

Be'er Sheva Innovation District: Re-conceiving Innovation "On the Edge of the Negev"

A Framework for Innovation and Inclusive Growth

Executive Summary

May 2020

This process and document was a collaborative process of many and we would like to thank them all:

Funding Ministries
Ministry of Construction and Housing
National Economic Council, Prime Minister's Office
Ministry of Interior
Israel Land Authority
Israel Innovation Authority

Management Committee (in Alphabetical order):
Ben-Gurion University of the Negev
BGN Technologies
Dell-EMC
District Planning Authority
Gav-Yam Negev Technology Park
Israel Defense Force (IDF), Digital C4I
Israel National Cyber Directorate
Israel Rail
Ministry of Agriculture
Ministry of Defense
Ministry of Environmental Protection
Ministry of Health
Ministry of Finance
Ministry of Transport
Municipality of Be'er Sheva
Soroka University Medical Center
The Manufacturers Association of Israel
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Executive Summary

It is time to change the mental map of Israel.

Be'er Sheva—a city experiencing growth in high tech and innovation-rich fields over the past five years—is coming into focus.

By 2048, Israel's population is expected to double, totaling nearly 15 million people. With a large percentage of start-ups, established companies, and talent pooling in Tel Aviv, additional growth means Tel Aviv's innovation actors will face a new set of realities— escalating real estate prices, stifling traffic, overcrowding, and growing inefficiencies. These looming challenges confronting Tel Aviv will ultimately accelerate the decentralization of innovation in Israel.

At the same time, other areas of the country are ambitiously preparing—building on their unique strengths and competitive advantages—to be the next story of Israeli innovation.

This brings us to Be'er Sheva, a growing city of great ethnic and economic diversity and geographically the second largest city in Israel. A city of over 220,000 people, population is projected to increase to 270,000 by 2030 . Mayor Danilovich has ambitiously advanced a city agenda—marked by new reforms and investment—to accelerate Be'er Sheva's transformation into a magnet for high tech and innovation-driven growth.

Be'er Sheva



Source: Diego Mittleberg

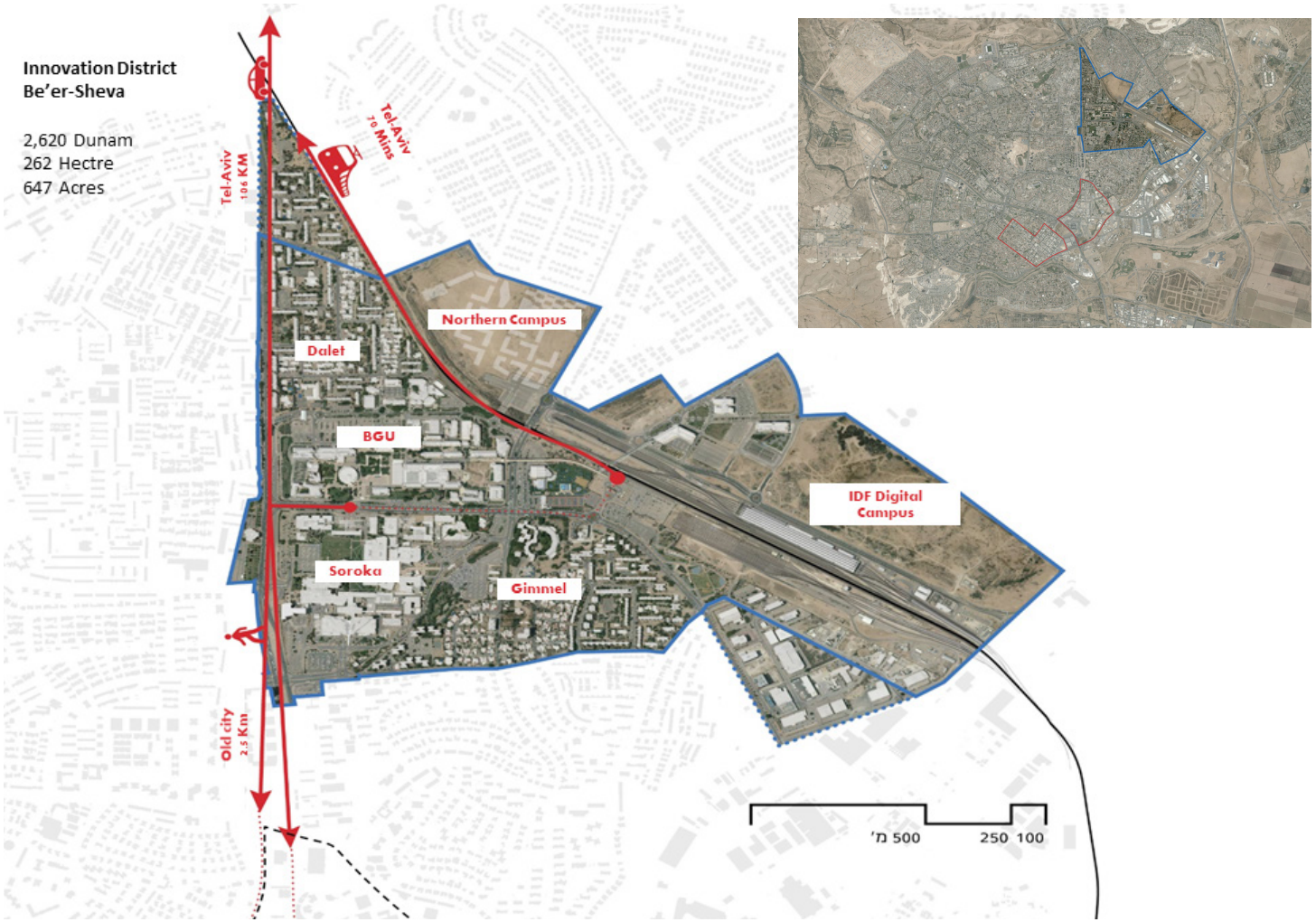
The city's economy exhibits early signs of economic restructuring with recent growth in high tech—specifically IT, cyber, and robotics. Between 2014 and 2018, the number of high-tech companies in Be'er Sheva increased from 47 to 100, demonstrating substantial growth in high tech fields over a short period of time. An outsized share of that growth, in both high tech and innovation-rich industries, can be found in **Be'er Sheva's burgeoning and organically evolving innovation district**.

The Be'er Sheva Innovation District

An area of 2,620 dunams, Be'er Sheva's innovation district is anchored by Ben-Gurion University of the Negev (BGU), Soroka University Medical Center (Soroka), and the Advanced Technologies Park, which is home to companies, incubators, accelerators, and start-ups. Compared to the regional and city averages, this area "punches above its weight" in the concentration of high-knowledge workers and students; there are approximately **4,000 employees at BGU,** which includes 900 full-time faculty members, and 20,000 students. **In Soroka there are 4,700 employees of various sectors,** which include 900 doctors. At the Advanced Technologies Park, 58 of the city's 100 high tech companies can be found, employing 2,500 engineers. The Israeli Defense Force Digital C4 Campus will be the district's next major anchor. It will be home to approximately **6,000 soldiers and permanent military personnel with specific training in computer engineering and cyber.** Be'er Sheva's innovation district is connected by the national rail with a station located in the district's center, creating important connections to other cities in Israel. The district also includes parts of the Gimmel and Dalet neighborhoods.

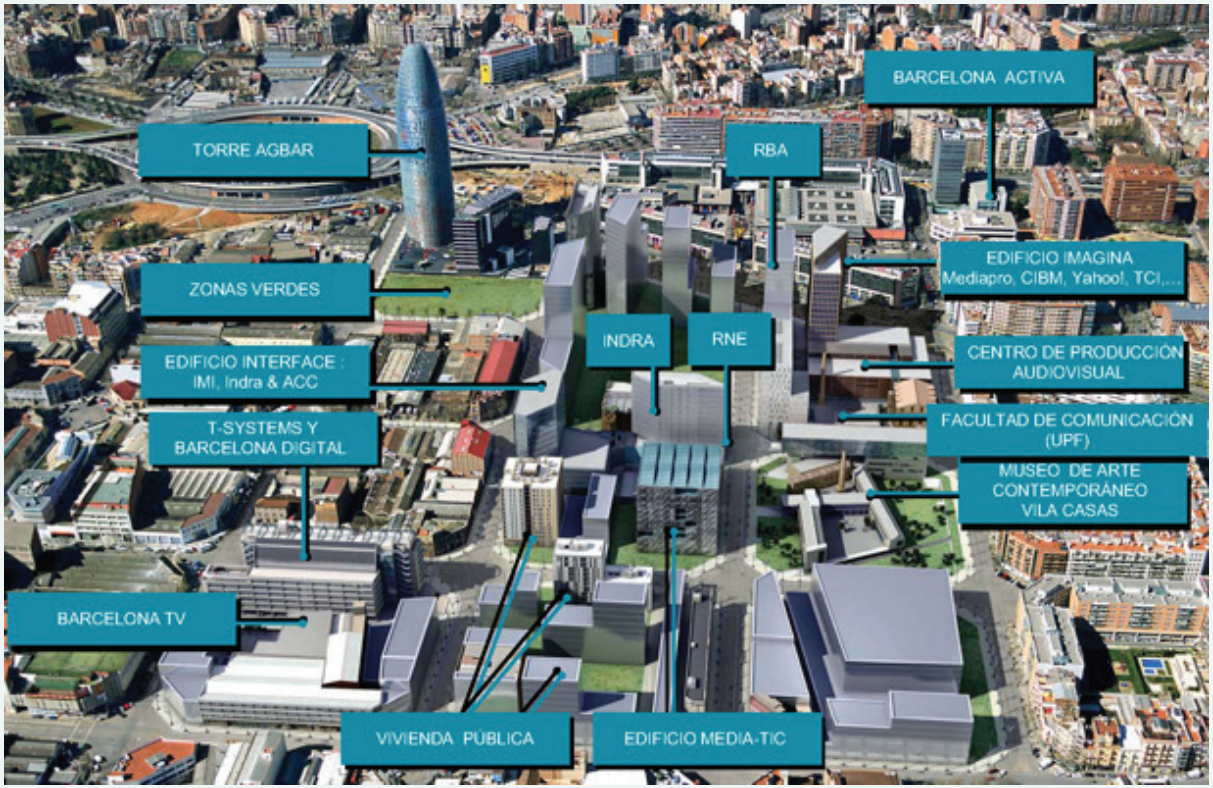
The drive for the district to be the locus and engine for innovative growth is complemented by other equally important ambitions: to enhance education and employment opportunities for city and regional residents, to increase the level of walkability and bike-ability within the district, to strengthen connections between communities and researchers, to create quality public spaces, and to support quality urban renewal. *The goal, then, is to create a dynamic and inclusive innovation community.*

The Be'er Sheva Innovation District



The Brookings Institution, a think tank based in Washington, D.C., defined innovation districts as “geographic areas where anchor institutions and companies cluster and connect with small firms, start-ups, and business incubators. Physically compact, transit-accessible, and technically wired, they offer mixed-use housing, office and retail.” Districts are emerging in response to a changing time, when innovation processes are increasingly “open” and collaborative, when more and a greater diversity of actors are contributing to innovation processes, and when technologies accelerate new and specialized discoveries. In response, the physical landscape is being re-valued, where physical proximity, sharing of key spaces, and leveraging of joint technologies are creating new advantages and assets. Current research suggests that over 100 innovation districts are emerging across all global regions. [1]

22@Barcelona: Bold changes in the physical landscape catalyzed industry-led investment



Source: Municipality of Barcelona.

Competitive Positioning of Be’er Sheva’s Innovation District

In 2018, Be’er Sheva won a national competition to transform its organically evolving innovation district into an intentional powerhouse of orchestrated growth.

The proposal, written by a diverse group of local actors, was as rigorous in its analysis as it was provocative in its vision. Since that time, local actors—including the Be’er Sheva municipality, BGU, Soroka, the Advanced Technologies Park, and companies such as Dell-EMC—have worked together with global experts on innovation districts and an ambitious Israeli team of planning, architecture, and economic experts. The process was catalyzed and financially supported by the national government, including the Prime Minister's Office, the Ministry of Construction and Housing, the Ministry of Interior, the Ministry of Finance, the Planning Authority, and the Israeli Land Authority. Other national bodies have also played a strategic role; these include the Ministry of Defence and the IDF, the Israel National Cyber Directorate, the Israel Innovation Authority, the Ministry of Environmental Protection, and the Ministry of Agriculture. This document is the Executive Summary of this collective work, documenting a new *Framework for Growth* and a detailed set of actions for implementation.

Advanced Technologies Park



Be'er-Sheva Municipality



Soroka University Medical Center



Ben-Gurion University



Sources: from left to right - Diego Mittleberg, Diego Mittleberg, Diego Mittleberg, Danny Machlis

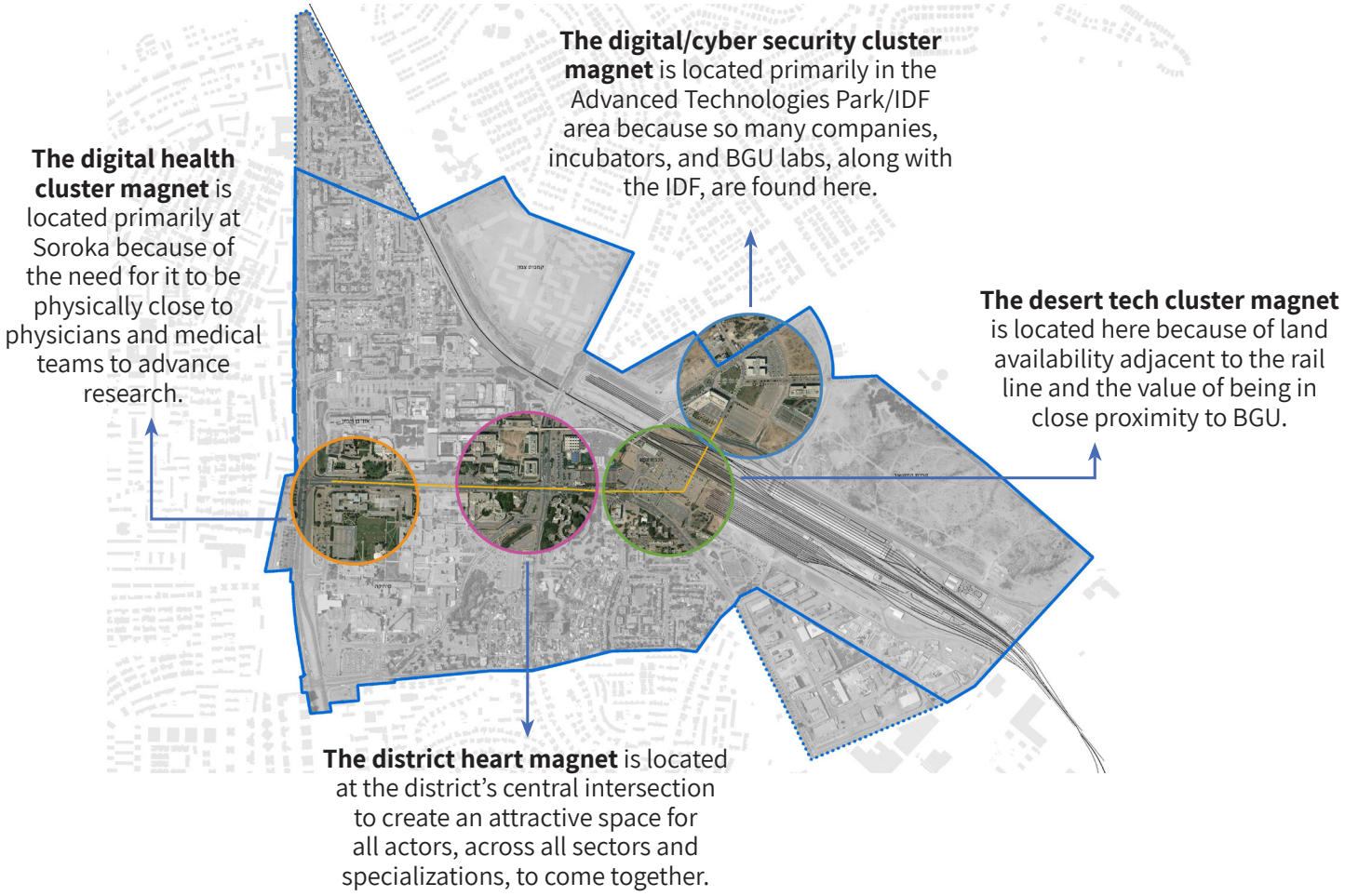
To understand the unique approach for Be'er Sheva and the Negev, the team conducted over 150 interviews with local actors, held over 50 large- and small-group meetings, and conducted hundreds of hours of quantitative analysis. This work included analyzing local and regional economic and research strengths; performing an exhaustive analysis of land, land ownership, and physical planning; identifying socio-economic trends among the populations, including specific economically disadvantaged groups; and conducting research and analysis on new forms of collective governance models to systemically manage the district.

This work identified three research and innovation specializations for the district: desert tech, digital health, and digital/cyber security. These specializations, and the district itself, will be underpinned by advanced technologies of IT/data, artificial intelligence, and robotics. Put simply, the "mash up" of these technologies with desert tech, digital health, and digital/cyber security is what will drive cutting-edge technological solutions.

Local actors, including BGU and Soroka, have aligned to advance these three specializations as the backbone of their innovation district strategy. These three specializations not only align with growing markets but also aim to tackle some of the most vexing and costly challenges of our time: climate change, the inability to solve intractable health problems, and growing threats in cybersecurity.

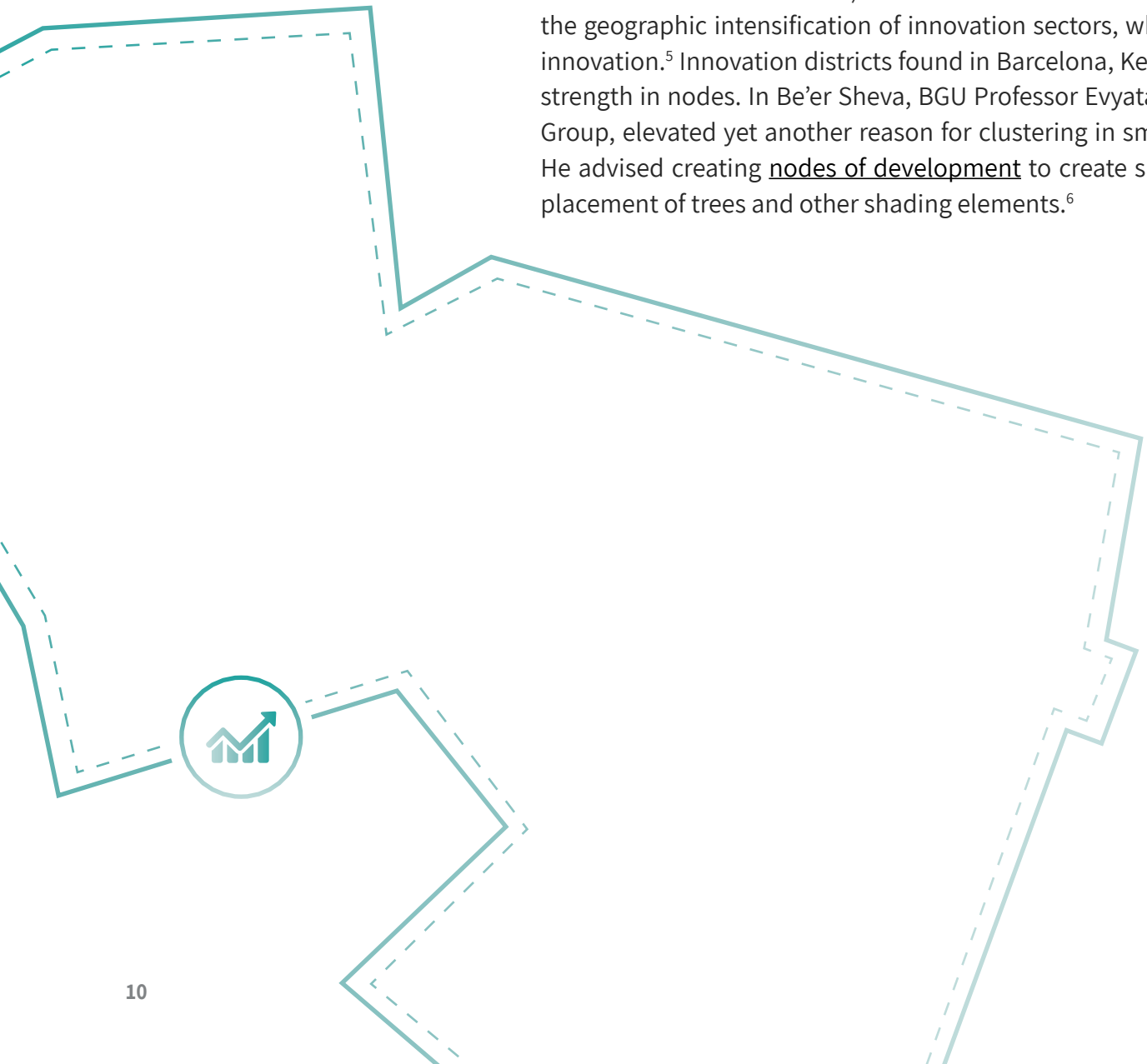
These three specializations will anchor three "cluster magnets"—concentrated nodes of development where cluster-specific actors (researchers, workers, community members, visitors, investors, and intermediaries) connect to strengthen these growing fields of research and innovation. A fourth node is included in this broader strategy because it is essentially the heart of the district as it touches BGU, Soroka, and surrounding neighborhoods.

The map below depicts the location of all these cluster magnets, each of which leverages key actors existing within that node.



Source: HQ Architects

The concentration of people, firms, and institutions in a small geographic radius—concentrated nodes—also helps reduce inefficiencies and imperfections, as described by Harvard economist Ed Glaeser.[4] These imperfections include challenges in sharing highly complex or tacit information (which occur often at innovation-oriented sectors) and difficulties in working across sectors and disciplines. This helps explain the geographic intensification of innovation sectors, which has been described as the "hyper-localization" of innovation.[5] Innovation districts found in Barcelona, Kendall Square/MIT, Melbourne, and St. Louis are finding strength in nodes. In Be'er Sheva, BGU Professor Evyatal Erell, of the Desert Architecture and Urban Planning Group, elevated yet another reason for clustering in small geographic areas: to create cooler micro-climates. He advised creating nodes of development to create shade and create a smaller geography for the strategic placement of trees and other shading elements.[6]



Why Digital Health for the Be'er Sheva Innovation District?

Digital health is a rapidly evolving field that combines health with digital technologies. This broad field includes products ranging from wearable health sensors to ingestible diagnostic tools. Digital health is also a growing market. According to a new research report by Global Market Insights, the digital health market, valued at $86.4 billion in 2018, is expected to surpass $504.4 billion in value by 2025.[7] For Israel, early signs point to digital health becoming an important engine of growth. Between 2014 and 2017 alone, Israel experienced a 14 percent increase in digital health start-ups, which grew in number from 315 to 470 during that period.[8]

In 2018, the government developed a National Strategic Plan on Digital Health to strengthen Israel's position as a worldwide leader in digital health. That same year, Government Resolution 3709 launched a five-year program and allocated 898 million shekels, or 250 million USD, to advance digital health initiatives across Israel.[9]

Soroka University Medical Center



Source: Diego Mittleberg

Several competitive advantages make Be'er Sheva's innovation district ideal for digital health:

Its data assets

In Israel, the country's four HMOs and affiliated hospitals feed into a universal data collection and storage system, using the national identification number given to each Israeli at birth. This translates into a hefty body of data, known as Electronic Health Records (EHRs), on each person over their lifetime. The continuity of data is a strong asset for Be'er Sheva as well. Soroka University Medical Center is part of the Clalit Health Services, the biggest health services provider in Israel with one of the largest digital data pools in the world, providing primary and secondary health services to approximately 67% of the Negev and Southern region. The combination of a single hospital providing services to such a large population with a large amount of medical data, gives Soroka the advantage and possibility to produce, computerise and create value efficiently out of health data. The continuity of data is a strong asset for Be'er Sheva as well, which can benefit the entire population.

According to Yuval Shahar, head of the Medical Informatics Research Center in the Department of Software and Information Systems Engineering at BGU, "We could be [the] Silicon Valley of digital health; we have the data, the people, and a system where there are relatively few obstacles—and we should be exploiting this."

Its regional assets

The Negev region faces numerous health challenges, including genetic disorders, local environmental exposure to industrial waste, along with solar radiation, heat burden, and desert dust emission. Thus, it gives researchers a unique living laboratory to find ways to address "localized" conditions, and these approaches may also be applicable to problems in other regions; one such global problem, of course, concerns the effects of climate change on human health. *Further, as research yields new insights, the aim is to transfer the benefits of these discoveries directly to the population of the Negev, strengthening the quality of health care across its hospitals and clinics*.

Its ambition to create a start-up ecosystem in digital health

Creating an entrepreneurial ecosystem in digital health means eliminating obstacles that translate into increased risks: increased or unpredictable R&D life cycles, unanticipated costs, and failure to access key information or evidence. Soroka has re-positioned itself to play a supportive—even intermediary—role to help start-ups advance and grow. Their support will include providing incubator companies with access to physicians, opportunities to observe procedures in a clinical field and to participate in team discussions, health data on a population of almost a million from birth to grave, and the ability to immediately test discoveries using the centralized health system.

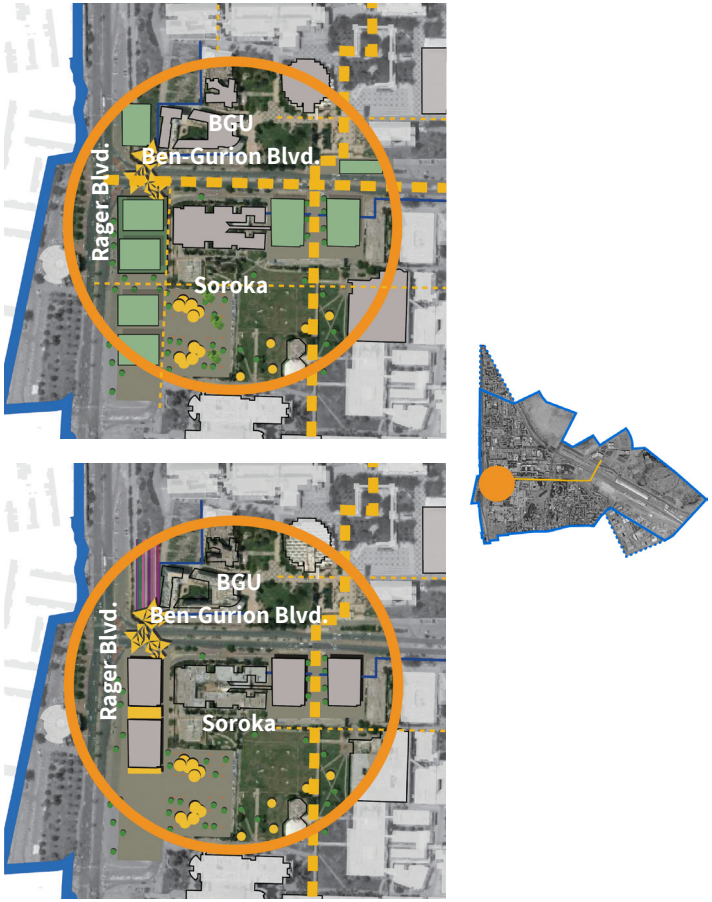
Its physical proximity

For digital health, physical proximity is not an "amenity" but a necessity. This means that health-based researchers, computer and data engineers, and physicians need to be within steps of each other. "If we are more than 200 yards away, researchers and physicians will not meet," explained Victor Novack, director of the Clinical Research Center in Soroka University Medical Center. Part of the need for close proximity arises from the pivotal role of physicians and the extent to which they are the natural link between research and application.

"We could be [the] Silicon Valley of digital health; we have the data, the people, and a system where there are relatively few obstacles—and we should be exploiting this."

Yuval Shahar, Head of the Medical Informatics Research Center in the Department of Software and Information Systems Engineering at BGU

Two scenarios for developing the digital health node



Source: HQ Architects

This cluster on digital health will create a new center of gravity for Soroka—one that supports a dynamic relationship between research and practice and a hub of community-based activities and programs. This concentrated activity is proposed to include:

- A range of spaces, offices, and wet labs for industry, including start-ups
- A digital health incubator to accelerate the growth of new start-ups—an effort actively being developed
- A medical devices cyber incubator—an effort actively being developed
- A genetic biobank in Soroka
- The new Andrea Deloro Medical Research Institute in Soroka—already underway
- Developing infrastructure for digital health in Soroka (through Digital Israel)
- A cutting-edge workforce development/training center to connect residents to a range of new jobs – a true "gateway" to the district
- Public spaces with healthful food/restaurants
- Reuse of the Medical Library in Soroka for startups and advanced work spaces
- Programs to help introduce healthy living support to residents, including the ability to test/prototype new ideas in digital health

Why Desert Tech for the Be'er Sheva Innovation District?

Our warming planet elevates the role and importance of desert technologies on a massive scale. According to the UN, by 2025, 1.8 billion people will experience "absolute water scarcity" with two-thirds of the world living in water-scarce conditions.[10] The escalating effects of climate change, population growth, and the fact that most land reserve is in drylands mean that our reliance on areas with arid conditions as sources of food, water, and energy will only increase. This global phenomenon will require out-of-the-box solutions, including new technologies such as desert tech. Desert technologies are an amalgamation of specializations that use desert areas and conditions to conceive of innovations (knowledge, processes, and technologies) in food, water, and energy.

Vertical farming: An approach to grow food in areas with limited water and land



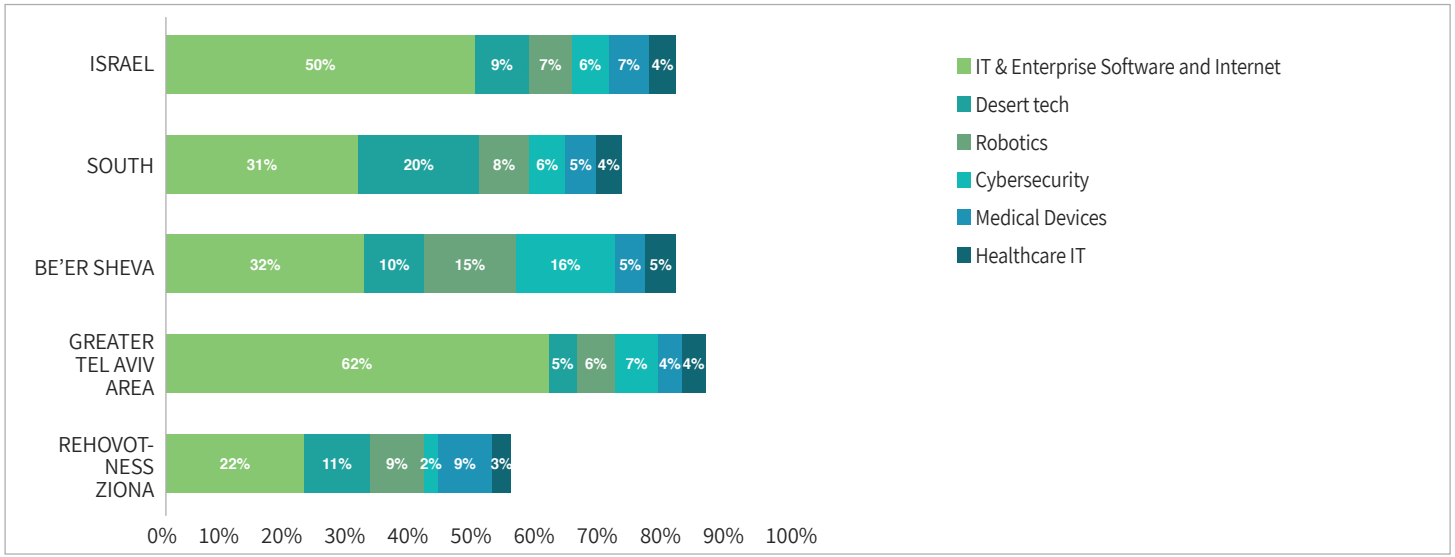
Source: SAP Africa

The competitive advantages that make Be'er Sheva's innovation district ideal for desert tech follow:

Its regional assets

Located on the edge of the Negev desert, Be'er Sheva and the broader region's arid ecosystem are a natural laboratory for studying the effects of climate change. Over time, BGU has amassed over 70 researchers in sustainable agriculture, water, and energy at research institutes. The integration of robotics and remote sensing as part of desert tech is particularly promising, and BGU researchers in robotics and remote sensing are driving new applications in AgTech. At the same time, Soroka, in partnership with BGU, has established the Negev Environmental Health Research Institute (NEHRI) to study the effects of climate change on human health. Finally, analysis of all high tech fields determined that 16 percent of companies situated in the six municipalities closest to Be'er Sheva are working in desert tech fields (AgTech, water tech, and energy). Within the Be'er-Sheva sub-region, desert tech is second only to the broader IT cluster, which represents 31 percent of this area's high-tech economy.[11] This includes the company "Netafim," located only seven kilometers away. The company developed drip irrigation—both a technology and process that is now applied globally in agriculture.

The share of companies in the South working in "Desert Tech" industries



Source: Jerusalem Institute for Policy Research, IVC Data analysis

It will have physical proximity

Interviews with researchers, department heads, and BGU top leadership revealed support for the development of a desert tech cluster magnet within the innovation district. A desert tech hub here will draw together researchers, industry, and policymakers that are currently spread across the landscape. For example, BGU researchers actively advancing sustainable agriculture and other desert tech research are 55 kilometers away from the BGU campus at the Sde Boker campus. Researchers who specialize in engineering, robotics, and AI are located on the main BGU campus and within the innovation district. It is the convergence of these disciplines that are developing robotic tractors, precise sprayers for herbicides, the remote sensing of weeds and the ripeness of fruit. Industry, including start-ups, is spread across the Negev, and policymakers are clustered in Jerusalem and Tel Aviv. This physical distance between researchers, industry, and start-ups has been cited as a major barrier. "It is not working in many cases," shared one researcher. "We are losing." [12]

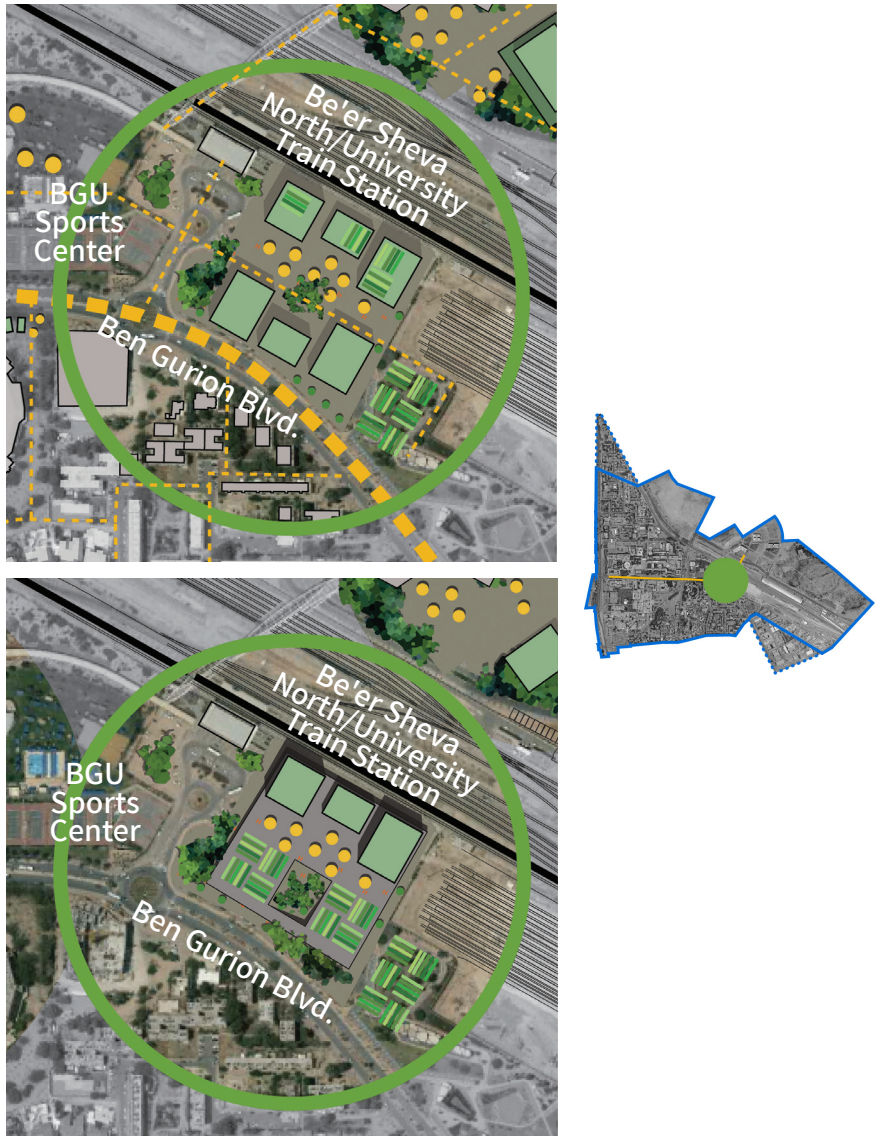
"This place could serve as an international hub for climate change and we would like to help make that happen,"

Galit Cohen, Senior Deputy Director-General, Planning and Policy, Ministry of Environmental Protection.[13]

A new hub on desert tech in the innovation district will be designed to capture the synergies among these actors, rather than undermining research that is already under way in areas such as Sde Boker. The aim is to create a locale where research challenges are solved through multi-disciplinary teams; where demonstration projects support the collective work of researchers, industry, start-ups, and policymakers; and where communities (including children) have direct access to similar agriculture spaces to learn new approaches to desert tech.

Such a hub—one that integrates researchers, industry, and policymakers around the issues of climate change—is a high priority for some Israeli ministries.

Proposed densification and development alternatives for the node



Source: HQ Architects

Responding to the research and policy agenda, the concentrated activity would be likely to include:

- An international multidisciplinary climate tech/desert tech innovation center (led by the MEP)
- Buildings for at least two anchor tenants. Ground floors are open spaces with internet, coffee shop, and places to draw people together
- Spaces dedicated for use by BGU researchers
- Affordable and flexible start-up spaces with wet labs
- A variety of plots for sustainable agriculture to be used and tested with robotics, engineering, remote sensing, and AI within footsteps of the anchor industry offices
- Community agricultural plots for schools to conduct their own experiments
- Cutting-edge technologies to facilitate the testing and analysis of agriculture-led research at a much faster and more precisely established pace
- Center for research/public policy and global hub for climate change
- Live shading projects and place-making

Why Digital/Cyber for the Be'er Sheva Innovation District?

Israel is undeniably a global leader in cybersecurity, with more than 500 active companies driving innovation and attracting more than 1 billion USD each year in private investment. This equals about 16 percent of all private investment globally.[14] Crucially, Israel's Defense Force and the wider defense community led the country in cybersecurity, driving significant investment and technological advancements in the field.

The global market for cybersecurity is also projected to grow. MarketsandMarkets projections signaled that the global cybersecurity market, valued at $137.63 billion in 2017, is likely to grow to $248.26 billion by 2023,[15] a compound annual growth rate (CAGR) of 10.2 percent during this time period.[16] Cybersecurity has captured the attention of policymakers at the World Economic Forum. In their "Global Risks Report," cyberattacks were rated by top industry leaders as the second largest global threat. This same group identified the leading threat as climate change.[17]

The competitive advantages that position Be'er Sheva's innovation district favorably for digital/cyber follow:

Government support

Leveraging Israel's advantages and ambitions in cyber, Government Resolution 546 was passed in 2013 to strengthen Israel's Southern District with the development of a cybersecurity cluster in Be'er Sheva. This resolution was based on the national initiative of relocating the IDF's elite technological units to Be'er Sheva and surrounding areas. Continued support by the government, led by INCD, has been extensive, including an incentive for all cyber-related non-government organizations to locate in Be'er Sheva; the Cyber Incentive supporting cyber employees' salaries (according to Government Resolution 528); and a joint venture with INCD and BGU on the Cybersecurity research center (CSRC), conducting innovative academic research and advancing competencies and resources. Also included were the relocation of Israel's national CERT to Be'er Sheva's Advanced Technologies Park, which is the operational arm of the civilian government in cyber; innovation labs for cyber in transportation, FinTech, and energy (PwC and Ministry of Energy); and plans for future projects such as innovation labs in Medisec (a cyber community) and a cyber visitor center.

Its local actors

For more than 20 years, BGU has been building competencies in both cybersecurity and AI, leveraging its strengths in information systems, software systems, and data analytics. BGU's ambition to collaborate in cyber, AI, and broader areas of digital compelled the first wave of companies, such as IBM and Dell-EMC, to come to Be'er Sheva.

Over 2500 engineers work at the Gav Yam High Tech Park



Source: Dani Machils

Its physical proximity

The first wave of government investment focused on the Advanced Technologies Park—a partnership brokered between the municipality of Be'er Sheva and BGU and implemented by master developer Gav-Yam. Less than four years later, the Advanced Technologies Park has over 2,500 engineers and includes companies such as Dell-EMC, Oracle, RAFAEL, Deutche Telecom, JVP Cyber Labs, IBM, AllScripts-dbmotion, and many others. Also located here are Cyber @ BGU research centers, including Innovation Labs of Deutsche Telekom and The Center for Computational Criminology in cooperation with the government of Israel. More than 160 researchers, students, and technical staff conduct their research within these and other research centers.
The relocation of approximately 5,000 IDF soldiers into the innovation district in 2023 will add a critical mass of trained soldiers.

The new Digital C4I Campus to open in 2023



Source: Digital C4I Ltd.

The relocation of approximately 6,000 IDF soldiers into the innovation district—with the new Digital C4I Campus—in 2023 will add a critical mass of trained soldiers including many within its software units, the IDF's Computing and Cyber Defense Academy, and advanced technologies.[18]

Proposed densification and development alternatives for the node, including new public areas and shading



Source: HQ Architects

Additional projects have also been identified as advancing the digital/cyber cluster consisting of the municipality of Be'er Sheva, the IDF, the Ministry of Defense, and BGU. They include:

- STEM or cyber/arts high school
- New research Center of Excellence that supports research between the IDF, BGU, and industry
- Joint study programs in Digital and Cyber for the IDF's special units, inside BGU (a partnership supported by the Ministry of Finance, Prime Minister's Office, Higher Education Committee, BGU and Ministry of Defense)
- Support and dissemination in existing initiatives by the Israel National Cyber Directorate
- A hotel (existing tender on ILA land)

A mix of additional projects will help create a vibrant, "buzzing" area



Additional projects have also been identified as advancing the digital/cyber cluster consisting of the municipality of Be'er Sheva, the IDF, the Ministry of Defense, and BGU. They include:

- Ground-floor spaces for high tech gaming (an idea developed by the IDF)
- Public "Innovation Hall"—a public meeting space where entrepreneurs, soldiers, and workers mingle; spaces for meetings and events; a place to eat
- Food trucks, markets, and public activities drawing people into the public space in the Gav-Yam Negev Advanced Technologies Park and the train station
- Containers for affordable work spaces/FabLab
- Additional restaurants
- Areas designed between buildings are re-designed to increase shading, create places to sit

Why a District "Heart" Node for the Be'er Sheva Innovation District?

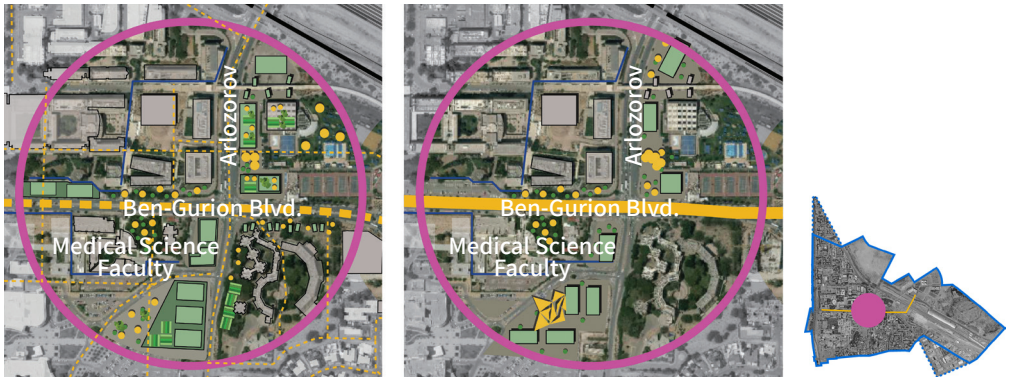
A fourth node is included in this broader strategy to become "the heart of the district," given its centrality within the district, its high visibility, and its development potential. The intent is to *give space back to the community*, taking down fencing, offering new places for people to visit, to learn, and to stay. The district heart is meant, in other words, to be the place that belongs to the people of Be'er Sheva.

This "district heart" is at the intersection of Ben-Gurion Boulevard and Arlozorov Junction. Its central location at the district's major intersection ensures that its role and prominence will grow.



Source: SCAPE Landscape Architecture DP

Two scenarios for developing the district heart node



Source: HQ Architects

There are several approaches to transforming the district heart, which can be clarified and sharpened through more tactical, inclusive planning processes. One approach is to focus on adding new, amenity-laden community spaces. Another approach is a higher level of transformation, featuring office and work spaces (including affordable spaces for start-ups) and a greater number of community spaces, restaurants, and other amenities. These two approaches could therefore include:

- **Areas where the fences are removed from around select BGU and Soroka buildings,** including the iconic NIBN building
- **Small public spaces with shade and benches**
- **Restaurants serving high-quality food** (but this initiative can start now by creating spaces for food trucks with shading and seating)
- **Neighborhood-serving retail and community spaces where people can meet**
- **Spaces allocated for industry** (the level of space can vary significantly)
- **A hotel**

An Innovation District Requires Both Bold Moves and Small, Early Moves

The Bold Moves

Many successful, if not thriving, innovation districts required leaders to undertake bold, transformative moves to re-purpose and ultimately revalue the land. Land transformation is a common path for innovation districts because they are often emerging in areas designed for another time and another economy.
To create the innovation district in Barcelona, for example, the municipality led sweeping changes in its land form and infrastructure to transform a 494-acre (2,000-dunam) area of industrial and mostly vacant land into a compact, knowledge-intensive community.[19] This required changes in policy and zoning and necessitated significant government investments over time. Over a period of 15 years, Barcelona transformed 70 percent of this industrial land by approving 150 plans; 141 of those plans were advanced by the private sector.[20]

Here are some of the bold moves that will be necessary to create a living, thriving innovation district at Be'er Sheva:

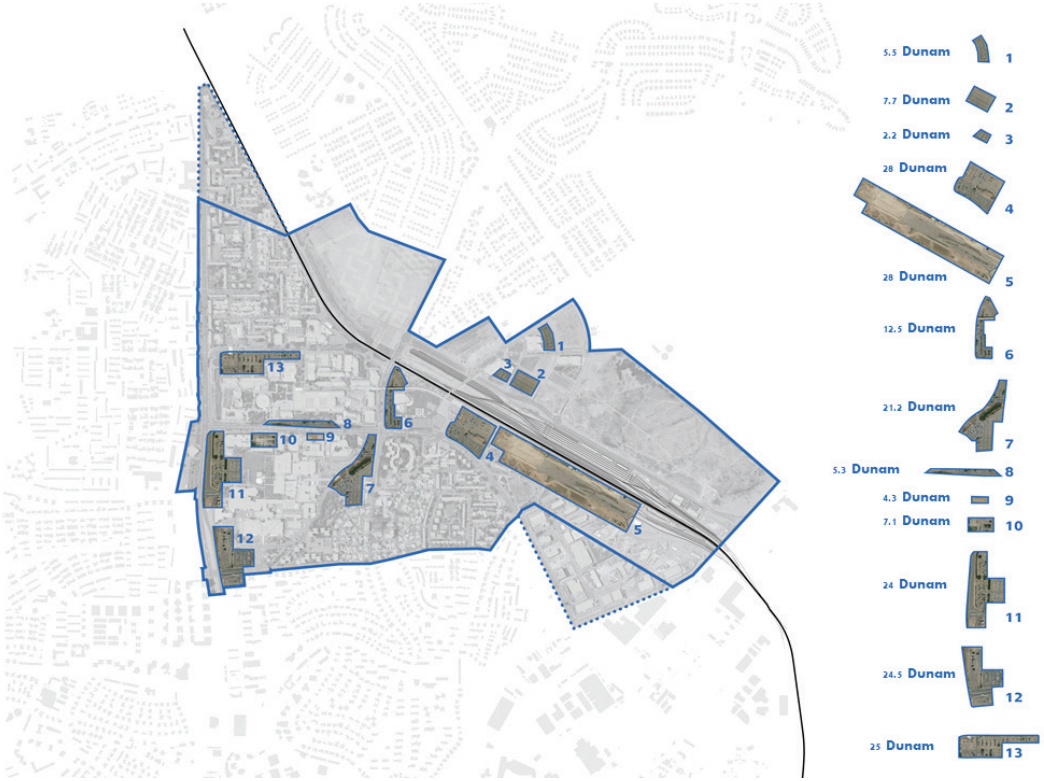
Creatively solve surface parking and catalyze change: There are approximately 195 dunams of underutilized space in the district, which includes numerous surface parking lots. To transform this area will require using a number of surface parking lots for offices for industry, affordable offices and labs for start-ups, spaces for community to gain skills, and restaurants.

Elevate Ben-Gurion Boulevard to a level of grandeur befitting the district's spine: This boulevard will create key connections between Rager Boulevard, the national rail station, and the Advanced Technologies Park. Today, Ben-Gurion Boulevard is one-dimensional in that it only facilitates the flow of traffic. It should play other roles as well, serving as a destination, a center for community, and a place of tremendous beauty. A number of bold investments are therefore proposed—a new line of buildings on one side, wide shaded sidewalks and bike lanes, and a light rail line—to transform Ben-Gurion Boulevard into a "grand place" and a place buzzing with diverse activities.

Create new connections, including 21st century infrastructure:

The security issues in Israel, and the subsequent laws that were enacted, have resulted in the installation of security fencing around all educational institutions and hospitals. This takes the degree of “compartmentalization” to an entirely new level. For Be’er Sheva and for other emerging districts in Israel, new models of connectivity will be needed—models where security remains intact but, at the same time, walkers and cyclists have greater opportunities to connect.

Underutilized areas in the district



Source: HQ Architects

The Small, Early Moves

For the people who live and work in the district, early and visible progress is essential. This is even more important because developing a shared research/innovation agenda for desert tech, digital health, and digital/cyber will take time. Bold, important moves to reshape the physical landscape will also take time.

To move the district forward in a way that enables residents and workers to both see and *feel* progress, a range of smaller and earlier investments should be considered, such as in placemaking, the development of sustainable micro-climates, the provision of food trucks and other pop-ups, and some rapid development projects. Small moves that strengthen walkability and bike-ability are also essential.

Food trucks can help create new spaces for people to meet and eat



Source: Projects for Public Space

Realizing the Full Potential of Districts Means Designing for Inclusive Growth

The rise of innovation districts is occurring during a period of dramatic demographic transformation and economic restructuring, which are combining to create enormous disparities in income, wealth, and health both within and across cities in Israel and elsewhere. This has increased the imperative to grow the "inclusive city"—a city that expands educational and employment opportunities, creates wealth, shares prosperity, and engages residents as co-creators and problem solvers. Innovation districts—a place-based economy-building strategy emerging in cities—demand that closer links between innovation and inclusion be articulated, designed, financed, and delivered.

Some of the socio-economic challenges facing Be'er Sheva and Negev populations are as follows:

- **The Bedouin community—an estimated 230,000 in the Negev—has lower levels of educational attainment than other socio-economic groups.** According to a recent study, in 2016 only 30 percent of the total Bedouin population in the region had received a high school diploma, compared to 68 percent in the total population.[22]

- **Challenges in reaching higher levels of education persist for students living in the Negev.** Despite a significant improvement in high school graduation rates between 2009 and 2017, only 52 percent of students during that time frame received a diploma that makes them eligible to advance to higher education.[23]

- **The gap in wages between workers in Be'er Sheva and Tel Aviv continues to grow.** Between 1995 and 2015, the fastest-growing employee group in Be'er Sheva was defined as having "low to medium wages," which grew by 5.6 percent. During that same period, the fastest-growing employee group in Tel Aviv was defined as having "high wages," which grew by 4.4 percent. Note that "high wages" is defined as twice the average wage.[24]

- **Compared to the city as a whole, higher concentrations of low-income residents are living in the district.** In 2008, neighborhoods within or adjacent to the district (Gimmel, Ramot, and Dalet-east) received monthly incomes that averaged no more than 2,825 shekels—an income lower than most other neighborhoods in

Be'er Sheva.[25] To better understand the likely level of change in income between 2008 and 2019, municipal staff was interviewed. They estimate that these neighborhoods have changed little over time.[26]

Drawing on these and other trends, the district process identified an early set of strategies for advancing inclusion within the Be'er Sheva Innovation District:

- **A detailed mapping effort** to identify, link, and leverage existing projects and efforts already under way. It is likely that making key linkages will generate a multiplier effect.

- **An integrated set of strategies to advance employment development.** One workforce development strategy is to create an advanced job center in the district. The idea comes from a model found in the Barcelona innovation district, Barcelona Activa, which tracks employment opportunities, trains residents in the key skills these jobs demand, and helps with placement. In Barcelona, many of the people who filled those jobs were found in the district.

- **Systemic data collection and trend analysis**, to ultimately create a common data collection system and an open database on demographics, wages, education, geographic data, services, programs, and activities.

To advance these and other ideas, an Innovation-Inclusion Committee will be established. This committee will work closely with the municipality of Be'er Sheva and the innovation district governance body. It will include representatives from the municipality, district partners, other stakeholder organizations, and the government.

Moving from Idea to Action: The Action Agenda for the Innovation District

The realization of Be'er Sheva's innovation district has already begun. Teams of people are re-imagining, re-thinking, and re-organizing themselves to propel this area forward. At the same time this document was in development, select leaders—at the government, municipal, and local levels—were identifying and aligning financial support and specific projects for the district. Implementation starts now.

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