NEW INVESTMENT MODELS FOR URBAN INNOVATION ECOSYSTEMS

Author
Stefania Fiorentino, University of Cambridge

Expert group who contributed to the drafting of this report
Filippo Addarii, PlusValue
Robert Bush, Majlis Partners
Saïd El Khadraoui, European Environment Agency
Paris Kokorotsikos, EUROCONSULTANTS SA
Georg Inderst, Financial expert and independent consultant to EIB on PPP
Mika Pyykkö, Finnish Agency for Innovation
Peter Portheine, Brainport Smart District
Hardy Schmitz,

Project coordination and editors
Alessandro Fazio, Joint Research Centre, European Commission
Kaia Kert, Joint Research Centre, European Commission
Sheron Shamuilia, Joint Research Centre, European Commission
# Table of Contents

Executive summary 1

1 Introduction and background of the study 3

2 Methodology 5

3 The case studies 7
   Location and key drivers 8
   Ownership, initial costs, and planning regulations 15
   Shareholders and stakeholders 18
   Social and environmental value delivered 22
   Summary of the key lessons learnt 24
<table>
<thead>
<tr>
<th>Page</th>
<th>Section Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>The different interests at stake: balancing public and private interests</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>The public sector interests and governance arrangements</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Risk allocation and private sector concerns</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Key differences between mature and new projects for innovation ecosystems</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Guiding investments: policy and funding frameworks</td>
<td>32</td>
</tr>
<tr>
<td>7</td>
<td>Private investments and their directions</td>
<td>33</td>
</tr>
<tr>
<td>8</td>
<td>Conclusions: the future of investments in innovation districts</td>
<td>34</td>
</tr>
<tr>
<td>9</td>
<td>References</td>
<td>36</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

Innovation is key to generate economic growth in cities and regions. Entrepreneurial ecosystems of innovation, such as innovation districts and science and technology parks are increasingly emerging as a driver of socio-economic regeneration. Different cases across the globe share the involvement of multiple types of stakeholders/actors/components in their delivery and operation ranging from public administrations and agencies to private investors, from the real estate field to human capital and venture capital investors to technology, life science and innovation firms and start-ups, to higher education institutions and research centres.

The manner in which different stakeholders converge towards a common vision for the district influence both the long-term success of the innovation district (ID) and the additional social and environmental impact that can be delivered. Both the private and public sectors have a key role to play in directing the development of IDs in a more resilient and sustainable way.

This report addresses policy makers interested in supporting innovation and urban regeneration, as well as private investors with an interest in IDs.

The report intends to answer two main questions: 1) What are the main features and success factors of existing IDs and how can we replicate them in other projects? 2) How can we develop new investment frameworks adapted to this investment product that accommodate the specific requirements of these projects in terms of financial returns, economic development, and regeneration objectives and sustainability imperatives?

The first part of the report presents a comparative analysis of five case studies: MIND – Milan Innovation District, Italy; ThessINTEC in Thessaloniki, Greece; BIC Brainport in Eindhoven, Netherlands; WISTA in Adleshof, Germany; and 22@Barcelona in Barcelona, Spain. The second part of the report considers ways to support and accelerate investments in this sector without compromising the cooperative multi-organisation nature of these projects or diluting their sustainability and regeneration aspirations.

The key recommendations formulated in this report describe possible investment models and funding frameworks to support the delivery of IDs as a tool for sustainable urban regeneration strategies. The recommendations aim at translating into policy assessment criteria the less quantifiable elements of social and environmental value creation, that are instrumental to achieve resilience and shared value creation in such large-scale projects. We explore ideal governance structures, suggesting that any partnerships set up between the private and public sectors should attempt to identify an optimal solution for the eventual operation of the site, be this by the public sector partner, the developer, or other management body. This solution will allow to achieve longer-term results for the surrounding context. It will enhance the convergence of stakeholders’ interests of attracting better tenants and ensuring the resilience over time of the site.

For risk management purposes, and to streamline the usually lengthy bureaucratic processes, the public sector should establish dedicated agencies to deal with the initial negotiations, setting the planning regulations, and monitoring the delivery and evolution of the site. It is very important that funding frameworks are place sensitive or place based. In other words, they should be adapted to the regional strengths and the surrounding context, to support a more targeted and inclusive innovation model, as well as the resilience over time of the ID.

The last section of the report is dedicated to the formulation of a set of practical indicators for the assessment of ID projects and the related funding allocation. The proposed criteria are differentiated for new projects and expansions/improvement of existing districts. This approach recognises the different requirements of operating on a brownfield
or on a pre-existing urban fabric. Projects are assessed based on the potential economic, social, and environmental value generated for the local and wider regional area. Beyond traditional metrics like the projected profit margins generated by the district, we propose additional criteria like: the type and quality of new jobs created and the inclusion of training and apprenticeship programmes to improve the social capital profile of the area; the type and number of anchor tenants secured (along with their connection to the regional economy); the efficiency of the site in reducing carbon emissions; and the use of prop-tech and other smart city solutions to store data and increase operational efficiency, transparency and the monitoring and management of risks.

We conclude with a reflection on ways to translate these assessment criteria into investment evaluation criteria valid also for private sector investors. This is to demonstrate that more sustainable investment models are a longer-term win-win solution for both public and private sectors, requiring the establishment of a common terminology, updated policy tools for value creation, as well as a long-term orientation in investment models and regeneration strategies.

IDs are not yet a fully-fledged new investment product from a financial or real estate perspective. Their delivery and operation usually require the collaboration of public and private parties. IDs include a variety of asset classes (infrastructure, commercial and residential real estate, energy facilities, digital infrastructure, firms and higher education institutions’ financial equities, etc.) and financing needs (real estate, infrastructure, venture capitals, etc.). Given the complexity of this “product” and the plurality of stakeholders involved, the main challenge linked to the development of IDs remains the administration and perceptions of the investment risks and opportunities. However, given the direction of technological innovation and the current grand challenges of our times, IDs are certainly an emerging opportunity for urban regeneration and, as a fully functioning ecosystem, they can also become great generators of economic, environmental, and social value.
1. INTRODUCTION AND BACKGROUND OF THE STUDY

This report focuses on the description of the key features, internal and external dynamics, as well as the new opportunities for economic and sustainable growth that are associated with the development of Innovation Districts (IDs) in Europe. The report aims at the formulation of key guidelines for future funding frameworks dedicated to the creation and expansion of new and existing IDs. The report addresses policy makers, whose mission includes supporting innovation and urban regeneration, as well as private stakeholders with an interest in investing in this sector.

IDs are often part of large-scale regeneration projects, responding to spatial, social, and economic restructuring needs. The target users and tenants attracted within IDs are typically participants in knowledge intensive sectors of the economy. These projects therefore appeal to a plurality of stakeholders from different sectors (from real estate to big tech to SMEs and start-ups), as well as to both private and public investors.

We draw on a comparative analysis of five case studies in the EU: MIND Milano in Italy, 22@Barcelona in Spain, Thess-INTEC in Greece, WISTA, Adlershof in Germany, and Brainport Industries Campus (BIC) in the Netherlands. We review their key features and highlight the key historical and economic drivers that have led to their development.

The first part of the report (Sections 3 and 4) describes key features and lessons learnt from the five different districts covered by the comparative analysis. In the second part of the report (Sections 5, and 6) we detail the key stakeholders involved, the opportunities and constraints associated with this kind of developments, and the key questions that need to be resolved by their participants. Finally, Sections 7 and 8 formulate some key recommendation for new policy frameworks dedicated to IDs. We explicitly concentrate on proposing a set of innovative assessment criteria, which could take into account the less easily quantifiable aspects of developments, to deliver longer term results for the local communities and wider sustainable development goals.

The report is fully anchored to the main EU priorities on sustainable development and innovation, recognising the crucial role of innovation in driving a just twin digital and green transitions. In particular, the work has the potential to contribute to EU efforts in meeting Sustainable Development Goals, delivering on the European Green Deal and building an economy that works for people, by expanding on the EU Taxonomy for sustainable activities and promoting the adoption of ESG criteria in real estate investments for innovation. The study is also aligned with the objectives of EU funding programmes and instruments, such as Horizon Europe and the European Recovery and Resilience Facility, aiming to leverage private investments for an inclusive ecological and economic transition and more resilient societies.

The present research builds upon a previous study carried out by the JRC’s Competence Centre on Technology Transfer on the use of Public-Private Partnerships (PPPs) as models for the construction and operation of (financially) sustainable Science and Technology Parks (STPs) and IDs1. Through an online consultation of a set of relevant stakeholders and an in-depth analysis of eight case studies, the publication explored how PPPs and similar partnering modalities (e.g., concessionary models) are applied to the STPs and IDs, and identified key features of existing PPPs.

The study revealed that private sector involvement can be an important contributing factor in not only the development and operation of STPs and IDs, but also in the creation of a broader innovation ecosystem of quadruple-helix actors, by generating

---

project-contingent efficiencies and triggering a “crowding-in” effect, attracting new investors and users, and ensuring long-term sustainability. However, the study also uncovered that the involvement of private actors in such endeavours entails considerable risks for public partners, specifically in terms of alignment of public-private interests, legal hurdles, and – ultimately – financial arrangements (valuation, revenue projections, allocation of risks and benefits, sustainability, etc.).

Following on from these findings, the current study aims to address the risks and opportunities around mobilising private investment, alongside public funds, to enlarge the pool of resources available to support the creation and operation of IDs.

The study also explores possible new funding mechanisms that acknowledge the economic, social, and environmental value delivered by these types of urban regeneration projects. Our main recommendations refer to key criteria for new social and environmental value indicators to be incorporated in innovative funding frameworks for the development and/or expansion of IDs in Europe.
2. METHODOLOGY

This report is the result of an extended period of research and engagement with experts from different fields (from March 2020 to March 2022). During this period, several rounds of stakeholder engagement have allowed to capture the variegated voices and interests involved in the delivery of successful IDs.

After an initial desk-based research, five European case studies were selected to act as the initial window of observation on existing IDs and their functioning dynamics. The desktop study included a literature review of the state of the art of IDs in relation to their (1) financial, (2) legal, (3) economic, and (4) technological features.

The five case studies are:

A. MIND—Milan Innovation District, Italy;
B. 22@Barcelona in Barcelona, Spain;
C. Thess-INTEC, in Thessaloniki, Greece;
D. WISTA, in Adlershof, just at the outskirt of Berlin, Germany; and,
E. Brainport Industries Campus (BIC) Brainport, in Eindhoven, Netherlands.

We are thankful to the pool of experts that have provided key insights and information for each of the five cases. Selected policy documents and press coverage for each case have also been reviewed as a complementary documentary analysis. The experts have contributed to the data collection and to drafting the analytical framework of this study, i.e., a matrix containing the comparative assessment of the key features of each case study.

The key criteria against which we compared case studies included:

- location, size and population,
- cost and redistribution of investment,
- origin story and project phasing of the development,
- planning and regulatory framework,
- ownership and legal framework,
- type of stakeholders and shareholders involved,
- key drivers and connection to the wider regional economy,
- relations to university and research centres,
- social and environmental value generated,
- value for money and innovation creation.

Each criterion will be described and discussed in Section 3 of this report.

The comparative analysis and a series of SWOT analyses have highlighted strengths and weaknesses from each case study. The key aim of this comparative study was to draw generalisable lessons learnt guiding the subsequent formulation of a set of recommendations and policy guidelines for supporting policy frameworks and funding tools for investments in IDs.

In some cases, the confidential nature of the information – e.g., financial arrangements between key shareholders or business case modelling, and share of ownerships and contractual arrangements in the private/public partnerships – has prevented us from conducting a micro level analysis that a proper financial valuation of large-scale investments would need. This report is therefore intended as a high-level scoping study for the assessment of new policy tools and investment
opportunities in an emergent market for IDs, as demonstrated by the five case studies.

At the second stage of the investigation, we held several round tables and discussion sessions with selected experts involved in ID projects and with private sector stakeholders. The workshops allowed us to understand interests, expectations, opportunities, and possible constraints from the perspective of private investors.

The invited experts included representatives from universities and public research organisations, STPs and IDs, EU policymakers, public and private developers and investors (incl. sovereign wealth funds, pension funds), asset managers and other intermediaries (e.g., membership organisations and associations). The mix of expertise participating in the round tables is representative of the multidisciplinary nature and interests raised by investments in IDs. The feedback we gathered from the roundtables has been incorporated in our study.

Finally, this work has been presented in a workshop held in January 2022 at the Swedish Pavilion at Dubai EXPO2020: “New Investment models for innovation ecosystems”, raising a stimulating debate on the timely topic of IDs.
### 3. THE CASE STUDIES

The initial comparative analysis underpinning this report looks in detail at five European case studies of IDs. In this section, we review and compare their main features relating to investment readiness and attractiveness.

Table 1 summarises the general details of our case studies.

<table>
<thead>
<tr>
<th>22@Barcelona</th>
<th>Brainport, Eindhoven</th>
<th>MIND, Milan</th>
<th>Thess INTEC, Thessaloniki</th>
<th>WISTA, Adlershof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area: 1.98 Km²</td>
<td>Area: 2 Km²</td>
<td>Area: 0.95 Km²</td>
<td>Area: 0.76Km²</td>
<td>Area: 4.2 Km²</td>
</tr>
<tr>
<td>800,000 new housing units; 113,526 inhabitants in the 22@ district area at 2018. 8,223 companies and 93,000 professionals</td>
<td>100 to 150 visitors per day.</td>
<td>Expected population: 60,000 with 1500 new jobs at the Human Technopole alone and around 9,000 jobs in the private sector.</td>
<td>Expected users of Phase 1: 75 companies and 17 R&amp;D labs of Universities and Institutes: more than 1000 employees. 7500 employees at completion</td>
<td>In 2020 WISTA counted 22,000 workers; 6,400 students; 1,200 companies.</td>
</tr>
<tr>
<td>Project started in 2000 and is still ongoing.</td>
<td>5 clusters. BIC1 2015 - 2019. Next phases to be delivered over the next 20 years.</td>
<td>Project started in 2020 – expected completion 2031.</td>
<td>4 phases 1. Phase 140.000sqm 2019 -2024 2. Phase 2110.000sqm under planning with PPP mode, next phases are yet to be finalised.</td>
<td>1991 – 2003: university moves in. 2007: re-development legislation; 2008: first expansion; 2011: tram line extension; 2020: housing units planned.</td>
</tr>
</tbody>
</table>
4.1 Location and key drivers

The five case studies occupy sites of different sizes. In increasing order of surface area, we have: ThessINTEC, MIND, 22@Barcelona, BIC Brainport, and WISTA. There is a strong correlation between the number of current or expected users and visitors (commercial tenants and residents) and the type of location occupied by the ID. Districts that are more urban and well-served by public transport usually tend to attract a higher number of visitors. The locational differences (i.e. urban, peri-urban, industrial locations) also impact on what can be achieved in the district (e.g., additional residential units, different types of amenities, requirement for logistic spaces, typology of office spaces). Other important variables that are indirectly linked to the location include: the type of uses present in the surroundings of the districts’ boundaries, geographical and topographical constraints or barriers, accessibility, etc. Rather than the size of the site, it is ultimately the density of agglomeration that matters. In other words, urban districts with higher density of agglomeration can typically attract more users and visitors even with a smaller availability of land.

Key features like the size, location and number of visitors/tenants are also translated into different investment variables for the different stakeholder groups: e.g., occupancy rates for real estate investors; potential stakeholder synergies for R&I activities; and from a public policy perspective, access and function of the site in reference to inclusive regeneration.

ThessINTEC and BIC Brainport seem to be primarily driven by availability of commercial spaces. They are in more suburban locations and can attract companies that have specific logistical and colocation with R&D requirements. For BIC in Eindhoven, the business density is quite limited as we are looking at around 100 to 150 visitors per day for the cluster that has been delivered to date. A similar non-residential approach applies to the case of WISTA, but on a much larger scale and with a higher employment density. The district hosts students from selected science faculties of the Humboldt University and employees of local companies, attracting up to 30,000 daily visitors. The current expansion programme foresees the development of housing units aiming at enlarging the residential population of Adlershof. Finally, MIND and 22@Barcellona are the more urban and more densely populated districts, being mixed-use developments including both commercial and residential spaces.

The latter two cases were created as legacy projects of former events like Milan EXPO2015 for MIND, and the 1992 Olympic games and the 2004 Forum des Cultures for 22@Barcelona. Both projects have inherited the pre-existing constraints (e.g., presence of existing facilities like a prison for MIND or of railway tracks etc.) of the site as well as a series of pre-existing infrastructures (e.g., public transport connections, sewage and other utilities, digital infrastructure), including the connection with the surrounding amenities, leveraging on the brand and legacy generated by the mega-events.

WISTA has been the technological district of Berlin for more than 100 years. It has relocated to the current location from the Johannisthal Airfield (where it was set up in the 1910s) taking up the legacy left by the Academy of Science of the German Democratic Republic and gradually expanding its scope and boundaries to include companies and higher education students. The other two cases have instead been planned on greenfield sites and responded to different imperatives: in ThessINTEC, the need to stimulate local employment and in Brainport, the need to respond to an increase in demand for space at the regional scale. The projects have been phased, requiring different type of investments at the different stages and adding in more layers of complexity. More details on the locations and their characteristics will be unpacked in the next paragraphs.

---

2 For example, connectivity is an important feature of MIND and most of the infrastructure were inherited from the EXPO: the site is reachable by the Milano Metro system and it has access to high speed rail connections on the Torino – Venice and Torino – Naples Axis.
3.1.1 22@Barcelona

The area where 22@Barcelona is located was a former textile district. It builds on the legacy of two major events, the 1992 Olympic games and the 2004 Forum de les Cultures (whose works started in 1999). Both events contributed to the preliminary urbanisation of the area. The re-use of key infrastructures and the urbanisation and expansion of the city were obvious drivers for the development of the district.

A couple of decades after, and thanks to the infrastructure built for both mega events, 22@ is now a very urban ID. It is fully integrated in the urban fabric of the city, and a fully functioning neighbourhood of Barcelona, not too far from the historic centre. Close amenities include tourist attractions and buildings designed by star architects, the museum hub of Poblenou, and the proximity to the seaside. The full urbanization and integration in the city boundaries are the result of a successful combination of legacy infrastructure and an efficient regulatory framework (22@ Plan\(^3\), see also section 3.3) that has allowed the creation of a mixed-use area with a good share of social housing and social infrastructure.

---

\(^3\) Ajuntament de Barcelona (2012) 22@ Barcelona Plan. A programme of urban economic and social transformation. 22@Barcelona Urban Planning management report. See also: https://www.22network.net/districte-22/?lang=en
3.1.2 Brainport Industries Campus (BIC), Brainport

BIC Brainport has been built in a strategic brownfield area between Eindhoven Airport and the A2 Highway. The district is a commercial real estate project that capitalises on the wider economic dedication of the Brabant region. The region benefits from the synergy deriving from the presence of the campus of Eindhoven University of Technology and multinationals like Philips that have stimulated a number of entrepreneurial spin-offs and an increasing demand for various industrial campuses. In this sense, the development simply responds to a rising demand for workspaces for firms connected to the regional economy and the need for space accommodating some specific logistical requirements (hence the suburban location). Several other similar small private ID initiatives can be found in the outer urban areas around the city of Eindhoven.
MIND is located in the area of the former EXPO2015. The site reuses the pavilions and structures left behind by the EXPO as well as benefitting from €1.5 billion of public investment for the infrastructure and connectivity undertaken for EXPO2015. The area is therefore well connected to the city centre and benefits from a relative proximity to the Politecnico University (Bovisa campus), Fiera Milano and several motorways. However, the site also presents a number of morphological and locational constraints. It is in fact a self-contained site sharing boundaries with a prison and hard barriers like railway tracks. The project has successfully integrated some of the existing facilities on site (e.g., Fondazione Triulza, the hub of civil society/third sector organisation that represents continuity between EXPO and MIND), and a great coordination effort has been made to connect the offer for prospective tenants with the surrounding amenities. For example, attracting the pharmaceutical and biotech sector leveraging on the proximity with the Galeazzi Hospital, the Human Technopole, and the upcoming scientific Campus of the University of Milano Statale, or offering training programmes and on-site facilities for inmates and their rehabilitation.
3.1.4 ThessINTEC, Thessaloniki

The innovation park builds on the branding legacy of Thessaloniki Technology Park (1992), which was located elsewhere. The ID is quite far from the city centre of Thessaloniki and at present accessible by bus. However, a planned extension of the city metro to the airport will include a station at Thessintec connecting directly the University Campus with Thessintec. Thessintec is built on a greenfield situated close to the Thessaloniki Airport and facing the seaside, therefore profiting from a stunning landscape. The development is intended to create a new innovation and technology centre for the city, following the model of traditional peri-urban science parks. New facilities created on site include: co-location spaces for several industry clusters and R&D partnerships (artificial intelligence, advanced manufacturing, clean energy, advanced mobility and electromobility, organic nanomaterials), industrial prototypes development and testing laboratories, computing facilities, a large-scale incubator and accelerator, flexible office spaces, co-working and networking areas, a conference centre, a competence centre for logistics, and new laboratories of the Centre for Research and Technology-Hellas (CERTH). The site also hosts an autonomous driving and smart city applications testing circuit of 1.2 km and several educational and recreational facilities. The key driver behind the construction of this science and technology park was employment creation and reversing the brain drain that has been affecting the country for the last two decades. ThessINTEC is still in the early stages of its development so the key challenges faced by the district will be its full implementation and kick-starting its economic potential.
WISTA is set in a peripheral location on the outskirt of Berlin. It is well connected by public transport (S Bahn), it takes around 40 minutes from the city centre to reach the ID. In terms of development stage, WISTA is the most mature district in the study as it builds on a hundred-year legacy. The site first hosted the Johannisthal Airfield in 1910s with associated research centres and in the post-war period, it became the Academy of Science of the German Democratic Republic and a media centre. All institutions were closed after the reunification of Germany, but in 1991 a process of modernisation of the site started with the creation of a new science and technology park. The Redevelopment Company Adlershof Ltd (Entwicklungsgesellschaft Adlershof mbH - EGA) was created for this purpose, which in 1994 was renamed to WISTA Management Ltd (WISTA-Management GmbH) as it is still called today. However, the big turning point in the history of the science park was the relocation of the Humboldt University’s scientific departments between 1998 and 2003, that gradually attracted other research centres and laboratories to the area.
Key lessons learnt – Location and key drivers.

• The location of the district and the way it connects to the wider regional economy are important factors to understand the kind of tenants that can be attracted to the site.

• Density of agglomeration and the number of users is a much more important factor than the size of the site.

• Different stages of maturity and the legacies of previous uses of the site require different approaches to the development or expansion of an ID.
3.2 Ownership, initial costs, and planning regulations

The main issues regarding the development of IDs are similar to those faced by most large-scale regeneration projects. They relate to managing risks and opportunities and channelling investments and public funding in effective ways to ensure longer-term results \(i.e.,\) striking a right balance between costs and debts, investment opportunities, risk sharing, etc.\). Addressing the project financing profile means defining the roles of both private and public sector stakeholders, and the ownership models and regulations for the development and management of the site.

In terms of ownership models, the five case studies present a variety of different situations. In MIND, the land is owned by Arexpo spa, a publicly owned company with shares by the Ministry of Economy and Finance (39.28%), Lombardy Region (21.05%), Municipality of Milan (21.05%), Milan Fair Foundation (16.80%), Milan Metropolitan City Authority (1.21%), and the Municipality of Rho (0.61%). However, the site is managed through a traditional Public-Private Partnership (PPP) contract (following a public tender offer in 2017), establishing a 99-year lease to the Australian real estate investment group Lendlease for the initial development and following management of the site.

Except for the cost of the majority of infrastructures (including public transport connection), already delivered for EXPO2015, the initial cost of the development has been shared between the partners. The public sector invested €1.2 billion for the construction of the Human Technopole (a new research institute for genomics in the country), for funding laboratories, research apparels, staff and research grants, and a smaller proportion for construction cost, which mainly came from private investments. Lendlease and other private investors invested over €2.5 billion (including the lease costs). In addition to the private capital invested by Lendlease, €300 million were used for the construction of the Galeazzi Hospital, and another €300 million for the construction of a new scientific campus for the University of Milan (through a PFI arrangement). The investments continue to grow as the district develops and new tenants are attracted: additional matching public funding was added while the development was under construction and more private investments have been attracted following the start of construction. No EU structural funds were used for the development of MIND.

A similar partnership was established for ThessINTEC but with a different financial arrangement. The site is owned by Thessaloniki Alexandria Innovation Zone (a public company), who leased the land for 99 years to ThessINTEC development and management company. However, contrary to MIND, in the case of ThessINTEC, 42% of the company is owned by public institutions (by several public R&D and local organizations) with the remaining 58% owned by private actors (shares by business associations and private companies; no company has more than 1%).

ThessINTEC also differs from MIND in that EU Recovery and Resilience Funds (RRF) were instrumental for the development of the initial infrastructure. The initial €73 million necessary to kick-start Phase 1 construction were shared between the public and private sectors (with 50% being private sector donations or loans).

€38 million was raised from several private sector investors including: €3 million donated by a first group of tenants to cover feasibility studies, and project preparation costs; €20 million in the form of loans secured against tenancy contracts, and €15 million as an upfront payment received by an Israeli JV for the rights to complete Phase 2 construction. An additional €355 million was received through EU RRF funding and devoted to the construction of infrastructure for all project phases and of innovation and technology buildings for Phase 1 of the development.
It is already decided that the next three phases of the project, involving expansion of the district and creation of more space for new companies, will be funded entirely through private investment. An agreement has been signed with the JV of the developers of Israeli Technology park Gav Yam Negev in Besheda Basecamp, and the biggest Israeli Real Estate fund JTLV for the development of 2,110,000 sqm aiming mainly to attract Israeli, US and Multinational Tech companies in the sectors of ThessINTEC’s specialization.

The investment of Phase 2 is estimated at €220 million, while the remaining rights to build another 90,000 sqm are reserved for future development after completion of Phases 1 and 2. In total, the project will cost close to €450 million. Of this amount, the state contributed land with limited value (non-used agricultural land valued at less than €10 million) and a €35 million RRF grant, with the rest of the investment mobilized through the private sector.

A totally different type of ownership situation is that of 22@Barcelona, where the ownership of the various plots of land within the site is quite mixed. As enacted in the 22@Law, 70% of land is in mixed private ownership and the remaining 30% is owned by the municipality. According to the regulation, landowners could build taller buildings (i.e., increase the height and number of floors), in exchange for 30% of the total plot of land originally owned, that was donated to the City of Barcelona. The 22@Law was instrumental in maintaining the current balanced share of public/private ownership, the innovative character of the neighbourhood, and its wider social benefits. With the reclaimed 30% of land, the city delivered 10% of green areas, 10% of social housing, and 10% of knowledge infrastructure, university and incubators. This was a very clever planning policy that has ensured longer-term social and environmental benefits for the site while maintaining economic profits for the private sector, tax revenue for public sector, and social benefits for the local communities. The current ID has received €200 million in public investment from the City of Barcelona for the delivery of basic infrastructure, prior to the development of each lot by private sector investors.

WISTA and Brainport represent opposite cases of ownership: the former is publicly owned and the latter is completely privately owned.

WISTA’s land is entirely owned and managed by WISTA Management GMBH (owner and operator), with the exception of some sparse pockets of private land. This is a governmental organisation that is capitalized by the Senate of Berlin, although it operates like a private company. The organisation creates infrastructure for start-ups using EU and German investment subsidies.

The initial capital for the redevelopment of the site was mostly public, but after 2006 private investments have prevailed. WISTA Management Gmbh manages the core of the science and technology park (80 Ha). The Land of Berlin, represented by a fiduciary agency (Adlershof Projekt, now WISTA Plan), financed the development of the surrounding area to sell it off to private investors. So, in this case we are looking at an expansion of the district and at the opportunities it might unlock. The “Entwicklungsgebiet” or the formal designation as ‘Development Area’ has largely contributed to a smooth development of the ID as it is today. Once an area is designated as such, the city government can buy plots of land in the area, develop it by building basic infrastructures (streets, sewers etc.), and then sell it as fully developed plots with the associated building rights.

Finally, the case of BIC Brainport is entirely private sector led. The developer (and construction company) SDK (part of the Volker Wessels Group) was at first the sole shareholder of the ID (the municipality assembled the land and sold it to SDK). SDK assumed all risks and expenses, as well as the monetary profits from the operation. There was, however, an informal Acquisition Consultancy
Key lessons learnt – Governance and public policy

- Public planning policy frameworks for managing the longer-term evolution and expansion of the site as well as the mix of tenures, uses and ownership situations for the site are powerful policy tools to ensure the resilience of districts and their successful integration in the local economy.

- Imposing long-term planning regulations and governance for the site is a more efficient policy tool than issuing subsidies.

- The public sector should play a key role in ensuring that the district delivers social and environmental value. This should be done by establishing a dialogue with private investors and setting key guidelines on the future development of the site and the way it should connect with the regional economy.

- The delivery of preliminary infrastructure by the public sector is key for the development of the site.

- Alignment with EU funding guidelines and principles will ensure a more efficient and effective use of public investments.
3.3 Shareholders and stakeholders

This section reviews the key stakeholders involved from the preliminary stages of district development. By stakeholders we refer to any organisation involved in the project as a contributor/participant or beneficiary of the project (including public authorities, private and public investors, tenants, anchor tenants etc.). We refer to shareholders when talking about any organisation involved in providing resources, financial or in-kind, necessary to implement the project. In this sense, shareholders are also stakeholders in the project.

It is crucial for the success and final buy-in of the ID that stakeholders from different sectors are involved\(^4\). Tech and innovation businesses will help populating the area and develop the necessary synergies with other regional economy sectors, and real estate investors will take care of the construction and management of the site. In some cases, a mixed tenure with added residential units will support indirect growth in additional economic sectors like retail and hospitality, lifting the social profile of the area. The main challenges faced in the development of a successful ID are represented by understanding and managing the different interests at stake, the diverse array of public sector regulations at local and national scale, and the different ways in which private and public sectors perceive risk.

The various actors involved in the five case studies are quite heterogeneous. In most cases, the success of the ID lies in the involvement of partners from both the public and private sector, as well as different economic sectors: real estate, biotechnologies, traditional tech, higher education, etc. And they all played a role in establishing ties with the regional economy and the surrounding local context.

3.3.1 Key stakeholders involved in kick-starting the project and overseeing the development and anchor tenants

Four out of our five cases display a mix of different tenants and higher education institutions, building on the synergies that can be established through this quadruple helix model. Here we analyse the key actors and tenants of our IDs case by case. In the next section, we detail the dynamics and impacts of the connections with higher education.

Lendlease has been undoubtedly the key stakeholder driving the development of MIND, overseeing the delivery and management of the site and, most of all, securing high profile private sector tenants since the early stages of development. Human Technopole (genomic research) and the Galeazzi Hospital (a Policlinic and Research centre part of Gruppo San Donato) are anchor tenants of the innovation ecosystem from the beginning. Although they do not provide any direct cash-flow for the developer, they were instrumental in kick-starting the project and attracting other tenants. Other anchor tenants are the new campus for natural sciences of the University Statale of Milan (UNIMI)\(^5\) and Fondazione Triulza (a third sector organisation already present on site since EXPO2015). A number of corporate tenants followed, attracted by the emerging ecosystem including approximately 40 other companies (multinational, national, SMEs and startups). The most prominent in terms of footprint on the site operate in the biotech and pharmaceutical sectors (e.g., Astra Zeneca and Illumina).

A mix of different tenants is also behind the success of 22@Barcelona. The district hosts a number of multinational companies (e.g., T-System, Indra, Telefonica, Mediaprox), universities (e.g., University of Barcelona, Universidad Politécnica de Cataluña, University Pompeu Fabra), national/regional..."
research institutes (e.g., IREC, IAAC), and technology Centers (e.g., Leitat, Bdigital, Barcelona Media, BCD). Like in the other cases, the presence on site of higher education institutions has been key for the buy-in and development of the district. The regeneration of the district has led to the further establishment of 10 universities with a total of more than 25,000 students on the site.

A similar influence from the academic sphere is found in the Greek case. 20% of the available footprint of ThessINTEC will be occupied by university facilities. Three local universities and the most significant applied R&D Centre in the country, CERTH, are partner entities in the PPP behind ThessINTEC, holding a 42% of share.

Securing tenants from an early stage was a key objective and part of a wider plan for the attraction of additional foreign investment. At present, the list of secured tenants includes several higher education institutions and research centres (e.g., Aristoteles Engineering and Science Applied labs, CERTH Institutes, and foreign partners like Texas A&M University and KIT from Karlsruhe). Future secured tenants include 25 companies, including national tech-based SMEs and large enterprises. The development of specialised postgraduate taught and research programmes are coherent with the objective of co-locating labs with industrial R&D units.

The centrality of higher education and its role in stimulating synergies and the emergence of a true ecosystem is also one of the key features of the German case. There are 6 scientific faculties of the Humboldt-Universität of Berlin (Chemistry, Geography, Computer Sciences, Mathematics, Physics, and Psychology), a heavy presence of private research institutes (belonging to Leibniz and Helmholtz-Society) as well as a variety of research oriented or “deep tech” private companies. Overall, being a knowledge intensive area for R&D is the key strength of the science park. WISTA is at a much more mature stage of development in terms of stable tenants and ecosystem synergies. However, the district now needs modernisation, as it is facing an emerging competition from the more urban start-up scene of Berlin.

Finally, the only exception to the highlighted patterns is Brainport, that is a completely privately owned district. This district does not rely on higher education institutions. Instead, the main anchor tenants are: KMWE (a supplier to Boeing and Airbus and therefore benefits from the proximity to the airport), Yasakawa Benelux (robotics and industrial control technology), Fujitsu Glovia (a software company), and Anteryon (high-tech sensors, lenses and opto-mechatronic devices). All require some specific logistic spaces to operate.

These main companies and their logistic requirements also reflect the peripheral location of the site and its proximity to high-speed motorways. Universities benefit from the possible synergies that can originate from the proximity to these companies, for example, involvement in spin-offs. The local universities are mostly private: University of Applied Science Fontys, University of Applied Science Avans, Vocational College Summa Techniek, and TNO, the Netherlands Organisation for Applied Scientific Research (regulated by law, but not part of any government, university or company). The integration of education and business was conceived in an inverted way so that educational institutions could collaborate with first-rate companies from the high-tech manufacturing industry.

Comparing the five cases through these first lenses (location, ownership and costs, and shareholders), we notice their heterogeneity, which is also due to their different stages of maturity. We also see how location, ownership and stakeholders involved are intertwined variables that influence the set-up and

---

6 The innovation district idea has been highly influenced by the vision of Prof. Jordi Trullén from Universitat Ramon Llull in Barcelona. Trullén, J. (2001) El Projecte Barcelona. Ciutat del Coneixement desde L’Economia. Monogràfics de Barcelona Metropolis Mediterrània, 1: 16-25.
operation of the district and the type of tenants that can be targeted or attracted.

3.3.2 The role of universities and research centres

All five cases follow the quadruple helix model of innovation\(^7\), where the involvement of universities and research centres is crucial for the development of economic spill-overs, collaborations and synergies between the various stakeholders. In these types of regeneration projects, technological and social innovations are the result of cooperation and new synergies between four groups of stakeholders: public administration, private business, higher education and research institutes and local residents\(^8\). The concept is not new and has been part of the EU's Research and Innovation Strategies for Smart Specialisation.

The comparative analysis of the case studies showed that in peripheral areas, the presence of fully established faculties, like in Adlershof, helps attract users to the area. The repopulation task is even easier in areas that are closer to the city centre and other urban amenities, like in 22@ Barcelona. In urban environments, a mixed-use neighbourhood has more chances to facilitate the development of knowledge spillovers. However, the latter carries an added layer of complexity and risk linked to the wider constellation of stakeholders and shareholders.

\(^7\) Miller, K., McAdam, R., and McAdam, M. (2018) A systematic literature review of university technology transfer from a quadruple helix perspective: toward a research agenda, R&D Management, 48 (1).

Key lessons learnt – Relations between stakeholders

• The public sector should ensure that synergies among the different stakeholders are encouraged from the early stages of the project and incorporated as a requirement in the relevant policies.

• The creation of special purpose vehicles and dedicated public agencies, ensuring the delivery and monitoring of the regeneration scheme over time, would support risk management and relations with private sector investors.

• The implementation of clear and strict requirements on the delivery of wider social and environmental benefits should be assessed and negotiated before any private-public sector agreement is undertaken. This is to ensure that wider sustainable development goals are met by the delivery of the project.

• A mix of uses and tenancy from the early stages of project planning would ensure a better buy-in of the project by the present and future population.

• In line with EU Smart Specialisation principles, projects aligned with existing regional economic sectors should get priority. Alignment with the regional economy can be demonstrated either through synergies developed with initiatives contained in the local smart-specialisation strategies or by pre-securing anchor tenants that will strengthen and reinforce an existing critical mass, serving the economic needs of the region.

---

1 See: https://s3platform.jrc.ec.europa.eu/
3.4 Social and environmental value delivered

Demonstrating a clear alignment with the Sustainable Development Goals (SDGs) and Environmental, Social and Governance (ESG) is increasingly important for international corporations. This is particularly critical in the innovation industry to attract skilled labour and talent\(^9\). Similarly, for the real estate industry, green and efficient buildings are a way of securing better tenants, delivering energy efficient solutions, and lowering operational costs in the long term\(^10\).

The delivery on ESGs is in fact one of the main opportunities associated with the latest generation of IDs.

All our case studies have addressed environmental concerns in different ways, also depending on the different timing and context of their development. In most cases, the adopted measures looked at building efficiency and associated green requirements. This is the case for WISTA, where all buildings comply with a national technology standard (“Stand der Technik”) that includes three main requirements: all streets are naturally drained into grass rigolets, all buildings have green roofs or are covered with solar panels, and all buildings within a certain radius from the development area have to be connected to the wood feed block-type combined thermal and electric power station.

A similar approach to green construction standards has been adopted in Brainport where the construction and operation guidelines include: the use of renewable energies (solar, biomass, and no gas; smart electric cars), smart construction measures for insulation, the delivery of additional green spaces, a zero-waste policy, and the optimisation of services with a system of shared logistics and facilities.

The Phase 1 development of ThessINTEC also puts emphasis on efficient buildings and minimal energy consumption design, integration of renewable energy sources, and delivery of large public green spaces. To enhance the creation of an ecosystem of green economy within the district, green businesses are targeted. Phase 1 is housing two business clusters related to green deal targets: one on clean energy, hosting R&D labs and companies working on clean energy solutions, and the other on future mobility applications, combining electromobility, autonomous mobility and smart city solutions. Phase 2 will continue the green economy specialisation but will diversify the offer and focus on additional specific sectors like agrobiotechnology, health sciences with nutrition/health direction, and green shipping. The green economy commitment of the district combines well with its geographical location over the extended waterfront.

Digitalisation of the area has also been set as a key sustainable development goal, aiming at improving accessibility and inclusivity. Given the peripheral location of the district, a powerful digital infrastructure will offer an opportunity for the creation of more and better jobs in the area. Finally, the indirect aspirational social impact of ThessINTEC is reversing the brain drain, experienced by Greece in the last decades, by attracting talented professionals that are working at innovative companies and R&D institutions abroad.

MIND and 22@Barcelona deserve a special mention for their explicit dedication to sustainability, combining both the environmental and social aspects. MIND in Milan is the most recent case being implemented. It has been conceived as Lendlease’s flagship project for IDs, based on a specific internal framework made up of a series

---


of indicators for climate risk management and socio-economic value creation. The district has set a decarbonisation target of net zero by 2025 and absolute zero emissions by 2040. On the land use side, a ratio between built up areas and green areas will allow for the delivery of a linear park 1km long that will be publicly accessible.

Given the resilience target of delivering a project fit for the future (2090 horizon) Lendlease is retaining the management of the site after construction. MIND is the key project contributing to Lendlease’s overall target of 250 million (AUD) in social value creation by 2025 (not including donations and sponsorships). One of the flagship initiatives undertaken within MIND is a training programme for the inclusion of prisoners piloted in partnership with the Ministry of Justice (the site is adjacent to the Bollate prison).

The more mature case of 22@Barcelona demonstrates the way social and environmental value projections can be translated into positive regeneration outcomes at the neighbourhood scale. First, the development authority set the digitalisation of the area with the provision of a new optic fibre grid as a key target for social inclusion and fast development of the area. Then, new power grids and a centralised climate control system were put in place to increase the energy efficiency of the area by 40%. But the real success story from the social value perspective has been the social housing model put in place through 22@Law. The city of Barcelona granted landowners the right to increase the height and number of floors of the buildings, but they asked 30% of the land to be given back to the city council as a compensation for the acquired right. So, buildings can be taller but be built on a plot that is 70% of the land size.

Key lessons learnt – Governance and public policy

- Legislative frameworks, like 22@Law for MIND or the Entwicklungsgebiet for Adlershof, are crucial to ensure a development that brings shared environmental and social value to the local community. The local urban planning authorities should lead this initial process and set adequate land use regulations.
- ESG goals should be set from the planning stages of the ID project.
- Achieving social and environmental value will result in better tenants, social inclusion, a faster urbanisation pace, and a better integration with the surrounding context. In the longer term, this means more economic resilience and accelerating economic diversification and spillovers needed for innovation and economic growth.
- Beside the regular physical infrastructure, IDs need social infrastructure to thrive.

11 Detailed indicators and results are not publicly shared by Lendlease. Among the adopted frameworks of reference there are: UN Principles for Responsible Investments; (G20) Taskforce for Climate Related Financial Reporting (TCFR); (GRESB) Global Real Estate Sustainability Benchmark; UN Global Compact; and Climate Group Steel Zero.
originally acquired by the private landowners. The 30% of the land acquired by the city council was split into three main land uses delivering 10% of green areas, 10% of social housing, and 10% of new knowledge infrastructures (as universities and incubators). The law contributed to a successful mix of social infrastructure, tenants, and uses that allowed for a faster integration of the new and rapidly urbanising neighbourhood into the urban fabric of the city as well as for a faster generation of the social capital necessary to produce innovation12.

3.5 Summary of the key lessons learnt

Key lessons gained from our case studies are summarised in the following table.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>More urban IDs will work better if within a mixed-use development.</td>
<td></td>
</tr>
<tr>
<td>Peripheral locations will benefit more from a horizontal specialisation and connections to higher education and research centres. These cases might require longer time to establish an ID brand and attract high-profile investors.</td>
<td></td>
</tr>
<tr>
<td>Branding the project is key.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTEXT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The offer of IDs needs to be tailored to the local demand and connected to regional economic strengths.</td>
<td></td>
</tr>
<tr>
<td>High-quality and high-profile anchor tenants will accelerate the attainment of critical mass.</td>
<td></td>
</tr>
<tr>
<td>Pre-existing infrastructure and easy accessibility to the site are always necessary.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OWNERSHIP, PLANNING REGULATIONS AND LEGAL FRAMEWORK</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PPPs are usually a long-term commitment; they do not always ensure adequate monitoring and a flow of public and social profits over time. From a private sector perspective, a complex institutional structure is a deterrent for investment.</td>
<td></td>
</tr>
<tr>
<td>A clear strategic vision from the local institution is key to imposing longer-term goals, setting key requirements for the wider economic, social, and environmental benefits of the area (no matter the ownership).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIVERSITIES AND RESEARCH CENTRES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The presence of universities and research centres is key to start attracting visitors and investors (especially in the more peripheral cases).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUNDING and INVESTMENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Relying heavily on public subsidies might hamper completion of more long-term goals and phases.</td>
<td></td>
</tr>
<tr>
<td>Attracting private investors should contribute to ensure long-term financial sustainability of the project, with the public sector setting overarching public policy objectives to drive the project and then monitoring implementation.</td>
<td></td>
</tr>
<tr>
<td>Private investors potentially interested in IDs come from different sectors: real estate, human capital, biotech, innovation services, venture capital, etc.</td>
<td></td>
</tr>
<tr>
<td>R&amp;D expenditures need to be sustained over time. IDs need to adapt and be flexible to absorb new technologies and to respond to a changing nature of work and labour.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VALUE CREATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaging with environmental goals and producing social value is key to lift the profile of the ID and attract better tenants. Same applies to reconnecting with the regional economy and its leading sectors.</td>
<td></td>
</tr>
</tbody>
</table>

4. THE DIFFERENT INTERESTS AT STAKE: BALANCING PUBLIC AND PRIVATE INTERESTS

In the previous section, we highlighted the different needs and interests of investors, users, and governance bodies that are commonly involved in IDs. This section details the main opportunities, interests, and value of investing in IDs for the various stakeholders involved, but also the key concerns and current difficulties for implementation.

4.1 The public sector interests and governance arrangements

How do we ensure the convergence of private and public interests? If stakeholders from different economic sectors are involved (e.g., real estate, knowledge economy sectors), how do we make sure that they all benefit? These two key questions have led our investigation of key interests and drivers behind the development of IDs.

The collaboration of private and public sector is the key to the successful development of IDs. However, we need to address the common misalignment between the operational objectives and behaviours of the public and private sector. Significant initial public subsidies might help kick-start the development. But long-term budget commitments – spanning over potentially different political mandates – may ultimately become a threat to the full delivery of the project and raise risks, unless additional private capital is mobilised. Establishing adequate public-private partnerships might help overcome this issue. But what is the ideal format for these partnerships?

The public sector has some clear interests in developing, urbanising, regenerating, or optimising profits from either derelict or underperforming sites and brownfield areas. In the case of legacy sites (e.g., MIND and 22@Barcelona), the infrastructure delivered for the events was optimised and new amenities were integrated, consolidating the urban fabric. From a public sector perspective, the interest was regenerating an entire area of the city (creating new jobs and improving the socio-economic and physical environment), while optimising the infrastructure investment for EXPO. From a private sector perspective, new jobs and new investment opportunities in real estate were unlocked, and so was the possibility of associated investments in the local economy. This is a clear example of a convergence of private investors’ interests with the objectives of the public sector. Similar allocation of private/public roles could be recreated also in other situations.

The second priority driving IDs is the need of creating economic growth and new employment opportunities, by boosting innovation creation and R&D capacity in the region, and generating knowledge spill-overs through agglomeration effects. In some cases – like ThessINTEC – there is also an attempt to attract FDIs or private investments more widely. IDs are an opportunity to unlock new housing developments and to tap into new technologies and therefore invest in the future of the region.

Monetary profits are raised from selling public land or real estate stock, or contributing them to PPPs and lease contracts under different formats. However, the public sector often lacks capabilities to manage contracts and partnerships with the private sector, to assess profits margins generated by the private investors, and the potential managerial challenges. ESGs are laid down in both public and private sector projects, but there are currently no
clearly defined nor unified mechanisms to assess environmental and social value creation within policy and funding frameworks. More generally, the longer-term benefits that the (re)development generates in the area are difficult to assess within the current policy frameworks. Therefore, from the public sector perspective, setting adequate guidelines for the development and management of IDs is challenging. The result is that the public sector often undersells land and assets and only banks in short-term profits from the transaction, failing to anticipate the longer-term management and the community buy-in of the site. On the other side, some private sector investors still consider ID projects as very risky for the often complex and lengthy bureaucratic process of liaising with public authorities\textsuperscript{14}.

4.2 Risk allocation and private sector concerns

The management of risks and uncertainties that derive from the novelty of the sector are discouraging some private sector investors. Uncertainties are linked to the type of tenants attracted: the fast pace and quick variability of the tech sector and the contemporary entrepreneurial clusters of innovation, and the disruptive features of the contemporary innovation industry. It is also important to note that private investors from different sectors might have different targets and interests. Our research has highlighted a clear difference in the way real estate investors and other actors investing or operating in IDs assess risks and rewards. In the following section, we explore interests and challenges perceived by both groups, as emerged from the insights collected in our workshops.

4.2.1 Real estate investors and developers

The plurality of asset classes involved (i.e. economic, physical and networking assets like real estate, infrastructure, venture capital, business equity) complicate matters\textsuperscript{15}. All are required to work in synergy to ensure the success and resilience of an ID. But the various stakeholders involved often have different ways of operating.

Within the real estate sphere, investors have grasped the positive advantages of tapping into a new area of the real estate market and are increasingly capitalising on investments. That has been the case for Lendlease, which has used MIND in Milan for testing a new business model for real estate, leveraging on innovation ecosystems and ESGs. The pilot has been innovative from both the development and management side, and it has even allowed to test new digital solutions since the construction stages (e.g., a dedicated prop-tech company: Podium). Lendlease is now trying to replicate the model of merging urban regeneration and innovation districts, tested in Milan, in other locations, starting with Paris Saclay and London's Euston Station.

The tendency observed within the selected case studies is that real estate investors mostly operate with short-term goals of build-to-sell (WISTA) and in some cases, of build-to-rent (Brainport). It is only when looking at longer-term management prospects (MIND) that developers start showing serious consideration of ESG factors.

On the other side, more traditional real estate companies still lack the necessary experience and expertise in financing and managing large projects like IDs. They struggle to assess real risk due to lack of market information and possible volatility of certain tenants like start-ups. Setting up a new ID calls for real estate stakeholders to retain most of the risks related to these uncertainties, especially

---

in the early stage of financing. Therefore, IDs are still considered a risky investment.

The workshop with private sector representatives showed that risk allocation is critical for real estate investors. Projects must be financially successful (lower returns can be handled but not failure), therefore private investors need credible funding arrangements for attractive returns over long periods. Given the novelty of IDs, issues usually associated with portfolio diversification might be common: a failure of an investment in a new product, if not well managed, could compromise the returns across the rest of the portfolio.

This is where the public sector could intervene creating funding frameworks that are specifically intended to de-risk the early stages of development of IDs, for example, by providing key infrastructure.

In this way, projects can become more like traditional assets for private investors.

After risk management, the second main issue raised regards the complexity of the bureaucratic structure and long decision-making procedures that are typical of the public sector. The private sector representatives indicated that political instability (e.g., electoral cycles) contributes to raising the risk profile of investments. In this respect, managing relationships with a multitude of public sector counterparties was identified as significantly riskier and harder than dealing with a single entity.

Key recommendations:

• The public sector should contribute by delivering the initial infrastructure rather than subsidising the development in later stages.

• ESGs and binding land use regulations should be set by the public sector from the early planning stages of the district to ensure a wider shared value is delivered to the local community.

• Special public agencies or a department of local government could oversee relations with the developer over time and monitor the site.
4.2.2 The interests of innovation stakeholders: tech firms and investors

Unlike traditional real estate stakeholders, innovation business settling in IDs are interested in maximising benefits from agglomeration effects. Such externalities might be generated by the diversity of local economic activities or by a local specialisation.

Traditional literature on agglomeration theory and industrial districts have demonstrated that more urban locations possibly need a diversification of economic activities and amenities to thrive, whereas in the more peripheral cases horizontal specialisation are more successful\textsuperscript{16}.

The agglomeration advantages of a diverse business environment and the presence of a mix of uses is quite visible in the case of 22@Barcelona, where remarkable architectural designs were conjugated with a variegated array of tenants, thanks to the concessionary model of 22@Law.

Agglomeration effects have also driven the Eindhoven case, although being a private and more peripheral case, the target tenants are companies with different logistic requirement and a more specialised type of knowledge spill-overs. In both of our peri-urban cases, ThessINTEC and Brainport, the opportunity offered to business investors is that of participating in physically co-located clusters of emerging technologies or of a specialized industry sector.

However, in addition to real estate and businesses, within IDs we need to consider also a third class of stakeholders: private equity investors and venture capitalists. They are willing to take on board higher risks but for shorter-term investment goals, accommodating the fast pace of technology and innovation.

On this last point, stakeholders from business sectors like tech, biotech, human capital, and private equity funds, expressed concerns over a knowledge gap, i.e., the lack of understanding by real estate investors of the dynamics, pace and plurality of assets and stakeholders involved in the innovation industry. For example, start-up acquisitions and scale ups might result in changing needs in terms of workspaces, logistic requirements, office capacity and/or relocation, which is a positive outcome for innovation investors, but a negative and riskier process for more traditional real estate stakeholders.

Smart city solutions have emerged as a way forward to enable the convergence of stakeholders’ interests and to facilitate cooperation between investors for a more efficient and transparent use of resources and capital. The use of technologies like prop-tech and other digital solutions (e.g., blockchain based smart contracts or other AI solutions) could facilitate planning, developing, and managing of IDs\textsuperscript{17}. Collecting data on dynamics in IDs – like users and demand, commuting patterns, energy consumption and patent registrations – allows all groups of stakeholders to make better informed decisions to improve the performance of the sites (both economically and environmentally) and to lower the risk profile of investment. In addition, lessons learnt and data from more mature districts could guide more early-stage projects.

Actions could be taken to improve knowledge and understanding of incubators, accelerators, start-ups and scale-ups, and revenue generation processes. By improving data storage systems for


access and analysis by the different stakeholders within districts, the risks currently associated with the innovation industry can be minimised. Better access to data would allow for the monetization of future innovation revenue streams (e.g., IP licensing, ID data use). This could be an incentive for more traditional real estate investors to attract more tech investors and innovative businesses.

The convergence of real estate and innovation stakeholders is key for the longer-term survival of districts and for more sustainable and socially valuable results. But it does not always lead to high short-term profits.

The recent COVID-19 pandemic demonstrated the importance of good convergences and joint-upness. The pandemic has in fact triggered investors’ interest in life sciences and lab spaces, as opposed to traditional commercial properties, and it has also demonstrated the more resilient and longer-term value of mixed-use developments.

The convergence of interests and the efficient use of technology is also key to the proposition of IDs as a new and real estate investment product. This potential new asset class also needs to be supported by a new breed of investors that look beyond sheer financial revenues, factoring in also longer-term benefits and sources of profits linked to reaching ESG and SDG outcomes.

Key recommendations:

- Smart city solutions and prop-tech could be implemented within IDs to enhance the efficiency of buildings, management of the site, energy consumption as well as innovation creation and its monetization.

---


5. KEY DIFFERENCES BETWEEN MATURE AND NEW PROJECTS FOR INNOVATION ECOSYSTEMS

Comprehensive value creation analysis and monitoring (environmental, social and monetary)

Conception analysis of value creation potential

Periodic Assessment at regular/critical project junctures

Continuous Monitoring Throughout project implementation

IDs require different interventions and investments at different stages of their development. Setting up an ID from a brownfield or using the legacy of a mega-event will be a different task than expanding an existing site or modernizing a techno-park. Over the years, science parks and other types of techno parks have been developed and evolved in different ways. Some are now in need of restructuring and regeneration. In those cases, investments are needed for an update and upgrade of the existing facilities to meet the new requirements of an ID or to expand. So, it is important to take into account the stage of maturity of the district before drafting the most adequate delivery plan and associated funding framework.

IDs offer a set of interesting opportunities to tap into a new investment market seeing the participation of a variety of different stakeholders from both the public and private sector. For the multi-stakeholder nature of these projects, they also require the adoption of a wider notion of value creation (See Figure 1) to ensure their resilience and a longer-term success. One that gives adequate

---


weight also to environmental and social outcomes, delivering benefits to the wider geographical and social context.

Such wider notion of value\(^{23}\) should be adopted from the conception of the project and maintained throughout its duration. Mechanisms should be in place for monitoring the management of the districts. Any dedicated policy scheme and funding framework should reflect a wider approach to value creation. Translating the less quantifiable indicators of SDGs into assessment criteria for policy is a key challenge. In the next section of this report, we list some key criteria that may support policy-makers in drafting policy and funding frameworks for IDs.

---

**Key recommendations:**

- The policy instruments and intervention types used should differ for new development of IDs and improvements or expansions of existing ones.

---

32(2)


6. GUIDING INVESTMENTS: POLICY AND FUNDING FRAMEWORKS

Current policy and funding frameworks in the real estate and regeneration sector are still far from clearly embedding SDGs within funding and scoring criteria, despite the urgency to address climate change and to meet SDGs. This section proposes new assessment criteria for the evaluation of ID projects reflecting this need. What we propose in this report is aligned with the European Green Deal and the EU taxonomy for sustainable economic activities\(^{24}\). We expand and adapt the same principles to the domain of real estate and innovation, in an attempt to develop a common language for SDG-oriented policy and investment models.

There is currently no defined, clear and accountable framework to measure social and environmental impacts of large-scale regeneration projects. The public sector should shift from subsidies to results-based models. To do so, it should acquire capabilities to assess and score the non-monetary value, like social return on investment, produced by the new projects. Setting clearer benchmarks will also help engage with private investors, who will be able to identify rewards in engaging more closely with ESGs and with longer-term gains. The policy guidelines developed in this section represent a first step towards the achievement of this objective.

The multi-stakeholder nature and novelty of ID projects offers an opportunity to test new approaches for policy and public funding frameworks as well as for new investment models incorporating SDGs.

The scoring criteria are based on an assessment and reward model that recognizes some of the longer-term positive outputs of projects. These impacts often arise from actions that are less easily quantifiable in monetary terms, like the reduction of CO2 emissions, the provision of higher skilled jobs, the use of technology solutions to reduce energy consumption for data storage, or the number of new patents and firms registered in the area that have an impact on innovation creation.

Any policy framework for the evaluation and delivery of funding for IDs should also consider the stage of maturity of the project. For new projects, the proposed criteria look at projected results, drivers, investors and anchor tenants that are secured early-on and can contribute to reaching the critical mass needed for the success of projects.

For already existing districts, investments could be required for expansions and modernization projects. A potential funding framework should therefore consider both the proposed improvements and the results achieved so far. This approach should also ensure the monitoring of projects with a longer-term horizon.

---

To find out more about the European Green Deal see: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
7. PRIVATE INVESTMENTS AND THEIR DIRECTIONS

Many studies show that sustainable assets generate greater value by attracting better tenants and further investors\textsuperscript{25}. This section spells out the potential benefits perceived by private investors engaging with ID projects and conforming to the wider notion of value discussed earlier in the report. Here, we distinguish between economic goals and environmental and social goals. We intend to demonstrate that just like for the public sector, opportunities associated with IDs are numerous for private investors and they might lead to greater profits over a greater timespan. In real estate terms, IDs are a longer-term investment: one that works better in retained ownership models. A retained management of the site after construction goes hand in hand with setting longer-term goals and profit plans, requiring to look after the social and environmental wellbeing of the site and the attraction of better tenants and residents.

IDs are complex systems of interactions and synergies between different stakeholders that can support the socio-economic and spatial regeneration of places, while producing considerable economic growth and innovation. For their heterogeneous nature, IDs are different from other property-led regeneration strategies. They directly fulfil several SDGs (e.g., 8 – decent work and economic growth, 9 – industry innovation and infrastructure and 11 – sustainable cities and communities) and, if associated with the right governance and financing structure, these projects can indirectly deliver on a set of additional SDGs (e.g., 4 – quality education, 7 – affordable and clean energy, 10 – reduced inequalities, 12 – responsible consumption and production, 17 – partnerships for the goals). There are new opportunities for value creation associated with this potential new product. This report has disentangled lessons learnt from a set of five existing European cases and addressed strategies for future investments and funding frameworks in this emerging sector.

The location and history of the site influence significantly the type of ID that can be established, the challenges investors will encounter, and the type of visitors and tenants it can attract. Branding is always an important part of the process. Successful branding campaigns and district strategies connecting the ID to the surrounding regional economy lead to more resilient outcomes in the longer term. The maturity of the district is another important variable to acknowledge. Projects for IDs will have different requirements depending on the legacy and the stage of urbanisation of the site. In cases like Milan or Thessaloniki, the challenge would be to set up an ID almost from scratch: finding anchor tenants and reaching the critical mass that is needed to generate innovation and economic growth. Whereas, in cases like Adlershof, the challenge is the adaptation of a former model of science park to contemporary requirements and innovation trends, or planning for an expansion of the site and unlocking new investments opportunities. Monitoring the evolution of an ID and investing in R&D for attracting new key tenants are also necessary requirements for the longer-term success of these projects based on innovation creation.

Adequate urban planning regulations are also fundamental to define the roles played by both the private and public sectors and to ensure that social and environmental value is delivered. It is important to acknowledge the potential competition that might arise between IDs. Therefore, policy frameworks for their delivery should be place-based, conscious of the local needs, and connected with the regional specialisation.

A critical mass of stakeholders from both private and public sector is needed to establish a district and ensure that it thrives over time. Interests and objectives linked to investments in IDs might be different in different sectors, and so could be the elements defining a “failure”. Ultimately, an ID is successful when the final buy-in by local communities and firms is achieved, and economic growth is produced alongside innovation and social change. If we aim for more sustainable and long-term regeneration strategies, private and public sector should cooperate to project profit margins over a long-term time horizon. For this reason, we have recommended a retained ownership model as the most adequate form of private-public partnership needed for the delivery of IDs. The public sector should set the initial regulations and longer-term requirements. After delivering some of the initial physical infrastructure, public stakeholders should undertake a monitoring role preferably converging in dedicated agencies. The private sector developers should in turn retain the management of the site after construction and oversee the delivery of the necessary social
infrastructure and economic resilience over time. Cooperation is also required between real estate investors and those coming from the technology and innovation sectors as a way to achieve SDGs, attract better tenants, and generate social capital.

IDs are not yet a distinct asset class. In these early days, they tap into a variety of different economic sectors, asset classes and interests (e.g., economic, physical and networking assets of interest to different economic sector like real estate, technology and innovation firms, venture capital and investment funds, life sciences, higher education, etc.). However, if supported by the right funding frameworks, these projects hold great potential for urban regeneration through an effective and combined use of public and private resources.

The second part of the report concentrated on translating economic, social, and environmental objectives into assessment criteria to be incorporated into innovative investment models for ID. These criteria, most of all, make an attempt at translating into policy the less easily quantifiable measures for social and environmental value creation. Ultimately, multidisciplinary skills are required for the delivery of innovative districts projects, reflecting the different stakeholders that should be involved, intertwining real estate, economic development and planning.
9. REFERENCES

Ajuntament de Barcelona (2012) 22@ Barcelona Plan. A programme of urban economic and social transformation. 22@Barcelona Urban Planning management report. See also: https://www.22network.net/districte-22/?lang=en.


GETTING IN TOUCH WITH THE EU

IN PERSON
All over the European Union there are hundreds of Europe Direct information centres.
You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

ON THE PHONE OR BY MAIL
Europe Direct is a service that answers your questions about the European Union.
You can contact this service:
– by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
– at the following standard number: +32 22999696, or
– by electronic mail via: https://europa.eu/european-union/contact_en

FINDING INFORMATION ABOUT THE EU

ON–LINE
Information about the European Union in all the official languages of the EU
is available on the Europa website at: https://europa.eu/european-union/index_en

EU PUBLICATIONS
You can download or order free and priced EU publications from EU Bookshop at:
https://publications.europa.eu/en/publications. Multiple copies of free publications may be obtained by contacting
Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

EU LAW AND RELATED DOCUMENTS
For access to legal information from the EU, including all EU law since 1952
in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

OPEN DATA FROM THE EU
The EU Open Data Portal (http://data.europa.eu/euodp/en) provides access to datasets from the EU.
Data can be downloaded and reused for free, for both commercial and non-commercial purposes.
The European Commission’s science and knowledge service
Joint Research Centre

JRC Mission
As the science and knowledge service of the European Commission, the Joint Research Centre’s mission is to support EU policies with independent evidence throughout the whole policy cycle.

EU Science Hub
joint-research-centre.ec.europa.eu

@EU_ScienceHub
EU Science Hub — Joint Research Centre
EU Science, Research and Innovation
EU Science Hub
EU Science