

QUT Digital Repository:
<http://eprints.qut.edu.au/>



Yigitcanlar, Tan and Lee, Shinyi (2009) *Moving towards a knowledge city : Brisbane's experience in knowledge-based urban development*. In: Proceeding of the State of Australian Cities National Conference 2009, 24-27 November 2009 , University of Western Australia, Perth, Western Australia .

© Copyright 2009 [please consult the authors]

Moving towards a knowledge city: Brisbane's knowledge-based urban development experience

Tan Yigitcanlar and Shinyi Lee

Queensland University of Technology, School of Urban Development, Brisbane, Australia
tan.yigitcanlar@qut.edu.au; shinyi.lee@qut.edu.au

Abstract: *In the global knowledge economy, knowledge-intensive industries and knowledge workers are extensively seen as the primary factors to improve the welfare and competitiveness of cities. To attract and retain such industries and workers, cities produce knowledge-based urban development strategies, where such strategising is also an important development mechanism for cities and their economies. This paper investigates Brisbane's knowledge-based urban development strategies that support generation, attraction, and retention of investment and talent. The paper provides a clear understanding on the policy frameworks, and relevant applications of Brisbane's knowledge-based urban development experience in becoming a prosperous knowledge city.*

Keywords: Knowledge city, knowledge-based urban development, knowledge precinct, knowledge-intensive industry, knowledge worker, Brisbane, Queensland

1. Introduction

Many metropolitan cities worldwide faced the prospects of major transformation in the 21st century as the world moves towards a global information order shaped by the growth of technology and knowledge economy (Castells, 2000; Baum et al., 2007). In the knowledge era urban economies are being radically altered by dynamic processes of economic and spatial restructuring, and the rise of knowledge-based opportunity has been accompanied by a concomitant decline in neoclassical model of economic growth and low-value commodity-based industrial activities (Graham and Marvin, 1996; Drucker, 1998; Burton-Jones, 1999). The replacement of physical commodity production by more abstract forms of production has paradoxically reinforced the importance of central places and led to the formation of 'knowledge spaces', i.e. Knowledge Cities (KCs) (Carrillo, 2006). Knowledge-based development of cities is found clearly important for speeding up the formation process (Knight 2008; Yigitcanlar et al., 2008a). Knowledge-based development of cities or Knowledge-Based Urban Development (KBUD) is a development approach that aims sustainable urban development and economic prosperity, which helps in making cities compatible with the knowledge economy, and provides their citizens with opportunities to foster knowledge creation, knowledge exchange, and innovation (Ergazakis et al., 2004). Achieving a KBUD is an ambitious project with many challenges, however, if undertaken successfully it provides enabling conditions for cities to become in the forefront in the global competition (see Yigitcanlar and Velibeyoglu, 2008). These conditions include: knowledge infrastructure; technological infrastructure; connections to the global economy; and concentration of well-educated, talented and creative people (Van Winden and Berg, 2004). During the last two decades a number of cities adopted KC and KBUD strategies, which have become important development mechanisms for cities in the knowledge era. Although a number of cities promote themselves as KCs, currently, there are only a handful of cities around the world (e.g., Barcelona, Boston, Helsinki, Ottawa, Singapore) that have earned that label (World Capital Institute and Teleos, 2009; Yigitcanlar, 2007). Many other cities aspire to the status of KC through urban development programs that target knowledge-based development. Examples include Brisbane, Dubai, Kyoto, Melbourne, Shanghai (Ergazakis et al., 2004).

This paper aims to investigate *whether adopted current KBUD strategies are adequate enough to transform a city into a KC* in the case of Brisbane, Australia. To address this question, the research presented in this paper, as the research methodology, develops three KBUD analysis frameworks, and examines Queensland and Brisbane’s KBUD experience by using these frameworks. The first framework is the conceptual framework that brings together the key considerations in KC and KBUD and helps in developing other two operational analysis frameworks. The second framework is developed to investigate the regional/state level KBUD strategies and the last one for Brisbane’s local KBUD strategies. Although the methodology is mainly based on qualitative and content analysis, by using these analysis frameworks, the paper provides a clearer understanding on the policy frameworks and relevant developments in the case of Brisbane, and discusses Brisbane’s potential to become a KC.

2. Knowledge city and knowledge-based urban development

KC can be seen as an umbrella concept for geographical entities, which focuses on knowledge creation, and covers knowledge spaces such as ‘knowledge precincts / corridors / villages / regions’ (Dvir and Pasher, 2004). KCs are incubators of knowledge and culture, forming a rich and dynamic blend of theory and practice within their boundaries, and are being driven by knowledge workers through a strong knowledge production (Work Foundation, 2002; Yigitcanlar et al., 2008b). As societies become increasingly knowledge-based, the nature of city development changes because activities in the knowledge sector are becoming more important and they require conditions and environments which are very different from those required by commodity-based manufacturing activities in the production sector (Knight, 1995). Literature indicates the importance of essential conditions for cities trying to change their status towards KC through KBUD strategies in various development levels and scales (Van Winden et al., 2007; Yigitcanlar et al., 2007). The broad set of components of the conceptual framework of KBUD includes: KC foundations; KBUD foundations; and KBUD levels (Figure 1).

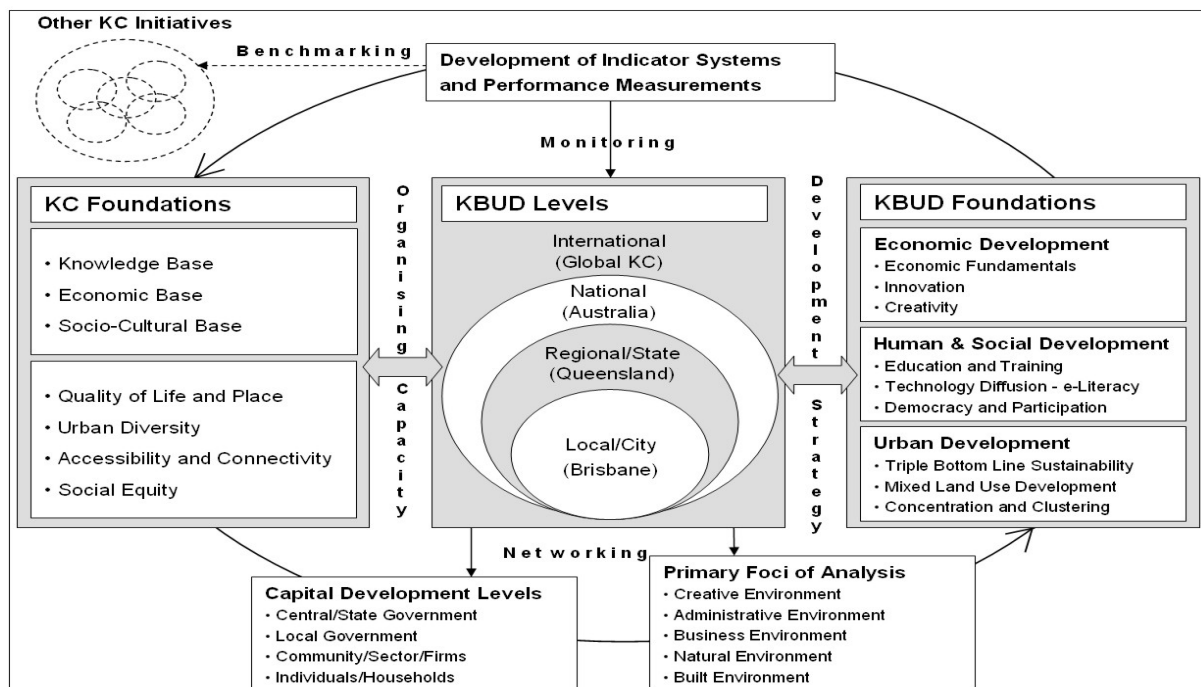


Figure 1. Conceptual KBUD framework (derived from Yigitcanlar and Velibeyoglu, 2008)

2.1. Knowledge city foundations

A city’s strong economic, knowledge, and socio-cultural bases are the key for transforming it into a KC. Strengthening the knowledge base of cities requires strong knowledge clustering,

which is particularly important in the promotion of the spill-over effects found to be vital for long-term economic prosperity (Lever, 2002). The economic base of a KC creates high value-added products using research, technology, and brainpower. In a KC, private and the public sectors value knowledge, spend money on supporting its discovery and dissemination, and ultimately, harness it to create goods and services (Carrillo, 2006). Socio-cultural base is essential for cities to incubate creativity to ensure economic growth, urban development, and socio-cultural and psychological wellbeing of their residents. Cultural resources are embodied in people's creativity, and Landry (2000) highlights that KCs aim to create the conditions for people think, plan, and act creatively. In an urban context this means providing an enabling environment that facilitates exchange of ideas, and the possibility to turn these ideas into products, services, and innovative solutions to urban problems. Other KC foundations include; quality of life and place, urban diversity, accessibility and connectivity, and social equity. Van Winden et al. (2007) suggest 'organising capacity' or the quality of governance, in various levels, has a significant influence on the KBUD efforts of an urban region. Quality of life and place are defined not only by the level of public service but also by the conservation and development of the cultural, aesthetic and ecological values that give cities their character to attract knowledge workers. Urban diversity is expressed in a cosmopolite atmosphere, accepting others with open channels for communication and knowledge exchange. Accessibility and connectivity emphasis the seamless links with other knowledge centres by the networks of good international and regional transport and information technology infrastructure. Social equity is a key dimension of sustainable urban economic growth. Social tensions and conflicts such as social exclusion and unemployment discourage both knowledge workers and investing firms away from a region of perceived social danger.

2.2. Knowledge-based urban development foundation and mechanisms

KBUD is a powerful strategy for economic growth and the post-industrial development of cities to participate in the knowledge economy. It is a strategic management approach, applicable to purposeful human organisations (Carrillo, 2002). The goal of KBUD is a KC purposefully designed to encourage the production and circulation of abstract work, where it can be regarded as an approach to nourish the transformation and renewal of cities into the KCs and their economies into knowledge economy (Cheng et al., 2004; Yigitcanlar et al., 2008c). The promise of KBUD is a secure economy in a human setting, in other words KBUD has three major purposes; economic, human and social, and urban development. Economic development codifies technical knowledge for the innovation of products and services, market knowledge for understanding changes in consumer choices, financial knowledge to measure the inputs and outputs of production and development processes, and human knowledge in the form of skills and creativity, within an economic model (Lever, 2002). Human and social development indicates the intention to increase the skills and knowledge of residents as a mean for individual and community development (Gonzalez et. al., 2005). Urban development builds a strong spatial network relationship between urban development clusters. In this sense, knowledge precincts play a significant role in the spatial formation of the city-wide KBUD strategies (Yigitcanlar and Martinez-Fernandez, 2007).

3. State level knowledge-based urban development strategies

The State of Queensland made a significant move from a natural resource-based economy to a global knowledge economy during the last two decades, where the use and dissemination of knowledge is the basis for innovation, competitiveness and growth. The political imperative of the Queensland 'Smart State Strategy' was developed in 1998 to drive growth and economic development in Brisbane and the rest of the state. The strategy was released in 2003, targeting to position economy as a knowledge economy, recognising knowledge, science, technology, research, education, and innovation as key drivers of economic growth. It aims to achieve KBUD through developing capital systems by obtaining a positive value balance among all

stakeholders and interest groups into the decision-making process as active actors. The strategy focuses on the regional level of KBUD activities including; economic development, human and social development, and sustainable urban development. All these initiatives form Queensland's knowledge-based urban development strategy and have a strong pushing power in positioning Queensland economy as a knowledge economy. The strategy outlines government's commitment to achieve the Smart State Vision of using knowledge to drive sustainable economic growth, and charted future directions and new initiatives in the following key strategic areas (Queensland Government, 2004): (a) Skilling the state with training and science education; (b) Using knowledge to drive economic growth; (c) Managing the knowledge economy; (d) Building scientific and research facilities; (e) Commercialising discoveries and innovations; (f) Harnessing smart science for the environment; (g) Government agencies to drive research and innovation; and (h) Strategic partnerships with private and academic sectors. Queensland's KBUD strategy is investigated under the following key themes: economic; human and social, and; urban development (Figure 2).

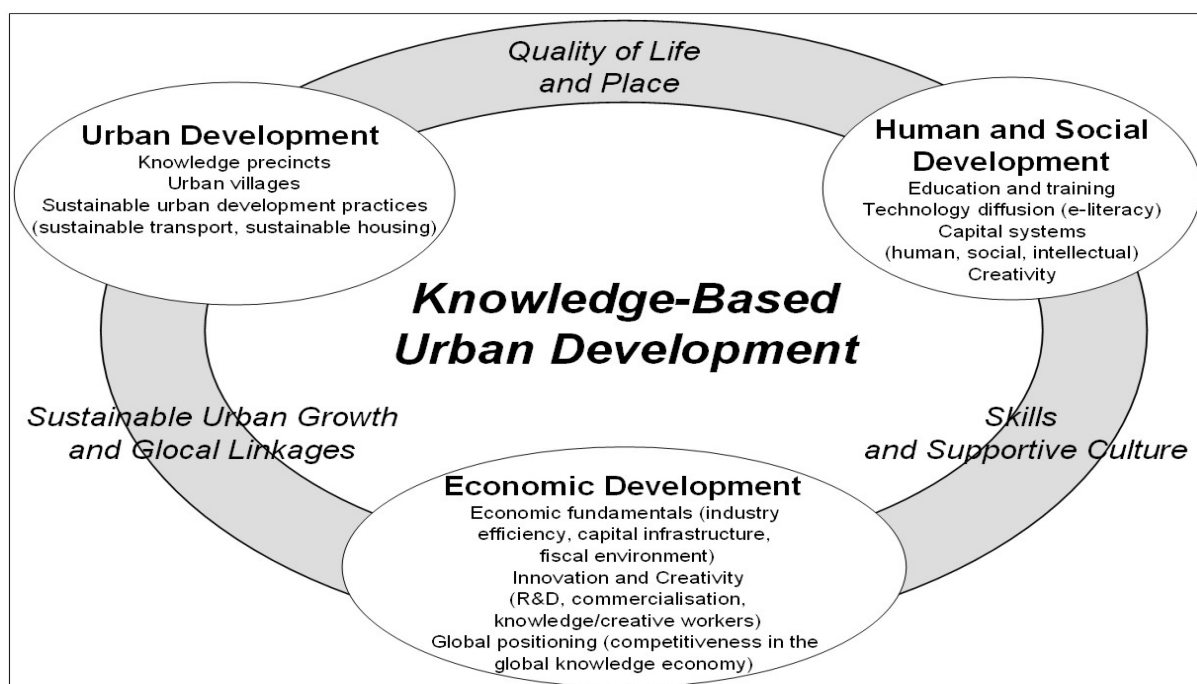


Figure 2. A framework to investigate Queensland's KBUD strategy (derived from Yigitcanlar and Velibeyoglu, 2008)

3.1. Economic development

In terms of overall economic measures Queensland is an outstanding performer, and economic growth in Queensland has exceeded that for Australia for the last decade, where Australia itself has been acclaimed as one of the fastest growing economies in the OECD (Andrews, 2006). Brisbane is the capital city of Queensland and the fastest growing urban region in terms of economy, urban development and population within Australia. Although there are few knowledge-intensive industries located and some limited KBUD initiatives are planned for Cairns and Townsville, most of the KBUD in Queensland occurs within the Brisbane metropolitan area (Rayner, 2006). Queensland started to develop extensive innovation engines centred on nine universities and research agencies in late 1990s. Queensland focused on emerging capabilities in niche knowledge-intensive areas such as ICT, nanotechnology, neuroscience, forensics, sports science, and eco-tourism, as well as continuing her competitiveness in food and agribusiness, aviation and aerospace, mining, marine, and environmental technology industries. However, until recently all these developments were not appropriately coordinated, and there was insufficient recognition of these sectors' potential to generate wealth. Additionally there was not a great level of public leadership and investment to

boost the knowledge infrastructure. The Smart State Strategy comprises a number of initiatives to provide a stimulus for boosting industry innovation and commercial capacity for greater global export and trade gains. The initiatives for the funding of: innovation building, research facilities, innovation skills, and innovation projects, aim to target the mobilisation of the innovation process by providing support in converting ideas into tangible results. The strategy particularly emphasises on building the 'Queensland brand' through expanding on strengths, successes, and global recognition of Queensland. Initiatives in branding include: Smart sector strategies to grow priority industry sectors; Smart ICT to grow the ICT industry and exports; and Queensland aquaculture development initiative (Queensland Government, 2005).

3.2. Human and social development

Queensland takes the long-term view by building its capacity as an innovative society, as well as providing an immediate stimulus for innovation. Investing in knowledge and skills requires a new approach in learning and education that equips people with knowledge, technology, skills and abilities necessary to succeed in an innovative society. The key initiatives in the field of learning and education are: the 'smarter learning' project; the 'smart classrooms' project that provides access to learning beyond the traditional school grounds; and the 'smart academies', which is the centre of excellence in science, mathematics, technology, and creative arts (Queensland Government, 2005). Creativity-intensive jobs and skills are among the major requirements of the knowledge economy for knowledge production. The Strategy sees creativity and creative industries as important drivers of KBUD. In 2004, State Government launched its first Creative Industry Strategy: *Creativity is Big Business: A Framework for the Future*, with an overall vision of building a globally recognised creative industry cluster (Department of State Development, 2004). Both Creative Industry and Smart State Strategies stressed that training and higher education system enthusiastic about innovative enterprise and partnership with industry is a must. Key initiatives in this area include: modernising the vocational and education training system to deliver flexible and responsive training; 'Smart State University Internships' to assist students become work-ready; and 'Skilling Solutions Queensland', a one-stop shop for providing free training and career advice (Queensland Government, 2005).

To realise KBUD and being competitive in the global markets Smart State Strategy aims to generate and attract international investment and knowledge workers as well as improving its residents' skills through training, and providing incentives to local investors. Investing in diversity, creativity, connectivity and sustainability is another important aspect of creative urban regions, and therefore Smart State aims to increase its appeal as a place to live, study, work and play, by creating a dynamic state, building a community that cares for its people and fosters and celebrates knowledge and creativity. The key initiatives for that purpose are: 'business and skilled migration program' which aims to promote State's appeal to skilled knowledge workers; 'building the multicultural image of the State' by organising festivals to celebrate Queensland's cultural diversity; and to promote exchange of ideas by encouraging participation to the 'Queensland ideas festival' (Queensland Government, 2005). In the knowledge era global networking is important for the establishment of a knowledge society. Key initiatives for making the right connections by investing in strategic alliances and networks include: Smart State Council to provide advice on emerging trends in innovation and skills; international collaborations program to support strategic alliances; and a virtual forum for residents to participate and shape the future Smart State agenda (Queensland Government, 2005).

Technology and knowledge infrastructures, along with skill development, and improved access are fundamental vehicles for achieving a KBUD. Underlying this technical development is the importance of social development – literacy training, public computer access and creating opportunities for participating in the knowledge-intensive industry. Infrastructure is crucial in order to strengthen connectivity of Queensland's firms, institutions and residents. Key initiatives in the provision of new infrastructure include the streamlined development of the

approval process for telecommunications infrastructure and the online telecommunications information portal for business and communities (Queensland Government, 2005). Smart State Strategy plays an important role in facilitating the development of ICT and learning communities. For this purpose the strategy initiated an 'e@able project' to establish industry internet portal and share relevant information between all levels of government, ICT providers, developers and communities (Queensland Government, 2006). Given Brisbane and State's reliance on the service sector for growth, enhancing its function as a key service centre through relevant technology development is strategic and important for KBUD.

3.3. Urban development

Sustainability and smart use of natural resources is an integral part of the Queensland Smart State Strategy and includes the following major initiatives: developing a sustainable natural resource development strategy; establishing an international water centre; and innovative research to control environmental hazards (Queensland Government, 2005). The recent environmental agenda includes Queensland's Climate Smart Adaptation Plan. To cope well with the climate change Queensland Government's Smart State Innovation Funds has granted many projects including the saving of the World Heritage listed Great Barrier Reef that is the world's largest coral reef system, supporting a rich diversity of wildlife. Additionally, The Climate Change Centre of Excellence which opened in March 2007 establishes Queensland's credentials as a national leader in driving climate change science and policy (Queensland Government, 2007). Most of the Smart State initiatives targets sustainable urban development that are important to both traditional and knowledge-intensive industries (State Development and Innovation, 2004). To strengthen the global positioning of these enterprises a number of interrelated knowledge precinct and clusters have been located in the region.

4. Local level knowledge-based urban development strategies

In line with the Queensland Smart State Strategy, in May 2007 Brisbane has also adopted a ten year 'Brisbane Smart City Strategy' aimed at addressing and promoting the following to support KBUD: information access; lifelong learning; digital divide; social inclusion; quality of life; and economic development within the Brisbane City and its hinterland. In contrast to relatively mature Smart State Strategy (1998) the brand new Smart City Strategy (2007) has a much more intense urban development focused knowledge-based development perspective. The Smart City Strategy develops KBUD policies with an aim to transform the city into a KC. These policies serve to realise the founding blocks of the KBUD mechanisms with various KC dimensions. These dimensions are investigated under the following themes that constitute the primary foci of the policy analysis: creative, administrative, business, natural, and built environments (Figure 3).

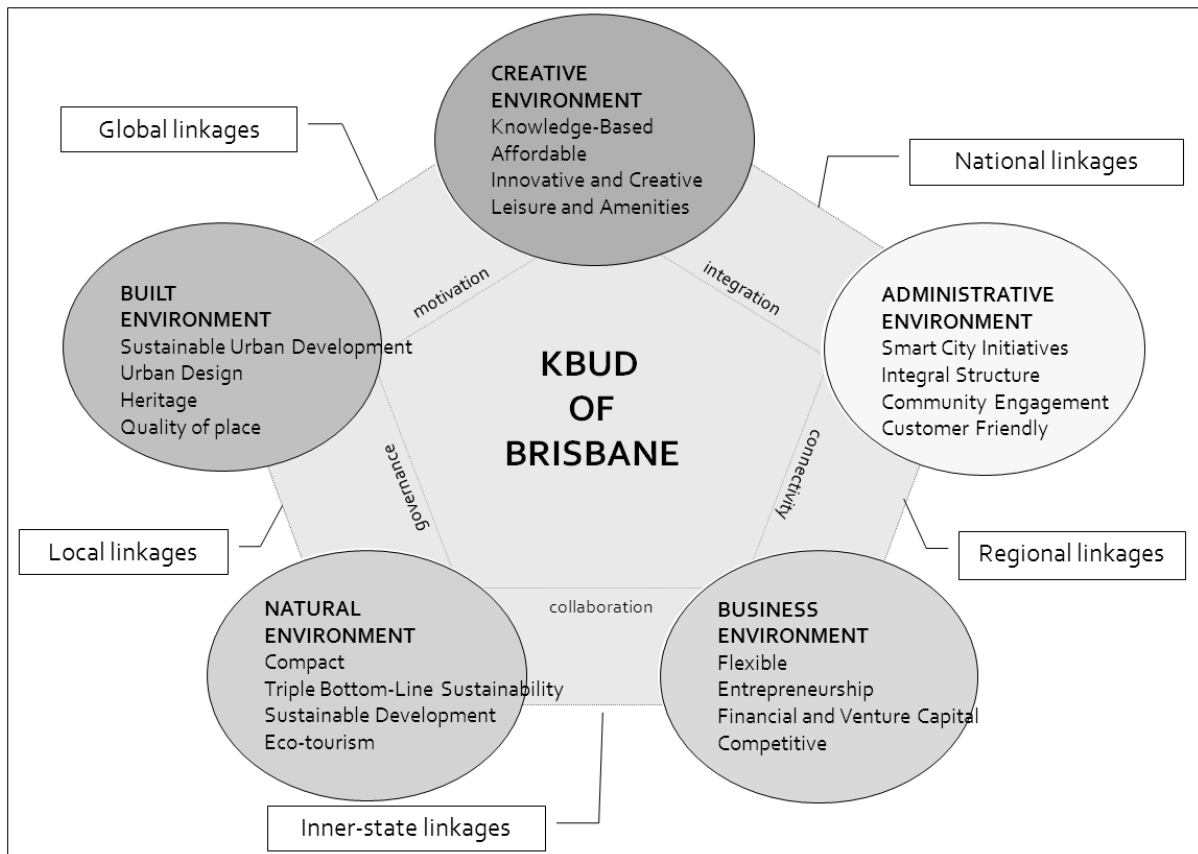


Figure 3. A framework to investigate Brisbane's KBUD strategy (derived from Yigitcanlar and Velibeyoglu, 2008)

4.1. Creative environment

In Brisbane's Smart City Strategy knowledge and creativity terms are referred as vital sources for attracting investment and talent, which drive the economic vitality of the city. Before the introduction of that strategy, Brisbane was already working towards the same direction, and had a creativity strategy, Creative City: Brisbane City Council's Cultural Strategy, as part of the City Plan and Living in Brisbane Vision. This strategy recognised not only the importance of creativity and creative industries, but also urban development and renewal, ecological balance and sustainability, and social and cultural capital development. The strategy aimed Brisbane to become a 'city of ideas' that has the venues and audiences to attract world-class festivals and events, and also to become a city of excitement where energy, life and vitality create a sense of cultural confidence (Brisbane City, 2003). Since the declining 'housing affordability' as being a significant barrier to the development of KBUD strategies (Yates et al., 2005), the Smart City Strategy ensures that there is a wide range of dwelling types and sizes, which avoids gentrification causing exclusion of families, people on lower incomes, and people who might otherwise be marginalised. In this context, new generation urban scale knowledge precinct projects developed in Brisbane purposefully target to integrate different types of knowledge clusters, particularly the creative ones, with mixed-use living environments. However, affordability of these new developments are still under question, which seems to be the biggest obstacle in Brisbane's path to become a KC. Nevertheless, the creative environment provides optimism for the city. The literature reveals that knowledge workers prefer inspiring cities with a thriving cultural life, leisure and amenities, an international orientation and high levels of social and cultural diversity (Van den Berg et al., 2004). In this sense, Brisbane's drive to urban diversity and tolerance can be interpreted as creating places diverse in character and scale, which are accessible and attractive to people from all cultural and socio-economic backgrounds.

4.2. Administrative environment

Brisbane City Council's efforts in human and social development mechanisms of KBUD are based around partnerships: with State Government in providing training in schools; with universities in providing training, and skill development; with the information technology businesses in providing infrastructure; and with knowledge-intensive industry providing services and employment. Brisbane shows the synergy that comes from public-private-academic partnerships, networks with other state agencies such as State Education in providing various initiatives and online training, and working with Federal and State government in the development of local e-government (Odendaal, 2003). The operationalisation of Smart State and City initiatives from one centre for each promotes overall integration of various local and state wide e-governance initiatives. The city and the metropolitan region are well integrated in terms of service delivery, the infrastructure for which is underpinned by the telecommunications plans, with social integration is addressed through various initiatives. This integral structure is facilitated largely through a strong State and Local Government collaboration with a clear policy framework and well-resourced staff (Odendaal, 2003). The synergy created in administrative environment is combined with the strong local economy and lifestyle options to attract more knowledge-intensive industry and workers, which supports the KBUD of the city and the region. This synergistic administrative environment supports the community engagement that creates opportunity for people to participate in decision-making. For example, community engagement is established via 'Our Brisbane' portal (ourbrisbane.com), where this portal is promoted as an icon in itself, and it is marketed aggressively as a key component of the Smart State and City initiatives. The portal is seen as an underpinning to all of Brisbane's long term objectives, and emerged as a project in response to the desire to make Brisbane a KC.

4.3. Business environment

The active involvement of the private sector in the organisation of knowledge production is essential. Positive business climate is a breeding ground for the development of entrepreneurial spirit. Beyond this, the positive promotion of knowledge entrepreneurship is a vital aspect of successful KBUD strategies. Brisbane's KBUD strategy is improving to be able to handle administrative environment hand-in hand with sound business environment to create an exemplary entrepreneurial climate and an open, flexible interface between government and business. A strong financial support is fundamental for a successful KBUD. From various government resources Brisbane provides financial support for the public and private sectors to boost the business environment. Brisbane's KBUD strategy declares its orientation towards achieving flexibility in any sense allowing responsiveness to changing needs and demands, while providing the basic capital infrastructure and sound fiscal environment that enables future needs and demands to be accommodated. Nevertheless, in the current state of Australian cities only Sydney enjoys the proliferation of multinational regional headquarters in the city, which translates into knowledge-based employment growth (Searle and Pritchard, 2008). Brisbane is still investing on its business environment to become a globally vibrant city.

4.4. Natural and built environment

Environmental sustainability is one of the key concepts in Brisbane's Smart City Strategy. This concept employs precinct-wide strategies for energy, water and waste efficiency, setting clear targets and monitoring performance, as well as regulating ecological sustainable development standards. The idea of 'compactness' is another key concept considering the city's future urban growth and natural assets in a more sustainable way. It optimises the use of available re-developable land, facilitating a density of living and working environments that capitalises upon existing city centre infrastructure, offers choices of living affordability, and provides adequate open space and leisure environments. In Brisbane urban and regional planning instruments have been used as an effective tool in planning the KBUD of the city and the metropolitan region. Brisbane Metropolitan Regional Plan supports the KBUD, and represents a smart way of planning the region. The economic development initiatives reflected in the regional plan are

underpinned by the Smart State Strategy. The plan adopts a KBUD strategy that “*identifies investment in research, development, technology diffusion and commercialisation of ideas. It also includes investments in knowledge, skills, diversity, creativity and connectivity as the key mechanisms to achieve increased productivity and a better quality of life*” (SEQRP, 2005: 82). Similar to Regional Plan, City and Transport Plans of Brisbane: Brisbane City Plan, Brisbane City Centre Master Plan, Living in Brisbane Vision, Transport Plan for Brisbane, and Brisbane Walking and Cycling Plan, also include policies and guidelines to move Brisbane towards a KC through the implementation of KBUD strategies. For example, City Centre Master Plan sets the strategic direction for the future development of the Brisbane as one of the key KBUD projects of the city. The City Plan also emphasises the necessity of attracting knowledge workers as residents by providing quality of place through urban renewal schemes (Brisbane City, 2006).

5. Local knowledge precincts: knowledge-based urban development hotspots

Brisbane’s Smart City Strategy (2007) adopts KBUD as its development strategy, and aims to transform the city into a knowledge one through KBUD. The spatial nucleus of this development strategy is ‘knowledge precincts’ that play a significant role in knowledge production. Knowledge precincts are named differently from country to country (science and technology / high-tech / knowledge / innovation cluster), more or less indicating clustering of R&D activities, high-tech manufacturing of knowledge-intensive industrial and business sectors linked by mixed-use environments. A feature of globally competitive knowledge economies is that governments, universities, and industry work together to create knowledge precincts where generation, transfer, application, and transmission of knowledge take place (Dvir and Pasher, 2004). In this context, Smart State and City strategies advocate knowledge precinct development in and around Brisbane. Biotechnology and biosciences in general, aviation and aerospace, and ICT in particular, are the examples of Brisbane’s strong knowledge precinct development opportunities, which have the potential to make Brisbane a global player, especially in the Asia-Pacific region (Andrews, 2006).

Smart State Strategy strengthens the KBUD of Brisbane’s suburbs, inner city suburbs are home to globally linked knowledge precincts such as Herston (medical research), and Kelvin Grove (creative industries, health). ICT sector is developing in Milton, CBD, and Fortitude Valley, with government representation in the iLab incubator, and Information Industries Board. Substantial activity is centred around the Brisbane universities with a range of research facilities. Emerging clusters are apparent at the Sunshine Coast, based on the University of the Sunshine Coast at Sippy Downs, and at the Gold Coast with the Griffith University campus, and its adjoining knowledge precinct. The Gold Coast is also home to a thriving ICT industry and enterprises associated with leisure and entertainment (SEQRP, 2005). Elsewhere in the Brisbane metropolitan region, there are specialist centres of research and development at sites focusing on minerals and energy, pathology, bio-security, and resource industries. The ongoing development of University of Queensland campuses at Ipswich and Gatton will be a key factor in diversifying that area’s economic activity, as well as increasing access to education and training in the Western Corridor. Urban redevelopment areas, particularly knowledge precincts such as Boggo Road at Dutton Park, provide the opportunity for mixed-use development, incorporating high value-added research, development and service industries and linkages to university research facilities. Kelvin Grove Urban Village adjunct to Queensland University of Technology campus provides a new model for ‘community knowledge precinct’ development by bringing creative and knowledge-intensive industry and businesses together with a vibrant lifestyle and living opportunity (Figure 4). Such developments and clustering effect have potential to magnet other knowledge-intensive industries in Brisbane.

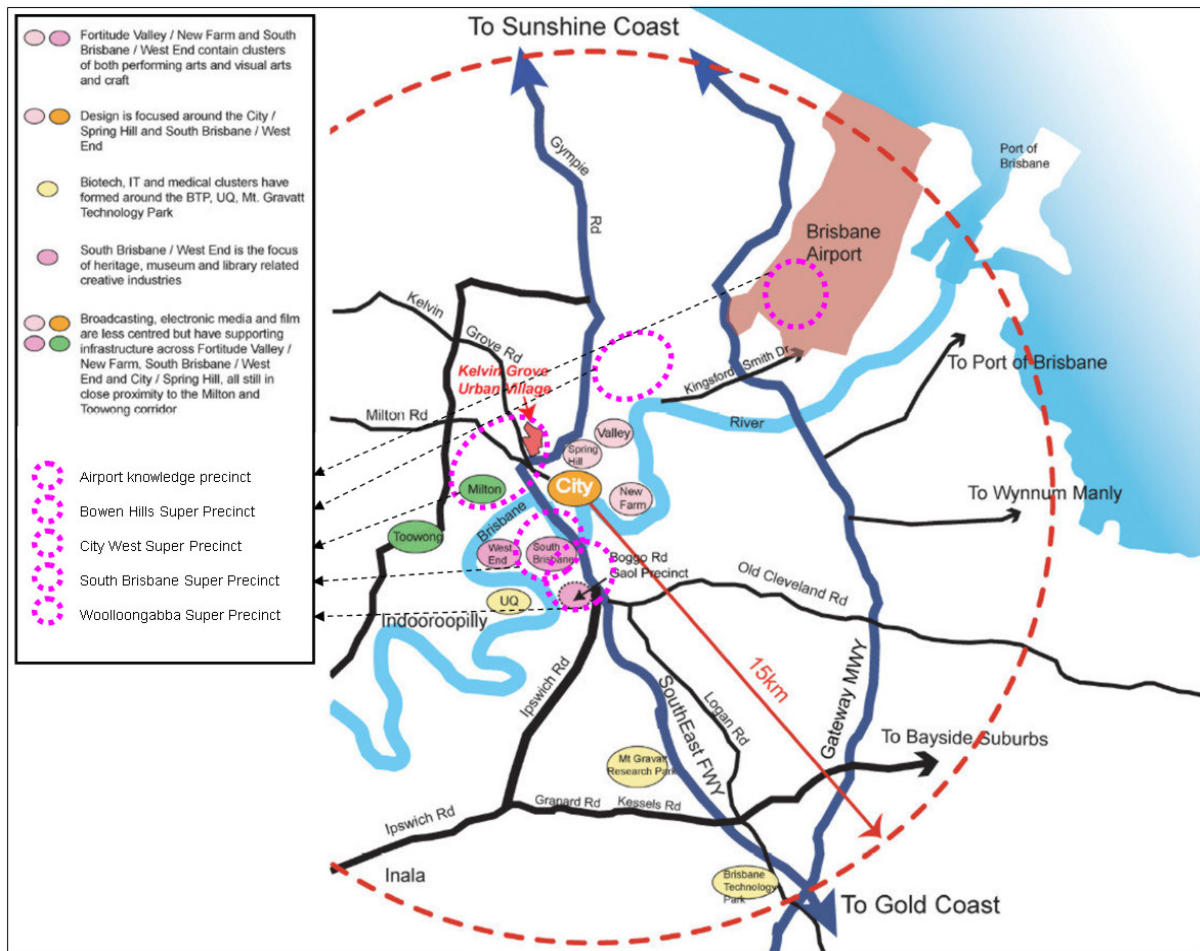


Figure 4. Brisbane's major knowledge clusters (Hornery Institute and Hassell, 2004:25)

Smart City Strategy strengthens the KBUD of Brisbane's inner core particularly by developing and integrating four super knowledge precincts. These super precincts, Woolloongabba, Bowen Hills, South Brisbane, and City West precincts (Figure 4), possess a remarkable range of creative, commercial, cultural, educational and research facilities to generate a strong knowledge economy for the city (Smart State Council, 2007). These super precincts will facilitate a new conceptualisation of the inner city lifestyle for Brisbane in its journey to become a globally recognised KC. Woolloongabba Super Precinct unites its urban growth area with the Boggo Road and PA Hospital precincts linking to University of Queensland, and is expected to become a major sub-city centre. It is planned to bring together major commercial and residential growth with research and knowledge development, and with strong educational connections to the regions major universities. Bowen Hills Super Precinct unites Newstead, the Bowen Hills transit oriented development area, Mayne rail yards, RNA Showgrounds, and Fortitude Valley, and combines a number of currently independent precincts. When fully developed, the precinct will comprise of a transit oriented development, a central park offering cultural and recreational facilities, a creative industries precinct, a knowledge precinct, a cosmopolitan shopping street, a showground, and waterfront development. It will also accommodate all ingredients of a self-contained city-centre, linked to existing major health, recreational and lifestyle precincts in proximity. South Brisbane Super Precinct unites South Bank, the West End Riverside growth area, and the Kurilpa growth area. It combines significant commercial and residential urban growth with major knowledge-based facilities including major recreational, cultural and tertiary educational facilities of Brisbane. City West Super Precinct unites Kelvin Grove Urban Village and Queensland University of Technology with Milton and the developing North-West CBD, and combines several currently independently planned knowledge precincts. The new super precinct will integrate major commercial and

residential urban growth of the area including the independently planned precincts (Smart State Council, 2007). In addition to these four super precincts another knowledge precinct is currently being developed at the Brisbane airport. This airport knowledge precinct will specialise on aviation and aeronautical R&D.

Conclusion

This paper highlighted the critical connections between KC foundations and integrated KBUD mechanisms in both state and local levels. The global orientation of Brisbane within the frame of national and regional level KBUD strategies is performing quite well, and several good practices in strategy and knowledge precinct developments from Brisbane have been acknowledged. However, the research has shown that Brisbane is still in the early stages of its KBUD strategy development and implementation. The methodology of this research only looked at generic KBUD policies. Therefore, further research and development of a monitoring system for scrutinising all KBUD activities is highly important to measure the success and failure of specific KBUD policies accurately. It is useful to develop an indicator system for Brisbane as an assessment and reporting tool, which also helps in benchmarking the city with other global KC initiatives. Along with Brisbane's opportunities and constraints, KBUD benchmarks and comparative analyses should take into account of specific developmental conditions of the city. Brisbane's capital systems and value structure, including all significant forms of social value, nourishes local KBUD strategies. The evaluation of Brisbane's KBUD approach based on the perception of global KCs is not a simple task, and the success of one particular region is largely based on its tacit and implicit values, and hence not easily replicated. Therefore, effective KBUD policies of Brisbane need to be resilient enough to capture the advantages of national and state level industrial, intellectual, socio-economic, and urbanisation characters. Another important point is the vital need for a participatory process: the more endogenous and participatory the KBUD strategy is, the more successful the outcomes are. In such a process the specifics of the demand side should be taken into account. The process should not be prescriptive, and should be adapted to meet the requirements of the individuals, and social and business communities. Although, Smart State and City Strategies refer most of these qualities, and so far there are some significant outcomes of the KBUD in Brisbane. Because of data and empirical research limitations, it is not possible to accurately comment on how successful Brisbane's KBUD strategies are. Therefore, further research focusing on in depth knowledge precinct, knowledge-intensive industry sector, and firm-based analyses are necessary to find out whether introduced KBUD strategies are adequate enough to transform Brisbane into a KC.

References

- Andrews, P. (2006). The smart regions report: characteristics of globally successful regions and implications for Queensland. Queensland Government Smart State Council, Apr 2006, Brisbane.
- Baum, S., Yigitcanlar, T., Horton, S., Velibeyoglu, K. and Gleeson, B. (2007). The role of community and lifestyle in the making of a knowledge city. Research Monograph, Griffith University, Brisbane.
- Brisbane City. (2003). Creative City: Brisbane City Council's Cultural Strategy 2003-2008. Brisbane: City Council.
- Brisbane City. (2006). Brisbane City Centre Master Plan 2006-2026. Brisbane: City Council.
- Burton-Jones, A. (1999). *Knowledge capitalism: business, work, and learning in the new economy*. Oxford: Oxford University Press.
- Carrillo, F. (2002). Capital Systems: Implications for a global knowledge agenda. *Journal of Knowledge Management* 6(4): 379-399.
- Carrillo, F. (2006). The century of knowledge cities. In Carrillo (Ed.), *Knowledge cities: Approaches, experiences, and perspectives*. New York: Butterworth-Heinemann: xi-xv.
- Castells, M. (2000). *End of the Millennium: The information age economy, society and culture*. Oxford: Blackwell.
- Cheng, P., Choi, C. Chen, S. Eldomiaty, T. and Millar, C. (2004). Knowledge repositories in knowledge cities. *Journal of Knowledge Management* 8(5): 96-106.

- Department of State Development. (2004). Creativity is big business. Department of State Development and Innovation. Queensland Government, Brisbane.
- Drucker, P. (1998). From capitalism to knowledge society. In Neef (Ed.), *The Knowledge Economy*. Boston: Butterworth-Heinemann.
- Dvir, R. and Pasher, E. (2004). Innovation engines for knowledge cities. *Journal of Knowledge Management* 8(5): 16-27.
- Ergazakis, K., Metaxiotis, K. and Psarras, J. (2004). *Towards knowledge cities*. Journal of Knowledge Management. 8(5): 5-15.
- Gonzalez, M., Alvarado, J. and Martinez, S. (2005). A compilation of resources on knowledge cities and knowledge-based development. *Journal of Knowledge Management* 8(5): 107-127.
- Graham, S. and Marvin, S. (1996). *Telecommunications and the city: Electronic spaces, urban places*. London: Routledge.
- Hornery Institute and Hassell. (2004). Kelvin Grove Urban Village Integrated Master Plan. Brisbane. Aug 2004.
- Knight, R. (1995). Knowledge-based development: Policy and planning implications for cities. *Urban Studies* 32(2): 225-260.
- Knight, R. (2008). Knowledge based development: the challenge for cities, in *Knowledge-based urban development: planning and applications in the information era* edited by T. Yigitcanlar, K. Velibeyoglu, and S. Baum, Hershey, PA: IGI Global pp. xiii- xxv.
- Landry, C. (2000). *The creative city: a tool kit for urban innovators*. London: Earhscan.
- Lever, W. (2002). Correlating the knowledge-base of cities with economic growth. *Urban Studies*, 39(5-6): 859-870.
- Odendaal, N. (2003). Information and communication technology and local governance: understanding the difference between cities in developed and emerging economies. *Computers, Environment and Urban Systems* 27: 585-607.
- Rayner, M. (2006). Strategies for communicating the Smart State. Brisbane.
- Queensland Government. (2004). Smart State Strategy Progress 2004. Queensland Government, Brisbane.
- Queensland Government. (2005). Smart Queensland, Smart State Strategy 2005-2015. Queensland Government, Brisbane.
- Queensland Government. (2006). South-East Queensland: Infrastructure plan and program 2006-2026, Brisbane: Office of Urban Management, Queensland Government.
- Queensland Government. (2007). Smart State Progress Report 2006-2007. Queensland Government, Brisbane.
- Searle, G. and Pritchard, B. (2008). Beyond Planning: Sydney's Knowledge Sector Development, in *Knowledge-based urban development: planning and applications in the information era* edited by T. Yigitcanlar, K. Velibeyoglu, and S. Baum, Hershey, PA: IGI Global pp. 184-202.
- SEQRP. (2005). South-East Queensland Regional Plan 2005-2026. Brisbane: Queensland Government. Office of Urban Management.
- Smart State Council. (2007). Smart cities: rethinking the city centre. May 2007. Brisbane: Queensland Government.
- State Development and Innovation. (2004). Queensland R&D priorities: policy and implementation plan. Queensland Government, Brisbane.
- Van Winden, W. and Berg, L. (2004). Cities in the knowledge economy. Rotterdam: European Institute for Comparative Urban Research.
- Van Winden, W., van Den Berg, L. and Peter P. (2007). European cities in the knowledge economy, *Urban Studies* 44(3): 525-549.
- Work Foundation. (2002). *Manchester: Ideopolis? Developing a Knowledge Capital*, London: Work Foundation.
- World Capital Institute and Teleos. (2009). The most admired knowledge city report. 2008 Edition. Monterrey, Mexico.
- Yates, J., Randolph, B. and Holloway, D. (2005). Housing Affordability, Occupation and Location in Australian Cities and Regions, Final Report, Australian Housing and Urban Research Institute, Melbourne.
- Yigitcanlar, T. (2007). The making of urban spaces for the knowledge economy: global practices. In Al-Furaih, Sahab, Hayajneh, Abdullah, Ibrahim and Thalha (Eds.), *Knowledge cities: future of cities in the knowledge economy*. Selangor: Scholar Press: 73-97.
- Yigitcanlar, T., Baum, S. and Horton, S. (2007). Attracting and retaining knowledge workers in knowledge cities. *Journal of Knowledge Management*, 11(5): 6-17.

- Yigitcanlar, T. and Martinez-Fernandez, C. (2007). Making space and place for knowledge production: knowledge precinct developments in Australia. State of Australian Cities 2007 National Conference, 28-30 Nov 2007, Adelaide, Australia.
- Yigitcanlar, T. and Velibeyoglu, K. (2008). Knowledge-based urban development: local economic development path of Brisbane, Australia. *Local Economy*, 23(3): 197-209.
- Yigitcanlar, T., Velibeyoglu, K. and Baum, S. (Eds.) (2008a). *Knowledge-based urban development: planning and applications in the information era*, Hershey, PA: IGI Global.
- Yigitcanlar, T., Velibeyoglu, K. and Baum, S. (Eds.) (2008b). *Creative urban regions: harnessing urban technologies to support knowledge city initiatives*, Hershey, PA: IGI Global.
- Yigitcanlar, T., O'Connor, K., and Westerman, C., (2008c). The making of knowledge cities: Melbourne's knowledge-based urban development experience. *Cities*, 25(2): 63-72.