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Orchestrating knowledge-based urban development: lessons from Multimedia Super Corridor, Malaysia

Tan Yigitcanlar and Muna Sarimin
Queensland University of Technology, Australia

Abstract: *In the era of knowledge economy, cities and regions have started increasingly investing on their physical, social and knowledge infrastructures so as to foster, attract and retain global talent and investment. Knowledge-based urban development as a new paradigm in urban planning and development is being implemented across the globe in order to increase the competitiveness of cities and regions. This chapter provides an overview of the lessons from Multimedia Super Corridor, Malaysia as one of the first large scale manifestations of knowledge-based urban development in South East Asia. The chapter investigates the application of the knowledge-based urban development concept within the Malaysian context, and, particularly, scrutinises the development and evolution of Multimedia Super Corridor by focusing on strategies, implementation policies, infrastructural implications, and agencies involved in the development and management of the corridor. In the light of the literature and case findings, the chapter provides generic recommendations, on the orchestration of knowledge-based urban development, for other cities and regions seeking such development.*

Keywords: *Knowledge based urban development; knowledge economy; Multimedia Super Corridor; Cyberjaya; Kuala Lumpur; Multimedia Development Corporation; knowledge worker; knowledge era*

Introduction

The 21st century has marked the beginning of the new advancements in the field of information and communication technology (ICT). The rapid development of ICTs has also made a significant impact on the overall socio-economic fabric of cities and thus created an urgent need for urban planners to explore new ways of strategising planning and development that encompass the needs and requirements of the economy and society. The 21st century is also an era that the notion of knowledge economy emerged, where knowledge and ICTs are seen as important factors as the classical factors of production (i.e. land, labour, capital) in the creation of jobs and wealth (Cooke, 2001). The era of knowledge economy requires knowledge being the most crucial factor for national, regional and local economic development. Hence, the emergence of a knowledge economy has spawned a new notion of knowledge-based urban development (KBUD) as the latest wave of globalisation that extends over geographical boundaries (Yigitcanlar et. al., 2008a).

Historically cities and metropolitan regions have always been the hubs of knowledge generation and knowledge related activities with highly benefitting from various technologies (Van Doren, 1992). Particularly, advances in ICTs are inevitably making societies and cities increasingly knowledge-based, and responsive and dynamic to

answer the needs of residents and to ensure their quality of lives. During the last several decades, following the lead of developed countries, some of the developing countries realised the necessity of starting up their ICT sector in order to compete in an environment of increasing globalisation and emergence of the new knowledge economy. In recent years the nature of the urban development started to change accordingly as activities in the knowledge sector have become more important and they required conditions and environments which are different from the commodity-based manufacturing activities (Knight, 1995). At that instance, KBUD is seen as a new approach in urban planning and development in order to ensure that cities are competitive in the global market of the era of knowledge economy. Hence, in broad sense, KBUD is a new form of urban development for the 21st Century that could potentially bring both economic prosperity and sustainable socio-spatial order to the contemporary city (Yigitcanlar, 2007). In order to realise a KBUD and compete nationally and internationally, Yigitcanlar and Velibeyoglu (2008) suggest that cities need knowledge infrastructure (e.g. universities, research and development institutes), a concentration of well educated people (e.g. knowledge workers), technological, mainly electronic, infrastructure (e.g. ICTs), and connections to the global economy (e.g. international companies and finance institutions for trade and investment).

In the case of Malaysia, the goal of KBUD is taken seriously by policy-makers. Malaysia, being a developing country relies heavily on the manufacturing-led industries for the economic growth due to her rich natural resources and relatively low-cost labour force. However, the structural transformation of the global economy which focuses on knowledge and human capitals has challenged Malaysia to concentrate on activities with a higher level of value addition. In Malaysia, the shift to the knowledge economy is part of a wider plan to achieve the objective of the National Vision for 2020. The Vision 2020 is a 30-year plan to push Malaysia to achieve a level at par with the developed nations in terms of economic performance and technological capability (Mohamad, 1996). With the move towards the knowledge economy and knowledge-based development, Malaysia aims to achieve sustainable gross domestic product (GDP) growth rates in the long run with knowledge playing a dominant role in driving productivity and sustaining economic growth (Economic Research Services Department, 2000). Thus, Malaysia needs to successfully transform herself into a knowledge economy where its growth will be lifted to a new and higher trajectory, which is one of the key requirements for Malaysia to become a developed nation. This shift offers an opportunity for economic growth and prosperity, as well as bringing her faster to the achievement of the Vision 2020 goals. The most significant tangible evidence of Malaysia's commitment to the knowledge economy is the Multimedia Super Corridor (MSC) project, which is the largest KBUD attempt in Malaysia.

This chapter aims to provide an overview of and lessons learned from the MSC project, being the most ambitious KBUD manifestation in South East Asia. Following to this introduction section, the second section discusses the background, concepts and principles of KBUD. The third section investigates the implementation of the KBUD concept within the Malaysian context. The subsequent section scrutinises the development and evolution of MSC by focusing on strategies, implementation policies,

infrastructural implications, and agencies involved in the development and management of the corridor. The final section provides generic recommendations in the light of the MSC experience, on the orchestration of knowledge-based urban development, for other cities and regions seeking knowledge-based development.

Background

Knowledge-based urban development (KBUD) is spurred by the growth of knowledge economy, which refers to the generation of income through the creation, production, distribution and consumption of knowledge and knowledge-based products (Yigitcanlar et. al., 2008a; 2008b). The outputs of the knowledge economy are not necessarily raw materials and production of quantified goods, but also highly skilled and educated labour force producing abstract goods such as information, software and management, and transferring skills and knowledge particularly via the internet and other online vehicles. In other words, as Cooke (2001) states the traditional factors of production (i.e. land, labour and capital) are now strongly complemented with information and knowledge in the new knowledge economy. Figure 1 below shows the evolution of the key factors effecting economic development (for more information see Drucker, 1993).

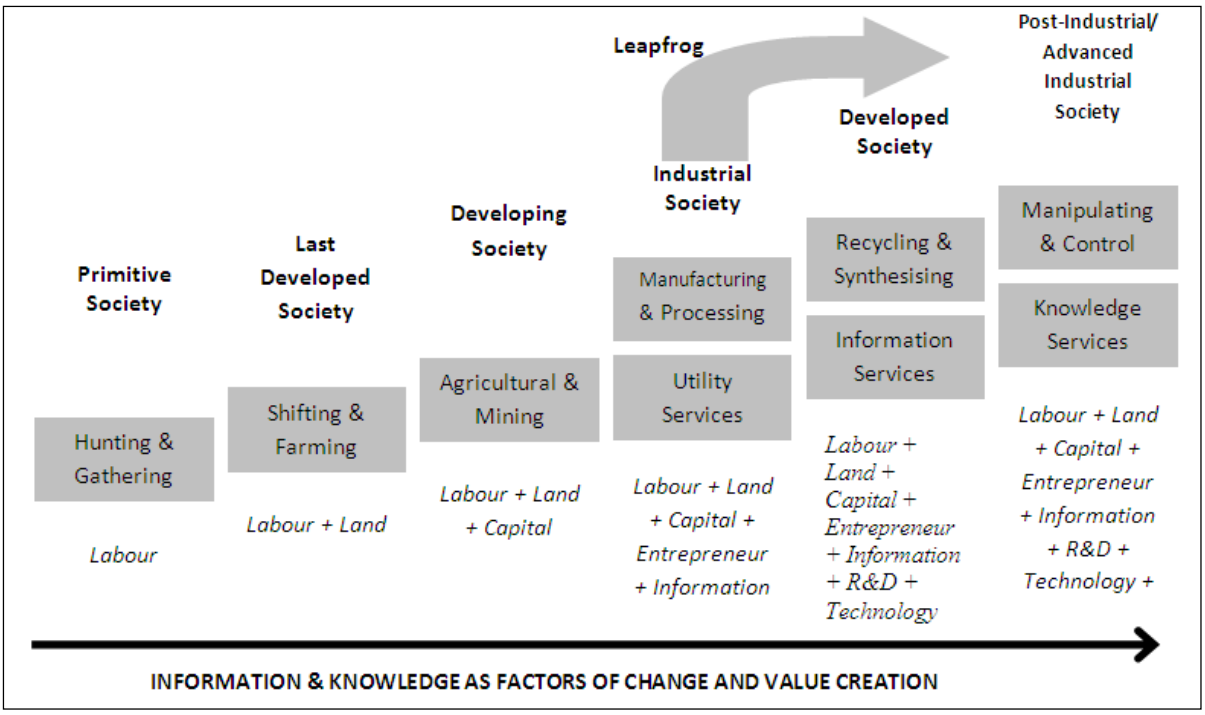

Figure 1. Evolution of factors effecting development (Mohan et al., 2004)

In general, the major elements of knowledge economy are characterised by the non-diminishing resources such as knowledge whereby the knowledge-inputs are rapidly expanding in tandem with technology and innovation. The advancements in internet creates virtual market places and organisations enabling increased mobility of capital and labour, highly educated labour force, high level of per capita wealth, skills and knowledge are key assets, which form a perfect incubator for knowledge generation.

ICTs are pillars to the knowledge economy as they provide a well connection to other global nodes and contribute to the formation of an open cosmopolitan society attractive to global talents (Corey and Wilson, 2006).

Since knowledge economy mostly focuses on the creation of abstract goods produced by highly skilled and educated workers, the creation of an ideal work environment for knowledge economy is not dependent on traditional factors such as proximity of the industry to the raw materials and availability of a transport hub to distribute produced goods. Therefore, a shift towards knowledge economy through the creation of KBUD presents significant new opportunities and challenges to the way the government, people and organisations think, operate, and manage their activities. In the knowledge era, KBUD needs to focus on catering and attracting knowledge-based activities and high-technology industries that are expected to contribute significantly to employment, GDP and exports. Factors of production such as labour, capital, raw materials and entrepreneurship remain important but knowledge is the key driving force underlying growth and a valuable commodity, not only as a factor of production but also as a commodity to be traded (Hearn and Rooney, 2008).

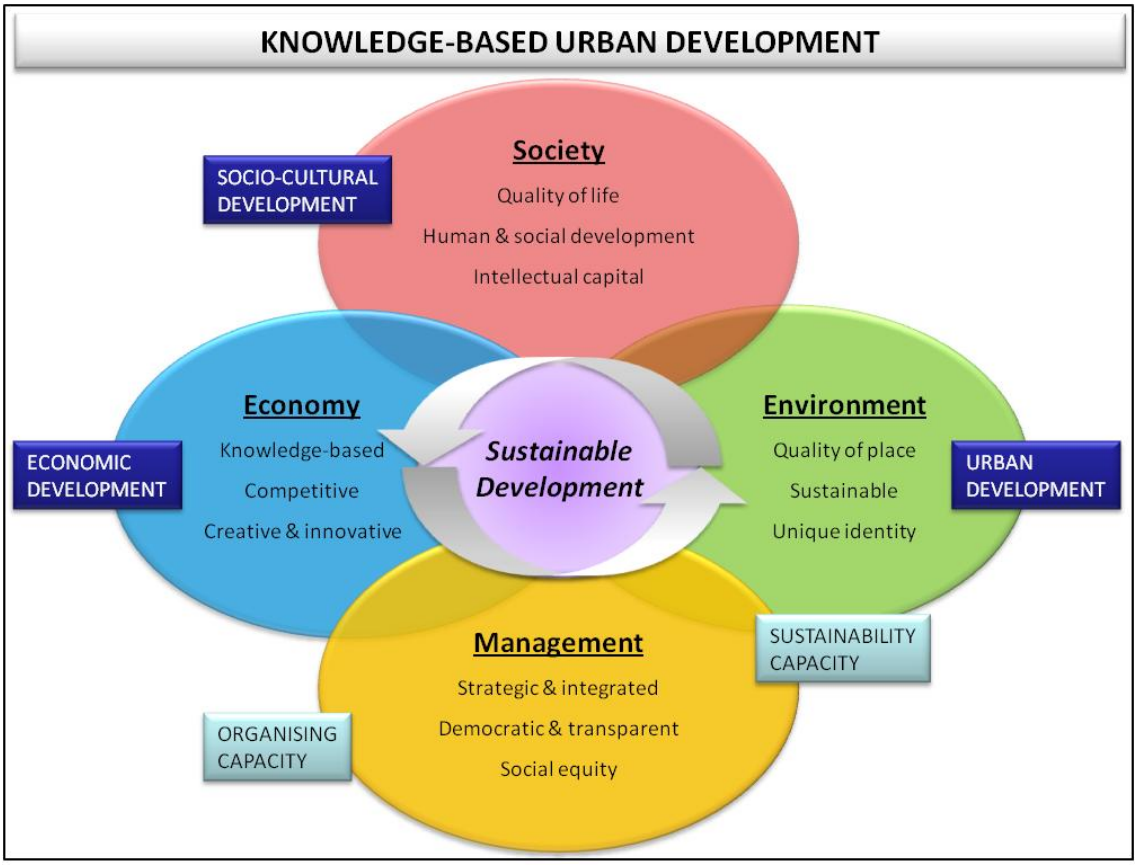

Figure 2. Pillars of knowledge-based urban development (Yigitcanlar, 2008:308)

KBUD transcends many areas of economic, social and urban policy, and has three broad purposes (Figure 2). Firstly, KBUD is an economic development strategy that codifies technical knowledge for the innovation of products and services, including urban

services, market knowledge for understanding changes in the economy, 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). It aims at a local economic development that is competitive and integrated with global knowledge economy. Secondly, KBUD indicates the intention to increase the skills and knowledge of residents and employees as a means for intellectual, human and social development (Gonzalez et al., 2005). It aims to increase the quality of life by providing necessary services for societal development. Thirdly, KBUD builds a strong spatial relationship among knowledge community precincts for augmenting the knowledge spill-over effect that contributes significantly to the establishment and expansion of creative urban regions and supports linkages and knowledge transfer between these precincts (Yigitcanlar et al., 2008c). It also aims an urban development that is ecologically sensitive, sustainable and safe.

The main attributes of KBUD are high levels of economic success, high levels of knowledge intensity, diverse knowledge industries, strong academic institutions, excellent communications and transport infrastructure, unique offering to investors and individuals, strategies to ensure all benefit from knowledge and economic success (Yigitcanlar et. al., 2008d).

Knowledge based urban development in Malaysia

Since early 1990s Malaysia's economy has been going through a structural transformation. The transformation has established a transition pace for the economy dominantly dependent on agriculture and primary commodities to move forward to a manufacture-based, export driven economy spurred by high technology and capital-intensive industries (Ramasamy et. al., 2004). Emergence of the knowledge era, where knowledge replacing physical and natural resources as the key ingredient of economic development, has provided a new platform for Malaysia to move forward to achieve a more sustainable economic and socio-spatial growth and become globally competitive. Thus, basic foundations of the knowledge economy have been set in Malaysia's development policies. The foundation is the concentration on the key areas including human resource development, science and technology, research and development, physical info structure, and financing and equity, which are the fundamental elements of building the knowledge economy and minimising the digital divide (Jaffee, 1998). In Malaysia, the shift to the knowledge economy is also a part of a wider plan to achieve the objectives of the National Vision of 2020. This vision was delineated by the Third Outline Perspective Plan which states that the knowledge economy will provide a platform for Malaysia to sustain a rapid rate of economic growth, enhance global competitiveness, and strengthen Malaysia's capability to innovate, adapt and create indigenous technology. The foundation initiatives for the knowledge economy in Malaysia started in the mid 1990s with the launch of her National ICT Agenda (NITA) and KBUD initiatives (i.e. the Multimedia Super Corridor Project) (Economic Planning Unit, 2001).

While the NITA objectives are very much geared towards the formulation of strategies and promotion of ICT utilisation and development, the KBUD initiatives are aimed at creating an ideal ICT and multimedia environment as well as a global test bed to enable Malaysia to be in the global competition to attract knowledge workers and industries and businesses. The basic physical infrastructures (e.g. telecommunications) for the KBUD initiatives were completed in 1999. In addition to the telecommunications infrastructure, there are also five designated cyber cities (i.e. Kuala Lumpur City Centre, Kuala Lumpur Tower, Technology Park Malaysia, Cyberjaya and Malaysian Technology Development Corporation, University of Putra Malaysia Incubator Centre) which played a critical role on the achievement of KBUD goals. While progressing further towards the knowledge economy, Malaysia has started the experience of such development on the knowledge accumulated from the implementation of the KBUD initiatives since mid 1990s, which has marked the beginning of the era of KBUD in Malaysia. KBUD initiatives are seen as the most significant tangible evidence of Malaysia's commitment to the knowledge economy. The corridor development project along with NITA also serves as a catalyst to expand knowledge economy, in other words, ICT-related industries, by creating an attractive and suitable environment for the development of ICT industry in Malaysia.

The National Vision for 2020 is a 30-year plan to push Malaysia to achieve a level at par with the developed nations in terms of economic performance and technological capability. With the move towards a knowledge economy, Malaysia is moving forward to achieve a sustainable GDP growth rate in the long run with knowledge playing a dominant role in driving productivity and sustaining economic growth. The most relevant context of KBUD has been embedded in the sixth challenge of the Vision 2020 of Malaysia: "the challenge is to establish a scientific and progressive society, a society that is innovative and forward looking, one that is not only a consumer of technology but also a contributor to the scientific and technological civilisation of the future" (Economic Planning Unit, 2006:39).

The Vision 2020 includes the planning and provision of ICT and telecommunication infrastructure in a multi-billion dollar urban mega-KBUD-project (i.e. the Multimedia Super Corridor Project). The Vision 2020 is intended to bring Malaysia to become a united nation, with a confident Malaysian society, infused by strong moral and ethical values, living in a society that is more democratic, liberal and tolerant, caring, economically just and equitable, progressive and prosperous, and in full possession of an economy that is competitive, robust and resilient. Thus, Malaysia needs to successfully transform itself into a knowledge economy where its potential growth will be lifted to a new and higher trajectory (Huff, 2005). This will offer unparalleled opportunity for economic growth and prosperity, as well as bringing the country faster to the achievement of the Vision 2020 goals.

In relation to KBUD, what makes KBUD in Malaysia is so important is that unlike similar projects in other countries, Malaysia is explicitly attaching aspirations for both national development and national identity to it. As envisioned by the Malaysian Government, the mega-KBUD-projects "will not be just a physical location, or just another industrial

or technological park, and it is not a far eastern imitation of the Silicon Valley, [but] it represents a new paradigm in the creation of value for the [knowledge era]" (Mohamad, 1998:107). Malaysia envisioned that KBUD initiatives will be the best platform to uplift the nation to be at par with the global aspirations in the era of knowledge economy. KBUD initiatives will be a unique form of KBUD that will incorporate economic goals as well as the socio-spatial vision of the country. As noted by Mohamad (1998) that Malaysian KBUD initiatives are attempts to create environments for testing both the technology and the way of life itself.

Taylor (2003) states that Malaysia's long term objectives of shifting Malaysia into the knowledge era are reflected in the various development plans. The fundamental strategy is to transform the nation into an information-based society, and to move away from the previous focus on resource-based industries. In this respect, the Malaysian government recognises the importance of shifting its investments to intellectual capital and skilled manpower. Malaysia has always placed knowledge as a top priority in economic and social development. These will be translated into the policies incorporated in the national social and economic plans such as the five year Malaysia Plan and Outline Perspective Plan. In the most recent the Ninth Malaysia Plan, which became the economic blueprint for the nation between 2006-2010, knowledge development is placed as the second of five priority development thrusts. Malaysian planning system is very much based on the British plan-led system where future spatial development of the country is directed by policies outlined in the hierarchical order of plans (i.e. National Physical Plan, Structure Plans and Local Plans). These development plans are prepared parallel to the aspirations of Malaysia which are spelt out in the national economic and social plan. As such the direction of future spatial development in Malaysia is foreseen to correspond to the vision of KBUD.

Current policies indicate that Malaysia continues to nurture the elements of knowledge in the future development of the country (Al-Furaih et al., 2007). This future direction was envisioned by the newly elected Prime Minister in his speech at the Symposium of Knowledge Cities which was held in the city of Shah Alam, Selangor, in 2007. He emphasised on the needs to have "the physical infrastructure to cater for greater knowledge acquisition, embarking on initiatives that would attract value added investments into the city through technology transfer and incorporating learning and knowledge culture among the city dwellers". He also added that a "knowledgeable population is a key in fostering a knowledge-based economy which able to bring Malaysia to a greater height in development and progress".

Multimedia Super Corridor

The largest Malaysian KBUD initiative is the Multimedia Super Corridor Project (MSC), which is a hub designed to promote multimedia products and services by bringing together the legislative framework and next generation telecommunications infrastructure. The aim of MSC project is to create a world class urban corridor with state-of-the-art multimedia infrastructure, efficient transportation system and an attractive living environment to attract knowledge workers and industries to invest and

operate within the area. The development of MSC contributes to the creation of a high technology environment to enable Malaysia to involve in the mainstream activities necessary to attract knowledge workers, technopreneurs and industries. The first phase of MSC area covers about 750 sq.km. The corridor is a cluster of seven distinctive functional zones within the Klang Valley (Figure 3). There are two intelligent cities (i.e. Putrajaya and Cyberjaya). While the former acts as a new federal administrative centre and electronic government, the latter is a development hub of ICT and multimedia companies, professional and students (Mukhtar, 2008). There is an airport city which serves as a service centre to support Kuala Lumpur International Airport and aeronautical services centre. A nucleus for local ICT small and medium-scaled enterprises (SMEs) is located in the Cyber Village. Tele-Suburb is the residential zones which comprises of smart homes, smart schools and smart neighbourhood local centres. High-Technology Park is the location for industrial related activities and they include the high-tech industry, institution and R&D zones. There is also a R&D centre which places a collaborative cluster of academic institutions and corporate R&D Centre at the heart of MSC (MDec, 2008).

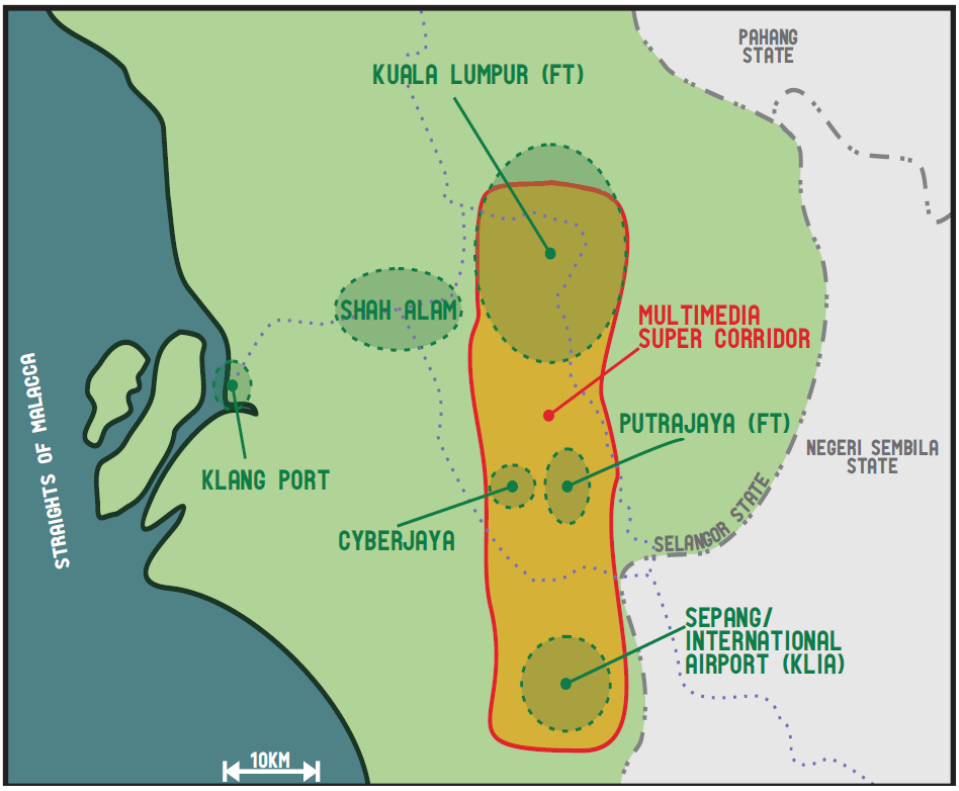

Figure 3. Location of the Multimedia Super Corridor (Bowman et. al., 2008:9)

Cyberjaya is the core of the MSC and one of the two intelligent cities established within the corridor. While the other intelligent city, Putrajaya, is set to function as the new government headquarters, the development of Cyberjaya is initiated as a Cyberjaya Flagship Zone. Cyberjaya was officially launched in May 1997 and located adjacent to Putrajaya. Cyberjaya covers an area of approximately 7,000 hectares and is designed to

provide infrastructure and facilities to support multimedia industries in the MSC. Cyberjaya is planned to accommodate approximately 240,000 residents and a working population of 10,000 foreign knowledge workers. The development components of Cyberjaya consist of designated zones for: housing; enterprise; open space and greenery; institutions, and: commerce and businesses (Federal Department of Town and Country Planning, 2005; 2006). The development aims to create a multimedia catalyst centre for global R&D and design, with the capacity to be the operational headquarters for multinational firms. In achieving a world class status, all developments in Cyberjaya and the MSC area are governed as whole by a set of guidelines, comprising of local plans and urban design guidelines. The KBUD in Cyberjaya is guided by this planning vision outlined as below (Federal Town and Country Planning, 1997a; 1997b):

- To have the highest quality-of-life opportunities for all socio-economic levels of resident and commuting worker communities;
- To create conductive places for work, predominantly low density residential living, and leisure, in safe, attractive, green environments;
- To facilitate the development of a socially and culturally rich community in which residents with a wide diversity of cultural and socio-economic backgrounds have a strong sense of 'civic ownership' and pride in their shared welfare and environment;
- To facilitate the development of a human oriented, intelligent city in harmony with nature;
- To physically facilitate the wide-scale building of an ICT literate population through education and skill development;
- To provide the physical attributes necessary and conducive to the National Strategy for the development of the MSC as a hub of information technological advancement and future economic growth in promoting new industrial sectors;
- To provide advanced telecommunication infrastructure for multimedia and ICT industries, business and residential users;
- To provide road, public transit and pedestrian networks that are convenient, reliable, safe and efficient and provide barrier-free movement for the young, elderly and disabled;
- To provide stormwater drainage, water supply and sewerage networks that are safe, reliable and efficient;
- To achieve a harmonious and balanced natural and built environment, protecting natural environmental resources;
- To promote opportunities for vibrant enterprise, commercial and residential development at all developable land, with having regards to the National policy of creating environmentally friendly entrepreneurs;
- To encourage the orderly development of land and resources, and the efficient management of all phases of the development process including the construction phase.

Multimedia Development Corporation (MDeC), a one stop agency appointed to manage the operation of the MSC, envisions a 20-year time frame for the full implementation and execution of the corridor. There are three phases of activities within the 20-year

period as shown in Figure 4. Phase 1 of MSC (1996-2004) has completed and the MDeC has successfully managed to attract a core group of world-class companies, launched seven Flagship Applications, put in place a world-leading framework of cyber laws, and established Cyberjaya as the world's-first intelligent city. Presently, the MSC is at its second phase, which links the corridor to other cities around Malaysia and the globe. Phase 2 of the MSC development is planned to be completed soon (2004-2010) whereby it will link the MSC to other cyber cities in Malaysia and around the world by creating a web of corridors and establishing world class companies. The development will also set global standards in flagship applications, champion cyber laws within the global society, and establish a number of intelligent and globally well-linked cities. Phase 3 (2010-2020) foresees the corridor to be expanded to the whole country by providing a spin for a full transformation into a knowledge economy and society as envisaged in the Vision 2020 (MDeC, 2006; 2008).

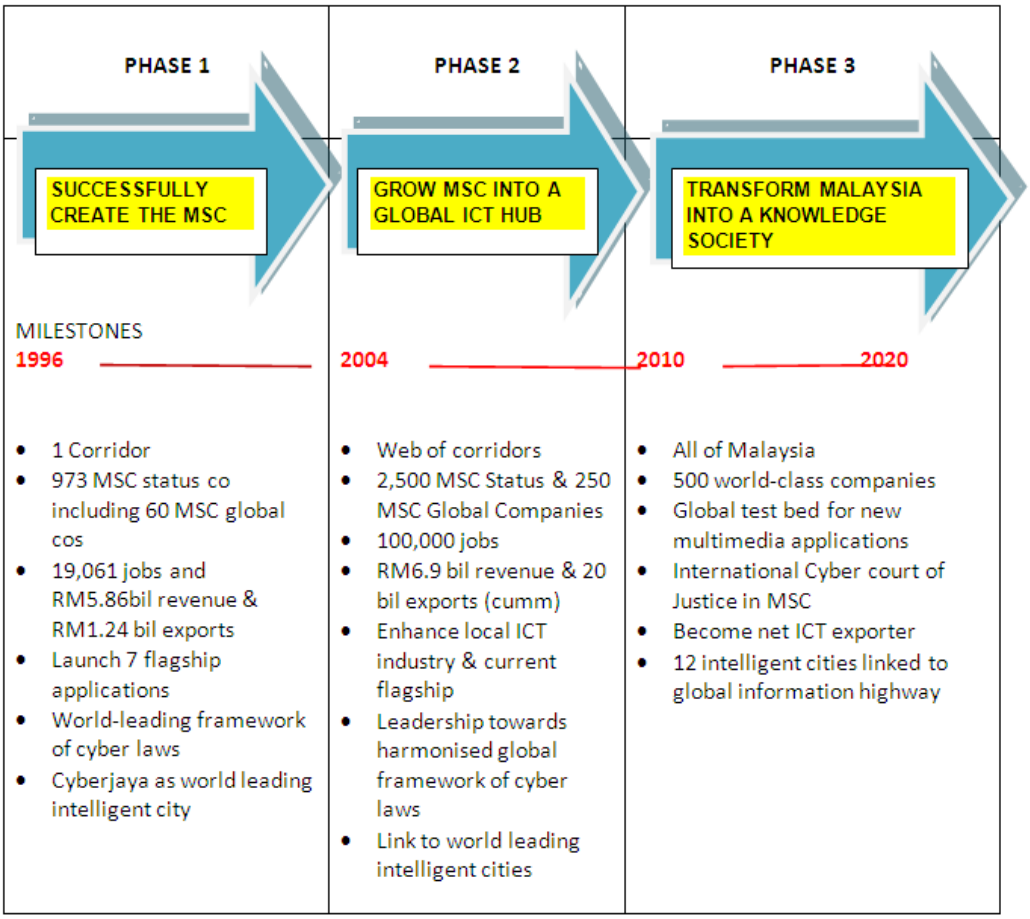

Figure 4. Milestones of the MSC development (Azhar, 2008)

In order to make the corridor more attractive to local and international investors, a number of policies are developed. The first policy was focusing on the development of the physical infrastructure including Kuala Lumpur City Centre, Kuala Lumpur International Airport and integrated logistics hubs, rapid rail link to Kuala Lumpur, a smart highway and two intelligent cities (i.e. Cyberjaya and Putrajaya). The second one

involves the execution of laws, policies and practices, which are purposely designed to encourage electronic commerce, facilitate the development of multimedia applications. There were also a policy for the development of high-capacity telecommunications and logistic infrastructure, which is built on up to 10 gigabit digital optical fibre backbone and using the ATM switches to provide optic fibre connections to buildings. This network has a five gigabit international gateway with direct links to the US, Europe and Japan as well as the other nations in South East Asia. The final policy also highlighted the need for a high powered one-stop-shop, the MDeC, to monitor the operation of the MSC. The overall development strategies of the MSC are (MDeC, 2006):

- Leapfrogging Development Stages, which highlighted the transformation from industrial society to knowledge society;
- Flagship Applications, which identified seven main applications to enable Malaysia to achieve a healthy and successful knowledge economy growth. These applications are: multipurpose cards, R&D clusters, electronic government, worldwide manufacturing web, borderless marketing centre, telemedicine and smart schools;
- National Information Technology Council, which drafted the National ICT Agenda and aims to transform the Malaysian society into a civil society in line with the Vision 2020;
- Strategic Policy Thrusts, which concentrated on the development of e-commerce, e-public services, e-learning, e-economy and e-sovereignty.

With abovementioned policy and strategies in mind, for the physical planning of the MSC, ten strategic development locations have been identified: Kuala Lumpur City Centre, Kuala Lumpur Tower, Putrajaya, Cyberjaya, Kuala Lumpur International Airport, High-tech Parks, R&D, Tele-Suburbs, Airport City and Cyber Village. Beyond ICT and multimedia industries the corridor also attracted non-ICT businesses such as finance, insurance and real-estate sectors. In order to encourage the establishment of knowledge industries in the MSC, the Government offers a Bill of Guarantee for "MSC-Status" companies. The Government of Malaysia also commits to (MDeC, 2006):

- Provide a world-class physical and information infrastructure;
- Allow unrestricted employment of local and foreign knowledge workers;
- Ensure freedom of ownership by exempting companies with the MSC Status from local ownership requirements;
- Give freedom to source capital globally for the MSC infrastructure, and the right to borrow funds globally;
- Provide competitive financial incentives, including no income tax for up to 10 years or an investment tax allowance, and no duties on import of multimedia equipment;
- Become a regional leader in intellectual property protection and cyber laws;
- Ensure no Internet censorship is applied;
- Provide globally competitive telecommunications tariffs;
- Tender key infrastructure contracts to leading companies willing to use the MSC as their regional hub;

- Provide an effective one-stop agency – the MDeC.

The MDeC is paying a great attention in attracting and retaining knowledge workers as much as knowledge industries. Companies are to apply through the MDeC for working visas, which permit multiple entries, for their qualifying foreign employees. Working visas for these foreign knowledge workers is granted for initial periods of up to five years. This benefit helps in transfer and understanding of knowledge by working with different people from different parts of the world. Thus, a key factor for the development of MSC is to compete in the global arena (MDEC, 2008).

The MSC status companies are also offered both the financial and non financial incentives. The former includes five years exemption from Malaysian income tax, renewable to 10 years, or a 100% Investment Tax Allowance for up to 5 years on new investments made in MSC cyber cities (provided under the Promotion of Investment Act 1997), duty free import of multimedia equipment as well as R&D grants for local SMEs. Meanwhile there is also non financial incentives given and they include unrestricted employment of foreign knowledge workers, freedom of ownership, freedom to source capital globally, intellectual property protection, execution of cyber laws and a healthy physical environment.

Several agencies played a key role in the development and management of the MSC. These agencies are appointed by the Malaysia government to facilitate and promote the development of MSC.

Multimedia Development Corporation (MDeC) is a government-owned corporation that functions as a 'one-stop agency', focusing on ensuring the success of the MSC and the companies operating in the corridor. The main role of MDeC is to advise the Malaysian Government on legislation and policies, develop MSC specific practises, and set standards for multimedia operations. With a mission to realise Malaysia as a global hub and preferred location for ICT and multimedia innovations, services and operations, MDeC acts as the promoter, developer and manager of the MSC by facilitating the entry of companies and granting MSC status to participating companies as well as realising MSC and Malaysia's overall vision and objectives (MDec, 2008).

Cyberview Corporation is a government owned company and landowner of Cyberjaya. It has been mandated by the Malaysian government to spearhead the development of Cyberjaya. Cyberview's mission is to realise Cyberjaya as a nucleus of the MSC and as global hub and preferred location for ICT, multimedia and services for innovation and operations, and to fulfil specific government initiatives in support of the Vision 2020. Among others, the main Cyberview's roles in the development of Cyberjaya includes ensuring the development of Cyberjaya is achieved in accordance with the MSC guidelines, providing both assistance and support in coordinating joint activities with organisation in Cyberjaya, advising the government on the MSC. In addition, Cyberview is also responsible with the physical development tasks of Cyberjaya including attending to all land administration matters, building enterprise buildings, building

supporting amenities as well as undertaking necessary maintenance work (Cyberview Corporation, 2009).

Setia Haruman Corporation acts as the master developer of Cyberjaya. It was entrusted with the role to plan, design and prepare the primary infrastructure for the Cyberjaya Flagship Zone. The area covers 7,000 acres of freehold land consisting of four main zones known as enterprise, commercial, institutional and residential. Each zone is fully equipped with a host of intelligent network services and interactive broadband services. In essence, all aspects of the Cyberjaya development are undertaken by Setia Haruman Corporation. It involves with planning and designing, providing basic infrastructure, marketing and selling of land parcels and other real estate developments to investors and sub developers to design their own premises subject to permitted planning guidelines. In addition, Setia Haruman offers assistance to the MSC status companies in obtaining the right land and approvals for sub division and building plans. It has also been approved to oversee the city's residential development (Setia Haruman Corporation, 2009).

Sepang Municipal Council (SMC) which was previously known as Sepang District Council is the local planning authority for Cyberjaya. In March 2005, Cyberjaya Development Committee approved to upgrading the status of SMC with a total of about 60,000 sq.km developable land. The responsibility of SMC as the local planning authority for Sepang is set out under the Local Government Act 1976, which includes 'planning, development and community services' (MDec, 2006). The function of the local planning authority is crucially vital to deal with any planning applications and to grant planning permissions in Cyberjaya (SMC, 2008).

Conclusion

It is evident that ICTs in the knowledge era are continuously shaping the physical and economic developments, including KBUD, which are playing a major role on the development and future expansion of the infrastructure development of cities. The success of Cyberjaya, being the pioneer city in the MSC strategy, has been envied by many. Although there were some criticisms levied pertaining to issues related to social and cultural development, the success can be evaluated from the number of inward investments and the statistics on job creation. Bunnell (2004:148) states that "by the infrastructural and economic criteria of its proponents, [the] MSC is perhaps the qualified success". Lepawsky (2005) highlights that the MSC is unique and interesting as Malaysia is attaching aspirations for both national development and national identity to it, and states that the MSC "is not [only] just another physical location, or just another industrial or technological park – and it is not a far eastern imitation of the Silicon Valley, [but also] represents a new paradigm in the creation of value for the information age" (Mohamad, 1998:107, cited in Lepawsky, 2005:10). Although there are some positive outcomes, still policies on urban development in such large scale and ambitious projects take long time to materialise. Therefore, in terms of urban planning and development of the MSC, it is still early years for a comprehensive evaluation.

Besides project dynamics, physical development of the MSC is also subject to the global economic conditions. Bunnell (2004) reminds us that the physical development of Cyberjaya suffered an inevitable delay of its supporting infrastructure due to economic recession in 1997. However, until recently the overall development of the MSC was progressing quite well when compared to other digital districts such as Boston and Silicon Valley (Indergaard, 2003 cited in Bunnell, 2004). But unfortunately, the current economic crunch beginning of 2008 is foreseen to bring almost similar impact of the 1997 recession to the overall development of the MSC. Nevertheless, the MSC is a long term plan, and it is fully supported by the Malaysian Government and highly regarded as an emerging knowledge corridor. Although the Malaysian government is the architect of and has its overall say of the MSC Vision, its implementation is largely driven by the private sector.

In general, there are a number of lessons that can be learned from the development of MSC being the largest manifestation of KBUD initiative in Malaysia. Firstly, placing MSC as one of the national agendas is perhaps, the best and unique strategy in realising the success of KBUD in Malaysia. While other KBUD initiatives are locally based (e.g. Delft, Barcelona, Silicon Valley), MSC is positioned as part of the Malaysia's national development agenda. The visions of MSC were later translated into series of development plans which guide the direction of the future development for the country. This is a systematic approach in ensuring that elements of KBUD are being continuously embedded in the future socio-spatial development for the whole nation. Secondly, the present success of MSC owes much to the concerted effort by both the public and private sectors. Although the former is the chief architect of the MSC vision and the main provider for the physical and information infrastructure, its implementation is largely driven by the private sector. A high government intervention and its continuous commitment in ensuring the success of this KBUD initiative will increase the confidence of international investors. It indicates a strong commitment given by the Malaysian government against unfavourable market forces. The creation of MDeC, being a one-stop-agency to oversee the operation of MSC is seen as the institutional factor that has contributed to the success. The third lesson learned from the MSC development is that KBUD initiative has to be rightly sited and phased. The first phase of MSC which is located within the Klang Valley Metropolitan Area (KLMA) offers a unique locational advantage. The MSC has a 'unique niche' and it offers a comprehensive package with attractive surroundings and good quality of life (Taylor, 2003). The present pool of the local knowledge workers in Kuala Lumpur, the national capital region plays a big role in the early establishment of the KBUD initiative. KLMA also offer the best urban setting in Malaysia to further enhance the physical environment.

With the steady progress and entering its second phase, the MSC has clearly served as the best platform for the manifestation of KBUD principles and energies to move the country forward to achieve the Vision 2020 and hence, reaching the status of a developed country. The MSC is seen as the best instrument to support Malaysia to be more responsive to the threats and opportunities posed by economic globalisation, which is market driven and technology oriented. In orchestrating a successful KBUD, a

comprehensive effort from all levels of government and is required to necessitate the success.

For the case of developing countries, which have similar characteristics like Malaysia, putting the KBUD initiative as part of the national agenda is always regarded as the best strategy. What is presently needed is a continuous and sound policy monitoring in ensuring all of the MSC vision and objectives are achieved and hence making Malaysia to be more competitive in the global market. A particular attention probably is needed in the aspect of intangible factors of MSC such as the attitude and culture of the society (i.e. knowledge communities) that makes up the essence of a successful KBUD. Their input in planning and development of the physical environment is urgently required to further enhance the success of any KBUD initiative. The MSC, being the Malaysia KBUD initiative will certainly equip Malaysia to enter into the global markets by becoming an international centre for knowledge industries and businesses as well as building a knowledge-based society. Future opportunities for research with regards to MSC, being a KBUD initiative in Malaysia is immense. KBUD is a dynamic, participatory and strategic process and it requires a careful and delicate orchestration where the real success cannot happen in a short span of time, and hence a continuous evaluation and assessment are required.

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