool and a wider range of services to key employers and producers. The cost of achieving a true single economic space may however be extremely high, due to the infrastructure investment required. Collaboration is more likely to become a valuable economic strategy in regions where there are fewer, larger dominant urban centres rather than those characterised by a complex network of cities (Docherty *et al.*, 2004).

Measurement of urban competitiveness

Competitiveness of firms represents the capacity of a business or the businesses of an area to sell its products in contested markets. The emphasis on contested markets is clearly important in order to avoid attributing competitiveness to cases which are protected from any strong competition. There are three kind of indicators that measure this: export, growth and productivity performance. Export markets may be expected to be the most widely contested. Firms from all areas might be expected to face a comparable set of competitors there, which may well not be true in different national and regional markets. Section 1.2 of this Review focuses on the competitiveness of firms in Copenhagen.

Some authors take the aggregate of firms' competitiveness in a region as a proxy for regional competitiveness. Some models for urban competitiveness have for example taken the growth in manufacturing value added, retail sales and business services receipts into account (Kresl and Singh, 1999). Although competitive firms often translate into regional welfare, this is not necessarily the case. Separate measurement of urban competitiveness is therefore necessary.

The consumer price index in large cities is slightly higher than the national average, but the land rent in large cities is much higher than the national average. Due to these variations in price differentials, it is not certain whether the real income in larger cities is higher or lower.

Glaeser *et al.* (1995) argued that in the analysis of regional growth, the appropriate dependent variable was population growth. They argued that equilibrium implied that the real returns to labour would be equalised between regions on the margin (since labour would vote with its feet if higher real returns were available elsewhere) and price differences and differences in the quality of life (climate, natural amenities or local pollution, for example) would be fully reflected in money incomes. In their view, the most appropriate measure of differences in regional growth in prosperity would be employment and population growth.

Although these models might work for analysis for US metropolitan areas, they do not seem well adapted to European conditions: they assume perfect factor mobility, which is not the case in Europe. Equilibrating migration flows between cities in different countries are highly constrained in the EU. When there is labour market mobility, this is mostly within national borders. For this reason, income growth rather than population growth is a more appropriate indicator of improvements in welfare in a city. Where cities are closely packed, as in the Benelux countries and much of England and Germany, changes in commuting flows appear to be a significant alternative to labour force mobility (Cheshire and Magrini, 2002). The main indicators for urban competitiveness used in this Review are regional GDP, productivity and employment indicators, such as employment growth and labour participation. These indicators are assessed in Section 1.3 of this Review.

Determinants of urban competitiveness

The academic literature on urban competitiveness finds basically five main determinants of urban competitiveness: skills, innovation, entrepreneurship, infrastructure and urban amenities. This Review will assess these determinants in Section 1.4, and policies to strengthen these determinants in Chapter 2. Specific geographic characteristics of the urban region and the firm sector structure determine how the different determinants affect the urban area in question. These are taken into account in Sections 1.1 and 1.2 respectively.

Geographic characteristics

An important finding is the positive effects of location of urban areas at coasts. Rappaport and Sachs (2003), after controlling for historical conditions, suggest that the coastal concentration of metropolitan areas in the United States captures a present-day contribution to productivity and quality of life. Their study suggests that the coastal concentration derives primarily from a productivity effect, but also from a quality-of-life effect. Their findings suggest an increasing coastal contribution to quality of life. With respect to quality of life, coastal proximity offers several advantages, including recreation and scenic beauty.

The influence of weather appears dependent on labour and population mobility. A multivariate regression of county population growth between 1975-1995 in the United States shows that temperatures, dryness and proximity to the coast are all strong predictors of local population growth (Glaeser *et al.*, 2001). Throughout much of the twentieth century, US county

population growth was strongly positively correlated with warm winter temperatures and cool summer ones (Rappaport, 2007). After controlling for shoreline and proximity to natural harbours, counties with centres within 80 kilometres of an ocean coast had faster expected annual population growth of 0.4% from 1960 to 2000 (Rappaport and Sachs, 2003). Cheshire and Magrini (2004), using a dataset of large city-regions of the EU12 between 1980 and 2000, find that a systematic and highly significant factor determining rates of urban population growth is climatic variation. Cities with better weather than that of their country average have systematically tended to gain population between 1980-2000, once other factors are controlled for. There is no such effect for climate variables if expressed relative to the value of the EU12 as a whole. Cheshire and Magrini confirm that people in Europe vote with their feet and that to some extent the trade of quality of life for income is valid. They suggest that people when they move chose their country first but, having chosen their country, are then influenced by better weather. Bosker and Marlet (2006) find that weather variables are insignificant for the explanation of urban growth and decline across regions in Europe. They suggest that this might be partly due to the fact that climate conditions do not greatly vary between cities in the same country, unlike in the United States.

Portnov and Schwartz (2008) suggest that the effect of location attributes, such as topography and proximity to networks, depends on how much they stand out in their regional or national contexts. In a region or country where a given advantage or disadvantages are commonplace, they are likely to have lesser effects than where they are uncommon. Location advantage is thus a relative notion; these relative location parameters appear more important than absolute ones in explaining the geographical distribution of population growth.

Firm sector characteristics

Economic well-being of an urban region depends on the firms that are active within its area: sector structure and degree of specialisation matter. Using a data set of 267 urban municipalities in Catalonia over 1991-2003, Boix and Trullen (2007) found that higher urban growth rates are related to services and manufacturing knowledge-intensive activities. That is not to say that all cities should be engaged in knowledge-intensive activities. Some cities maintain a path of development based on their specialisation in non-knowledge-intensive activities, supported by the intra-regional mechanisms of specialisation in the network of cities. Moreover, there is a certain path dependency that no city can escape. There is a strong persistence of the same activities in the same cities. Kim (1995) shows that the correlation of the coefficient of regional localisation for two-digit industries in the United

States between 1860 and 1987 at the state level is 0.64. Dumais *et al.* (1997) show that for US industries at the three-digit level, patterns of agglomeration have been rather stable over time.

There has been a long ongoing debate on the consequences of city specialisation, that is: the relative importance of localisation economies versus urbanisation economies. Localisation economies are the benefits to be derived from firms of the same sector locating in each other's proximity. Urbanisation economies are the benefits to be derived from firms locating in the proximity of a wide array of other necessarily related firms. Specialisation has both advantages and disadvantages. The advantages are less urban crowding and stronger localisation economies arising from the proximity of closely related producers. The disadvantages are less innovation and more exposure to risk as the fortunes of specific sectors and technologies rise or fall. Specialised cities are exposed to a greater risk with the rise and fall of specific sectors and technologies (Duranton and Puga, 2000). The empirical literature suggests that both economic specialisation and economic diversity in cities may play an important role in fostering innovation either in different industrial contexts or at different phases of the product life cycle.

Glaeser *et al.* (1992) found evidence that cross-industry intellectual externalities were particularly important for urban growth. They find that diversity and local competition foster urban employment growth, whereas specialisation reduces urban employment growth. This finding could in part be a reflection of the recent relative decline in traditional manufacturing employment in the United States. The relative importance of specialisation and diversity, however, remains ambiguous and unresolved. If knowledge spillovers are the focus, diversity may well be advantageous. If employment impacts are the issue, specialisation in the "right" sectors of the moment may be best (Cheshire and Malecki, 2004).

Henderson (1997) has shown that large cities are on average more specialised in services (finance, insurance and real estate sectors), and less in manufacturing than medium-sized cities. Medium-sized cities are more specialised in mature industries (textiles, food, pulp and paper) and less in new industries (such as electronic components and instruments). Most creations take place in diversified cities. Trial plants are overwhelmingly located in major metropolitan areas, whereas mass-production plants are almost always located in smaller cities or rural areas.

Both diversified and specialised urban environments are important in systems of cities. There is a role for each type of local economic environment, but at different stages of a firm's life-cycle. Diversified cities are more suited to the early stages of a product's life-cycle, whereas more

specialised places are better suited to mass-production of fully developed products. A balanced urban system may thus not be the one where all cities are equally specialised or equally diversified but one where both diversified and specialised cities co-exist (Duranton and Puga, 2000a).

Cities have recently shifted from specialising by sector – with integrated headquarters and plants – to specialising mainly by function – with headquarters and business services clustered in larger cities and plants clustered in smaller cities. Technological progress in transport and telecommunication has made it less costly for firms to separate their production facilities from their headquarters and management facilities. This gives a strong incentive for cities to shift from a main specialisation along a sectoral dimension to a main specialisation along a functional dimension, leading to the emergence of separate business centres and manufacturing cities. More sophisticated services might cluster in a handful of “world cities” such as New York, London and Tokyo (Duranton and Puga, 2005).

Several urban areas attempt to attract headquarters. Davis and Henderson (2008) find strong positive effects of the diversity of local service inputs on the location of headquarters, in an analysis of US headquarters data covering the period 1977-1997. The significance of headquarters in large urban settings is their ability to facilitate the spatial separation of their white-collar activities from remote production plants. Separation benefits headquarters in two ways: the availability of differentiated local service input suppliers and the scale of other headquarters activity nearby. A wired diversity of local service options allows the headquarters to better match its various needs, with specific experts producing services from which they learn and that improve their productivity. Davis and Henderson show that a 10% increase in the number of local intermediate business service providers increases the expected establishment of new headquarters in a country by 3.6%. Headquarters also benefit from other headquarter neighbours. The existence and magnitude of local-scale externalities has implications for local public policy. Achieving efficient size agglomerations in an urban system requires subsidies from land rents or property taxes to internalise scale externalities. Given the estimations, there might be a clear motivation as to why localities subsidise local business sectors.

Skills

Human capital development in the form of production of graduates, as well as the development of regional workforces through training and outreach activities, is a mode of regional engagement with the potential for promoting economic development. Florida (1995) argues that a key function

of universities is to produce creative workers that drive the knowledge economy.

It is a robust finding in the economics literature that human skills have a positive impact on regional competitiveness. Glaeser *et al.* (1995), using a data set of 203 US cities between 1960 and 1990, found that a key variable for cities is the initial education level of the population: cities with higher median years of schooling show faster subsequent *per capita* income growth. A one standard deviation rise in median years of schooling raises income 2.78% over the same period. Higher education is found to influence growth through influencing the growth of technology. Berry and Glaeser (2005), using data on 318 metropolitan area in the United States over 1990-2000, have found that places with higher levels of human capital have attracted more skilled people over the last three decades. They show a strong correlation between the initial share of metropolitan area adults with college degrees and change in that variable over the 1990s. They suggest that this phenomenon might have been explained by the fact that labour demand is often created by local entrepreneurs who start firms in their own city. If skilled people are increasingly likely to start firms that hire other skilled people, this could explain why an initially high level of skills would lead to a growth in the skill composition of a city over time. Shapiro (2006) found that a 10% increase in a metropolitan area's concentration of college-educated residents was associated with a 0.8% increase in subsequent employment growth in the United States between 1940 and 1990. Roughly 60% of the employment growth effect of college graduates is found to be explained by enhanced productivity growth. Moretti (2004) finds that productivity of plants in cities that experience large increases in the share of college graduates rises more than the productivity of similar plants in cities that experience small increases in the share of college graduates. According to his most robust estimates, a 1% increase in the city share of college graduates is associated with a 0.5-0.6 percentage-point increase in output. Because the stock of human capital grows slowly over time, the contribution of human capital spillovers to economic growth is not large. The most robust estimates in the Moretti paper indicate that human capital spillovers are responsible for an average of 0.1 percent increase in output per year during the 1980s. Simmie *et al.* (2002) analysed innovation in five European cities and suggested that the top reason why firms would choose to locate the development of new innovation in a particular city region was the availability of professional experts specialising in the relevant technology.

Large cities have the advantage that they will be able to have a larger supply of jobs for highly qualified couples. Costa and Kahn (2000) found that college-educated couples have over 1940-1990 become increasingly located in large metropolitan areas in the United States. They find that the

trend can mainly be explained by the growth of dual households and the resulting severity of the co-location problem. This is the problem that college-educated couples will need to find a location that can offer both members suitable employment opportunities. Costa and Kahn found that 65% of the increased concentration of these power couples in larger metropolitan areas could be explained by the co-location problem. Of this 65%, 19% to 36% was accounted for by the unique co-location problems faced by the college educated and 29% to 46% by the co-location problems faced by all couples. The remaining 35% could be explained by the increasing urbanisation of the college-educated because of rising returns to city size by education. Smaller cities may because of these effects experience reduced inflows of human capital relative to the past and thus become poorer. Costa and Kahn also show that the quality of universities in small cities in the United States has fallen since 1970, suggesting that larger cities are more likely to reap benefits from spillover effects than smaller cities. As the probability that power couples choose a large metropolitan area rises, mean educational levels in the city will rise. Educational levels in a city are in turn positively related to city wages and city growth.

Universities have an important role in producing human capital. Drucker and Goldstein (2007) find that university activities, particularly knowledge-based activities such as teaching and basic research, have been found to have substantial positive effects on a variety of measures of regional economic progress. Cheshire and Magrini (2002), using a data set of 121 functional urban regions in the EU12 from 1979 to 1994, found that the relative size of the university sector has a highly significant role in explaining growth differences. The average *per capita* income in the more innovative, relatively research intensive regions grow at a faster rate than in other regions.

Although non-university regional factors are often more influential than university factors, the majority of empirical analyses do demonstrate that the impacts of university activities on regional economic development are considerable. It is important to realise that the impacts of universities on regional economic development varies considerably, over time, over space, between sectors, between firms of different sizes and with the absorptive capacity of different firms.

Innovation

Research and development has a positive impact on urban competitiveness. In a study of 117 functional urban areas in Europe over 1979-1990, Cheshire and Carbonaro (1996) found that research and development was significantly correlated with GDP growth and productivity

growth. Similar findings were found in a study of 24 cities in the United States over 1977-1992 (Kresl and Singh, 1999): the number of research centres per million workforce was correlated with the growth of retail sales, manufacturing value added and business service receipts. University R&D also has an effect on new firm formation: Kirchhoff finds that it has the third most significant effect after market size and population size (Kirchhoff, 2007). Goldstein and Renault (2004) studied 312 Metropolitan Statistical Areas in the United States over 1969-1998 using a quasi-experimental approach in which the measure of regional economic development was workers' average annual earnings. They found that research and technology functions generate significant knowledge spillovers that result in enhanced economic development that would otherwise not have occurred. In the period 1986-1998, total university R&D activity was significantly related to regional economic growth. The strength of the causal relationship is however modest. Controlling for other factors, it would have taken an increase of USD 10 million in research expenditures among universities in an average metropolitan statistical area to increase the index of average earnings per job by 0.36%.

There are minimum thresholds for R&D and technology. For R&D investment to be effective, a minimum threshold of investment is necessary. The relationship between R&D and economic development is not linear. Furthermore, there are externalities associated with R&D, and returns from R&D rely heavily on the quality of the workforce and the quality of the local human capital (Rodriguez-Pose and Crescenzi, 2008).

Universities have a potential role to act as a node in knowledge networks linking regions and their actors to regional and international knowledge sources. There is however considerable variability in the capability of universities to effectively transfer their knowledge; and of regional businesses to effectively absorb such knowledge. Policy has sought to establish intermediary brokers and intermediary institutions. In some regions, such efforts appear to be bearing fruit through acknowledged contributions to regional development. However, it is not always the case, which makes it difficult to ascribe improved regional competitiveness to developments in knowledge-based infrastructure (Huggins *et al.*, 2008).

In these constellations, knowledge institutes will not always be willing, or in a position, to transfer knowledge across networks, if there is a low expectancy of reciprocal return. Universities are often wary of engaging with a business community dominated by SMEs, which they often regard as inferior and less lucrative collaborators and partners in comparison to larger and more internationally focused firms. Effective knowledge absorption is more likely to occur through collaborative networks than it is through market transactions. Perkmann and Walsh (2007) find that research

partnerships between firms and universities have the highest impact on knowledge spillovers. Nationally determined performance indicators can play a key role in influencing how entrepreneurial universities will be. When third-stream activities are not rewarded, many academics have to choose between being entrepreneurial and publishing.

In the United States, the Bayh-Dole Act of 1980 formalised university ownership of intellectual property and hence the ability of universities to commercialise their research. Although entrepreneurship has flourished since then, the possible causality of the growth of entrepreneurship and the passing of the act should be viewed cautiously. International policy emulation of the Bayh-Dole Act has resulted from a belief that university patenting is essential for effective technology transfer from universities to industry, but critics argue that their policy transfer models overlook more economically important channels through which universities contribute to innovation and economic growth. Indeed, some recent evidence suggests that increased patenting activity by universities is actually slowing the pace of knowledge exploitation and innovation, due to heightened restrictions on the diffusion of university-created knowledge (Fabrizio, 2007). Goldstein and Renault (2004) did not find evidence that university patenting was significant, suggesting that mechanisms by which university R&D activity stimulates economic development are much more diverse than just patenting and licensing activity.

The creation of science parks is central to many universities' strategies for increasing knowledge spillovers. These spaces range from small business incubators to large science and technology research parks. Science parks aim to enable rapid technology transfer, offer improved funding for academic programmes, help to attract research faculty, sponsored research agreements, student placements and create opportunities to commercialise intellectual property. The establishment of science parks has continued to increase, and while parks that mature out of incubation stages have the potential to generate economic benefits for their regions, the mortality rate remains high, as does the probability of parks failing to meet their target objectives (Huggins *et al.*, 2008).

Science parks and incubators have been found not to be greatly significant for innovation. The evidence in support of a positive effect on the economic performance of SMEs exerted by the opportunities for networking as provided by a science park is limited. Various studies have revealed little evidence of significantly enhanced performance of science-park enterprises. Geenhuizen and Soetanto (2008) confirm that evaluation studies of science parks have produced outcomes that are either not conclusive or only in part positive.

An extensive literature exists on industrial districts or clusters. It is however far from obvious that proximity of industrial firms always fosters competitiveness. While proximity may have positive effects, it also entails negative ones. There is the risk of collusion, and proximity could limit interaction with external networks. The security provided by co-operation could also reduce incentives. As a result, a trade-off appears to exist concerning proximity. Some studies have found a positive relationship when embeddedness is low, but there is a threshold over which performance decreases. The effects of proximity on innovation could be different according to the type of innovation. Process innovation may be positively influenced by proximity, because it favours a common understanding of technical problems. In product innovation, however, new ideas are essential: the closer they are, the less diverse is their cognitive environment, and the less they innovate on products (Callois, 2008).

Entrepreneurship

Using data on 394 local economic areas and six industrial sectors, covering the entire (non-farm) private sector economy of the United States, Acs and Armington (2004) found that higher rates of entrepreneurial activity were strongly associated with faster local growth rates. They suggest that new organisations play an important role in taking advantage of knowledge externalities within a region, and that entrepreneurship may be the vehicle by which spillovers contribute to economic growth. They find that new firms are more important than the stock of small firms in a region (with the exception of the manufacturing sector).

Glaeser (2007) finds that self-employment rates are higher among individuals who live in metropolitan areas that are filled with particularly entrepreneurial industries. He finds little evidence for a multiplier where entrepreneurial industries create abundant entrepreneurs outside their industries, but finds that the presence of an appropriate workforce is the most powerful predictor of new firm generation and small firms. As skilled and older people are much more likely to be entrepreneurs, pro-entrepreneurship policies might focus particularly on attracting such workers.

Urban amenities

Quality of life has come to be seen as part of the profile of a competitive city: one that is successful in attracting the attention of capital and labour. Quality of life has thus increasingly become part of place promotion and city marketing (Rogerson, 1999), because of their role in attracting highly skilled

workers. Even though relative productivity advantages may wane in metropolitan areas, high-skilled workers on average prefer to reside there. There is empirical support that cities need to increasingly focus on quality-of-life issues because they are at least as important as demand-side policies in attracting high-skilled workers. Recent research stresses that disadvantages such as pollution, long commutes and crime could be an explanation for higher metropolitan wages. Although these concerns affect everyone, there are reasons to believe that higher-income households have a stronger adverse response (Adamson *et al.*, 2004). Shapiro (2006) found that a 10% increase in a metropolitan area's concentration of college-educated residents was associated with a 0.8% increase in subsequent employment growth in the United States between 1940 and 1990. Roughly 40% of the employment growth effect is found to be explained by growth in the quality of life. This effect of college graduates appears to operate through "consumer city" amenities such as bars and restaurants, rather than from attributes such as crime, schools and pollution.

In a study on county population growth between 1975-1995 in the United States, it is shown that the presence of live performance venues and restaurants significantly predict later population growth at the county level. A similar relation between population growth and restaurants is found in France, although this relation is not statistically significant. No connection is found between art museums and county growth. Bowling alleys and movie theatres are both negatively associated with later county population growth (Glaeser *et al.*, 2001). A place with amenities for which individuals are willing to pay 5% of their income grows 0.3% faster than an otherwise identical place. High growth rates of high-amenity localities should eventually taper off. Localities with both high quality of life and high productivity might experience negative relative population growth as individuals leave in search of more affordable housing (Rappaport, 2007).

A variety of urban amenities are scale-dependent. A critical mass of consumers is necessary for a wide variety of ethnic restaurants and major-league professional sports. Economies of scale result in more theatres, museums and exclusive shopping in larger areas.

Crime has had an influence on the prospects of metropolitan areas. In the 1970s, workers in the United States needed to be compensated for living in big cities, as these cities suffered from crime and other disamenities. In 2000, crime rates had fallen, and rising incomes led people to value urban social amenities more strongly. As a result, real wages (wages corrected for regional costs of living) are now lower in big cities in the United States than in smaller areas. Crime has affected urban population growth and housing prices. Berry-Cullen and Levitt (1999) show that an increase of one reported crime per capita reduces city population by 1% and that a 10% increase in

crime corresponds to a 1% decline in city population. They find that almost all of the crime-related population decline is attributable to increased out-migration rather than a decrease in new arrivals. Migration decisions of highly educated households and those with children are particularly responsive to changes in crime. Causality appears to run from rising crime rates to city depopulation.

Schwartz *et al.* (2003) estimate an elasticity of property value with respect to violent crime rate of 0.15. They find that falling crime rates are responsible for about one-third of the post-1994 boom in property values. Their findings indicate that the fall in violent crime since 1998 has raised property values by about 8%, with most of this effect accruing from 1994 and later. The fall in violent crime accounted for about one-third of the total real price appreciation during the 1994 to 1998 period. This fall was valued at more than USD 15 000 per household, considering the sales-weighted average of the price per housing unit in New York City. Although crime rates are important, declining crime rates can only explain a modest amount of the increased demand for living in New York City and other big cities (Glaeser and Gottlieb, 2006).

Kahn (2001) has tested the relative importance of air quality as an urban amenity using data from Los Angeles County, an area where dramatic improvements in smog have been achieved. While high-ozone areas feature lower rents, the ozone's capitalisation suggests that it is not a key urban disamenity: to purchase a 10-day per year reduction in exposure to high ozone levels required an extra payment of 3%.

Infrastructure

Public infrastructure can play an important complementary role in the productivity of the regional private sector. Evidence from the United States suggests that the heavy infrastructure investment in the country during the 1950s and 1960s was a key factor in the strong economic performance during that period. While new regional infrastructure may encourage development in under-developed regions, its construction alone will not be enough to bring about any desired economic changes. In many situations, the provision of regional infrastructure can act as a catalyst for the generation of local agglomeration economies. The nature of infrastructure tends to mean that there are capacity limits beyond which negative externalities start to dominate.

The impact that variations in the provision of transport infrastructure have on regional development has been difficult to verify empirically. There seems to be a clear positive correlation between transport infrastructure endowment or inter-regional accessibility and the levels of economic

indicators such as GDP per capita. However, this correlation may merely reflect historical agglomeration processes rather than causal relationships effective today. Attempts to explain changes in economic indicators, *i.e.* economic growth and decline, by transport investment or differences in accessibility has been much less successful. In countries with an already highly developed transport infrastructure, accessibility tends to become ubiquitous and further infrastructure improvements may bring only marginal benefits. Transport improvements have strong impacts on regional development only when they result in removing a bottleneck.

What really matters to private firms are the (generalised) transport costs they will face. Infrastructure is thus only important as a means to achieve this. Improved infrastructure that creates more capacity, higher speeds, better quality and more reliable transport, will be reflected in firms' total costs, not just in terms of the direct costs of transport, but also the indirect costs of storage and inventories, the number of depots, etc.

Any public finance required for infrastructure puts an additional fiscal burden on the regional economy that could retard economic development. Although evidence from macroeconomic models has suggested that productivity and growth enhancing effects of infrastructure tend to outweigh the crowding effects of finance, at a regional level this is more complex. Within a region, the impacts of construction have to be taken more carefully into account, since there are likely to be larger leakages and smaller local multiplier effects. The smaller a region, the greater the relative net benefit to non-residents, since there will be more non-resident users and a smaller proportion of users will bear the costs, unless the full cost is charged to users (Vickerman *et al.*, 1999).

Connectivity refers to the ability of local firms to develop profitable market relationships with firms or consumers in other regions. A high level of connectivity provides for strong inter-regional linkages with external firms and customers, whereas a lack of connectivity due to insufficient transportation infrastructure implies a lack of choice, innovation and intellectual opportunities for the development of such geographical linkages. Capacity and network changes within the airline system can play a crucial role in changing the relative attractiveness of a region for a variety of industrial sectors, by changing the time taken for face-to-face transactions to be completed across large spatial distances. Indeed, evidence from the United States suggests that a one-day round trip is the crucial spatial extent for many types of information exchanges within much of the semiconductor industry (Arita and McCann, 2000).

As an input factor of production, the value of transportation infrastructure can vary significantly from sector to sector and firm to firm.

The industries in a given region must be checked for their sensitivity to transportation costs. For many sectors, the contribution of transport costs to overall value-added is not only very low but is also falling. Although several authors have proclaimed the death of distance, in many circumstances, face-to-face contact and the use of telecommunications may act as complements rather than as substitutes for each other. An increase in the quantity, variety and complexity of information produced itself increases the costs associated with transmitting this information across space. Much of the information will be of a non-standardised tacit nature, and the transmission of this type of information essentially requires face-to-face contact.

Reductions in transport costs can have ambiguous effects on urban areas. High transport costs lead to decentralised production. The elimination of all transport costs may lead to production being moved from locations with high production costs and concentrated in locations with low production costs, *i.e.* peripheral locations. However, a partial reduction in transport costs may lead to increasing concentration in a core location, since the larger-scale economies outweigh lower transport costs.

Firms' performances are affected by the level of housing and commuting costs, which can be called urban costs. High urban costs render firms less competitive on local and foreign markets. Increasing urban costs could shift employment from large monocentric cities either to their suburbs or to distant and smaller cities, where these costs are lower, at least once trade costs have sufficiently declined to permit large-scale exports to distant markets. Economic integration could thus well challenge the supremacy of large cities in favour of small cities (Cavallès *et al.*, 2007). The emergence of sub-centres within cities is a powerful strategy for large cities to maintain their attractiveness. The creation of sub-centres within a city, *i.e.* the formation of a polycentric city, appears to be a natural way to alleviate the burden of urban costs. However, for this to happen, firms set up in the secondary centres must maintain a very good access to the main urban centre, which requires low communication costs.

Governance

Institutional and governance arrangements create the conditions for economic activity to thrive. Close interaction among local political actors, the presence of a well-functioning civil society, regional administrations, and employers' organisations and trade unions favour economic development. Conversely, the absence of poles of collective action often leads to the formation of vicious circles of low growth. The lack or relative unimportance of collective organisations, and the presence of clientelistic practices facilitate migration and discourage economic activity. Different

institutional proxies of community, such as group participation, have been shown to explain higher economic performance. Conversely, excessive divisions within societies limit their growth potential (see Rodriguez-Pose and Crescenzi, 2008). Kaufmann *et al.* (2005) find that governance is significantly associated with public service performance, both for local and global cities. Well-governed cities perform better than poorly governed cities across all quality and access to service variables. Chapter 3 of this Review focuses on urban governance in Copenhagen.

There is a trade-off between competition and co-ordination in regions. Decentralisation provides regional and local authorities with the possibility to compete with each other; this can create diversity and responsiveness to local preferences. Co-ordination makes it possible to internalise inter-jurisdictional externalities that are increasingly important in a regionalised world. According to the different public functions, more or less co-ordination might be required. In some areas, such as economic development policy, the benefits of competition seem to outweigh the benefits of co-ordination. In other areas, like transportation, there are massive externalities, and regional co-ordination is extremely important. For housing policy, a mixed system might have value, in which localities would maintain control over land use decisions, but regions would provide incentives to induce localities to make the right choices (Glaeser, 2007).

Fiscal conditions have an impact on urban competitiveness. Using data available for 103 local government authorities in Israel, Carmeli (2007) found that local authorities that were fiscally healthier in 1997 and 1998 enjoyed better education and employment systems in 2001. He finds that the capacity to generate revenues is by far more critical than budgetary surplus or deficit. He suggests that fiscal health results in better-quality schools, not only because fiscally healthy governments can invest more resources in their education and employment systems, but also because they are able to attract more educated residents with higher demands and businesses seeking qualified people. Gyourko and Tracy (1989) found that variation in local fiscal conditions appears to be a key determinant of inter-metropolitan wage differences. Fiscal differences explain roughly the same amount of the variation in mean wages across cities as do differences in worker traits on differences in major industry/occupation classifications. In another study, Gyourko and Tracy (1991) find that fiscal differentials are nearly as important as amenity differentials in determining the quality of life across urban areas. The mean absolute dollar differential in taxes represents USD 603, with a standard deviation of USD 527.

Conclusion

There is a solid base of empirical findings that underpin the determinants of urban competitiveness used in the conceptual model in this Metropolitan Review. There are however reasons for caution. Many determinants are dependent on local context and circumstances. There is no universal model of urban development that can be applied to every urban area. There is a considerable amount of path dependency in urban economic trajectories. This means that the economic performance of every metropolitan area has to be studied, taking its peculiarities into account. This Metropolitan Review is an attempt to pursue that for Copenhagen.

The review's methodology is based on a range of information sources, ranging from the OECD Metropolitan Database, answers to a questionnaire submitted to the local Copenhagen Review team, numerous study missions including semi-structured interviews with more than 100 relevant stakeholders in Copenhagen, as well as policy documents and academic papers relevant to the area. The OECD Metropolitan Database contains data on 78 metropolitan areas, fed by national statistical offices in the OECD countries, and validated by the OECD Working Party on Regional Statistical Indicators.

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