
Dubaization of Istanbul: insights from the knowledge-based urban development journey of an emerging local economy

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Abstract. Knowledge-based urban development (KBUD) has become a popular pursuit for cities, especially from the developing countries, to fast track the catching up process with their counterparts in developed nations. Nevertheless, for these cities the KBUD progress is daunting and full of challenges. The authors aim to shed light on the major KBUD challenges of emerging local economies by undertaking an in-depth empirical investigation in one such city. They scrutinize the prospects and constraints of Istanbul in her KBUD journey through comparative performance and policy context analyses. The findings reveal invaluable insights, not only for Istanbul to reshape the policy context and align development with contemporary KBUD better, but also for other emerging local economies to learn from these experiences.

Keywords: knowledge-based urban development, knowledge city, knowledge economy, emerging local economy, Istanbul

1 Introduction

Pressures and new developments in the knowledge economy era (Cooke and Leydersdoff, 2006) have prompted cities to focus on their competitive strategies (Gabe et al, 2012). This has brought a new perspective to urban planning and development (Van Winden, 2010), and knowledge-based urban development (KBUD) has become a popular policy for cities aiming to increase their competitive edge (Huggins, 2010), upgrade infrastructures (Bulu, 2013), and improve quality of life (Yigitcanlar et al, 2008). It is seen as a policy of targeting building a place to form perfect climates for business, people, space/place, and governance (Yigitcanlar and Lonnqvist, 2013). This new way of thinking encompasses a vast variety of development dimensions—economy, society, environment, governance—that go way beyond traditional knowledge-based development—mostly focusing on socioeconomic dimensions of development (Yigitcanlar, 2014). Hence, as advocated by Kunzmann (2009) and Carrillo et al (2014), KBUD provides a comprehensive perspective in achieving knowledge city transformation.

Whilst the applications of KBUD policy in cities of the developed world are widespread—for example, Austin, Helsinki, Manchester, Melbourne, and Singapore (Grodach, 2011; Yigitcanlar, 2009; 2010)—KBUD is receiving increasing attention from the developing world: for example, Dubai, Istanbul, Kuala Lumpur, Monterrey, and Shenzhen (Huggins and Strakova, 2012). However, to date, no success stories are recorded due to the lack or failure of policies targeting the formation of conditions for cities' knowledge economy excellence. Literature provides a limited understanding of KBUD processes and the challenges facing

emerging local economies of the developing world (Sarimin and Yigitcanlar, 2011; Zhao, 2010). Their pursuit is little studied and there is a longstanding research gap in KBUD orchestration.

With this paper we aim to contribute to this under-studied area by scrutinizing KBUD in the context of an emerging local economy. Istanbul was chosen as the case-study city for such exploration because of its: having an astonishing historical background and potential to become a knowledge city; achieving a notable economic progress; growing towards becoming a major economic hub for the region; planning numerous controversial mega projects; and increasing resistance activities against social, environmental, and political malpractice.

2 Istanbul's development progress in a nutshell

Istanbul served as the capital of the Byzantine and Ottoman Empires, and for two millennia has been a world city (Tekeli, 2010). The international diffusion of contemporary urban development ideas first took place in Istanbul during the mid-19th century, with the Tanzimat reforms, and developed parallel to the influence which Western nations had on the changes in the political regime and the identity of the city (Ayatac, 2007). After the establishment of the modern republic, Turkey started to experience a political opening, while the beginnings of industrial production planted its first seeds in the flourishing economy. Since then, Istanbul has been the leading industrial center in Turkey due to its rich capital-accumulation and knowledge accumulation bases. People from rural parts of the country have migrated to Istanbul in hope of better jobs and life prospects. The population of the city has increased rapidly since 1950 from 1 million to 14 million.

This population increase generated serious infrastructural problems: deficiencies in the city's amenities and the dilapidation of historic neighborhoods (Gunay and Dokmeci, 2012). Planned and unplanned housing areas increased, while green areas were decreased, and rapid, uncontrolled, and illegal urbanization, accompanied by insufficient infrastructure, caused the degradation of forests, water basins, and barren lands (Baz et al, 2009). Istanbul has suffered from constant sprawl, consumption of forest areas, car dependency, and a lack of environmental protection measures. Istanbulians went through difficult times, especially because of inefficient waste and sewage collection and water distribution services. Telecommunication infrastructure was lacking during the industrial boom. Squatter houses sprang up around the periphery in the 1960s, causing acute urban problems (Kaya and Curran, 2006). Although the historic and cultural heritage of the city has put its stamp on visitors and Istanbulians, until recently conservation and the rehabilitation of historical/cultural areas were undertaken only poorly (Kocabas, 2006).

Turkey initiated the application of liberal economic policies in the 1980s, while most Western countries were adopting supply-side economies. Privatization of state-owned companies fuelled the Turkish economy. The Istanbul Stock Exchange opening in 1985 (Tarim, 2010) and EU candidacy in 1999 were turning points for reforms (McDonald, 2011). In this period KBUD strategies were for the first time vocalized in Istanbul. In the 2000s Turkey's liberalization and democratization continued, resulting in remarkable GDP growth. In 2013 the innovation catch-up agenda was brought into the government's priority areas in order to sustain the economic progress (Uzkurt et al, 2013). Istanbul has served a pivotal role as the major center of economic development, with a dominant performance in Turkey's economic achievements (Sharma, 2012). Istanbul generates 27.5% of national value added, creates 15% of employment, and contributes 43.2% of the national industry exports (Berkoz and Eyuboglu, 2007).

Since the 1990s new urban policies have been introduced aiming to address major infrastructural issues, initiate productivity-increasing measures and total quality management frameworks, and provide incentives to industries and businesses. Local councils in Istanbul

started to use urban information systems effectively, for urban development control and monitoring of Istanbul's acute pollution, sewage, water, and waste collection problems (Bulu et al, 2014). A KBUD milestone for Istanbul was the e-Turkey initiative, in line with the e-Europe+ program that was put in place as the basis of knowledge society initiatives. In recent years numerous mega projects have been planned—the 3rd Bridge; the 3rd Airport; the Tunnel Project to connect the European and Asian sides (opened on 29 October 2013); and the Great Canal Project, linking the Black and Marmara Seas. Although the propaganda of these investments packaged and branded as mega KBUD projects to turn Istanbul into a world city, they have encountered strong objections. Professional associations and NGOs have pointed out the detrimental impacts of these projects Istanbul's on limited freshwater resources and green spaces (Colak, 2012).

Colak (2012, page 36) sees these projects as political interventions and states that “since [it] came to power in 2002, [the government] has encouraged the consolidation of authoritarian, clientelist and speculative practices. [It] has built its hegemony by means of its neoliberal spatial policies. The new model of urban management has allowed it to transform the city's main functions, to generate urban income and to distribute this income arbitrarily to give birth to a new conservative bourgeoisie. This new bourgeoisie, dominant in Istanbul, has escalated the process of land speculation, involving consequences for urban planning.”

She argues that these projects are part of the ‘Dubaiization of Istanbul’; Turkish political authorities often mention Dubai as a relevant urban model for Istanbul. The city has experienced a swift and violent transformation, driven by financial interests, and Colak claims that social and environmental aspects are currently absent from urban policies. The recent corruption scandal including bribery allegations around Istanbul's megaproject tender process (for the 3rd Airport), along with environmental impact assessment reports and court orders on the project being overlooked by the developers, raised serious concerns.

Prioritization of the provision of solutions to Istanbul's acute problems helped the city to establish a positive image. In 2010 Istanbul was selected as the European Capital of Culture. Since then, there have been notable improvements in the cultural infrastructure and creative industries. Music and independent film industries accelerated their production and sales internationally; television production companies' achievements in widely internationally exported Turkish drama and soap operas are among the notable achievements; various international music and cultural events—the Istanbul Festival—have attracted both local and international audiences; and numerous conferences and congresses have attracted academics and professionals to the city. Today, Istanbul receives over 10 million international tourists and business visitors annually.

Bidding for the Olympics games five times since 2000, and constantly improving the required infrastructure, has provided the city with world-class sports facilities. Subsequently, Istanbul has become a regular host of many international sports events—for example, the 2010 World Basketball Cup, and candidature for the 2020 UEFA Championship. State and private companies invest heavily in the ICT infrastructure. Istanbul is widely served by fiber optic cables, which is helping city to attract global companies' regional offices.

Accessibility within the city is improved to a degree. The busway project and expanding subway systems have upgraded public transport infrastructure (Alpkokin and Ergun, 2012). The adoption of intelligent transport systems will further ease the transport issues (Baz et al, 2009). The 3rd Airport—planned to be the largest in Europe—is being built in order to turn Istanbul into a transportation hub for Europe, Asia, and Africa. Turkish Airlines has received the best European Airline Award for the last three years consecutively and, following the Singapore model, with this new airport hopes to become the world's best airline.

Urban renewal and regeneration projects are changing the view of the city, as these projects have become a focus of attention for tourism promotion (Uysal, 2012). Historical and character sites are being conserved and regenerated (Ercan, 2011), while all of the squatter and earthquake-hazard dwellings are in the process of being demolished and replaced (Sesetyan et al, 2011). However, gentrification of the residents has resulted in major conflicts in certain historical and ethnic neighborhoods (Karaman and Islam, 2012).

Improved buildings, amenities, and services are making the city an attractive place—especially for local and Middle Eastern high-income groups. Turk and Altes (2010) argue that the changing land and building development approach of the city has resulted in the improvement of urban space. At the same time, it has made the property market hard to enter for low-income and medium-income groups. Villas on either side of the Bosphorus are among the prime real estates in Europe. As more and more global companies move their regional offices, various real estate companies are developing projects to sell flats and offices to international customers.

Recent studies indicate significant advancement of Istanbul's KBUD progress. Analysis of global cities conducted by Cetindamar and Gonsel (2012) shows that Istanbul has gained a substantial lead in developing an innovation environment, even though Istanbul still lacks R&D, infrastructure, technical support, and investment in higher education. Huggins and Strakova (2012) indicate a growing concentration of innovation infrastructure within Istanbul upon which to establish the future growth of KBUD, and the city continues to upgrade towards more KBUD through sustained exposure to international practices. They state the necessity to network this innovation infrastructure more effectively, and to clearly understand the KBUD potentials of the city to build on. Despite some positive practice, the lack of sound strategic growth policies, transportation planning, gentrification and the property boom are generating polarization—in line with Mollenkopf and Castells's (1992) 'dual city' and Graham and Marvin's (2001) 'splintering urbanism' theses.

3 Empirical analysis

Literature on KBUD indicates that becoming a prosperous knowledge city requires perspectives in addition to those of KBUD: capitalizing on socioeconomic aspects of the development; also, investing in space/place and organizational excellence (Carrillo et al, 2014; Gabe et al, 2012). In the present study, we adopt the KBUD conceptual framework as an overall guide in undertaking quantitative and qualitative analyses to evaluate Istanbul's KBUD. The framework, illustrated in figure 1, provides a comprehensive investigation opportunity with its four policy domains—economic, societal, spatial, and institutional development—covering the key aspects of KBUD (Yigitcanlar and Lonnqvist, 2013). *Economic development* aims to build a knowledge economy producing prosperity (Lever, 2002), achieved through strong 'macroeconomic' and 'knowledge economy foundations', and forming a good 'business climate'. *Societal development* seeks to form a knowledge society producing social equity (Ovalle et al, 2004), achieved through strong 'human and social capitals', and 'diversity and independency', and forming a good 'people climate'. *Spatial development* aims to develop a knowledge milieu producing sustainability (Knight, 1995) achieved through 'sustainable urban development' and 'quality of life and place', and forming a good 'spatial climate'. *Institutional development* focuses on generating knowledge governance producing enablers (Maldonado and Romein, 2010), achieved through strong 'governance and planning' and 'leadership and support', and forming a good 'governance climate'.

In order to provide a clearer picture of Istanbul's KBUD, we gathered relevant information on the policy areas of the conceptual framework. For assigning specific indicators for each of these key areas, we adopted the KBUD-assessment Model (KBUD-AM) (Carrillo et al, 2014; Yigitcanlar, 2014; Yigitcanlar and Lonnqvist, 2013). In KBUD-AM, a composite index

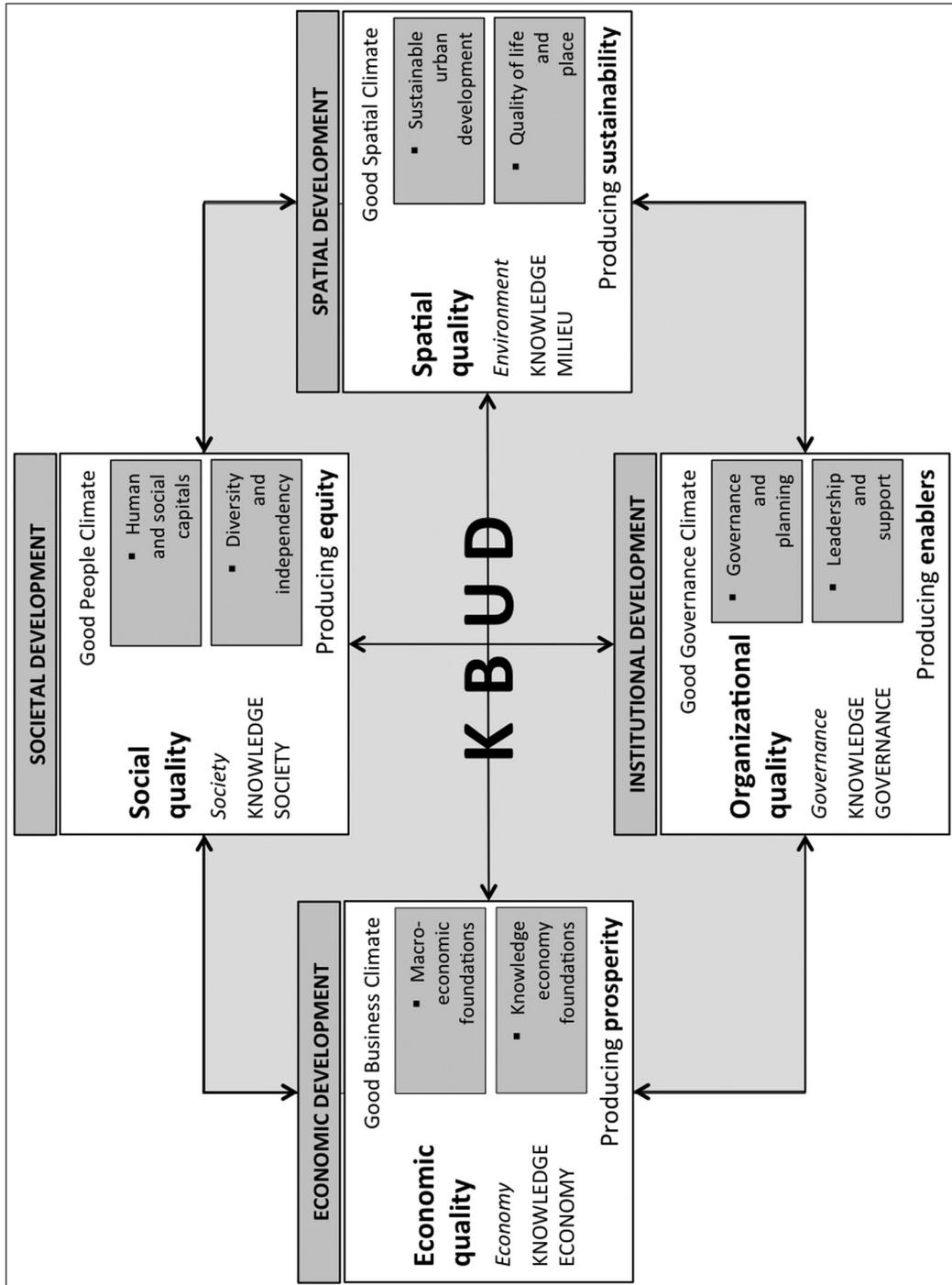


Figure 1. KBUD conceptual framework (Yigitcanlar and Lonnqvist, 2013, page 359).

Table 1. List of interviewees.

Group	Interviewee number	Affiliation	Position
Group 1: Key policy makers with limited KBUD ^a expertise	1	Turkish Parliament	member of Parliament for Istanbul
	2	Turkish Parliament	member of Parliament for Istanbul
	3	Istanbul Provincial Council	President
	4	Istanbul Metropolitan Municipality	general manager
Group 2: Key policy makers with KBUD expertise	5	Istanbul Metropolitan Municipality	manager
	6	Istanbul Development Agency	general secretary
	7	Istanbul Chamber of Commerce	manager
	8	Istanbul Provincial Head Office	Vice President
Group 3: Key KBUD experts with influence on policy making	9	Istanbul Sehir University	professor
	10	Istanbul Koc University	professor
	11	Istanbul International Competitiveness Research Institute	director
	12	IBM Istanbul	manager

^a KBUD—knowledge-based urban development.

corresponds to overall KBUD achievement; four of the indicator categories represent the development pillars of KBUD; and eight indicator sets relate to the key areas of KBUD pillars; thirty-two indicators of the model (table 2 below) are determined by the principles of measurability, analytical soundness, comparability, geographic coverage, data availability, and relevance (Carrillo and Batra, 2012; Grant and Chuang, 2012; Lin and Edvinsson, 2012; Veugelers, 2011). KBUD-AM assigns equal weighting to indicators and uses the *z*-scores method for the normalization protocol of indicators. In order to make the indicator values for Istanbul comparable, we included two benchmarks. Europe was selected as the benchmark context due to proximity, strong relationships, and the role-model position it plays. Helsinki and Manchester were used as benchmarks as the literature quite frequently refers to them as successful knowledge cities (Garcia, 2004; May, 2011; Jauhainen, 2008; Vanola, 2008;). Yigitcanlar and Lonnqvist (2013), Carrillo et al (2014), and Yigitcanlar (2014) have extensively discussed the model specifics, including its mathematical algorithm and data sources. Rather than repeating how the results of the model are calculated, in this paper we merely report the findings.

In order to obtain primary data to understand the KBUD policy context in Istanbul better, in-depth semistructured interviews with a dozen key policy makers were undertaken in February 2013. Questions focused on the KBUD policy domains, to complement the performance analysis. Interviewees were selected from among the three groups of Istanbul's executive policy makers: group 1—policy makers with limited KBUD expertise; group 2—policy makers with KBUD expertise; group 3—KBUD experts who influence policy making (table 1). KBUD performance analysis findings were shared with the interviewees to capture their views on the comparative standing of Istanbul. Earlier applications of this methodological approach have demonstrated its effectiveness in KBUD investigation (see Yigitcanlar et al, 2014).

4 Results and discussion

The findings of the comparative performance analysis are listed in table 2, where in normalized scores a high mark responds to a better performance. Not to our surprise, the overall KBUD results indicate that the benchmark cities of Helsinki (HEL) and Manchester (MAN) are clearly ahead of Istanbul (IST) (IST: 0.298; HEL: 0.691; MAN: 0.534). Albeit in some areas Istanbul is on-track catching up, the city is not showing a balanced and integrated development. Literature suggests that without balance and integration a long-term KBUD cannot be sustained (Lonnqvist et al, 2014). We note that our analysis provides only an overview of Istanbul's KBUD in comparison with benchmarks. The purpose of the analysis is by no means to compare these three cities in detail but, rather, to provide a big-picture view. The detailed findings of the performance analysis are discussed in the next sections.

As for the policy context analysis, group 1 does not fully realize and take advantage of the benefits which KBUD can provide. The group views KBUD as a 'black box'. They perceive KBUD as a brand to make the city more appealing to investors, which explains their lack of clear KBUD vision. They see Istanbul's megaprojects as major KBUD tools. For this group 'hard infrastructure is KBUD'. This view backs up the concerns of scholars on the Dubaization of Istanbul. The group is highly confident of Istanbul's potential to increase gains through tourism and real estate. However, they could not clearly establish the links amongst Istanbul's focus areas and the opportunities that KBUD can provide to support current priorities. Interviewee 1 confesses,

"Istanbul's motivation is to become a finance and cultural center for the region, however, we still have not developed comprehensive strategies to achieve this."

Interviewee 2 believed that

"Istanbul should reach satisfactory level of progress at the critical development issues, and only after, KBUD can be comprehensively placed in Istanbul's development agenda."

Group 2 seems to be more aware of the opportunities of KBUD for Istanbul. However, they do not have much hope concerning the comprehensive implementation of KBUD in Istanbul anytime soon. Interviewee 5 said that "achieving KBUD requires strong government backing; however, the main obstacle is the limited vision of most of the key government officials", and pointed out the governance problems. This group represents the KBUD-aware policy makers, who have already introduced some KBUD strategies in the policy documents. Nevertheless, so far, not many of these strategies have found implementation. Interviewee 7 saw the reason for this as "lack of support from the central and local government authorities".

Group 3 is fully aware of the opportunities of KBUD. Nonetheless, they see lack of consciousness among citizens and differing priorities of top-level politicians as the main obstacles to achieving a thriving development. The group shares a common view on the positive vibe that significant developments for KBUD have provided. Interviewee 9 underlined the importance of "presenting global KBUD best practices and potential benefits of a comprehensive KBUD agenda to the authorities." Interviewee 11 brought up the critical issue of the 'communications gap' among the policy makers that leads to poor orchestration of initiatives. The detailed results of the policy analysis are discussed in the following sections.

4.1 Economic development

In terms of comparative performance, Istanbul comes last in this domain with a small gap behind Manchester (IST: 0.357; HEL: 0.741; MAN: 0.385). The results for *Macroeconomic* and *Knowledge economy foundations* indicate that in the former Istanbul confidently stands second (IST: 0.510; HEL: 0.666; MAN: 0.312), and in the latter third by a large margin (IST: 0.204; HEL: 0.816; MAN: 0.458). The size of the economy of Istanbul, with 14 million inhabitants, makes a big difference in macroeconomic figures, but poor performance in knowledge economy brings down the achievements. The overall economic growth policy

Table 2. Comparative KBUD (knowledge-based urban development) characteristics.

Indicators	Indicator description	Raw data			z-scores		
		Istanbul	Helsinki	Manchester	Istanbul	Helsinki	Manchester
Economic development							
<i>Macroeconomic foundations</i>							
Gross domestic product	Gross domestic product (GDP) per capita in US\$ purchasing power parities	13498	47672	31532	0.357	0.741	0.385
Major international companies	Number of global top 500 companies located	1	1	0	0.718	0.718	0.124
Foreign direct investment	Ratio of international share in foreign direct investment	0.006	0.036	0.005	0.296	0.876	0.268
Urban competitiveness	Global urban competitiveness index ranking	136	16	36	0.873	0.234	0.339
<i>Knowledge economy foundations</i>							
Innovation economy	International city ranking in innovation economy	89	42	32	0.204	0.816	0.458
Research and development	Ratio of research and development expenditure in GDP	0.007	0.035	0.018	0.127	0.657	0.768
Patent applications	Patent Cooperation Treaty patent applications per million inhabitants	15.5	545	63	0.180	0.857	0.440
Knowledge worker pool	Ratio between professionals and managers and all workers	0.252	0.494	0.275	0.256	0.875	0.311
Societal development							
<i>Human and social capitals</i>							
Education investment	Ratio between public spending on education and GDP	0.041	0.061	0.054	0.221	0.665	0.652
Professional skill base	Ratio of residents over 18 years with tertiary degree—certificate, bachelor, master, PhD	0.075	0.348	0.310	0.130	0.724	0.695
University reputation	World university rankings	401	89	29	0.139	0.812	0.578
Broadband access	Ratio of access to fixed broadband subscribers per capita	0.104	0.296	0.333	0.126	0.758	0.672
<i>Diversity and independency</i>							
Cultural diversity	Ratio of people born abroad	0.004	0.086	0.106	0.127	0.663	0.765
Social tolerance	International country tolerance ranking	34	17	13	0.127	0.663	0.765
Socioeconomic dependency	Ratio between the elderly population and the working age—15–64 years population	0.076	0.185	0.220	0.313	0.606	0.609
Unemployment level	Ratio of unemployment	0.155	0.051	0.064	0.128	0.649	0.774
					0.128	0.651	0.773
					0.869	0.371	0.213
					0.126	0.754	0.677

Table 2 (continued).

Indicators	Indicator description	Raw data				z-scores	
		Istanbul	Helsinki	Manchester	Istanbul	Helsinki	Manchester
Spatial development					0.478	0.628	0.426
<i>Sustainable urban development</i>					<i>0.579</i>	<i>0.467</i>	<i>0.476</i>
Ecocity formation	International city ranking in ecocity	121	3	47	0.142	0.817	0.567
Sustainable transport use	Ratio of sustainable transport mode use for commuting	0.42	0.42	0.25	0.718	0.718	0.124
Environmental impact	CO ₂ emissions in metric tonnes per capita	4	10.6	8.5	0.864	0.195	0.406
Urban form and density	Population density in persons per km ²	1409	160	2001	0.592	0.137	0.806
<i>Quality of life and place</i>					<i>0.376</i>	<i>0.790</i>	<i>0.377</i>
Quality of life	International city ranking in quality of life	112	35	57	0.134	0.797	0.609
Cost of living	International city ranking in cost of living	70	42	148	0.619	0.792	0.132
Housing affordability	Ratio between GPD per capita and median dwelling price	0.251	0.130	0.606	0.624	0.789	0.131
Personal safety	International city ranking in personal safety	187	2	44	0.130	0.782	0.636
Institutional development					0.137	0.728	0.671
<i>Governance and planning</i>					<i>0.131</i>	<i>0.720</i>	<i>0.693</i>
Government effectiveness	Level of government effectiveness	0.65	0.99	0.91	0.130	0.785	0.632
Electronic governance	International city ranking in e-government	69	19	4	0.130	0.634	0.783
Strategic planning	Level of KBUD strategies in strategic regional and local development plans	50	87.5	75	0.138	0.809	0.586
City branding	International city ranking in city branding	42	29	26	0.128	0.652	0.772
<i>Leadership and support</i>					<i>0.143</i>	<i>0.736</i>	<i>0.649</i>
Effective leadership	Level of institutional and managerial leadership in overseeing KBUD	50	87.5	76.3	0.135	0.801	0.603
Strategic partnership and networking	Level of triple-helix and public-private partnerships and global networking—global city ranking	60	68.8	73.8	0.141	0.571	0.815
Community engagement	Level of institutional mechanisms for community building and participation opportunities in decision making	80	90.6	90.6	0.124	0.718	0.718
Social cohesion and equality	Level of income inequality—Gini coefficient	0.409	0.259	0.345	0.172	0.852	0.461
Knowledge-based urban development					0.298	0.691	0.534

of Turkey— based mostly on internal consumption—perhaps needs to be questioned, as Ozdemir (2010) highlights the strategic choice that Istanbul has to make for international orientation of the economy. As pointed out by Dokmeci et al (2005), the size of the informal sector in Istanbul is an issue which needs to be addressed. Istanbul needs to invest further in the knowledge base of the economy, otherwise it will not be possible to achieve a prosperous KBUD. In addition, the high GDP growth—over 5% per annum—in Turkey between 2002 and 2011 seems to have come to an end. In 2012 GDP growth was 2.1%, and in 2013 4.0%, projections for 2014–15 do not indicate a significant rise.

In terms of policy context, with respect to macroeconomic foundations, interviewees in all groups were highly confident concerning the achievements and future prospects of the city. In 2011 Istanbul's GDP had reached US\$200 billion. A number of global companies have located their regional offices in the city, and Istanbul is the home of a global company—Koc Holding, which is 212th in the Forbes 2012 listing. Customs union agreement with the EU has increased foreign direct investment (FDI) to the city since 1996: in particular, local production and finance companies have received investment from European investors. Istanbul Municipality's annual budget has increased to approximately \$20 billion. The Turkish City Competitiveness Index shows Istanbul to be the most competitive city of Turkey in the overall, production and trade capability, and innovation and branding subindexes, and in second position in the quality of life subindex (Bulu, 2011). With respect to knowledge economy foundations, group 1 sees the knowledge economy as an area which the city is already pursuing. Interviewee 1 stated:

“Vision 2023 of Turkey targets to make the country in one of the top ten economic powers . . . Istanbul has the potential and capacity to play a lead role in achieving this target by excelling in knowledge-intensive activities.”

Members of groups 2 and 3 agreed on Istanbul's weak edge in innovation and new product design. They believed that this is closely related to the limitations of Istanbul's knowledge-based industry. Interviewee 8 believed that

“policy makers in Istanbul do not support innovators adequately by either purchasing their products or providing sufficient incentives. Instead of giving a chance to local products, they bulk buy international brands and kill competition.”

Local innovators are significantly disadvantaged even though the city has a large market for new products. Patents and intellectual property (IP) rights are quite loose; hence, new measures are urgently needed for the protection of ideas and the new knowledge generated. Pirating and imitating issues create serious concerns and obstacles for innovators. There is a talented and skillful labor force in Istanbul, and some are highly specialized knowledge workers. However, the limited knowledge-intensive job market leads to brain drain. According to interviewee 10,

“Istanbul's policy makers are confused on whether to invest on knowledge industries or workers, not knowing which one is triggered by the other.”

4.2 Societal development

In terms of comparative performance, in this domain Istanbul lags way behind the benchmark cities (IST: 0.221; HEL: 0.655; MAN: 0.652). Istanbul performs extremely poorly in *human and social capital* (IST: 0.130; HEL: 0.724; MAN: 0.695) and *diversity and independence* (IST: 0.313; HEL: 0.606; MAN: 0.609). Because it is a developing country city, cultural attitude towards education (particularly the schooling of female children), diversity, and independence can be mentioned as among the main reasons. As Van Winden (2010, page 100) states, “the diversity of people, firms and cultures in cities constitute a fertile ground for new ideas and innovations.” Hence, KBUD is highly dependent on the diverse skilled workforce of a knowledge society with a cultural mix. Istanbul needs to develop new strategies and

initiatives to build her vibrant, diverse, and mixed knowledge society. As Huggins and Strakova (2012, page 972) suggest, KBUD policy activities in Istanbul “should be directed toward cumulative learning through networking activities that will positively impact not only on firms and intermediary organizations, but also on society as a whole.”

As for the policy context, with regard to human and social capitals, all interviewees agreed on educating and upskilling citizens being among the vital requirements for Istanbul’s KBUD. They noted that there is a deficiency in the skilled-people pool, which is a critical requirement for success in the global knowledge economy. Most of the international companies in Istanbul recruit top-level managers and specific experts from abroad. Even though the number of universities in Istanbul reached fifty one, only one of them is placed in international university rating indices. Despite the increasing quality and quantity of tertiary education opportunities in the city, it is common for Istanbul’s wealthy families to send their children to the esteemed universities abroad. Interviewee 12 says:

“companies in Istanbul started to establish close links with universities during the last decade, and this new cooperation has been beneficial for companies to train and secure local high-skilled human resources especially for their R&D departments.”

The need for further effort in this area is pronounced. With regarding to diversity and independence, interviewees 3 and 4 indicated that the city had had large Jewish and Greek communities for centuries, and tolerance to others was a tradition in Istanbul. They trust that the tolerance level in the central city areas is relatively high, especially in the cosmopolitan districts. However, these districts are mainly the gentrified areas at the center, and do not necessarily represent the entire city. The new districts at the periphery do not have the same level of tolerance as the central districts, as most of their residents came to Istanbul from rural areas. Tolerance, safety, and security remain major problems in Istanbul—especially towards single women and people with different sexual orientations and religious beliefs, such as Alevism or atheism. The rising concerns about a religious agenda behind and authoritarian behaviors of the government question the tolerance claims.

4.3 Spatial development

In terms of comparative performance, in this domain Istanbul comes second behind Helsinki and slightly in front of Manchester (IST: 0.478; HEL: 0.628; MAN: 0.426). Istanbul shows a leading performance in *sustainable urban development* area (IST: 0.579; HEL: 0.467; MAN: 0.476). This needs to be interpreted with caution, as the characteristics of population, industrialization, and car dependency in Istanbul and the benchmark cities are extremely dissimilar. When different indicators are utilized, Istanbul’s performance is poorer than that of Helsinki (Siemens Green City Index). In addition, the Istanbul Gezi Park protests highlighted the lack of sensitivity to environmental issues in the city. According to Hisamoglu (2014, page 218), the “handling of Gezi Park protests shows that there is room for improvement in conflict management”. Even if the analysis shows a positive performance, Istanbul’s administration needs to put in place more effective sustainability measures to deal with city’s environmental challenges. In *quality of life and place* Istanbul comes last, but by a very small amount (IST: 0.376; HEL: 0.790; MAN: 0.377). In this area a major problem is safety and security. This issue has some linkages with the economic and societal development domains and is among the most critical issues to be addressed urgently. Besides the policing measures—use of CCTVs—urban design and CPTED (crime prevention through environmental design) measures are in place. Other measures are also needed for solving poverty, substance use, homelessness, and problems related to Syrian refugees.

In terms of policy context, concerning sustainable urban development, all interviewees agreed that Istanbul suffers serious environmental problems—mainly due to her overcrowded population and rapid urbanization. They mentioned that a lot of projects are initiated in order

to conserve and upgrade the natural environment in and around the city. The Golden Horn was cleaned recently by getting connected to the Bosphorus so that fresh seawater circulates and initiates a self-cleaning process. Waste collection and processing systems serve nearly the entire metropolitan area. Istanbul is producing energy from the household waste. One big advantage the city has is the forested area in the North. The main water sources are located in this part. Interviewee 6 mentioned that “there is still no proper recycling program in place as a municipal system.” Environmental activists and many citizens are highly suspicious about the new motorway crossing (the 3rd Bridge), planned to be the widest in the world, since it harms the ecosystem in Northern Istanbul. In the early stages of the project 250 000 trees were cut down, even though politicians had promised to keep the forested area untouched. The environmental damage caused by the new airport is expected to be even worse as, so far, 2.5 million trees have been cut down. Regarding quality of life and place, interviewees had a consensus on Istanbul being far behind in quality of life compared with the world’s leading cities. Interviewee 9 put forward that

“instead of spending the city’s budget on mega projects such as the new canal, bridge, and airport, it would be wiser to allocate this budget for the projects that make difference in residents’ lives.”

Group 3 advocated investment for bikeways, subway expansion, air quality, and livable and affordable housing. They see the health and education systems as well as cultural opportunities as being amongst the most important items that can increase the standing of the city. In the light of the Gezi Park protests in Istanbul, we argue that the freedom of speech and reaching a full democracy level will also positively impact on the quality of life.

4.4 Institutional development

This is the worst-performing area of Istanbul (IST: 0.137; HEL: 0.728; MAN: 0.671). Recent corruption allegations have evidenced yet again the need for more transparent and democratic governance. Considering this KBUD domain being the ‘enabler’ of other three domains, overall poor performance of the city is evident. In *governance and planning* performance is extremely poor (IST: 0.131; HEL: 0.720; MAN: 0.693). This may be a consequence of strategic planning and urban branding concepts having entered Turkish urban planning practice only recently, establishment of the Istanbul Development Agency (as part of EU integration) in 2009, and until lately dealing mainly with hard infrastructure needs. In *leadership and support* the view is no different (IST: 0.143; HEL: 0.736; MAN: 0.649). As the Gezi Park protests revealed, the city has neither a public participatory decision-making mechanism, nor an effective conflict management system. The lack of charisma in both the mayor and the governor are contributing factors. Istanbul’s key management challenges include: defragmented governance, lack of flexible project management, and limited participatory processes. Istanbul, along with other Turkish cities, is experiencing the emergence of a resistance movement formed by the nonruling parties’ supporters who are opposing the megaprojects, highlighting their environmental and social hazards. In doing so, the movement gives birth to new ‘urban discourses’ such as public participation and sustainable development which have long been neglected in the Turkish planning system (Catterall, 2013). Erkip (2000) and Ozdemir (2002) underline the role of good governance and transparent policy making in articulation of the knowledge economy, thus making Istanbul more attractive for FDI. Erkip (2000, page 371) states, “urban politics and government cover only a limited area of urban dynamics in Istanbul A new approach to governance requires a strategic change in the state of mind of elected officials towards the integration of communities into governing practices.”

As for the policy context, in governance and planning most of the interviewees complained about a lack of coordination in interagency projects. According to interviewee 10, “technical

collaboration and public participation in the decision-making process is an area that requires urgent attention.” Policy conflicts among the top management team members were mentioned. It is publicly known that central government, the Istanbul governor, and the Istanbul mayor have conflicting views on the development policies as well as on the policy-making process for the city. Interviewee 9 articulated:

“KBUD knowledge level of policy makers of Istanbul is rather weak, particularly on the economic development issues. Consultants in the KBUD area are either unavailable or not active enough to inform and support policy makers.”

According to interviewee 12,

“sadly, long-term planning and knowledge management are not priorities in the city. This is a reason for Istanbul’s urban governance underperformance.”

There is a significant data and information deficit for the city to orchestrate the KBUD. Authorities do not have the habit of making data and information available to researchers and the public. In *leadership and support*, in the Turkish governance system a city has two leaders: the citizens elect the mayor, and the governor is appointed by the central government. Even though they seem to have different responsibilities in the city, they generally interfere with each other, especially when it comes to major decisions. This duality is creating challenges.

According to interviewee 4,

“lack of collaborative work and integration of databases, and length approval times of new development initiatives are among the major management failures.” However, Istanbul is fortunate, as currently the mayor and the central government are from the same political party, which aids accessing financial support.

5 Conclusions and recommendations

Literature suggests some motivation in Istanbul for moving towards KBUD: in particular, the changing policy directions and focus during the last decade are notable. Performance analysis findings indicate relatively strong and weak areas. In general, economic and spatial development areas are more promising than societal and institutional ones. Policy analysis findings raise concerns—particularly on short-term visioning and governance problems—and current practice confirms a misperception, seeing KBUD dominantly as an infrastructure development scheme. Overall findings suggest that, in Istanbul a new way of thinking about KBUD is needed. We highlight the summary of these findings in table 3, by focusing on strengths, weaknesses, opportunities, and threats. Furthermore, we make the following policy recommendations.

Economic development: Istanbul has achieved a thriving economic performance by seeing city as the economy, but performance is only commodity-based products and mainly depends on internal consumption. As Gabe et al (2012) state, seeing ‘knowledge’ as the economy is a more appropriate approach for Istanbul. Even if some achievements have been recorded in the IT, defense, and finance sectors, in knowledge economy activities the city performs poorly: Turkey ranks 69th globally and last in Europe in innovation. We suggest further investment on knowledge infrastructures. Development of a domestic market for knowledge-based products is a first step for an innovation economy to emerge. Once the knowledge industries are incubated domestically, they will expand export sales. This can be done by, initially, the public sector purchasing local innovative products or supporting their advancement with incentives and grants—best practices from Finland and Korea are worth contemplating (Fagerberg et al, 2005). In innovation catching up the National Science Foundation should play a more dominant role by providing grants and supporting partnerships. Harmonizing the current top sectors of Istanbul with a knowledge-based approach would be beneficial. Injecting advanced knowledge into these sectors would speed up knowledge-based economic development—best practices from Australia are worth considering (Fernandez, 2010).

Table 3. Summary of findings.

Strengths and opportunities	Weaknesses and threats
<i>Economy</i>	
The primate city and high growth region for the country	Lack of knowledge, economy activity concentration, and strong focus on the knowledge sectors
An attractive city for international tourism and conference activities	Lack of new open source innovation platforms
High GDP growth experienced during the last decade	Lack of high level knowledge worker quality and professional skill base
Strong consumption-driven economic base and revenue generation due to the high population concentration	Lack of adequate investment on internationalization of economic activities
Increasing cutting edge technology adaptation and use in municipal services	Lack of building globally known commercial products and brands
Increasing level of economic diversity, but not including knowledge-based activities	Lack of competitiveness in international markets, particularly in technology products
Business and employment attractiveness particularly to SMEs in traditional industries	Lack of mergers across industries to become globally competitive
Geopolitical position of the city	Lack of adequate foreign direct investment and attraction to global knowledge industries and workers
	Lack of entrepreneur spirit, particularly in the knowledge-intensive areas
	Lack of high level science and technology knowledge in traditional SMEs
	Increasing export dependency in production of goods and services
	Significant long-term unemployment
	Widening gap with competitors from the developed world
	Being vulnerable to the impacts of global finance crises
	Recent slowdown in GDP growth
<i>Society</i>	
Young population and growth trend	Lack of mechanisms to encourage the mix of people and ideas
Increasing number of educated young population	Lack of active citizens in the areas of urban and economic development
Quantity of higher education institutes	Lack of rapidly increasing research and relevant knowledge base
Cultural mix and vibrancy	Lack of open culture in social domains and to new ideas
	Lack of community spirit, volunteer work, and team spirit
	Lack of self-sufficiency and do-it-yourself attitude
	Lack of sociopolitical cohesion or tolerance

Table 3 (continued).

Strengths and opportunities	Weaknesses and threats
<i>Society</i> (continued)	<p>Limited tolerance to alternative lifestyles, such as different sexual orientations and religious views</p> <p>Questionable capability to further building on existing strengths</p> <p>Questionable quality of higher education institutes and brain drain</p> <p>Gentrification being widely used for urban renewal without community development schemes</p> <p>Mismatch between employment and education opportunities, leading to brain drain</p> <p>Not an overly attractive place for highly talented international immigrants</p> <p>Class consciousness and strong division at the society, such as rich and poor, educated and not</p> <p>Not being self-critical enough and working towards excellence</p> <p>Economic inequality and socioeconomic dependency</p> <p>Differing level of inequality in the urban areas of the metropolitan region</p> <p>Youth unemployment, even among the ones with university qualifications</p>
<i>Environment</i>	<p>Lack of high quality of life and place for all citizens</p> <p>Lack of efficient policies and will to conserve and enhance natural environments</p> <p>Lack of effective city branding and marketing initiatives</p> <p>Lack of vision and strategies for knowledge city transformation</p> <p>Lack of effective measures for climate change adoption and mitigation</p> <p>Raising environmental challenges, such as impacts of global warming and deforestation</p> <p>Difficulties to provide a vibrant urban environment to attract foreign knowledge workers</p> <p>Limited tolerance, safety, and security</p> <p>Negative outcomes of growth and development on the environment</p>
<p>Rich natural environment, such as Bosporus, Northern forest areas</p> <p>Improved accessibility and traffic safety levels</p>	<p>Lack of effective urban infrastructure, service and amenities</p> <p>A desired destination to live and work for the domestic workforce</p> <p>Rich historical and cultural assets base of the city</p> <p>High density built environment</p>
<p>Effective measures in urban control and minimization of squatter housing</p>	<p>Difficulties to provide a vibrant urban environment to attract foreign knowledge workers</p>
<p>Local activist groups</p>	<p>Limited tolerance, safety, and security</p> <p>Negative outcomes of growth and development on the environment</p>

Table 3 (continued).

Strengths and opportunities	Weaknesses and threats
<p><i>Environment</i> (continued) Local activist groups (continued)</p>	<p>Lack of a sustainable, balanced and integrated development perspective and practice High risk of natural disasters, such as earthquake Avoidance of community and expert views on the projects relate to the built and natural environments Negative impacts of urban renewal and regeneration programs on local urban characteristics Formation of built environments; lack of adequate green spaces and social activities</p>
<p><i>Governance</i> Improving partnership schemes between numerous international organizations Collaboration between municipalities in the region Agility and capability to react, but mostly not in knowledge-driven areas Strong collaboration between local and central governments Determined agenda of urban renewal and development</p>	<p>Lack of a development perspective based on endogenous assets and knowledge Lack of target setting in R&D and the global focus Lack of sufficient innovation and support mechanism to become an international player Lack of international collaboration in knowledge intensive areas Lack of schemes to bring universities, industries, and government in knowledge precinct investments</p>
<p>Political stability experienced during the last decade</p>	<p>Lack of a knowledge-based urban development vision Lack of effective participatory mechanism in decision and policy making Lack of involving knowledge actors in decision and policy making processes Limited academy and industry collaboration and partnership Limited institutional perspective and governance structures and flexibility in public sector Limited planning, coordination, and leadership for the long run Limited internationalization especially in the science, technology, and higher education areas Short-termism and communication gap between policy makers Risk of potential future political instability</p>

Societal development: Increased tolerance, safety, and security levels for a diversity of people, ideas, and culture are critical. A tolerant, safe, and secure city would fuel the innovation climate. World-class education and skill development programs are essential. Very few of the universities located in Istanbul are world-class, and these universities' cooperation with government and industry is limited. Collaboration of universities with public and private sectors should be improved. This would help to increase the knowledge worker pool, and through research activities improve the standing of universities (Yigitcanlar et al, 2007). Tolerance, freedom of speech, and full democracy are missing elements needed to enhance Istanbul's progress in KBUD. The cost of living is rising rapidly as the quality of amenities is increasing, and this has social implications, such as social polarization and gentrification. Istanbul has not managed to build her knowledge edge based on endogenous assets—besides tourism: most of the policies focus on exogenous assets and, rather than augmenting local human resources, the city seeks to attract knowledge industry and knowledge workers from abroad (Carrillo et al, 2014).

Spatial development: During the last two decades city management with strong support from the central government, has managed to uplift the face of the city, inspired by the Dubai model. However, serious criticisms have been voiced—especially on urbanism and environmental issues: Dubaiization, especially involving tangentopoli, may not after all be an ideal model for the city. Perhaps rather than building the world's widest bridge or Europe's largest airport, focusing on building a unique development model might lead others to replicate the practice—'Istanbulization' as opposed to 'Dubaiization'. Basic sustainable development practices are gradually being brought into practice. However, control of the metropolitan sprawl—including poorly planned megaprojects—is crucial, especially in light of the rising population and Istanbul being surrounded by pristine forest and natural resource areas. The 1999 earthquake, and the threat of another major earthquake in the future, make addressing the spatial issues even more pressing.

Institutional development: Improving strategic development plans by considering comprehensive vision and strategies would be useful. An inclusive and collaborative KBUD orchestration should be maintained by establishing a participatory mechanism for bridging both the knowledge and the communication gaps of policy makers (Cohen et al, 2002), and citizens and knowledge sector actors should participate in the policy-making process (Lonnqvist et al, 2014). Manchester and Melbourne have established institutions for KBUD with collaborative and participatory perspectives. These best practices are worth exploring (Carter, 2012). Turkey has made significant improvements in human rights, but in terms of democratic rights is still far behind. Recent turbulence in the political climate is an outcome of undemocratic governance practices—Turkey is ranked 154th in World Press Freedom Index. Although neoliberalization has been quite successful so far, as shown by the Gezi Park protests, transparency and democratization of the local policy-making process is the biggest challenge. As stated by Hisamoglu (2014, page 219), “law and order and bureaucratic quality are significant in promoting economic growth, extra care needs to be taken while designing and implementing related institutional reforms ... the fact that conflict governance ability is significant in generating economic growth makes the conflict handling an important duty for leaders.” The current sociopolitical environment is the biggest obstacle not only in achieving KBUD, but also in establishing and maintaining peace, prosperity, and democracy.

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