
FEATURES

Knowledge-Based Urban Development: The Local Economic Development Path of Brisbane, Australia

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ABSTRACT Knowledge-based development strategies play an important role in supporting local economic development of cities in the knowledge era. This paper investigates local knowledge-based urban development policies of Brisbane, Australia in its long journey to become a competitive knowledge city. The paper examines Brisbane's recent progress towards establishing knowledge community precincts that are critical creative urban environments to attract and retain global investment and talent. This paper also discusses major challenges Brisbane is experiencing during the implementation of its state- and city-wide knowledge-based urban development strategies.

Introduction

Knowledge-based economy has been considered as the motor force of the contemporary global market and as an essential part of any globally competing cities (Carrillo, 2004). During the last two decades, content and components of production has shifted from industrial and mass production to knowledge-intensive goods and service production. This shift was accompanied by the flows of capital and the operations of transnational corporations seeking to create new avenues of industrial production, financial inventions and a new market. As the recent literature indicates,

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knowledge-based economy is highly attached to the quality and stock of human capital (Clarke, 2001).

Economic growth and theoretical studies underline that both the level and accumulation of human capital are important factors of production, and have competitive advantages in the growth processes (DYNREG, 2006). As cities and their economies move towards becoming more innovative and competitive, knowledge production and *knowledge-based urban development (KBUD)* have become crucial aspects of success in the tough global competition of attracting and retaining knowledge workers and knowledge-intensive industries (Florida, 2005). This move pushed cities to develop new urban quarters to form creative urban regions with particular focus on knowledge production, i.e. *knowledge community precincts (KCPs)*. KCPs are integrated centres of knowledge generation, learning, commercialisation and lifestyle that are created through a cooperative partnership of all tiers of government, research and education community, private sector operators, highly talented professionals and the public (Henry and Pinch, 2000).

This new precinct form is different from traditional business or technology parks and industry clusters where the emphasis is much more on the advantages of business co-location (Baum *et al.*, 2007). The aim of this paper, therefore, is to discuss socio-spatial development of KCPs within the frame of KBUD strategies. Brisbane provides a strong case of a city that orchestrates its knowledge-based development through KCPs. The Brisbane case is investigated to address the question to what extent city-wide KBUD policies play a role in the augmentation of sustainable local economic development and competitiveness of a city. The study also scrutinises the critical relationships between competitiveness and sustainability with regards to local level urban and economic development strategies of Brisbane. The paper specifically focuses on Brisbane's KBUD policies and KCP developments.

Competitiveness, urban sustainability and knowledge-based urban development

The competition between cities has intensified since information and communication technologies, rapid transport connections and lower transport costs enabled a real-time global market. Tough global competition pushes cities to define their roles within the global processes, and to develop niche market areas in which to excel (Carillo, 2006). To compete nationally and internationally, cities need: knowledge infrastructures; a concentration of well-educated people; technological, mainly electronic, infrastructure; and connections to the global knowledge-based economy (Yigitcanlar *et al.*, 2008a). The value of being competitive, therefore, has been globally pumped by neo-liberal policies with the motto of *compete or perish*. The competition, as Friedmann (2006) underlines, is not for

attracting consumers but for attracting national and international investors and workers to the city to secure its global positioning in the new economy.

Besides many promises, such as global recognition and wealth generation, the notion of competing cities has some dead-ends to sustain a continuous accumulation of growth and wealth that are heavily based on exogenous global capital. The logic of global competition dictates that 'global capital is footloose, has no loyalty to place, and its horizon of expectation is short: investments have to be recouped within only a few years' (Friedmann, 2006, p. 4). In terms of cities, the real danger is the mobility of global capital. Once capital moves on to a more lucrative location, what it leaves behind is the degraded city that has lost its major economic base as well as sustainable endogenous development opportunities.

Rapid urbanisation and its immense effects on the environment have raised the importance of urban sustainability and the necessity to adjust urban and economic development in the knowledge era. In terms of economic sustainability this means that:

the ability to generate wealth and resources and, for the moment, as the planet is now entirely capitalist and will be so for the foreseeable future, it also means the ability to create wealth by increasing productivity and increasing competitiveness of the city in a market environment (Castells, 2000, p. 119).

Connectivity of global linkages and renewal of human stock for creating added value play key roles to achieve economic sustainability in a knowledge-based economy. Other components of urban sustainability, social and ecological sustainability, are equally important for the formation of a knowledge society. Knowledge society is an integral element of a knowledge-based economy, therefore, rather than solely investing on economy, also investing on communities via social and human development programs helps them to become sustainable communities, and also helps in the construction of a strong economic base for cities (Mort and Roan, 2003).

In social terms, urban sustainability includes acknowledgement of social heterogeneity, inclusion, tolerance, public participation and democratic governance (Castells, 2000). Although natural environment has always been a necessary precondition for capital accumulation, the importance of ecological sustainability could only be fully appreciated in recent years, following the signals of environmental catastrophes (While *et al.*, 2004). Besides, social and ecological sustainability have strong relations with the foundation stones of knowledge city formation, i.e. urban diversity, quality of life, social equity, sustainable communities and preserved natural environment (Van Winden & van den Berg, 2004; Yigitcanlar *et al.*, 2008b).

As an emerging field of study and practice, KBUD is principally about processes of knowledge production, and is considered as a new strategic development approach in the tough global economic competition (Yigitcanlar *et al.*, 2008a). KBUD involves contemporary

understanding and management of value dynamics, capital systems, urban governance, development and planning. The main promise of KBUD is a secure economy in a human setting; in short, sustainable urban and economic development. KBUD transcends many areas of economic and social policy and has three broad purposes (Yigitcanlar *et al.*, 2008d).

Firstly, it is an economic development strategy that: codifies technical knowledge for the innovation of products and services; market knowledge for understanding changes in consumer choices and tastes; 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).

Secondly, it indicates the intention to increase the skills and knowledge of residents as a means for human and social development (Gonzalez *et al.*, 2005).

Thirdly, it builds a strong spatial relationship among urban development clusters. Broad KBUD policies include: developing financial, social and human capital systems; distributing instrumental capital; developing and adopting the state of art technologies; providing hard and soft infrastructures; and providing quality life and place (Carrillo, 2004; Yigitcanlar *et al.*, 2008a).

The realisation of necessity and importance of KBUD has led the development of KCPs, which are considered as the socio-spatial nexus of KBUD (Yigitcanlar and Martinez-Fernandez, 2007). KCP developments, as part of the KBUD policies, have also become a significant component of the strategic visioning of the rising knowledge cities (Carrillo, 2006). In line with this view, Brisbane considers KCP investments as a crucial part of KBUD, and a path eventually turns Brisbane into a globally recognised competitive knowledge city.

Brisbane's knowledge-based urban development policies

The basis of prosperity and welfare of cities largely depends on their capacity to take advantage of opportunities for sustained employment growth, and minimise the challenges of competitive economic conditions and urban population growth. Therefore, developing sound local economic development strategies is highly valuable for cities in managing growth and augmenting economic performances (Cities Alliance, 2007). In Queensland, where Brisbane is the capital city, State Government's 'Smart State Strategy' Foundation initiated a modest-scale local economic development policy basically aiming to create jobs for the future for Queensland (Mort and Roan, 2003). The Smart brand also comprises social and urban development policy areas to fulfil the requirements of the global knowledge-based economy. Smart State Strategy aims to produce a friendly investment climate, and enhance the endogenous skills base of the residents (Wiltshire, 2003).

This branding strategy also restructured economic activities by shifting the primary focus of production from traditional economic sectors to knowledge-intensive industries (Mort and Roan, 2003). This shift, in turn, brought a major move in the Smart State Strategy frameworks from a modest local economic development policy perspective to a more ambitious KBUD policy perspective, a sustainable development model involving the simultaneous pursuit of economic prosperity, environmental quality and social equity (Smyth *et al.* 2004). In 2007 inline with the Smart State Strategy, Brisbane has developed its ‘Smart City Strategy’. This new strategy aims to address and promote information access, lifelong learning, digital divide, social inclusion, quality of life and economic development in and around the city. In contrast to the relatively mature Smart State Strategy, the brand new Smart City Strategy has an intense urban focused development perspective. Smart City Strategy accommodates KBUD policies with an aim to transform Brisbane into a knowledge city.

The research reported in this paper investigates KBUD policies of Brisbane based on a pentagon prism analysis model, which mainly focuses on five key themes that constitute the primary foci of this policy analysis. These key themes are creative, administrative, business, natural and built environments, which are found to be the fundamental aspects of a KBUD policy (Yigitcanlar *et al.*, 2008c). Figure 1 illustrates the pentagon prism analysis model used for Brisbane, where connectivity between each environment and their global and local linkages play a critical role in the success of Brisbane’s KBUD policy.

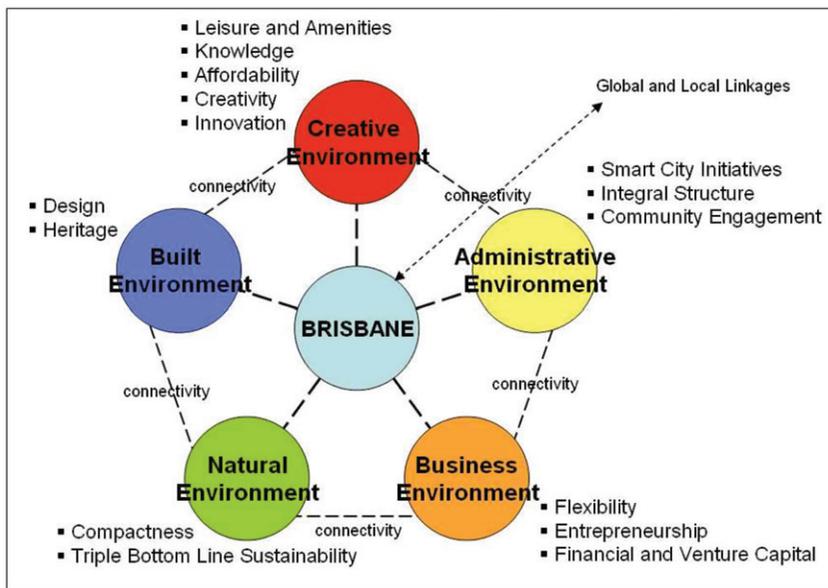


Figure 1. KBUD policy analysis framework of Brisbane

Creative environment

Creativity is considered as one of the vital sources for attracting investment and talent that drive the economic vitality of a city (Landry, 2000). Creative City Strategy of Brisbane is a result of its City Plan and Living in Brisbane 2010 Vision. Brisbane's Smart City Strategy was built on this creative city strategy. The creative city strategy not only recognised the importance of creativity and creative industries, but also urban development and renewal, ecological sustainability and development of social and human capitals. The strategy aims to turn Brisbane into a city of ideas that has venues and audiences to attract world-class festivals and events, and also to become a city of stimulation where energy, life and vitality create a sense of cultural confidence (Brisbane City, 2003).

Since the declining housing affordability as being a significant barrier for KBUD in Brisbane (Yates *et al.*, 2005), the Smart City Strategy aims to provide a wide range of dwelling options (in appropriate type and size) to avoid gentrification causing social exclusion, including creative people. Brisbane's drive to creativity, 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. A number of KCP initiatives have been put forward to augment the creativity in Brisbane by integrating creative knowledge clusters with mixed-use living environments.

Administrative environment

Brisbane City Council's efforts in human and social development mechanisms of KBUD are based around partnership. For example, State Government provides training in schools, universities provide training and skill development, information technology businesses provide infrastructure and knowledge-intensive industry provides services and employment. Brisbane incubates a synergetic administrative environment that is a result of public-private-academic partnerships, networking with other state agencies such as Department of Education in providing various initiatives including online training, and working with Federal and State governments in the development of local e-government (Odendaal, 2003). The synergy created in an administrative environment is combined with a strong local economy and lifestyle options to attract more knowledge-intensive industry and workers, which supports KBUD of the city. This synergy in the administrative environment supports the community engagement that creates opportunities for people to participate in decision-making processes, and helps in the development of sustainable communities. For example, a community engagement platform 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 Smart City initiatives.

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 an entrepreneurial spirit. Beyond this, the positive promotion of knowledge entrepreneurship is a vital aspect of a successful KBUD policy. Brisbane business community, however, suffers from uncoordinated efforts of government agencies that are giving a bad signal for the future growth of knowledge-intensive industries. Emphasis on global firms and incentives, on the other hand, creates a sense of exclusion for small and medium-sized enterprises which employ over 95% of Brisbane's workforce (Wiltshire, 2003). These negative indicators, however, can be reversed via strong financial support for small and medium-sized enterprises that are fundamental for a successful KBUD. From various government resources, Brisbane provides financial support for the public and private sectors to boost the local business environment. Brisbane's KBUD policy aims to create a dynamic and resilient business environment responsive to changing needs and demands of the market, and provides basic capital infrastructure and sound fiscal environment that enables future needs and demands. Nevertheless, in Australia only Sydney enjoys the proliferation of trans-national corporations' headquarters in the city, which translates into knowledge-based employment growth (Searle and Pritchard, 2008).

Natural and built environments

Effective local governance makes cities more competitive, more efficient and more attractive to investors and workers by promoting sustainable development of an urban environment (Cities Alliance, 2007). In this regard, ecological 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. Compactness is another key concept in considering Brisbane's future urban growth and natural assets in a more sustainable way. The new 'Metropolitan Regional Plan' (SEQRP, 2005) and Brisbane's 'Local Government Management Strategy' (Brisbane City, 2007) aim to optimise 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, provides adequate open space and leisure environments and restricts Greenfield development.

Higher density inner-city development is consistent with these planning strategies. In Brisbane, urban and regional planning instruments have been used as an effective tool in planning KBUD of the city and the

metropolitan region. Metropolitan Regional Plan 2026 supports 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 policy that:

identifies investment in research, development, technology diffusion and commercialisation of ideas . . . 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, p. 82).

The local government management strategy of Brisbane intends to describe how the local government area will achieve the infill dwellings targets and other urban development strategies and policies of the Regional Plan, and ensure that major (re)development sites are effectively planned and utilised. This development strategy also:

synthesises and ensures balance with the core matters; infill and redevelopment, Greenfield development, urban open, transit oriented development, assessment of housing needs and diversity (Brisbane City, 2007, p. 4).

Similar to Regional Plan, 'City Centre Master Plan' sets the strategic direction for the future development of Brisbane as one of the key KBUD projects of the city. This plan also emphasises the necessity of attracting knowledge workers as residents by providing quality of place and lifestyle options through urban regeneration and design schemes, and new KCP developments.

Brisbane's emerging knowledge community precincts

KCPs, which play a significant role in knowledge production and key magnets in the attraction of investment and talent, are considered as the socio-spatial nucleus of KBUD (Yigitcanlar and Martinez-Fernandez, 2007). Being fully aware of this, Brisbane invests on the development of KCPs across its metropolitan region. Smart State and Smart City strategies have augmented KBUD through the development of KCPs. Brisbane has emerging strengths in a number of dynamic knowledge-industry sectors that could help drive the regional capacity to develop into the future. Biotechnology and biosciences in general, aviation and aerospace, and information technology in particular are examples of strong specialised KCP development opportunities. These have the potential to make Brisbane a global player, particularly in the Asia-Pacific region, in the world's fastest growing knowledge-intensive industries (Andrews, 2006).

However, as Wiltshire (2003) indicates, like many other cities, Brisbane has been obsessed with global linkages with particular regions of the world since its actual distance from key global centres is comparatively high. In overcoming the tyranny of distance, one of the most recent trends is the development of KCPs around international airports. To this end, Brisbane airport have already diversified its property portfolio with a variety of knowledge-based land use activities including airport creative industry

precinct (Da Vinci precinct). This KCP is expected to be one of the hotspots of KBUD, and will be home to: craft, design and visual arts; games and leisure software; contemporary music; film and television; and performing arts industries (Yigitcanlar *et al.*, 2008c).

Brisbane CBD and inner city suburbs are home to a number of globally recognised KCPs. For example, Kelvin Grove Urban Village, adjunct to Queensland University of Technology, is specialised in creative industries, health and bio-sciences, and developed as a vibrant mix-use knowledge community precinct based on new urbanism and urban village principles. An information technology sector is developing in Milton, CBD and Fortitude Valley, with government representation in the iLab Incubator and Information Industries Board. Substantial activity is also centred around University of Queensland at St Lucia with a range of research facilities, including the Institute for Molecular Bioscience and a natural resources cluster. A similar concentration is located south of the city, with Griffith University at Nathan, the nearby Mt Gravatt Research Park, and Brisbane Technology Park. Emerging clusters are apparent at the Sunshine Coast, based on University of Sunshine Coast and at the Gold Coast with Griffith University KCP. The Gold Coast is also home to a thriving information technology industry and enterprises associated with leisure and entertainment. Elsewhere in the region, there are specialist centres of research and development at sites such as Pullenvale, Coopers Plains and Cooroy, which will be turned into KCPs.

The ongoing development of University of Queensland campuses at Ipswich and Gatton will be a key factor in diversifying economic activities of these suburbs, as well as increasing access to education and training in the western corridor. Urban redevelopment areas, particularly Boggo Road and Dutton Park KCPs, provide a good model for other KCP developments with their mixed-use development, incorporating high value-added research, development and service industries and linkages to university research facilities. Plans for redevelopment of Queensland University of Technology Caseldine Campus as a new KCP is another indication of Brisbane's ambition in KBUD. Besides, Smart City Strategy strengthens KBUD of Brisbane's inner city particularly by developing and integrating four super KCPs. These four super KCPs (Woolloongabba, Bowen Hills, South Brisbane, and City West precincts) possess a remarkable range of creative, commercial, cultural, educational and research facilities to generate a strong local economic development for the city (Smart State Council, 2007, p. 29). Such KCP developments have a potential to attract knowledge-intensive industries. Brisbane also aims to attract and incubate creative industries as these industries are important contributors of local economic development and the global knowledge-based economy. Brisbane's major creative industry clusters are located within the larger knowledge clusters of Brisbane (Figure 2).

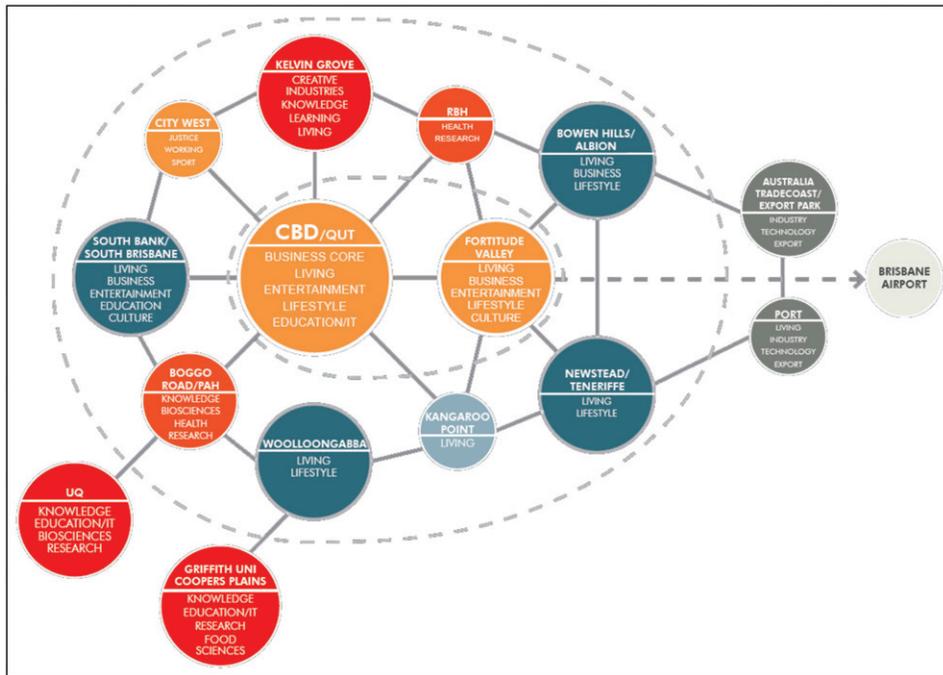


Figure 2. Knowledge clusters of Brisbane (Smart State Council, 2007, p. 26)

Brisbane's knowledge-based urban development challenges

Brisbane aims to engineer its local economic development with KBUD policies that mainly focus on KCP developments in and around the city. The rationale behind the extensive investment in KCPs is that it is believed once the conditions of a creative urban environment are met, this will attract both investment and talent to the city and will boost the local economy. However, the analytical framework analysis undertaken in this research to assess Brisbane's KBUD policies revealed a number of local economic development tensions and challenges that desired creative urban environment goals may not be reached in Brisbane in the near future. Therefore, the following challenging issues deserve attention.

The first challenging issue is the promotion of a highly creative environment. City's intellectual and creative assets include a reasonable number of creative people, e.g. artists, intellectuals, scientists and musicians, and as living human treasures these people need to exercise their talents to the full (Friedmann, 2006). Despite the recent efforts on developing KCPs, Brisbane's KBUD policy has some serious shortages on housing affordability which seems to be the biggest obstacle in Brisbane's path towards nurturing the creative environment and attracting exogenous creative talent, particularly young scientists and artists. In Brisbane, most of the land is privately owned and development is regulated largely by the

property market, reducing the effectiveness of local policies in making KCPs affordable living environments for creative people.

The second issue is the adjustment of the administrative environment for specific city-wide KBUD policies. This requires joined-up efforts between various public bodies and community associations, inclusiveness, a strong consensus around the vision and mobilising more resources for coordination. Despite the strong rhetoric of community engagement, networks and partnership in Brisbane's joined-up approach, its administrative environment lacks implementation of a holistic approach. Such an approach would consider multilateral networks of different government levels inline with city's development vision.

Another issue is the creation of a vibrant business environment that requires institutional and spatial proximity, clustering of economic activities, innovation, creativity and support for establishment of small and medium-sized enterprises. A healthy business environment requires bilateral relationships and a broad focus aiming to integrate KBUD, rather than narrow focus on the economics alone. Current strategies aim to establish conditions for the emergence of a vibrant business environment for Brisbane to become a globally competitive city. Although there are some positive outcomes, these strategies are still not able to provide the desired investment and talent flow into the city, particularly into its new KCPs.

The fourth issue is the control of urban growth over the natural environment (e.g. low-density suburban Greenfield development) without obsessing with short-sighted economic gains. Natural environments are scarce assets of cities that are easily squandered through thoughtless exploitation and unsustainable use. In recent years, environmental challenges (i.e. drought) have placed ecological sustainability at the hearth of Brisbane's urban development agenda. Since Brisbane is the fastest growing city in Australia, the city's future growth depends on carefully planned sustainable urban development considering a compact city form, water-sensitive urban design and integration of urban, transport and environmental planning (Yigitcanlar *et al.*, 2007). Implementation of a successful triple bottom line sustainability framework seems to be the biggest challenge for Brisbane.

The last major challenging issue is seeing foreign capital and talent as the primary, if not sole, source for local economic development. This is a dilemma of competitiveness, and Brisbane prioritises the policy on attracting exogenous investment and talent as the primary driver of economic welfare. In Australia, however, most of the foreign investment goes to Sydney and Melbourne. Brisbane, therefore, should also consider building its KBUD policies considering local strengths and endogenous (in)tangible assets (i.e. eco-tourism). Some cities around the world adopted KBUD policies without fully considering their local identities and strengths, and failed to achieve a sustainable development (Yigitcanlar *et al.*, 2008b). Therefore, it is essential for Brisbane to produce innovative tailored KBUD policies that are based on and are suitable for its unique character.

Conclusion

The famous Silicon Valley has inspired KBUD around the world in the belief it is a royal road to competitive advantage and economic development. Such successful KBUD policy implementation in the US has exposed that creative urban regions can be built by promoting knowledge-based and high-tech precinct developments. Engineering a creative urban region is a challenging task; factors related to culture of a place and government priorities might have a large influence on the economic success. Even ideal regions such as Silicon Valley are now shrinking and adjusting to a new business environment. Therefore, successful implementation of KBUD policies requires a sound understanding of the networks of cities where knowledge clusters (i.e. KCPs) has a particular importance in the promotion of spill-over effects, which are vital for long-term local economic prosperity.

So far, the development of knowledge clusters has been the most popular KBUD policy to achieve local economic development. However, just putting all high-tech pieces into a place neither constitutes a knowledge cluster, nor a creative urban region. The real danger here is that the promotion of such networks of premium places may result in the bypassing of remote and lagging urban areas with the serious risk of being marginalised by the knowledge-based economy. This is an issue which deserves consideration in the case of Brisbane, since KBUD has been chosen as Brisbane's local economic development path including substantial KCP investments. So far, in Brisbane, there are some visible positive outcomes of KBUD policy implementations, a boosting local economy, low unemployment and raising awareness towards social and environmental sustainability.

However, KBUD policies of Brisbane are still evolving to produce sustainable outcomes. The policy analysis undertaken in this research has revealed that Brisbane is facing serious challenging issues in its long journey to become a globally competitive knowledge city. Further research, to develop a set of performance criteria in monitoring Brisbane's achievements, potentialities and effectiveness of KBUD policies, is needed to clearly address to what extent these policies play a role in the augmentation of sustainable local economic development and competitiveness.

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