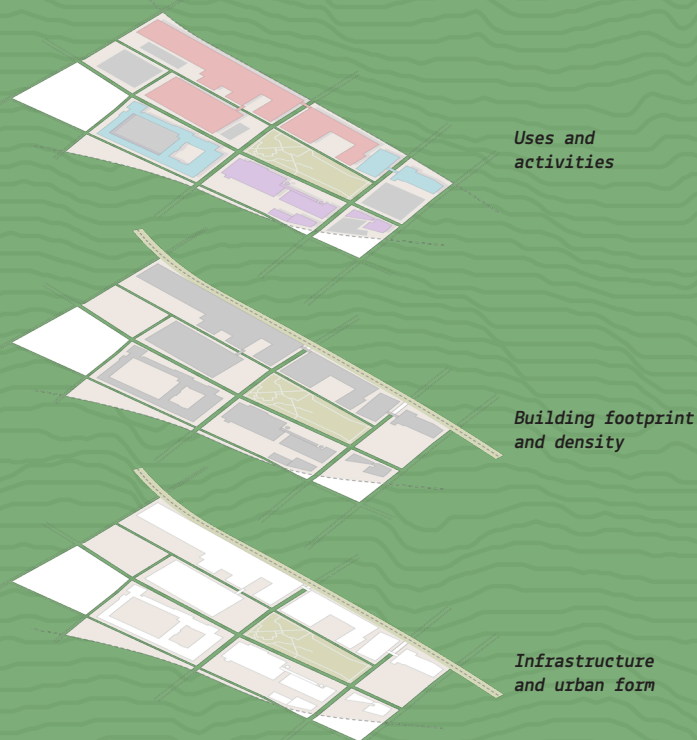


Innovation Districts and the Centrality of Land

Research Brief 2



This paper, Research Brief 2, is part of a series developed by The Global Institute on Innovation Districts to help districts organize for success.

Research Brief 2 explores the centrality of land in both the transformation of districts and, importantly, how they are effectively governed to advance specific ambitions. Research Brief 1, "Why Governance Matters," identifies seven factors contributing to effective governance. One of the seven factors revolves around tying land to governance. The paper delves more deeply into that topic.

Introduction

The emergence of over 150 innovation districts in less than a few decades might send a signal to government, institutional and civic leaders that districts are easy to design and, perhaps, even easier to execute. Extensive research and hands-on practice in dozens of districts across five continents tell us that nothing could be further from the truth.



GIID is engaged with approximately 80 innovation districts, as illustrated on this map.

Innovation districts are urban geographies of innovation anchored by academic institutions, corporate R&D centers and entrepreneurial support organizations in mixed-use communities that promote creativity and collaboration.¹ While this definition of an innovation district has utility in understanding what they are, the power of innovation districts ultimately rests in *what they aspire to achieve*.

Both the rise and the evolution of districts lie in their ability to address sectoral, administrative, and fiscal fragmentation while taking on “wicked problems.” A term introduced in the early 1970s by designer-planners Horst Rittel and Melvin M. Webber, wicked problems describe seemingly intractable social challenges as cancer, climate change or urban poverty.² Wired by advanced and fast-changing technologies, districts’ value become magnified in their capacity to draw on multiple, if not numerous, research disciplines to solve highly-complex problems. At the same time, they aspire to become an incubator for new startups, a catalyst for fast-growing firms to scale, and sites for established companies with new insights to secure, if not expand, their value and markets.

Innovation districts are places where ...



Ideas are tested



Spaces are surprising



People find reasons to stay



Expensive equipment is shared

Images on this page from left to right: MaRS Discovery District in Toronto, Canada; Melbourne Innovation Districts, Australia; Innovation Quarter in Winston-Salem, US; Tonsley Innovation District in Adelaide, Australia.

Districts also aspire to become their region's solution to addressing economic, social and racial inequality. This has led districts to often partner with regional actors in an effort to strengthen or provide quality education, workforce training and affordable housing. Some districts are also experimenting with how to become centers of both arts and sciences. 2024 research led by The Global Institute also indicates that a growing number of districts aspire to lead on sustainability. Some are deploying a web of strategies to address climate change head on, including driving R&D in areas such as new biomaterials and energy transition, creating new energy sources to be used by district residents and tenants, and monitoring the individual energy use of buildings to develop targeted strategies.

The scope and complexity of these ambitions require district leaders to engage, or “pull”, as many levers as possible. Typically they strive to secure university and institutional backing, new corporate partnerships, advocate for supportive public policies, develop a catalytic infrastructure and establish a well-structured base of financial resources.

Land, in particular how land is used, is a key factor enabling innovation districts to realize their ambitions both large and small. Perhaps the overarching intent in valuing land is to create a city model that differs from the 20th century city—a model where zoning rules often led to the separation of different uses, such as housing and industry. The new model is one that is sustainable, socially balanced and specialized in knowledge-intensive activities. This requires a new urbanism based on the mix of uses, a new compact and sustainable city where buildings and public spaces are designed to favor the exchange between people, companies and knowledge

Few levers have as broad an impact and possess the same transformative power as land.

Leveraging land can play a large role in advancing specific district goals:

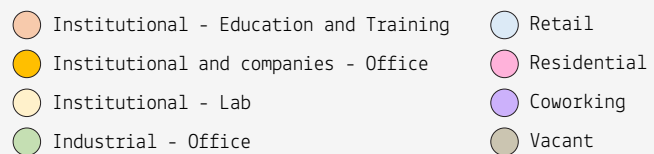
For districts seeking to make their talent pool more inclusive and to create a range of housing options, the reimagining, if not the reclassification, of land to allow a mix of uses is paramount.

For districts needing avenues to provide unrestricted dollars to fund the critical-but less tangible-investments that must occur for a district to thrive, extracting financing from land-driven activities has incredible utility. Such investments include mentoring local talent and placemaking.

For districts striving to advance a range of powerful and unique but still nascent R&D specializations, a reconceptualization of land, such as the re-use of existing, or the development of new, buildings designed for R&D, is a necessity.

For districts planning to eliminate physical barriers, render places more accessible, and become a playground for new programs, living labs and technological innovations, the transformation of land and specific barriers is central.

For districts seeking pathways toward increasing social equity, land can become an equalizer. If designed well, land can capture a portion of its revenues, which can then be directed toward educational systems, training initiatives, or inclusive placemaking. This ensures that the district's mission advances, rather than benefiting only a select few landowners.



While land is a key factor enabling innovation districts to realize their ambitions, research demonstrates that the harnessing of land as part of districts' self-organization is not a common practice. Evidence from more than 50 innovation districts shows that land is not a lever that many district leaders deploy.³ For example, very few districts have held strategic discussions early in their development process with a core set of district landowners and invited their ideas and input to shape a vision. Land, in other words, is not being actively tied to governance.

The imperative for districts to organize for success was the central tenet of a series of research briefs based on an in-depth analysis of 10 international innovation districts that was published by The Global Institute on Innovation Districts in 2023–2024. Research Brief 1, "Why Governance Matters," identifies seven factors contributing to effective governance. One of the seven factors revolves around tying land to governance.

This paper, Research Brief 2, explores the centrality of land in both the transformation of districts and, importantly, how they are effectively governed to advance specific ambitions. This principle stems from the recognition that districts aspiring to take on problems of administrative, sectoral, and fiscal fragmentation, along with “wicked problems,” typically find themselves needing to harness the kinds of opportunities and financing that land can provide. We will discuss how to successfully harness land and tactics for making it an effective lever of transformative change, providing examples from our in-depth research.

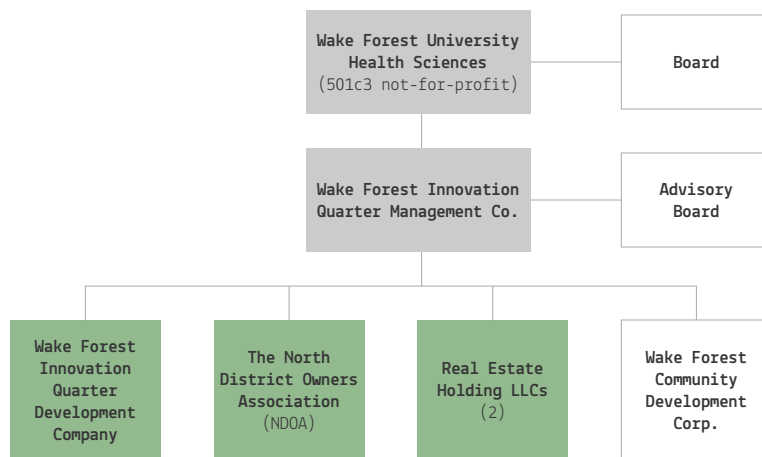
When land is connected to district governance, the power of land is magnified.

It's important to note that out of the 10 international districts examined, we have selected five as case studies for this paper. These selections demonstrate an integration of land as part of a governance structure.

This paper serves as a call to action, not an incitement to rush to judgment. It seeks to influence how district leaders view land from the very beginning of their district initiatives by exploring how it is intricately linked to different forms of district governance. This paper also aims to aid those far removed from land planning, facilities planning, real estate development and real estate finance in understanding that land is a tool that all leaders should focus on. Not only can land undergird how and where complex problems are solved, it also provides an avenue through which governance can be more impactful.

Tying Land to Governance

One of the most significant takeaways from more than two years of dedicated research on innovation districts and their governance models is that almost all high-performing, effective governance structures have incorporated land into their portfolios. Such a governance structure typically has a decision-making board and a staff that possesses strong competencies in land transformation, real estate development and real estate finance. *Land and enlightened leadership are intertwined.* This schematic below of one district's organizational structure provides a visual representation of the relationship between land and leadership.



Green boxes denote legal structures devised to drive land transformation

Some district governance models are designed to drive land transformation, such as this district in Winston-Salem, United States. Source: GIID analysis of the organizational structure of Innovation Quarter.

To write about land and leadership this way might suggest that all districts would do well to approach the work in the same way. This is an inadequate construal of the model and warrants correction. Districts around the world inevitably emerge or evolve from different starting points. As Miquel Barceló, a seasoned researcher and practitioner in the field, has observed, “Urban districts are built on pre-existing situations that we want to adapt to the conditions of the new district, and this introduces a layer of great complexity and the need for evolutionary processes and initial restrictions, which need to be dealt with on a case-by-case and block-by-block basis.”⁴

Some districts, for example, are emerging in a physical environment shaped by decades of urban investments, as manifested in the underlying infrastructure (streets, sidewalks, water, electricity), established mixed-use areas and existing development. They are, in other words, already working within a compact city construct. Other districts are emerging in brownfields or in areas with high concentrations of abandoned properties,

physical barriers and single-use zones. Yet other districts are designing investments to shift from a low-density, dispersed model to one that is more compact. These factors play significantly into what district leaders—individually and together—can accomplish over time.



Source: GIID Analysis of the Melbourne Innovation District, 2020.

The research led by The Global Institute examined 10 districts with different starting points and development conditions. While it is too early to draw definitive conclusions, our early observation is that districts that required greater physical transformation to advance their ambitions, tied land to organizational design and leadership earlier, and more intentionally, than other districts. In short, districts where land is not leveraged, which is a large number of districts, are missing an opportunity. When asked what revenue sources a new innovation district should develop in order to create a financially self-sustaining organization, Matt Entice, president and CEO of Buffalo Niagara Medical Campus, a district in upstate New York, was quick to respond. “Real estate is an obvious one because it’s part of a district mission. In fact, the best way to do it is to receive or buy the real estate and then push the governance structure to work for mission and money.”

Before outlining strategies and tactics for shaping and designing land to be an effective lever of transformative change, it is worth describing the role of land in innovation districts:

- **Land facilitates the physical transformation of districts to create the valued attributes of complexity, density, and the potential to support mixed uses and activities.** Such transformation has been particularly challenging in places that bear the indelible marks of 20th century development. Heavy infrastructure—highways and exposed railroad tracks—often break up districts. In some places, zoning that was originally intended to protect health and safety is segregating uses and isolating housing, workplace, commercial, and manufacturing activities from each other.

- **Land is needed to develop new infrastructure or to upgrade existing infrastructure considered essential for strengthening the district's value.** Infrastructure can take many forms, including road and transit infrastructure, which creates new connections and enables access within and between the district and other parts of the city or region. Technological infrastructure embedded in public spaces, streets, and buildings is another form and can include accessible internet, public test beds, and wayfinding technology. Innovation infrastructure, including core labs and facilities, is yet another form; it assists in advancing R&D in increasingly specialized fields, including next-generation genomics, immunology, and cybersecurity.

- **The transformation of land can help address gaps in the innovation ecosystem that are limiting a district's potential.**

While each district will determine its own list of innovation ecosystem gaps, commonly cited examples include the need for multi-tenant buildings to cluster R&D-rich companies and startups; the need for additional ground floor spaces where a diversity of people can meet and network; and the need for additional innovation infrastructure, such as the core labs and facilities in R&D-focused districts.



The Cleveland Foundation Headquarters now anchors Cleveland's Health-Tech Corridor.

Source: S9 Architecture.

- Land is also a powerful platform for advancing equitable growth. It can be used to build or modernize schools, create affordable housing for front-line workers, or build new community colleges or specialized work training centers that are linked to work opportunities in the district. In a separate 2020 research study led by The Global Institute on nine innovation districts, the majority with some form of governance had invested in at least one of these land-based strategies to expand opportunities for area residents.
- Land tied to a district's governance structure can support a creative mix of revenue streams to finance vital activities. Revenue can be generated from ground leases (in which the land itself is leased), from rents from tenants in newly constructed buildings, from user fees imposed on parking lots and garages, or from the sale of land or buildings to developers. Another strategy is the development of a district zone where building owners pay annual fees. This strategy is discussed in more detail in the next section.

Insofar as the role of land in relation to district governance, as noted above, fulfills many needs, how can districts—across a spectrum of starting points—truly harness land to achieve their ambitions? The next section lays out some approaches in greater detail.

How districts harness the land

One of the most powerful ways districts can evolve is to learn from their peers. *While districts develop competitive, if not comparative, advantages due to their variation and distinctiveness in R&D specializations and the combination of place-based assets, a group of international innovation districts demonstrate that the utility of land in the earliest stages of a district's physical and organizational design is paramount.* This can happen as early as when the initial vision or the first wave of detailed ambitions are sketched across the page.

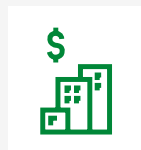
Even at these early stages, and even with districts in a compact urban structure, leaders are wise to consider the following:



The current uses of the district, or proposed district, and its proximity to the primary center of commerce.

It is also crucial to assess the level of mobility within the district and

degree to which the district is accessible across the region. This early assessment will determine whether infrastructure financing is necessary to drive the right market conditions. An early evaluation process should also consider the health of the real estate sector, including the demand for various types of housing and the strength of the office market, which is highly uneven across cities and countries.



The value of the land, the number of landowners within a proposed district and whether the property is owned by public or private landowners. From there, and often through an iterative

and informal process, how many landowners are willing (or can be persuaded) to play a formidable role in co-designing a district that moves beyond their singular interests.



The range of powers (or lack of power) various leaders in a district have regarding land. With that clarification, it makes sense to ask who else should be involved to use,

change or leverage the land.



The long life cycle of a district.

Decisions made early on to achieve optimal land development might eventually lead to loss of control over land use and impede the

achievement of a district's long-term goals.

Listed on the following pages are seven of the most common land-based strategies and tactics, gleaned from international practice, that districts have used to harness the opportunities posed by land *beyond its intrinsic value*. Some strategies directly influence or affect how a district governs.

1

Vest land under the entity responsible for advancing the district vision and mission

Organizing a district around its land, which will likely entail the engagement of multiple landowners, is a powerful strategy that helps in defining how districts can grow and how they are governed. Described below are select strategies that mature, innovative districts have adopted to advance their vision.

- **The gift of land spurred by a powerful vision, positioning a new way forward.** The growth of Innovation Quarter in Winston-Salem, North Carolina, US, was enhanced with a gift of 16 acres (6.4 hectares) of land by a major local company. The inspiration for the gift came after Wake Forest University Health Sciences (WFUHS) drew up a master plan that articulated a bold, thoughtful vision for the area.⁵ WFUHS subsequently acquired the remaining land that makes up this 300 acre (120 hectares) innovation district. In this story, the vision helped spearhead, over time, a way for the medical institution to develop a governance model with land as a central part of its portfolio. As a result of this strategy, Innovation Quarter successfully developed over 1.2 million square feet of mixed-use research and innovation space, in addition to a park that has become an inclusive centerpiece of the city.
- **The acquisition of parcels of land to create a growth magnet.** In the case of the Medellín Innovation District in Colombia, land acquisition—even just a few parcels of land—helped create an important magnet for companies and startups. The Ruta N corporation (a public company established to advance Medellín's innovation- and knowledge-intensive sectors) acquired approximately three hectares of land to develop a 30,000 square meter, multi-tenant, “ecosystem-centered” building, known as Ruta N.⁶ While this level of investment may not be viewed as high, it sufficiently initiated the district function and created a market to attract new investors and companies. Today, Ruta N is considered to be the district's center of gravity and has successfully attracted innovation-rich companies. The ownership and transformation of land to catalyze this burgeoning ecosystem while generating revenue was foundational to this story.



Land in the Medellín Innovation District was developed to create a center of gravity for Colombia's second largest city. Source: Ruta N, <https://www.rutanmedellin.org>.

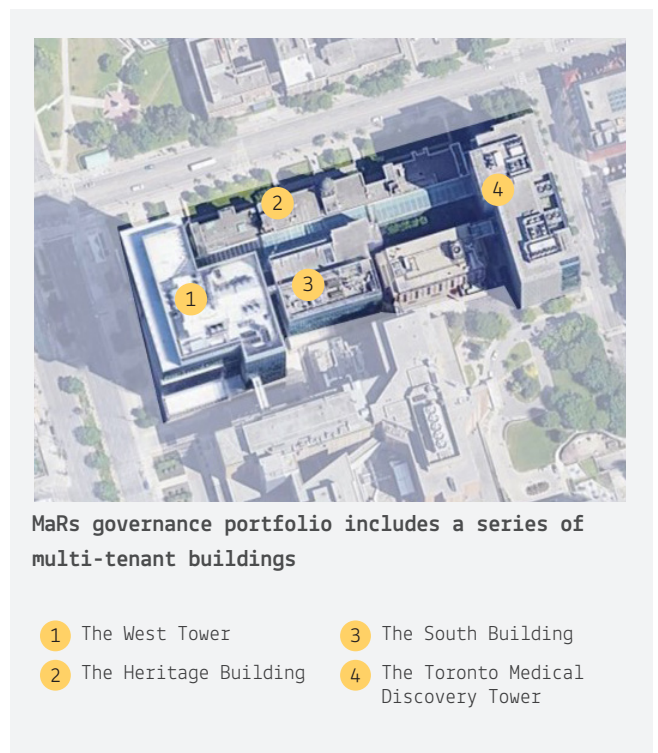
- **Local government leverages its powers to pursue a land-rich vision.** 22@ Barcelona is recognized as one of the first innovation districts globally. Strong, visionary municipal leadership paved the way for 22@ Barcelona, devising a strategy that would transform what was historically an industrial area into a cradle of innovation. Achieving this vision would entail the design of incentives to acquire and transform 200 hectares (494 acres) of land into approximately four million square meters of development through private investment. Given this, the city deployed its powers through land use planning and zoning, revising its master plan to require landowners to cede 30 percent of their land to the city in exchange for redeveloping their land under the new planning regime. The 30 percent included 10 percent for affordable housing, 10 percent for green space, and 10 percent for community and innovation ecosystem facilities.⁷ As described later in this paper, the new planning regime also created ways for the new development to increase its overall density, or floor area ratio (FAR).ⁱ

- **Local leaders pooled money to purchase and acquire land.** The act of acquiring land was equally catalytic in shaping MaRS in Toronto, Ontario in Canada. Several founding members of MaRS, along with others in their network, amassed \$11 million CDN and secured a contract of sale for 5.2 acres (2.1 hectares) in downtown Toronto.⁸

This early equity allowed them to secure additional funding for the construction or rehabilitation of a total of four buildings, including a historic wing of Toronto General Hospital and three new buildings. Together, these buildings now house the vibrant innovation ecosystem that MaRS is today.

A somewhat similar story can be found in the Cortex Innovation Community in St. Louis, Missouri in the United States. Local leaders, namely, universities and medical institutions, collectively contributed USD 29 million to purchase land to knit together an innovation community that includes companies, startups, and intermediaries.⁹

In both cases, the acquisition and transformation of land provided the necessary tools to help shape or spread an ecosystem. Harnessing land was also key to how the principal actors organized themselves to advance district ambitions.



MaRS Discovery District, Toronto, Ontario. Source: Google maps with design by GIID, 2022

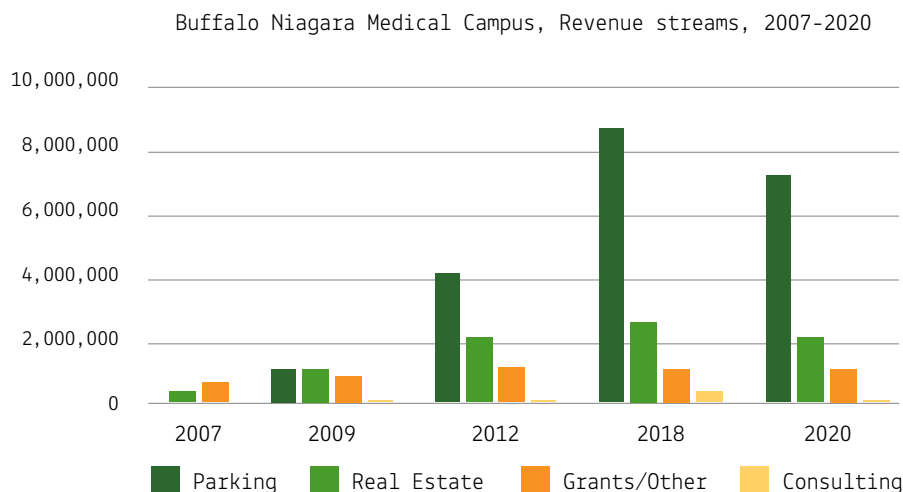
ⁱ Floor area ratio, or FAR, is the ratio of the total amount of usable floor area that a building has (or is legally allowed to have) and the total area of the lot on which the building stands. A higher ratio commonly indicates a dense or urban construction.

2

Harness land to generate revenue and advance a district's mission

The use of land to finance and advance a district's mission and deep ambitions can be achieved through multiple strategies. The ability to generate recurring revenue through land can be empowering in that it allows district leaders to lean less heavily on institutional, government, or even philanthropic dollars. While the value of land, particularly land supporting offices, has decreased in some cities, key districts researched shared how land remains an important source of income to finance cross-cutting expenses and advance priorities such as school building, training programs, the safety and cleanliness of the district, and new housing development.

- **Reliance on buildings and parking structures for a revenue stream.**
In the case of Buffalo Niagara Medical Campus (BNMC), based in Buffalo, New York, land has been central to bolstering its financial portfolio. Specifically, BNMC generates annual revenue by acquiring, renovating, and operating several buildings and parking structures. This includes an Innovation Center spread across 180,000 square feet in three buildings, two parking garages, and one parking lot. BNMC has USD 130 million (2023 dollars) in assets, including USD 24 million in equity. An important part of this district's story is wise investing over time to fully maximize gains. The district's focus on land and strong investment decision-making equates to institutions in the district financing less than 5 percent of BNMC's budget. The revenue has given BNMC the latitude to support anywhere between 18 and 24 staff members.



Source: BNMC

These revenues are also used to advance a central component of BNMC's mission, namely, to increase social and economic equality—an important ambition, insofar as Buffalo is one of the most segregated cities in the United States.¹⁰ Matt Entice, CEO and president of BNMC, has been quite clear about the role of land: "Our land-use strategy has afforded us the financial flexibility to start vital community focused programs within the scope of our mission." One of their programs, called the IC Success program, gives tools and resources needed by anyone starting or growing a business, particularly those from historically marginalized and underserved communities.

- **Designation of an innovation district zone or overlay.** Another strategy to finance a district's mission is to designate an innovation district zone or a "light" district overlay, defined by district leaders themselves, who may include a district's governance board, landowners, and building owners. In a district zone, the owners of buildings (who are sometimes also the landowners) pay an annual building fee or service charge. These funds are used for social programs and events intended to accelerate innovation, district maintenance (such as the provision of additional clean and safe activities), placemaking, mentoring or training programs to supplement the talent pipeline and the hiring of staff to support the ecosystem.

Such a zone or light overlay is ideally voluntary and not imposed through draconian measures, such as where such a zone becomes city regulated. The stage of the innovation district will help determine the design of such a strategy. A district in an early stage with little land development and with highly involved landowners or decisionmakers can decide to develop a zone or overlay before development is under way. In districts where land is already developed, the process will work only if it is openly discussed and co-designed with land and building owners.

A core argument to use when considering a district zone, especially in light of a remote workforce and a weak office market, is that a sustained level of services and support will strengthen essential social networks and connections. This topic is addressed in detail in a Brookings Research Brief, "The Rise of Innovation Districts".¹¹ Districts can also provide amenities no individual lab or company can provide because of their larger scale.



Events and programs that connect people is one way from building assessment fees are used.

Source: Cortex Innovation Community, Eric Hobson, 2017.

Such financing can be used to ensure the district is well maintained through clean and safe services and to finance programs and crucial operational teams. Our research identified two districts that employed this building assessment fee strategy:

- **Innovation Quarter.** In Wake Forest's Innovation Quarter, a specific entity, the North District Owners Association (NDOA), was established under the Wake Forest Innovation Quarter Management Company (a not-for-profit organization under the Wake Forest University School of Medicine) to manage, maintain and secure common spaces within the district as well as develop social programs. The role of the NDOA is outlined in the legal covenants of the land. The NDOA collects building assessments of \$0.50 per square foot for commercial space and \$0.15 for residential space. These fee levels were set to be not too high or prohibitive. NDOA funds are then used for landscaping, security, common area maintenance, and programming. In 2021, these fees generated \$600,000.
- **Cortex.** The board of the Cortex Innovation Community determined that it would charge an annual building assessment fee for every building, whether new or rehabbed, to finance Cortex's operation of the district. The Cortex West Redevelopment Corporation (CWRC), a subsidiary of the not-for-profit entity Cortex, collects funds from building assessments. The fee, which is less than \$1.50 per square foot, varies based on use, which may be residential, retail, or office. In 2023, assessments provided \$1.4 million for Cortex operations. Today the funds still cover a large share of the costs of Cortex's 17-member staff.

The value of devising a building assessment fee, as outlined above, is effective in creating funds to support district infrastructure or operations, which is a clear and undeniable value. While this strategy may be challenging to implement in all markets, it is a worthwhile strategy to try to develop with local actors given the long-term benefits.

3 Use land value capture to finance district ambitions

Land value capture is a policy approach that enables communities to recover and reinvest growth in the value of their land that has resulted from public investment and government action. Land value capture is rooted in the concept that public action should generate public benefit.¹² This funding source is increasingly important to the future of municipalities as challenges mount from rapid urbanization, deteriorating infrastructure and climate change. Land value capture, when used in conjunction with good governance and urban planning principles, can be an integral tool to help districts advance positive fiscal, social and environmental outcomes. Two cases are highlighted here to demonstrate its application in different locations with specific priorities:

- **Copenhagen.** Copenhagen rezoned land to enhance its selling price to developers, then used the extra cash to finance affordable housing, workplace training centers, and affordable workplaces. Although this initiative did not involve an innovation district, the work, led by the

Copenhagen City Port and Development Corporation, offers lessons in how to pool assets to create a value capture mechanism.

In 2007, the national government and the city government created the Copenhagen City Port and Development Corporation to address the city's deindustrialization and depopulation by catalyzing investment in housing and state-of-the-art infrastructure. The corporation developed a highly organized value capture process, making the most of government-orchestrated activities (in rezoning and significant infrastructural improvements) that enhanced land value. All parties agreed up-front that revenue retained as a result of the value capture would be used to finance transit.¹³

Copenhagen's complex strategy entailed the following steps: (1) vesting all the land (including the land owned by the national government) into the

Land value capture is rooted in the concept that public action should generate public benefit.

corporation, (2) rezoning the

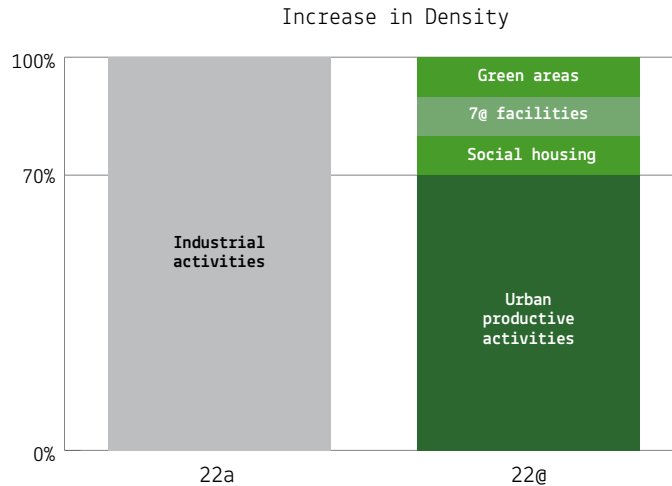
land to create value, and (3) sequencing infrastructure investments to ensure that the land could be sold to developers at a higher monetary value because of this sequence of activities. In the case of innovation districts, which might have equitable growth as an ambition, revenue can be retained from value capture to finance the intended activities of affordable housing, workforce training centers, and affordable workplaces for startups.

- **Barcelona.** Barcelona took a different approach. The city allowed higher-density developments but in exchange, developers had to provide buildings for 22@ Barcelona activities and cede land to the city for social housing, green space, and community facilities. In other words, the municipality of Barcelona used value capture to finance infrastructure improvements and acquire the land for infrastructure, parks, housing, and training spaces. Both national and Catalan regional laws require the public and private sectors to share in the costs and benefits of new developments, which allowed Barcelona to develop its value capture strategy.¹⁴

To be more specific, the municipal government of Barcelona updated the master plan to create an incentive system that allowed *developers* to build more density in exchange for:

- paying a significant share of the overall infrastructure investments. This process increased the FAR from 2.0 to 2.2;
- leasing a minimum 20 percent of the new buildings to “22@ activities” (in practice, this meant knowledge economy uses). This step further increased the FAR, from 2.2 to 2.7; and
- giving land for public housing, which was then turned over to the city. This step further increased the FAR, from 2.7 to 3.0.

This strategy above dictated that that if *property owners* wanted to redevelop their land under these new potential FARs, owners were required to cede 30 percent of their land to the city. As mentioned above, of the 30 percent of land ceded, 10 percent was allotted to affordable housing, 10 percent to green space, and 10 percent to community and innovation ecosystem facilities.¹⁵



Harnessing the land to advance the vision of 22@Barcelona.
 Source: 22@Barcelona, *El Distrito de la Innovación* (Ajuntament de Barcelona, 2009), 28.

In summary, the municipality created additional value in the form of potential FAR and its associated profits. It then required developers and property owners to return some of that value in the form of land ceded to the city, contributing to infrastructure improvements, and creating activities and uses that would help build and diversify the innovation district.

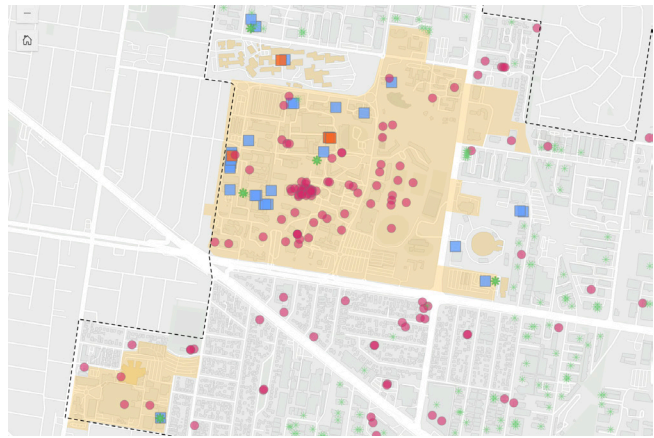
The 15 plus years that have passed since the implementation of this intricate strategy have allowed public policy leaders as much as local residents to evaluate the success of this strategy. Miquel Barceló, an urban policy thinker based in Barcelona and a leader in advancing innovation districts, reflects how “dedicating 10% of the land to public housing has been insufficient.”¹⁶ The limited supply of housing has in turn led to an increase in housing costs and a displacement of local residents. Today, the business association and city council are discussing how to address the situation.

Importantly, 22@ Barcelona offers a lesson for all districts: get ahead of the affordable housing issue and address it from the onset of a district initiative. Designing a housing and housing affordability strategy in later stages of growth proves to be far more difficult than at the beginning of the process.

4

Devise land planning and zoning activities to diversify uses

An early definition of innovation districts posited this model as “the ultimate mash-up.”¹⁷ It captured the essence of a district, which is to create an offer that far surpasses institutional buildings, offices, and other types of research buildings. In interviews, district leaders talk about the other uses and activities they have or are intending to include schools, housing, community centers, restaurants, retail spaces, hotels, and grocery stores. Even so, most districts are still in an early stage of development, and for them, diversification of uses is more aspiration than present reality.



GIID analysis of 23 innovation districts determined how certain districts are transforming land to create a “mash up” of activities. Shown here is Monash Technology Precinct and its main campus. Source: GIID geospatial analysis of core actors and place-based assets, 2023.

The ability to create a mash-up of diversified uses rests first with what is legally allowable under zoning. Some districts are wrestling with changing single-zone or low-density zones. While it is primarily governments that possess the legislative authority to make changes to official city plans and zoning, district leaders, such as universities and medical institutions, or district governance organizations often advocate for this change. In some countries, such as the United States and Canada, some public universities have been granted formal status whereby zoning, planning, and architectural review are devolved to them and are not the purview of the municipality or other government. In the first example below, the city is a core champion of the district, enabling the city to also lead in planning. In the last two examples, innovation districts led specific activities.

- **City government leads in the design of a district.** In Medellín, three city-led plans established the direction for this district’s development. A goal across all plans is to create a mixed-use innovation district in which people can live, work, and play. Local stakeholders spoke of the need to create spaces that allowed more, and more diverse, people and residents to come into the district. The city also shaped the governance structure, giving other stakeholders a seat at the table to advance this objective.
- **The delegation of unique planning powers to an innovation district.** Unlike any other innovation district analyzed for this paper, the Cortex Innovation Community in St. Louis was given both city and state functions and legal powers to develop its 200 acre (81 hectares) innovation district. The aim of its work was to transform underutilized land into a community with places and spaces for more than just researchers. Cortex used its unique powers to advance this ambition.

These powers included master planning and master plan implementation, the power of eminent domain (which was used only once), the power to abate taxes (which was used strategically to spur investment), and the power to approve or reject building plans. While Cortex led the development of the master plan, the plan was recognized by the City of St. Louis as a city plan and informed subsequent changes in zoning.¹⁸ Cortex also created Redevelopment Areas as part of a Tax Increment Financing (TIF) strategy to provide a mix of land uses and create a funding vehicle to construct the infrastructure and public amenities. The TIF is a city-established designation. Once the vehicle was established, Cortex had latitude to determine how TIF funds would be allocated for the duration of the financing scheme.



Source: St. Louis Innovation District Tax Increment Financing (TIF) Redevelopment Plan by St Louis Innovation District, LLC

- An anchor institution champions a district effort with city support.** The physical transformation of Winston-Salem's Innovation Quarter was guided by a series of four master plans. The ambitions outlined in the master plans, which included highly mixed and integrated spaces, required important changes in city zoning. "We had a philosophical commitment towards variety," said Graydon Pleasants, recently retired head of real estate development for Innovation Quarter. This commitment led leaders at Wake Forest University School of Medicine to work closely with the city government to create a zoning overlay that would allow mixed and new uses. Such instrumental changes in zoning could have satisfied the local leadership. Instead, leadership continued to evaluate how land could be harnessed to ensure the land—and especially the quality of the land—would remain a central proposition for the district.

The district leaders worked with a legal team to create specific restrictions and covenants, which are signed by each developer upon purchase or ground lease of the land. Restrictions and covenants are sets of rules governing the use of a certain piece of real estate and are

registered with the county clerk's office. These covenants maintain control of what can and cannot be done with the land, rules that remain with the land even if it is sold to a new owner.¹⁹

5 Plan and build catalytic infrastructure

New or improved infrastructure is proving to catalyze investment in innovation districts and their programs. While infrastructure does not shape or define district governance, it has a highly catalytic effect on the value of land and the potency of ecosystems. Two examples of this strategy follow.

- **Government-led investment in critical infrastructure.** 22@Barcelona was built in an industrial area that was scarred and separated from the rest of the city by railroad tracks. In the early stages of the plan, the Barcelona City Council approved significant infrastructure improvements. These improvements included rebuilding 37 kilometers of streets, installing a new fiber-optic network, introducing street-cleaning measures and pneumatic garbage collection to eliminate the need for street containers and garbage truck traffic, and extending the city's light rail system serving the district.²⁰ A large share of the infrastructure funding came from developers, who were required to pay EUR 64.17 per square meter of land they redeveloped in exchange for a higher FAR.²¹ Utilities which use the local infrastructure, especially those related to energy supply and telecommunications, also contributed to the financing.



22@Barcelona: Transforming old industrial land for the knowledge-intensive economy. Source: Ajuntament de Barcelona, 2006.

This strategy should be carefully measured and adapted for today's volatile environment. In many developments today, FAR is actually declining as developers reduce building size to derisk their projects and increase the preleasing percentage to attract capital.

- **Joint government and district investment in infrastructure.** Similar to Barcelona's experience, the design and execution of catalytic infrastructure propelled Innovation Quarter forward. Infrastructure improvements included the relocation of a rail line, the installation of power lines, and the re-creation of stormwater ponds. Inside the district, Innovation Quarter completed water and sewer systems and created green spaces and new internal roads. While they led these efforts, both federal and state governments reimbursed the district anchor, Wake Forest University School of Medicine. Connecting roads and infrastructure outside the district were financed by the state government. Innovation Quarter practitioners observed that securing funds from federal and state sources directly contributed to the growing ecosystem and community that exists today.²²

6 Design a cohesive vision through master planning

Innovation districts in Buffalo, Medellín, St. Louis, and Winston-Salem relied heavily on inclusive master planning exercises as instruments to articulate their vision and the roadmap for development. These master plans covered land owned and operated by different district stakeholders (e.g., government, universities, medical institutions, companies) to create a single cohesive strategy. The process of developing these plans required multiple stakeholders to work together to create a collective vision of how to drive transformative change. Interviews consistently revealed that district leaders viewed the alignment between vision and land as essential. It is helpful to understand that most districts realized only some elements of their original master plans. The power of such planning rests in the ability to bring together various landowners and stakeholders to place the district in a context larger than stakeholders' individual parcels or interests.



Tying governance to land can take the form of a district-wide masterplan. While this district has multiple landowners, this master planning process helped develop a set of synergistic strategies. Source: *Buffalo Niagara Medical Campus, Master Plan Update* (CKS Architecture and Urban Design and Gamble Associates, 2010).

Following is an important strategy to help achieve this goal:

- **Engage landowners in developing a unified master plan across the land.** Conventional practice in and across districts is for separate institutions (universities, medical institutions) and other landowners to develop their own master plans. Rather than an integrated, cohesive vision that achieves new synergies, these places are fraught with fragmentation. Two examples of a way forward follow:
 - **Buffalo Niagara Medical Campus.** BNMC used its master plan as an organizing mechanism to build broad support and collective engagement on the part of both district institutions and the community. “The plan gave me something to talk through and to have goals set that allowed us to say that, directionally, this is where we are headed,” shared Matt Enstice, president and CEO of BNMC.
 - **Cortex Innovation Community, St. Louis.** An important element of Cortex’s transformation began with a master planning exercise that brought together three universities, the city, the health care system, neighborhood leaders, and the developer. The second master plan involved landowners in the design and planning stages, as opposed to working just with the architects. This process helped nurture the understanding and buy-in needed to move the project forward.

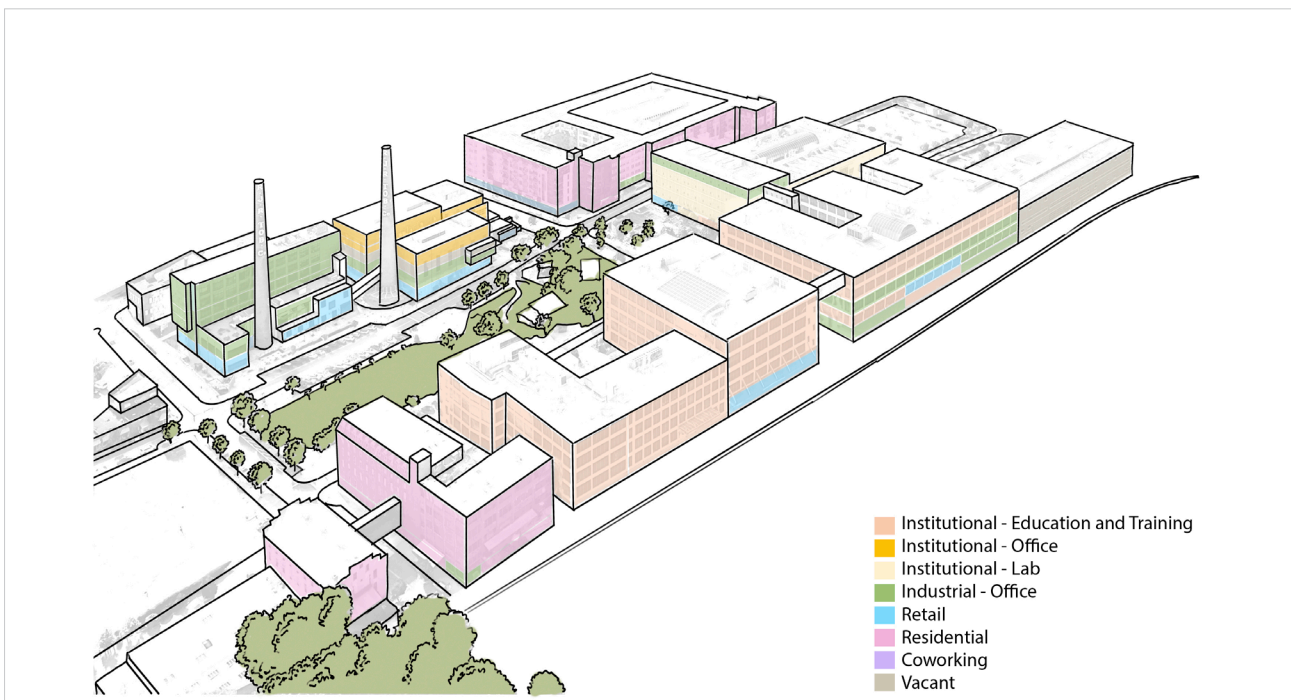
The addition of a Tax Increment Financing (TIF)-based plan, which is a form of value capture, and reinvestment, allowed Cortex to orchestrate the development of technology buildings. The plan also became the tool for partially financing public infrastructure, including parks and open spaces, streets, and structured garages, to support district density.²³

7 Create and activate parks and open space for everyone

Parks and open spaces, commonly incorporated into broader master plans, provide public spaces for workers, residents, and visitors to gather and connect. Urban planning and master planning processes provide avenues to create new public spaces. This is an area of deep focus for districts, placemakers, urbanists, and even sociologists intrigued by how people are forming new relationships in an age of technology.

Many districts have designed parks to be at least adjacent to, if not at the heart of, clusters of key district activities, enabling their programs to spill into public areas, in this way creating open and inclusive spaces. Some examples of this strategy follow.

- Cortex Innovation Community's Cortex Commons.** A central element of Cortex is *Cortex Commons*, a 3.5-acre park in the heart of the district. Prior to the development of Cortex Commons, the district lacked parks and open spaces. The Commons was designed to be the locus of public activities and programs expected to draw a diversity of people together. In exchange for a 50 percent state tax credit of nearly \$6.5 million, three district stakeholders (a master developer, an anchor institution, and a local leader) donated nearly \$13 million to construct the Commons.²⁴ Adjacent to the Commons is the MetroLink stop, pulling in people from across the region. The Commons is also close to some of the district's most active multi-tenant buildings that house clusters of companies, firms, and intermediaries. Collectively, the Commons and these buildings form the district's center of gravity.
- Winston-Salem Innovation Quarter's Bailey Park.** A similar center of gravity can be found in Winston-Salem's Innovation Quarter. *Bailey Park* forms the heart of the northern district, as well as a popular civic amenity, offering active programs throughout the year, free Wi-Fi, and food trucks. A magnet for fun and leisure, the park has also drawn important investment to the area, including three multi-tenant buildings that house a mix of companies, a medical institution, and 350 units of housing. Created in part through a gift and an operating credit purchased by a master developer, the park was also financed by philanthropy. Graydon Pleasants of Innovation Quarter, commented, "Who is going to rent your space if you don't help create a sense of place and support the underlying economy?"²⁵



The “mash up” of many actors and activities in a small, walkable geography helps create this magnet.
Source: GIID analysis of Innovation Quarter activities, 2022.

Conclusion

This conclusion is not a traditional one, neatly summarizing the ideas laid out in this paper, and touching lightly on some recommendations district leaders should “think about” or “consider” at their next meetings.

Rather, these final remarks are meant to prompt district leaders to question their practice and take appropriate action. Irrespective of your discipline or role in connection with an innovation district, the insights and strategies offered here show what districts can actually do to pull one of their most impactful and long-lasting levers: land.

As a research institute focused on practice, we offer two concluding observations.

First, districts are simply waiting too long to think about governance. For example, the idea of governance might emerge only after several buildings have been developed, at which time leaders find it harder to go back and design governance for existing developments.

Second, one of the most explicit ways to tie governance to land is through land ownership or through some other mechanism that builds some form of control over land. Too heavy a reliance on “good-willed” partners and persuasion is likely to change or fade over time. In fact, many district leaders are feeling this pain today.

To end with a message of uplift and promise: There is utility in knowing that a growing number of district leaders are starting to have hard conversations about district governance. GIID is tracking these conversations closely and changing our work to support more districts in governance development stages. For those that have yet to embark on this work, make this year your year of transformative change and ensure it values the centrality of land.

Endnotes

- 1 A number of researchers have written about innovation districts. The following is a partial list. Bruce Katz and Julie Wagner, 'The Rise of Innovation Districts: A New Geography of Innovation in America' (The Brookings Institution, May 2014); Greg Clark and Tim Moonen, 'Technology, Real Estate, and the Innovation Economy' (Urban Land Institute, September 2015); Greg Clark and Tim Moonen, 'The Logic of Innovation Locations: Understanding the Drivers That Enable Cities to Host Innovation Economies' (The Business of Cities and Future Cities Catapult, May 2017); Martin Neil Bailey and Nicholas Montalbano, 'Clusters and Innovation Districts: Lessons from the United States Experience' (The Brookings Institution, May 2018); Bruce Katz, Julie Wagner, and Thomas Osha, 'The Evolution of Innovation Districts: The New Geography of Global Innovation' (The Global Institute on Innovation Districts, June 2019); Geoff Mulgan, 'Innovation Districts: How Cities Speed up the Circulation of Ideas' (Nesta, November 2019), <https://www.nesta.org.uk/blog/innovation-districts/>; Mason Ailstock, Scott Andes, Deborah Crawford, Bob Geolas, Will Germain, Bruce Katz, Julie Wagner, and Kate Wittels, 'Innovation Zones: How the Federal Government Can Create Thriving, Place-Based Innovation Ecosystems' (HR&A, New Localism, and The Global Institute on Innovation Districts, November 2020); Jeremy Burke, Ramon Gras Alomà, and Fernando Yu, 'Multiplying Effects of Urban Innovation Districts. Geospatial Analysis Framework for Evaluating Innovation Performance within Urban Environments', in *Innovating Strategies and Solutions for Urban Performance and Regeneration* (Springer, July 2022).
- 2 In the early 1970s Horst Rittel and Melvin M. Webber defined "wicked problem" to mean a problem that is difficult to define and possibly, if not inherently, unsolvable. Examples they cite refer to problems associated with public policy or innovation in governance, such as poverty, urban renewal, and educational attainment. (For more on this, please see the website at <https://nnsi.northwestern.edu/wicked-problems-what-are-they-and-why-are-they-of-interest-to-nnsi-researchers/>). More recently, the economist Mariana Mazzucato has argued for mission-oriented research and innovation, a problem solving approach to drive innovation-led growth. In her work, she argues for boldly taking on the "wicked" social problems of our time.
- 3 This finding draws on evidence gathered over the past five years (2019–2023) through informal conversations with district leaders, a review of strategic plans that districts send for review, and GIID analysis based on deep engagements with districts in the Global Network on Innovation Districts.
- 4 Miquel Barceló, *Designing and Implementing the Transformation of the 21st Century City* (Madrid: Ediciones Pirámide, 2023).
- 5 Elise Shapiro, 'Wake Forest Innovation Quarter: A Transformation from Industrial Area to Vibrant Community', *WorkDESIGN Magazine*, November 2018.
- 6 See the website for Ruta N at <https://www.rutanmedellin.org/> (accessed February 21, 2024).
- 7 Renovation of the Industrial Zones of Poblenou: District of Activities 22@' (September 2000), pp. 36–39.
- 8 Catherine McIntyre, 'Discovering MaRS: The Untold story of Canada's Largest and Most Controversial Innovation Hub', *The Logic*, July 3, 2018, <https://thelogic.co/news/the-big-read/discovering-mars-the-untold-story-of-canadas-largest-and-most-controversial-innovation-hub/>.
- 9 Bruce Katz and Karen Black, 'Cortex Innovation District: A Model for Anchor-Led, Inclusive Innovation' (Nowak Metro Finance Lab, Drexel University, 2020).

- 10** A review of multiple demographic research papers indicates that Buffalo remains one of the top ten racially segregated cities in the United States. William Fry, senior fellow at the Brookings Institution Metropolitan Program, evaluated neighborhood segregation through a “dissimilarity index,” which measures the extent to which two groups are unequally distributed across neighborhoods in a metropolitan area. Drawing on 2020 Census data, he identified Buffalo as experiencing the seventh-highest level of Black-white segregation (see the website at https://www.brookings.edu/wp-content/uploads/2022/05/A-2020-Census-Portrait-of-America_s-Largest-Metro-Areas_-_Populati.pdf). Joe Cortright, president and principal economist of Impresa, a U.S. consulting firm, analyzed data from the U.S. Census American Community Surveys between 2009 and 2018. His findings determined Buffalo to rank the fourth most segregated city (https://cityobservatory.org/most_segregated/).
- 11** In the 2014 Brookings Research Brief, “The Rise of Innovation Districts: A New Geography of Innovation in America,” networking assets were included as their own category, alongside economic assets and physical assets. As a co-author of this research, our decision to include networking assets was in response to a growing body of research demonstrating how networks are increasingly valuable and prolific in innovation-driven economic clusters. In a detailed review of this research, scholars cite numerous advantages of networks: they are important sources of new or critical information for new discoveries; they encourage experimentation and are a testing ground for ideas; they help firms acquire resources; they strengthen trust and collaboration within and across sectors; and they help firms enter new markets, including global markets. A leading scholar on networks, the American sociologist Mark Granovetter, differentiates networks as having either “strong ties” or “weak ties,” which are determined by such factors as the frequency of contact, the emotional intensity of the relationship, and the reciprocity of commitments between the actors. Strong ties occur between people or firms with a working or professional history, higher levels of trust, a willingness to share more detailed information, and a greater inclination to participate in joint problem solving. Weak ties occur between people or firms working in different economic clusters or contexts and having infrequent contact. Weak ties provide access to new information, even novel industry information, new contacts, and new information on business leads that are outside existing networks.
- 12** Land value capture is a policy approach that enables communities to recover and reinvest land value increases that result from public investment and government actions. Land value capture is rooted in the notion that public action should generate public benefit. As challenges mount from rapid urbanization, deteriorating infrastructure, climate change, and more, this funding source has never been more important to the future of municipalities. When used in conjunction with good governance and urban planning principles, land value capture can be an integral tool to help governments advance positive fiscal, social, and environmental outcomes. For more information, see the website of the Organisation for Economic Co-operation and Development at <https://www.oecd.org/cfe/cities/Flyer-Land-Value-Capture.pdf>.
- 13** Bruce Katz and Luise Noring, ‘The Copenhagen City and Port Development Corporation: A Model for Regenerating Cities’ (The Brookings Institution, June 2017).
- 14** Carlos Marmolejo Duarte, “Novelties on land value capture in Spain: the 8/2007 Land Act’s new paradigm on land valuation.” Paper prepared for the 2nd Symposium of the International Academic Forum on Planning, Law and Property Rights; to take place in Warsaw, February 2008. https://upcommons.upc.edu/bitstream/handle/2117/2600/Novelties_on_land_value_capture_in_Spain.pdf
- 15** Ajuntament de Barcelona, ‘Modification of the General Metropolitan Plan (PGM) for the Renovation of the Industrial Zones of Poblenou: District of Activities 22@’ (September 2000), 36–39.

- 16** Interview with Miquel Barceló, Advisory Board Member of 22@Barcelona and President of Fractalogy Consulting, March 1, 2024.
- 17** See Brookings, "The Rise of Innovation Districts."
- 18** Bruce Katz and Julie Wagner, 'The Rise of Innovation Districts: A New Geography of Innovation in America' (The Brookings Institution, May 2014).
- 19** The Global Institute on Innovation Districts, 'Analysis and Insights for: Innovation Quarter' (January 2021).
- 20** Ajuntament de Barcelona, '22@Barcelona, El Distrito de la Innovación', 2009, p. 28, <https://bcnroc.ajuntament.barcelona.cat/jspui/bitstream/11703/86908/1/3214.pdf>.
- 21** Ajuntament de Barcelona, 'Special Infrastructure Plan for Poblenou: Study of Economics and Sequencing. Definitive Approval' (October 2000), pp. 121–124.
- 22** The Global Institute on Innovation Districts, 'Analysis and Insights for: Innovation-Quarter' (January 2021).
- 23** Bruce Katz and Karen Black, 'Cortex Innovation District: A Model for Anchor-Led, Inclusive Innovation' (Nowak Metro Finance Lab, Drexel University, 2020).
- 24** Ibid.
- 25** The Global Institute on Innovation Districts, 'Analysis and Insights for: Innovation-Quarter' (January 2021).

Methodology

International districts and other models

Interviews with successful practitioners provided the basis for much of the content in this Research Brief. The official citations of those interviews are noted here rather than in the endnotes.

22@, Barcelona, Spain

- Joan Clos, Former Mayor, City of Barcelona, 10 February 2022
- Ramon Garcia-Bragado, former Department Manager, Urban Planning Department, City of Barcelona, 21 February 2022
- Miquel Barceló, President, Fractology Consulting and former President, 22@Barcelona, June 2023

Buffalo Niagara Medical Campus, Buffalo, USA

- Matt Enstice, President and CEO, BNMC, 9 December 2021 and 3 January 2022
- Patrick Kilcullen, CFO, BNMC, 14 and 15 December 2021

Copenhagen City & Port Development Corporation

- Bruce Katz, Director, Nowak Metro Finance Lab at Drexel University, 25 January 2022

Cortex Innovation Community, St. Louis, Missouri, USA

- Dennis Lower, former President and CEO, Cortex Innovation Community, 17 January 2022
- Sam Fiorello, President and CEO, Cortex Innovation Community, 11 February 2022

Distrito de Innovación de Medellín, Medellín, Colombia

- Paulina Villa, former Portfolio Manager, Ruta N, 7 February 2022

Innovation Quarter, Winston-Salem, North Carolina, USA

- Graydon Pleasants, Head of Real Estate Development, Innovation Quarter, 29 November 2021 and 6 January 2022
- Lindsey Schwab, Director of Community Relations, Innovation Quarter, 25 February 2022

Knowledge Quarter London, London, UK

- Jodie Eastwood, President, Knowledge Quarter, London, 9 February 2022

MaRS Discovery District, Toronto, Ontario, Canada

- Prakash Surapaneni, Senior Director, Business Development and Partnerships, MaRS Discovery District, 19 January and 1 February 2022

Melbourne Biomedical Precinct, Australia

- Damian Dewar, Director, Business Precincts, Precinct Planning and Coordination, Department of Jobs, Precincts and Regions, 2 and 10 February 2022
- Morris Orchard, Manager, Parkville Precinct, Precinct Planning and Coordination, Department of Jobs, Precincts and Regions, 2 and 10 February 2022
- Bryn Davies, Principal Urban Economist, Precinct Planning and Coordination, Department of Jobs, Precincts and Regions, 10 February 2022

University City District, Philadelphia, Pennsylvania, USA

- Nick Edelman, Finance Director, University City District, 20 January and 22 February 2022

About The Global Institute on Innovation Districts

The Global Institute on Innovation Districts is a global-reaching not-for-profit organisation dedicated to conducting independent and practice-oriented research on innovation districts—new geographies of innovation emerging primarily in cities and urbanising areas. Drawing on deep analytics and proven impact, The Global Institute seeks to identify how districts transform themselves into new engines of city and regional economic growth. During a time of uneven growth, our research and work with a global network of districts aim to identify new systems for advancing inclusive innovation.

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The Global Institute would also like to acknowledge the innovation districts serving on our Steering Committee: The Advanced Manufacturing Innovation District in Sheffield and Rotherham; Be'er Sheva Innovation District; Buffalo Niagara Medical Campus in New York; Cortex Innovation Community in St. Louis; Distrito de Innovación de Medellín; Knowledge Quarter Zuidas in Amsterdam; Melbourne Innovation Districts, City North; Pittsburgh Innovation District; and the Innovation Quarter in Winston-Salem.

Disclosures

GIID is an independent not-for-profit organization and acknowledges that four of the nine innovation districts serving on our Steering Committee are cited in this report: Buffalo Niagra Medical Campus, Cortex Innovation Community, Innovation Quarter and Distrito de Innovación de Medellín. In addition, included on our Board of Directors is a representative of Wexford Science and Technology, LLC, which has invested in the development of two districts: the Cortex Innovation Community and Innovation Quarter.

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