Innovation Districts at the Crossroad of the Entrepreneurial City and the Sustainable City

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**Abstract** Innovation districts are designed to promote increased interaction between employees and firms in knowledge-intensive industries. They have been praised as both sustainable economic development and sustainable real estate development. Nevertheless, there has been little investigation of how those involved in the planning and development of innovation districts view the role of sustainability. In this paper, we draw on 40 semi-structured interviews with professionals associated with four innovation districts in the U.S. The results provide new insight into how these market participants perceived the components of sustainability in fostering innovation and project success. Economic attributes of sustainability were consistently emphasized as the primary driver of innovation district successes. Further, where social and environmental elements of these districts were acknowledged as factors contributing to project success, professionals tended to frame their roles in economic terms.

Many municipal governments, non-government organizations, and real estate practitioners across the United States have invested their time, capital, and land in the development of innovation districts designed to attract, retain, and grow knowledge-intensive businesses operating within a host of industries (Battaglia and Tremblay, 2010). These projects take on a variety of forms, but are linked by theory and hope that urban areas can be reshaped to facilitate innovation outside the confines of private labs and research facilities (Katz and Wagner, 2014). Innovation districts are therefore an example of an economic development strategy merging the idea of “open innovation,” which emphasizes the benefits companies derive from leveraging the research and development capacity of the external parties with whom they interact (Chesbrough, 2004), with the financial and economic advantages evident from sustainable real estate (Rauterkus and Miller, 2011; Robinson and McAllister, 2015).

Conceptually, innovation districts connect the scholarship of innovation to the theory and practice of economic development, real estate investment, urban design, and land use planning (Read, 2016). As concentrated areas of entrepreneurial activity, they draw together agglomeration and cluster theory with research on tenant mix optimization (Porter, 2000; Rosenthal and Strange, 2001, 2004; Clark,
Huang, and Walsh, 2010). As purposeful facilitators of open innovation or the removal of that process from traditional silos (Chesbrough, 2004), they represent the democratization of spaces between people and firms through thoughtful urban design (Von Hippel, 2004). And as environments intended to catalyze innovation and defend against economic cyclicality, they connect the historical discussion of innovative milieus to the Marshallian industrial cluster (Marshall, 1890; Hall, 1998; Boix and Galletto, 2009).

Importantly for this paper, advocates have also argued that innovation districts can be transformative and sustainable urban places with the potential to address a wide range of social, environmental, and economic opportunities (Katz and Wagner, 2014, p. 2). A growing number of public officials and developers seem to agree and have invested capital and resources in them (Almirall et al., 2016). As a result, an emerging body of evidence is now available to evaluate aspects of these claims (where limited data served as an obstacle). While it is clear that innovation district advocates have justified the projects on sustainability grounds, there is little evidence suggesting how those participating in the planning and development of innovation districts perceive the role of sustainability in creating a competitive advantage and in facilitating innovation. It is here where this paper seeks to make a contribution.

The results of 40 semi-structured interviews, focused around four case studies, are presented below in an effort to unpack how the diverse array of individuals involved in innovation districts view project attributes and stakeholder coalitions. Specifically, the paper addresses the research questions: What do innovation district stakeholders consider as factors of success? Further, what role does sustainability play therein? These questions serve as a starting place for examining the connections between sustainability, real estate, and innovation districts.

The cases examined include Cortex in St. Louis, Missouri, SkySong in Scottsdale, Arizona, Tech Center at Oyster Point in Newport News, Virginia, and Technology Square in Atlanta, Georgia. These cases were chosen because they all have characteristics consistent with modern innovation districts as described in the literature. For example, each came to fruition as a result of a public-private partnership formed between a profit-driven developer, university-affiliated entity, and a local government to accommodate the development of a mixed-use environment fostering collaborative interactions between highly-skilled people and the organizations where they work. These unifying features link the projects for the purposes of empirical analysis despite the fact that they vary in terms of design elements, financing structures, locations, and tenant mix.

Interviewees perceived sustainability as a substantial factor in the shaping of each of the four innovation districts. However, the results consistently illustrate nuances and a somewhat hierarchical prioritization of constituent sustainability components. Interviewees stressed that economic resilience, or the ability to adapt to economic cyclicality and to resist exogenous shocks (Sánchez et al., 2017), was a central strategy or priority in each of the cases. They less frequently spoke of social, energy, and environmental attributes, although they still acknowledged their roles in project success and as part of the demand the professionals observed in their markets; an interesting and important insight for practice.
The remainder of the paper is organized to provide a summary of several strands of literature that connect research related to innovation districts, description of the group of professionals interviewed, and the data those interviews generated, analysis of the interview data, and a discussion of the insights provided by the interviews. As an exploratory qualitative process, the findings have some limitations. Primarily, the discussion questions and the interview process itself are limited by bounded rationality. Additionally, while the general inductive analysis techniques we utilized produce results that may not be easily generalizable, they are certainly transferable to other like type situations (Anderson, 2010). They also provide a useful way to start connecting a research framework to emerging themes in the data (Thomas, 2006). Although these limitations constrain the findings to a degree, they are present in much exploratory research and purposeful sampling and analytical techniques have been used to mitigate their effects. As a first research step, the data derived from the interviews help reveal important first order insights about how those associated with innovation district development and operations perceive these projects.

**Literature Review**

The term “innovation district” has been used in the urban studies literature for at least two decades (Raco, 1999), but only in recent years have significant efforts been made to operationalize it in a manner supporting critical analysis (Clark, Huang, and Walsh, 2010; Forsyth, 2014; Katz and Wagner, 2014). Similar to Marshallian clusters, innovation districts are described as sub-geographies within cities, usually rather small, exhibiting unusually high concentrations of entrepreneurs, entrepreneurial activity, and innovative firms (Boix and Galleto, 2009). They often include high-density, mixed-use, transit-oriented, pedestrian-friendly, urban design elements producing places and interstitial spaces where highly-skilled people can engage, share, and create (Battaglia and Tremblay, 2010).

As innovation districts are real estate development projects, as well as components of economic development strategies focused on facilitating innovation and growth within knowledge-centered businesses, the literature underpinning their evaluation is broad, connecting elements of research conversations about sustainable real estate, economic development, and agglomeration economics. Innovation and its role in changing the face of both business and place is embedded in each of these three areas. Consequently, the objective of this section of the paper is to provide a summary of these areas of the literature.

**Sustainable Real Estate**

Innovation districts are designed to be physical spaces where individuals, firms, and innovation can flourish. This goal connects them to a growing conversation within the real estate finance and economics literature on the role sustainability and innovation play in shaping real estate markets. Within this conversation, scholars have examined three broad types of research questions: (1) how to
incorporate sustainability into real estate development and investment decisions; (2) what is the value proposition of sustainability across different asset classes in the real estate market; and (3) what are the roles of sustainability and innovation in the property markets.

Research about the incorporation of sustainability into real estate development and investment processes emerged alongside questions about corporate social responsibility (Kats et al., 2003; Spitzer, Emerson, and Harold, 2007; Pivo and McNamara, 2008) and the triple-bottom-line (Pivo and McNamara, 2005). Reflecting evolving notions of the theory of the firm, agency theory, and issues of stewardship, researchers argued that doing well and doing good (e.g., considering people, profit, and planet concurrently) were consistent with and components of a fiduciary’s obligations (Pivo and McNamara, 2005). Papers from Scheer and Woods (2007) and Sayce, Sundberg, and Clements (2010) expanded the debate and refined the application of these concepts to the commercial real estate markets. Additional papers helped to frame and suggest how to measure sustainability in real estate. For example, Ellison and Brown (2011) advanced a number of metrics for consideration on resource efficiency, locational advantages, and design quality, while Batty (2006), Fellows (2006), Heywood and Kenley (2008), Pivo and McNamara (2008), and Eichholtz, Kok, and Quigley (2010) each worked to illustrate the complex tradeoffs that individuals, firms, and governments need to grapple with when integrating sustainability into real estate investment and development decisions.

Relative to the assessment of sustainability’s value proposition, there is substantial evidence that sustainability creates competitive advantage across nearly all asset classes in the real estate market. Competitive advantage in a multiplicity of forms has been observed in single-family housing (Aroul and Hanz, 2011, Bloom, Nobe, and Bloom, 2011; Rauterkus, 2011), in multi-family housing (Pivo, 2014; Bond and Devine, 2016), in the office market (Miller, Spivey, and Florance, 2008, Eichholtz, Kok, and Quigley, 2010; Wiley, Benefield, and Johnson, 2010; Holtermans and Kok, 2017), and in industrial property (Harrison and Seiler, 2011). Recently, Devine and Chang (2017) identified competitive advantages for sustainable retail property. Together, these and other related papers have revealed that sustainability in real estate is associated with superior asset values, premium rents (although not rent rate growth premiums), attractiveness to capital markets, advantageous technologies generating operational economies, lower occupant churn, and the need to offer fewer incentives to attract and retain tenants.

In addition to the value proposition of sustainable real estate, researchers have also examined the role of public policy in facilitating the growth of sustainability in the real estate markets. Simons, Choi, and Simons (2009) and Kontokosta (2011) studied the factors associated with the spread of public policies supportive of green buildings. They observed that market, climate factors, patent activity, carbon emissions, and political climate were significant predictors of public policy related to green building. Simcoe and Toffel (2014) identified positive spillover effects from public policy decisions on the development of sustainable real estate. In investigations of the technology decisions of U.S. homebuilders, Koebel et al. (2015) and Sanderford, Keefe, Koebel, and McCoy (2015) found that public policy
positively influenced builders’ choices to select sustainable versions of products over traditional economic substitutes (e.g., windows). Bond and Devine (2016) presented similar findings.

Conceptually connecting sustainability and innovation, several studies have focused on sustainability as an innovation in the property markets. Two in particular identified eco-certifications such as LEED and ENERGY STAR as property market innovations and examined how these innovations diffused across the housing and commercial real estate markets. In an analysis of the factors that shaped the adoption of eco-certifications in U.S. housing markets, Sanderford, McCoy, and Keefe (2017) observed positive effects from different types of public policies. With respect to commercial real estate, Kok, McGraw, and Quigley (2011) were surprised not to find a relation between the adoption of sustainable building certifications across U.S. office markets.

Sustainability and innovation districts also intersect in the sustainable real estate literature through the public-private partnerships used to fund high density, mixed-use, urban development projects. These co-investment strategies are a means of sharing the risk of constructing, maintaining, and operating physical assets and urban infrastructure (Indegaard, 2003). The use of public-private partnerships in the realm of local economic development reflects recent urban population growth and the locational efficiencies and advantages associated with the clustering of individuals and firms (McGuirk, 2005). Moreover, the literature suggests that public-private partnerships can be used to meet the space demands of knowledge-based industries (Nelson, 2015). However, and critically for innovation districts, the evidence also suggests that municipal investments in speculative, mixed-use real estate development projects have an inconsistent track record (Frank and Pivo, 1994; Joseph and Chaskin, 2010).

Agglomeration Economics & Economic Development

The study of innovation districts is also intimately related to co-location or agglomeration economies from which they trace their roots (Marshall, 1890, 1920; Rosenthal and Strange, 2001, 2004). This work focuses on spatial measurement relations such as Zipf’s law (e.g., Gabaix and Ioannides, 2004; Holmes and Lee, 2010) and productivity phenomena such as labor pooling (e.g., Baumgardner, 1988; Krugman, 1991; Becker and Murphy, 1992; Rosenthal and Strange, 2004). Building from this and other similar work, innovation district advocates argue that these projects create physical and transactional space for innovation to occur and as a result are more economically resilient than other forms of compact urban development (Katz and Wagner, 2014). [Economic resilience is taken here to mean the ability to withstand exogenous shocks, to adapt to market cyclicality, and to recover quickly in the wake of large shocks (Sánchez et al., 2017).] The economic resilience of innovation districts stems from the ability to create synergies between people, firms, and places (Katz and Wagner, 2014), enabling what Chesbrough (2004) describes as open “innovation” or innovation generated outside of pathways internal to a firm or enterprise.

Agglomeration economics are at the heart of many knowledge-based urban development strategies (Benneworth and Ratinho, 2014; Florida, 2014) including
planned commercial and industrial districts (Markusen, 1996; Raco, 1999), cluster
development theory (Porter, 2000; Motomaya, 2008), and research, science, and
technology parks of many different shapes and sizes (Link and Scott, 1997;
Hansson, Husted, and Vestergaard, 2005; Ratinho and Henriques, 2010). However,
not all agglomeration theory maps clearly to innovation district development. For
example, Kolko (2010) found that service industries such as finance, insurance,
and consulting tend to be less agglomerated although more heavily urbanized,
suggesting that there may be industry- and market-specific patterns that influence
how and where these firms choose to locate, as well as how they engage
with others around innovation, or what Schumpeter (1939) called “creative
destruction.”

Although innovation districts trace their roots to agglomeration economics,
advocates have placed more emphasis on urban design, policy interventions, and
public-private partnerships as a means of catalyzing knowledge-intensive
businesses (Sharma, 2012; Wilson, 2014). Modern iterations appear to
purposefully bring together entrepreneurial start-ups, established corporations,
venture capital providers, universities, and economic development agencies in
targeted geographic areas, while using design features consistent with the
principles of new urbanism to encourage them to interact in formal and informal
ways in attractive common areas, onsite retail outlets, shared-use facilities, and
cowork space (Read, 2016). Advocates have argued that the amalgamation of
these features helps to differentiate innovation districts from other related
economic development strategies (Katz and Wagner, 2014).

The idea that urban areas serve as collision points for innovative people as
embodied in the innovation district thesis has been discussed throughout the
economic development and innovation literature. For example, Rogers (1995)
highlighted the role of social systems as vectors for facilitating increased
innovation diffusion. Hall (1995) related the idea of social systems to the city,
arguing that cities can serve as a milieu in which innovation can thrive (Crevoisier,
of the creative class positing that the denser the city, specifically with respect to
individuals engaged in knowledge-based work, the more frequent the exchange of
ideas. As sub-components of cities constructed to stimulate interactions between
both knowledge-intensive firms and the people they employ, innovation districts
highlight the connections between sustainable real estate and economic
development. Innovation districts have the potential to create durable competitive
advantage via design, place, and density of people (Chatterji, Glaeser, and Kerr,
2013; Beneworth and Ratinho, 2014).

Innovation District Risks & Connections

Embedded in the potential to create this competitive advantage, is the risk of
attracting a synergistic mix of tenants and knowledge workers. In the context of
labor portability in knowledge-centered economies (Tabuchi and Yoshida, 2000),
this risk could be amplified. Commercial real estate owners and operators have
grappled with similar issues of inclusion and exclusion when attempting to
optimize the tenant mix of innovation districts, just as they do in all other real estate development projects to maximize economic returns (Sirmans and Guidry, 1993; Grenadier, 1995; Gerbich, 1998). At present, strong prevailing demand among knowledge workers for jobs and housing in dense, mixed-use, walkable environments potentially helps mitigate this risk (Yigitcanlar and Velibeyoglu, 2008).

An additional innovation district risk, perhaps more of a question of capacity, surrounds the potential of these projects to inject social benefits across the economic spectrum, not simply at the high end. Given the focus on knowledge-oriented businesses, innovation districts have the theoretical potential to serve as economic catalysts much in the same way large firms create economic multiplier effects through their need for service provision (e.g., supplies, logistics, and proximate food and beverage options). As a result, it is plausible to expect that innovation districts could create new demand for retail amenities, service sector job opportunities, and improve access to technology (Kauffman, 1995; Pearson, Henryks, Trott, and Jones, 2011). However, despite these theoretical connections, it remains unclear as to whether these projects tend to prioritize or create positive social spillover effects (Wilson, 2014; Almirall et al., 2016; Griffith, 2016).

The types of questions illustrated by Wilson (2014), Almirall et al. (2016), and Griffith (2016) suggest a research opportunity. Innovation district advocates have drawn together the theoretical and practical connections between innovation districts and urban design, real estate, typologies of innovation, and agglomeration (Katz and Wagner, 2014). They have argued that innovation districts have the capacity to address opportunities in social, economic, and environmental terms. However, what appears to be missing from the literature is an examination of how professionals responsible for the planning, development, and operation of innovation districts perceive their projects. More specifically, to what do these professionals attribute their projects’ successes and how does sustainability and its constituent components play a role in those successes? We address these questions in this paper.

**Data and Methodology**

The innovation district case studies presented in this section help provide context about whether those involved in their planning and development conceptualized these projects as a means of simultaneously advancing a city’s economic, environmental, and social goals, as has been frequently suggested in the extant literature. This overarching research question is addressed using data collected through a series of semi-structured interviews with individuals involved in four innovation district projects across the U.S. (Exhibit 1). The cases were selected because they all have characteristics consistent with modern innovation districts as described in the literature. For example, they are all products of public-private real estate development partnerships formed between profit-driven developers, university-affiliated entities, and local governments to accommodate the development of mixed-use environments. Furthermore, they all seek to foster innovation by encouraging formal and informal collisions between highly-skilled
Exhibit 1 | Innovation Districts Selected for Case Study Analysis

1. Cortex is an innovation district officially created in 2002 when BJC HealthCare, the Missouri Botanical Garden, St. Louis University, University of Missouri, and Washington University jointly provided $25 million in funding to begin planning activities and land assembly on approximately 200 acres of land in Midtown St. Louis. Over one million square feet of commercial space has already been constructed on the site and the project is anticipated to include over 4.5 million square feet at completion, owned and managed by various private sector real estate development interests and equity partners. It was started with the explicit purpose of helping the City attract and retain innovative firms in the biotech and life sciences industries.

2. SkySong is the product of a partnership between Arizona State University, the ASU Foundation for a New American University, and the City of Scottsdale formed in 2005 to redevelop a defunct shopping mall located on 42 acres of land into a vibrant innovation district serving the needs of technology-driven firms. It will include over 1.2 million square feet of commercial space at buildout, a significant amount of which has already been delivered to the market. A 325-unit apartment complex and 12,000 square foot of retail space compliment office and research facilities occupied by both private firms and ASU-affiliated entities. All of these buildings are investor-owned. The project was initiated in improve connectivity between ASU and the IT industry.

3. Tech Center at Oyster Point is an innovation district in very early stages of development. A Whole Foods-anchored shopping center and 288 units of apartments have already been completed by private sector real estate developers, with office and lab space scheduled to break ground in the summer of 2017 on a greenfield site immediately adjacent to the Thomas Jefferson National Accelerator Facility. The entire project is anticipated to include over one million square feet of commercial space at completion. Employees of Virginia Tech Corporate Research Center, a successful university research park, were retained on a fee basis to manage and lease the office and lab space, as well as develop programming to help growing firms. The project received public support in the hopes that it would contribute to entrepreneurship in an area well known for its historic dependence on the military and federal government contracts.

4. Technology Square is a 1.3+ million square foot innovation district in Atlanta, scheduled to grow dramatically in the near future with the completion of a new mixed-use tower including a combination of lab, office, and retail space. The first phase of the project was completed in 2003 to help Georgia Tech connect its urban campus to the thriving Midtown business district. A combination of public and private financing was used to complete the project in partnership with a private sector developer. In addition to street level retail, the project houses Georgia Tech’s Scheller College of Business and a number of corporate innovation centers, along with co-work space for start-up business and the various service providers and financiers that support them. Commercializing technology developed at Georgia Tech was one of the primary objectives.

The interview data were analyzed using a generalized inductive approach (Thomas, 2006) that was chosen for three reasons. First, qualitative research methods are increasingly being used in exploratory studies of the built environment when rich data are needed to obtain an in-depth understanding of a
particular phenomenon in a context-specific setting (Levy and Peterson, 2013). Second, the approach allows researchers to consolidate raw data easily, to identify common themes present in the data, and to develop a framework to summarize the insights generated from the analysis (Gibson and Barkham, 2001; Levy, 2006; Thomas, 2006; Manning, Weinstein, and Seal, 2007; Heacock and Hollander, 2011). Third, case studies involving semi-structured interviews have proven to be an effective tool to examine the perceptions of real estate practitioners and the professionals they work with in a conversational manner, allowing researchers to probe into issues of interest (Levy, 2013; Palm, 2016; Parker, 2016).

Purposive sampling was used to select the interviewees, which is appropriate when there is a need to ensure those participating in a research project have sufficient knowledge of a real estate issue or transaction (Gallimore, Hansz, and Gray, 2000; Dixon, Pottinger, and Jordan, 2005; Levy and Peterson, 2013). The interview subjects can be divided into five categories for descriptive purposes. As summarized in Exhibit 2, eight of these individuals represented university-affiliated entities or research centers, nine represented third-party firms retained to provide brokerage, design, or consulting services, six represented local governments in executive, economic development, or urban planning roles, six represented nonprofit economic development agencies, and eleven represented real estate development or investment interests. One or more interviewees in each of these categories offered commentary on each of the innovation districts to ensure public, private, and nonprofit perspectives were considered. The full sample was comprised of 28 men and 12 women, all of who were relatively seasoned professionals with multiple years of work experience in their respective fields.
1. Please provide a brief description of the general characteristics of the innovation district development in which you were involved.

2. Please describe the public and private sector parties involved in the development of the aforementioned project to the best of your understanding. Who were the key stakeholders?

3. Who is the target market for the aforementioned project in terms of both tenants and customers? How is the project positioned to serve the target market?

4. What stakeholder groups were influential throughout the development process and how did they influence the project? How was input from these groups solicited or obtained? In what ways were the interests of these groups complimentary or competing?

5. Were any features of the project specifically intended to benefit entrepreneurial firms or start-up enterprises? Were any features of the project intended to provide flexibility to respond to evolving market conditions or consumer preferences?

6. Were any design features of the project intended to encourage the diffusion of ideas or knowledge across tenants or residents? Were any features of the project intended to promote socioeconomic diversity in the tenant or resident mix?

7. Were any design features or management practices incorporated into the project to promote ecological sustainability? What factors motivated these decisions?

8. What factors do you deem critically important to the ongoing success of the project from a real estate investment perspective? What factors pose the greatest threats?

9. What factors do you deem critically important to the ongoing success of the project from an economic development perspective? What factors pose the greatest threats?

10. Are there any best practices you would suggest to other municipalities or real estate practitioners interested in participating in the development of “innovation districts”?

The ten prompt questions presented in Exhibit 3 were emailed to all of the research participants for review before the formal interview. In the aggregate, the questions were designed to gain a better understanding of each person’s role in the planning and/or development of one of the innovation districts of interest, as well as his or her perceptions about factors to which they attributed project successes. Interviewees were additionally asked to describe any design features or management practice they felt were included in the project to promote entrepreneurial activity, socioeconomic diversity, or environmentally-oriented design. The open-ended nature of the prompt questions, coupled with probing follow-up questions put forth by the research team, allowed the interviewees to expand upon these ideas and their conceptualization of innovation districts over the course of interviews that typically lasted around one hour. Naturally, the specificity and amount of the questions were limited by time constraints and by the knowledge bases of both the interviewees and interviewers (Anderson, 2010).

**Interview Results**

The interview results were systematically reviewed to identify common themes in the data related to innovation district development and its perceived ability
to promote economic resilience, environmental sustainability, and social responsibility. When interpreting the data, emphasis was placed on gaining insight into how those participating in the research conceptualized the projects of interest and how, if at all, they perceived sustainability elements as determinants of success and facilitators of innovation. Broadly, interviewees provided insight suggesting that sustainability played a significant role in the innovation districts on which each worked. More specifically, the results point to a hierarchical emphasis on the components of sustainability as a concept. Interviewees painted a consistent picture where economic attributes of sustainability (e.g., resilience) were given primacy as factors associated with project success. Both environmental and social elements of sustainability were given less emphasis in project discussions, although it was apparent that these components were still factors contributing to project successes.

Economic Resilience

Interviewees participating in the planning and development of SkySong and Technology Square offered rather strong support for the contention that innovation districts can be more resilient to economic downturns than other types of development. Commercial real estate brokers familiar with these projects opined that both weathered the global financial crisis of the late 2000s extremely well, outperforming a majority of their peers in terms of occupancy levels maintained and effective rental rates achieved. The latter project was even reported to experience positive absorption during this challenging period due to a “flight to quality” among firms capable of upgrading their facilities. These outcomes were attributed to a combination of factors. Tenants operating in the information technology sector were reported to exhibit strong demand for space near major research institutions, irrespective of whether they were directly involved in research and development activities themselves. This group of tenants was also reported to value proximity to other companies engaging in knowledge-driven enterprises even if those enterprises were in a completely different line of business. These perceptions are consistent with the innovation district thesis and suggest opportunities for open innovation may be capitalized into real estate rents.

Cortex Innovation Community and Tech Center at Oyster Point are still taking shape, but the fact that these projects came to fruition at all was cited by a number of interviewees as a testament to the innovation district concept. In both cases, real estate developers were said to have tried for many years to bring more traditional research and technology parks out of the ground on these particular sites, only to fail. Investors and tenants did not become interested in the idea until the right groups of real estate practitioners and institutional partners proposed the construction of mixed-use environments replete with programming and services catering to the unique needs of innovative firms. Members of the commercial real estate brokerage community familiar with these projects expected them to prove more economically resilient than many of their competitors moving forward as a result of such characteristics.

When asked to describe the factors contributing to the economic success of the innovation district with which they were familiar, interviewees frequently
Read and Sanderford acknowledged the importance of compact, mixed-use design as a means of attracting knowledge workers and knowledge-based companies to a project. However, they cautioned against relying exclusively on such features to spur interaction and the exchange of ideas. Impactful programming offered on a regular basis was generally perceived to be a more effective and efficient avenue to achieve these ends. Targeted networking events, product and service showcases, CEO roundtables, and executive training programs sponsored by an innovation district’s institutional partners, existing tenants, or property/asset management teams were just a few of the examples put forth to stimulate knowledge diffusion. The fact that this type of programming was highlighted in all four of the cases indicates that it is an essential component of the innovation ecosystem regardless of a project’s location, the different knowledge-intensive businesses served, or the physical environment in which they operate.

Interviewees also noted that innovation districts must be large enough and flexible enough to encourage a significant number of companies in different lifecycle stages to co-locate, while including attractive common areas and public events space to bring outsiders onsite to collaborate. Leveraging the resources of institutional partners was identified as one way of achieving these goals. In all of the cases except Tech Center at Oyster Point, academic institutions stepped forward to master lease space and/or guarantee debt financing in order to procure private sector investment in the development of multi-tenant office and lab facilities serving a diverse tenant mix. Sophisticated operators of co-work space were engaged to provide opportunities in these buildings not only for start-ups, but also established global companies interested in establishing a presence near young and innovative firms. Both non-profit and profit-driven service providers were additionally attracted to these buildings to help start-ups commercialize their intellectual property.

Perhaps unsurprisingly, innovation districts were generally conceptualized in a manner very similar to other types of real estate development involving cross-sector collaboration. Public-private partnerships were perceived as a means of mobilizing parties capable of effectuating change, speculative investments in real estate development were seen as a legitimate use of government resources, and place branding strategies were identified as a useful tool to attract financial and human capital to targeted geographic areas in the name of sustainable economic development. Furthermore, a significant amount of attention was devoted to the importance of adhering to sound real estate development principles, establishing a market-driven vision, and empowering effective private sector leadership to keep all of the parties involved in these complex real estate/economic development transactions moving in the same direction.

The interviews also yielded some evidence that innovation districts differ from other knowledge-based economic development strategies in that their power is not perceived to stem from agglomeration economies alone. Rather, the success of these projects was expected to hinge to no small degree on the implementation of effective governance structures and purposeful efforts to coordinate the activities of knowledge-generating agents in the public, private, and non-profit sectors. Risk sharing and shifting among parties in all of these sectors was additionally seen as
Innovation districts were generally perceived to be more economically resilient than traditional office parks due to their ability to better satisfy the demands of tenants in knowledge-intensive industries.

Key advantages were reported to include proximity to research institutions and other technology-oriented enterprises, impactful onsite programming encouraging interactions between highly-skilled individuals and their employers, and the ability to accommodate companies in different lifecycle stages.

Financial commitments and guarantees provided by institutional partners and local governments were perceived to be important to allow real estate development sufficient in scale to promote collaboration among individuals and organizations operating in a diverse array of industries.

Mission and vision-driven strategies, adherence to sound real estate development principles, and the effective use of branding and promotion were all identified as factors critical to success.

Effective governance structures and thoughtful risk sharing/shifting were anticipated to be necessary to align the disparate interests of all of the parties involved in these transactions.

Exhibit 4 | Key Findings Related to Economic Resilience

Environmental Focus

Although environmental sustainability manifested itself in a variety of different ways across the four cases, very few of the interviewees spoke of clearly defined environmental goals established at the front end of a transaction. Resource conservation efforts were more often described as opportunistic and case specific in nature, driven by a combination of market demands, corporate social responsibility commitments, and municipal land use policies and practices. These factors were perceived to define the parameters for incorporating “green” features into a project as summarized in Exhibit 5.

A majority of the interviewees acknowledged that growing market demand for space in urban areas created opportunities to construct innovation districts on infill sites. This was perceived to be environmentally advantageous to the extent adaptive reuse projects prevented the conversion of greenfield sites into traditional suburban office parks or limited development in areas poorly linked to public transportation networks or existing public infrastructure. However, several also contended that settings ripe for innovation could be constructed in areas exhibiting a diverse array of density levels in their land use patterns. The cases themselves illustrated the point. Cortex and Technology Square were both urban infill projects, whereas SkySong involved the adaptive reuse of a suburban site and Tech Center at Oyster Point the development on a greenfield site. The urbanity of a proposed development site was generally believed to be of less importance than its proximity to anchor institutions, such as universities and research centers, amenities, housing options, and supportive public infrastructure.
Reported efforts to promote environment sustainability were often opportunistic in nature and responsive to evolving tenant demands, market conditions, and municipal land use policies and practices.

Site selection decisions were primarily driven by adjacent land uses, nearby amenities, and proximity to institutional anchors, as opposed to defined efforts to promote infill development or adaptive reuse.

Walkability and access to public transportation were both cited as desirable features catering to the demands of those working for technology-driven organizations.

Conspicuous commitments to environmental sustainability, including the pursuit of eco-labels, were observed to satisfy the corporate social responsibility mandates of large firms and government entities.

Mixed-use development was frequently a product of evolving space and capital market conditions rather than environmental goals established at the beginning of a project.

Pedestrian-friendly design elements and access to public transportation were typically seen as marketable and environmentally conscious features of innovation districts contributing to their appeal to knowledge-intensive firms and their employees. Nonetheless, efforts were made in all of the cases to accommodate automobile usage through the provision of surface and decked parking at ratios similar to those offered by competitive buildings. The urban planners interviewed also noted that the commitment to walkability displayed by these projects was just as attributable to municipal land use regulations, urban design guidelines, and negotiated concessions as it was to market demand or an interest in promoting impromptu collisions among knowledge workers.

Conspicuous efforts to promote the environmental attributes of sustainability, such as LEED certification, were often seen as a way of satisfying the demands of universities, government agencies, and large corporations much more so than those of relatively small entrepreneurial firms. Nowhere was this more apparent than in Tech Center at Oyster Point where members of the development team noted that a conscious decision was made to design efficient buildings and common areas without pursuing LEED certification because the branding dimension of sustainability was not perceived to be as important to the tenants they sought to attract as other features. Members of the commercial real estate brokerage community working in the four markets where the innovation districts were located echoed this sentiment to different degrees, while noting that demand for impactful sustainability was on the rise among tenants in most knowledge-based industries.

The mixed-use characteristics of the innovation districts studied were reported to evolve over time in opportunistic ways separate and apart from environmental policy goals. Multifamily housing and retail space were not incorporated into SkySong’s original design, but were included as the project evolved in response to favorable capital market conditions and a need to better amenitize the existing office and lab space. A significant amount of land in the Cortex district was dedicated to big box retail only after IKEA expressed an interest in the location. Greater efforts were made to activate common areas and streetscapes in...
Social policy goals were infrequently cited as motivating factors for the decisions made throughout the planning and development of the projects studied.

Attracting social responsible companies and organizations to an innovation district was often perceived to translate into social benefits for the city in which it was located through nondescript channels.

Market demand stimulated by the development of an innovation district was perceived to create a risk of displacing start-up firms and low/moderate income residents in the absence of mitigating forces.

Retail amenities included in projects were generally perceived to cater to the unique demands of highly-skilled and highly-educated people working onsite, as opposed to underserved indigenous populations.

Potential social benefits received rather little attention in comparison to proposed economic benefits and were rarely touted to obtain public support for an innovation district.

Technology Square several years into its existence to bolster its competitive position. And Tech Center at Oyster Point came to fruition only because policymakers allowed investors to lead with the development of a lifestyle shopping center before constructing any space for knowledge-intensive firms. These examples suggest mixed-use development in innovation districts is pliable and shaped by market forces. Importantly, the emphasis on both the spatial attributes of sustainability (e.g., walkability, mixed-use compact urban form) and the environmental design attributes of projects suggest that market participants perceived the environmental elements of projects to be attributes of success. The emphasis further indicated that sustainability was in demand in a diverse set of market.

Social Responsibility

The interviews offered little evidence to suggest that a desire to promote socially responsible real estate development was a driving force behind the innovation districts studied, as noted in Exhibit 6. In fact, several of the interviewees stated that the social dimensions of the projects they participated in were not discussed in any meaningful way during the planning process and did not influence project outcomes in significant ways. Cortex represents the most notable exception, where over $150 million in public subsidies were made contingent on compliance with workforce participation requirements targeting historically underrepresented groups such as women and minorities. The master developers of the project also went on to form a diversity and inclusion committee and sought opportunities for children attending public school in the area to access the technology and makerspaces available onsite. Interviewees involved in the other innovation districts cited few concrete examples of social responsibility initiatives and often noted it was an ongoing conversation.

Interestingly, several of the interviewees seemed to believe attracting socially responsible companies to innovation districts would, in and of itself, translate into greater social equity in the areas where they were located. Those expressing this position cited efforts on the part of non-profits to provide workforce training to
economically disadvantaged parties and improve their access to technology, but they generally had difficulty describing the mechanisms through which profit-driven firms might engage in similar activities. Some of the interviewees also noted that efforts were still underway to figure out how social responsibility might fit into the brand promise of an innovation district to help attract desirable tenants and knowledge workers.

None of the innovation districts in the study are located in heavily populated areas, which limited concerns about gentrification. However, individuals participating in the development of the more established projects acknowledged that real estate values were going up in the areas surrounding them, making it difficult to acquire land for the development of housing serving low- and moderate-income residents. Escalating real estate values were also noted in some instances to create challenges for start-up companies ready to transition out of incubator space into their own facilities. These comments suggested innovation districts could become victims of their own success in terms of their ability to promote economic sustainability and long-run social equity.

The retail amenities included in these innovation districts were rarely lauded by the interviewees for their responsiveness to the needs of underserved populations. Rather, emphasis was more frequently placed on the importance of satisfying the unique and discerning consumer demands of highly-skilled and highly-educated people working in knowledge-based industries. Bars, restaurants, entertainment venues, and specialty retailers targeting this market segment were therefore incorporated into mixed-use environments to further differentiate these projects from competitors. Infrastructure investments such as public transportation upgrades and public park expansions were posited to serve broader socioeconomic groups, but few comments were put forth to suggest community interests consistently influenced the prioritization of such investments.

It is important to note that the majority of statements made by the interviewees did not support a contention that the social benefits of innovation districts were overstated to sway public opinion. Alternatively, such benefits appear to have been given little consideration at all because they were perceived to be outside the scope of an innovation district’s primary objectives. Only two of the urban planners interviewed, as well as two of the real estate developers, questioned whether more could have been done in their respective projects to promote social equity. And even in these instances, they acknowledged that social elements had little impact on planning and development decisions in their innovation districts.

**Conclusion**

Innovation districts connect a number of research threads germane to sustainable real estate. Conceptually, innovation districts link broad conversations about the role and power of innovation to real estate and economic development. That innovation districts, frequently planned and developed as compact, transit proximate, walkable real estate projects with eco-certified buildings, have been identified as a connection between discussions of sustainability and innovation is
logical. Imagining the transformative potential of these projects is natural. However, small numbers of completed projects and a paucity of data on how those professionals involved in their planning, development, and operation perceive their success and the role of sustainability therein, have limited the exploration of this topic.

Drawing on a set of 40 semi-structured interviews with professionals involved in the planning, development, and operation of four innovation districts in the U.S., this exploratory paper started to address this gap in the literature. This paper is focused on Cortex in St. Louis, Missouri, SkySong in Scottsdale, Arizona, Tech Center at Oyster Point in Newport News, Virginia, and Technology Square in Atlanta, Georgia. These cases were chosen for their alignment with definitions observed in the literature and their stage of life. Each represented a public-private partnership formed between a profit-driven developer, university-affiliated entity, and local government. Further, each is a mixed-use project focused on attracting knowledge industry firms and employees.

The interview data were analyzed using a general inductive approach. Broadly, the results suggest that professionals see sustainability as a factor associated with the success of innovation district real estate projects and a facilitator of innovation. However, consistent with the fact that innovation districts are both economic development strategies and real estate development projects, the interviewees gave economic attributes of sustainability primacy in explaining the successes of their innovation districts. Although the professionals emphasized the social and environmental attributes of projects to a lesser extent, it was evident that they were seen as important project elements. The sustainability components received less attention, which confirmed an important aphorism about sustainability; that is, “it’s complicated.” The observations about market demand for corporate social responsibility, compact mixed-use urban design, and environmentally-oriented building design suggest that even though they were not equally emphasized, these factors are in demand in the market and part of the apparatus that urged projects towards success.

The insights from this group of professionals have implications for innovation district development practice and research moving forward. With respect to practice, those keen to advance a systematic and sustainable approach to economic and real estate development focused on innovation would do well to consider economic competitiveness-based marketing and justification strategies. Although social and environmental issues are critical components of these projects, perhaps developers and public officials should consider framing their benefits in ways that connect them to the project’s ability to be economically resilient and competitive to firms and employees; something that can be accomplished with the growing literature on the value proposition of sustainable real estate.

With respect to research, the findings suggest that more work is necessary to explore how the insights from these professionals correspond and relate to those working on new and emerging innovation district projects. Further, although the paper did not focus on the demand for sustainability, the findings suggest that exploring this topic for its alignment with the narrative across other property types noted in the sustainable real estate literature would be most welcome.
While the findings help articulate some important ideas and next steps, they are also limited. The project may be limited by the bounded rationality of the researchers and interviewees. Such limits are present in similar types of research. However, as natural parts of the exploratory process, purposeful sampling techniques and systematic analytical strategies help to attenuate their effects.

Finally, the results recall the reflection from Hall (1998) on the market, human, and policy challenges of creating contexts for innovation to flourish. In his final discussion of the city as an innovative milieu, Hall concluded that the social and physical systems needed to catalyze innovation can be made neither easily nor to order. Innovation can be a powerful elixir for urban places, but it can also be difficult to tease out. Creating the conditions for innovation to thrive involve a complex alchemy of risk taking, technical expertise, opportunity, and artistic sensitivity blended together in social and market contexts. Based on the insights provided by the interviewees, it seems, sustainability can be additive to this process.

References


The authors thank the NAIOP Research Foundation for financially supporting the collection of data for this project and to those providing thoughtful comments and suggestions at the 33rd annual meeting of the American Real Estate Society.

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