
Smart cities and Sustainable Development: the MIND district case

A new model of urban regeneration



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The Research Centre

The Geneva UN Charter Centre of Excellence on sustainable finance for infrastructure and smart cities (ExSUF) has been set up by UNECE and LIUC – Cattaneo University in order to advance sustainable finance for infrastructure and smart cities, in order to accelerate action to achieve the Sustainable Development Goals (SDGs), in particular SDG 11 on sustainable cities and human settlements.

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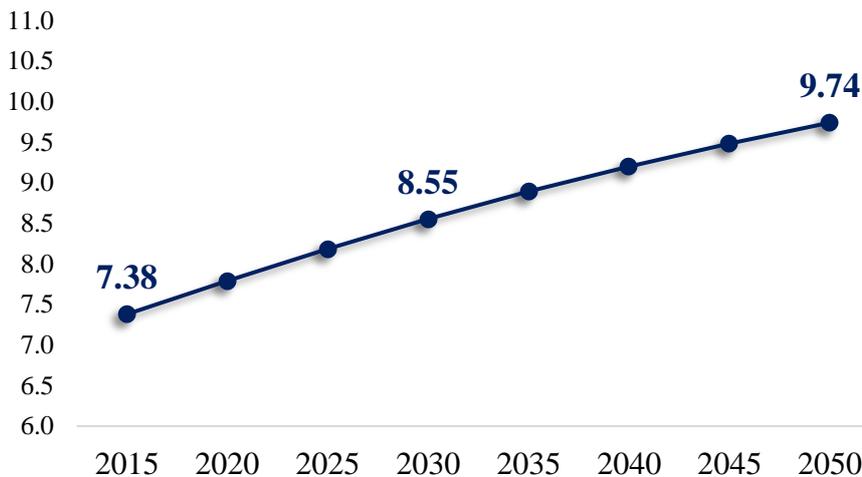
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Rationale and background

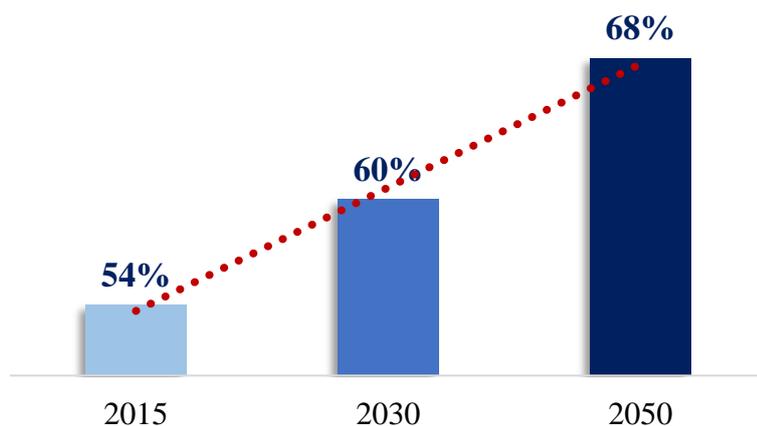
The current macroeconomic landscape urges policymakers to rethink the structure and arrangement of urban areas. As per the United Nations (2022), projections indicate a substantial surge in the global population in the coming decades, expected to reach 9.8 bn in 2050 (Figure 1). By that year, 68% of the world community will be living in cities (Figure 2), compelling governments to re-design urban spaces and optimize their functionality for hosting such a large population under acceptable living conditions.

Figure 1: **World population trend from 2015 to 2050 (bn)**



Source: Authors personal elaborations of the “2022 Revision of World Population Prospects” data published by the Population Division of the Department of Economic and Social Affairs of the United Nations. Retrieved from: <https://population.un.org/wpp/>

Figure 2: **Urbanization rate worldwide from 2015 to 2050**



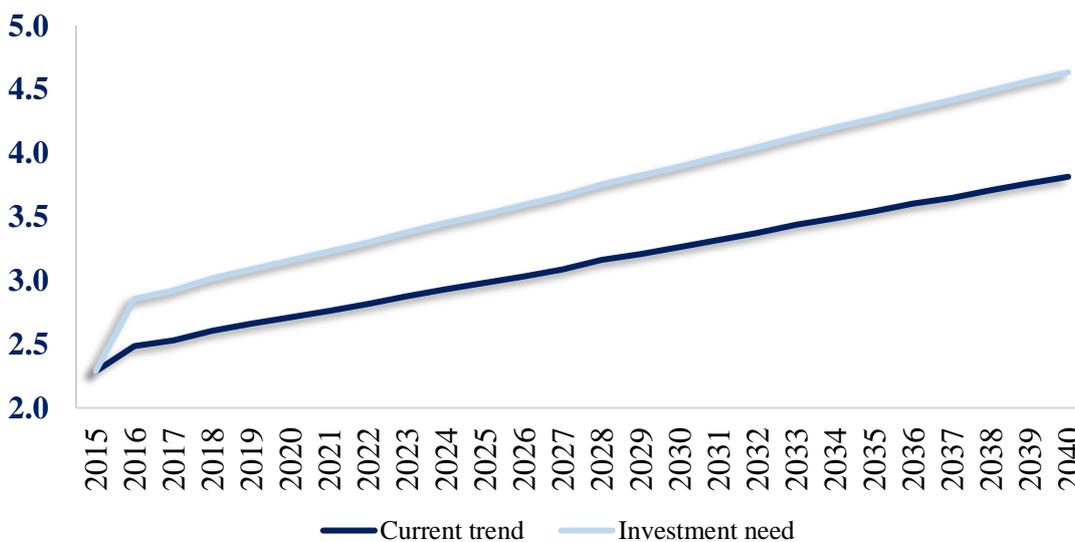
Source: Authors personal elaborations from Statista. Retrieved from: <https://www.statista.com/statistics/671366/change-in-urbanization-of-countries-worldwide-by-regional-development/>

The upward demographic and urbanization trend is going hand in hand with a cultural shift in lifestyle and needs. Increased attention to individual well-being makes modern inhabitants perceive cities as an ecosystem in which they can enjoy high standards of life quality. By proactively engaging in municipal activities, contemporary citizens are increasingly willing to contribute to the development of more interconnected, sustainable and safe urban areas to benefit from effective policies and efficient public services (Bull & Azennoud, 2016; United Nations, 2016).

In this framework, the concept of smart city has gained prominence as the solution to future population growth and evolving citizens necessities (Dameri, R.P., 2013; Angelidou, 2014). According to the European Commission definition¹, smart cities are urban areas where technology and digital solutions are pervasively implemented to achieve an optimal use of public resources, promote environmental and social initiatives, and preserve citizens well-being.

However, the shift from conventional to smart cities generates significant expenses, and there is a growing concern among global policymakers regarding the shortage of public funding and the widening up of the so-called “infrastructure gap” (Figure 3). In this context, municipalities and governments are increasingly collaborating with private parties to collect the resources and access the skills needed to undertake this transition (Moser & Nealer, 2016; Woetzel, 2017).

Figure 3: **Infrastructure gap evolution from 2015 to 2040 (tn; \$)**



Source: Authors personal elaborations from Global Infrastructure Outlook - A G20 INITIATIVE. Retrieved from: <https://outlook.gihub.org/>

The scarcity of resources available for the development of smart cities compels academics and professionals to combine their efforts in the pursuit of a model that optimizes public resources allocation, attracts private investments, and meets the needs of the community. To achieve this goal, the foremost step is to thoroughly study existing projects, delving into their successes and shortcomings.

This report aims at presenting the Milano Innovation District (MIND) case and analysing the unique features that contribute to making it an innovative approach of efficient and effective smart urban regeneration. Figure 4 summarizes the key information about MIND.

¹ The smart city definition has been retrieved from: https://commission.europa.eu/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en

Figure 4: MIND project – key elements

| |
|---|
| Area: 1 million square meters of surface, with 40 hectares of open public space, located in the municipalities of Milan and Rho (Italy) |
| Project leaders: Arexpo S.p.A. and Lendlease SGR S.p.A. |
| Project objective: innovative urban regeneration of the area that hosted EXPO 2015 exhibition |
| Total investment amount: €4.5 bn |
| Project duration: 99 years-concession |

Source: Authors personal elaborations from Arexpo. Retrieved from: <https://www.arexpo.it/en/mind/>

The present study is the result of a mixed methodological approach, combining publicly available information and semi-structured interviews to Arexpo and Lendlease managers.

1. The evolution of the area: from the EXPO 2015 to MIND

1.1 EXPO 2015

In the months between May and October 2015, the city of Milan hosted the World EXPO 2015. The Universal Exposition proved to be an enormous success, attracting 21.5 million visitors worldwide and significantly positioning Milan as a globally sought-after destination.

The exhibition took place in an area located in the northwest of Milan, in a space that was 90% owned by the municipality of Milan and the remaining 10% by the municipality of Rho. Overall, the site covered 110 hectares and was located in the area adjacent to the new Fiera Milano exhibition centre.

The infrastructural area used for the exhibition was unique in Italy in terms of size and connections:

- 1 mln square meters;
- 1 railway stop for regional and high-speed trains;
- 2 highway exits (A4; A8-A9);
- 1 subway line connecting to the center of Milan.

1.2 The post-exhibition phase

After the event, the area was under the supervision of Arexpo S.p.A., a private company controlled by public institutions (see Figure 6 for details), founded with the aim of managing, enhancing, and developing the EXPO spaces in the post-exhibition phase. At that time, the site was completely inactive and mainly occupied by temporary exhibition pavilions. Considering the size and condition of the area, it was evident that a dramatic investment was needed to enhance and reactivate the site.

The first strategic option explored by Arexpo was selling the whole area to an entity owning the sufficient resources and skills for the regeneration project. However, the selling procedure did not attract any prospective buyer willing to assume control and shoulder the investment risks. Given the unsuccessful initiative and to meet the demands of its stakeholders, Arexpo actively embraced the role of leader and promoter of the site regeneration process.

At that point, to properly implement the initiative it was necessary to:

- A. Organize and structure Arexpo as a company owning the resources and skills to supervise the project;
- B. Outline a strategic vision of regeneration and lay out an innovative urban plan;
- C. Identify a long-term partner.

A. The establishment of Arexpo as supervising entity

Since its foundation in 2011 until 2016, Arexpo's operations remained quite limited. Indeed, it acquired the area designated for the Universal Exposition in 2011, sold the surface rights to the entity in charge for running the exhibition, namely EXPO 2015 S.p.A., and retained only limited administrative functions. The year 2016 marked a turning point for Arexpo: its new role as project supervisor implied the internal restructuring of the company. To this purpose, a diversified group of directors was temporarily moved from Lombardy Region and EXPO 2015 S.p.A. to hold strategic positions in Arexpo. The company gradually grew to become, as of today, an entity with 60 employees.

B. A strategic vision and innovative plan

The foundational idea at the basis of the development of the MIND district was the result of in-depth studies on similar existing projects worldwide and consultations with specialized real estate and financial companies. In 2016, Arexpo laid down the guidelines for the development of the masterplan, outlining the principles of the project.

In this initial phase, assessments were made regarding the potential establishment of public entities, the so-called "anchors" (the University of Milan, the Human Technopole Foundation, the Galeazzi Hospital, and Triulza Foundation). In fact, to build a cutting-edge scientific park, the presence of these entities was considered fundamental to catalyse the attention of long-term private stakeholders. The contamination among the public and the private would have benefitted both parties thanks to the synergies arising from collaboration initiatives. In this sense, the "common ground" concept developed in the guidelines originated precisely from the idea to design the district's spaces in a way that facilitated interaction among the involved entities.

C. The long-term partner

Having identified the principles and main schemes, it became crucial to find a long-term partner capable of translating the guidelines into a comprehensive masterplan, which would serve as the reference tool for developing the intervention plan². In fact, entrusting the design and development of the area to a third party was considered essential to implement a project that was not only innovative from an architectural perspective but also financially sustainable, offering compelling returns for private entities. To achieve the goal, Arexpo launched a tender process in 2017.

1.3 The tender

The tender consisted of two strictly interconnected phases: the entity that served as consultant for the formulation of the masterplan in the first phase automatically became the subject in charge of developing the project through the acquisition of surface rights on the area³. This framework was essential to guarantee the practicality and economic sustainability of the plan formulated in the initial stage. In November 2017, Lendlease, a multinational company operating in the real estate sector based in Sydney, won the tender by prevailing in both the technical judgment on the project and the economic part. In a single tender, therefore, Lendlease was selected both as advisor for the master plan and as developer of part of the area, through a 99-years concession upon payment of a fee.

² The Italian term "Piano Integrato di Intervento" is here translated as "intervention plan" as there is no English equivalent.

³ For further information see Arexpo website at: <https://www.arexpo.it/consorzio-guidato-da-lendlease-si-aggiudica-gara-per-masterplan-e-sviluppo-parte-dellarea/>

In that same year, Lendlease commenced its collaboration with Arexpo to lay down the masterplan. Upon completion of this initial phase, which involved various personalities, including the popular architect Carlo Ratti, the document, together with an environmental assessment, was presented to the municipal administrations in the form of intervention plan. From the economic analysis section of the intervention plan, it emerges that the expected project revenues amounted to €2,186,917,345 while the costs for undertaking it totalled €2,029,949,151, leading to a margin of the intervention (the so-called “sustainability margin”) equal to €156,968,194 (7.18%). Detailed revenues and costs expected from the intervention are reported in Figure 5.

Figure 5: **Intervention plan: expected costs and revenues from the project**

| Main costs of the intervention plan | Amount (€) |
|---|-------------|
| Tabella 1: Costo dell'area e oneri diretti sostenuti sulle aree di proprietà | 310.236.618 |
| Tabella 2: OOUU primaria e secondaria calcolati con riduzione per risparmio energetico, produzione energia termica ed elettrica da fonte solare e incentivazione da pompe di calore geotermiche e ad acqua di falda | 117.414.896 |
| Valore opere di urbanizzazione primaria e secondaria effettivamente scorporato su oneri dovuti | 117.414.896 |
| Tabella 3: Costo da sostenere per completamento e adeguamento delle opere di urbanizzazione primaria e secondaria esistenti (a scorporo dagli oneri) - IN CESSIONE | 32.484.485 |
| Totale Valore opere esistenti di urbanizzazione secondaria, degli adeguamenti, rifunionalizzazioni e nuove opere su aree asservite all'uso pubblico | 64.028.802 |
| Tabella 5: Totale generale Contributo commisurato al costo di costruzione | 71.706.000 |
| Tabella 4: Costi diretti stimati per la realizzazione dell'intervento edilizio - incluso parcheggi nel periodo di sviluppo | 937.939.200 |
| Tabella 7: Spese tecniche e oneri indiretti e complementari (sui costi diretti per la realizzazione dell'intervento) | 388.455.967 |
| Tabella 8a - Valore dei servizi di interesse pubblico e generale - in capo ad altri soggetti già individuali | 665.960.473 |
| Copertura economica per la realizzazione dei servizi di interesse pubblico e generale - in capo ad altri soggetti già individuali | 665.960.473 |
| Tabella 8b - Valore dei servizi di interesse pubblico e generale - Housing Sociale | 51.480.000 |
| Tabella 8c - Valore degli altri servizi di interesse pubblico e generale - in capo ad altri soggetti da individuare in relazione alla modalità di convenzionamento | 20.000.000 |
| Tabella 9 - Altri costi - Allacciamenti utenze e costi generali supercondominio (intero periodo sviluppo) | 67.218.079 |
| Tabella 10 - Oneri finanziati in costruzione | 86.400.000 |

| Revenues expected from the intervention plan | Amount (€) |
|--|---------------|
| Direzionale avanzato, terziario, uffici, | 1.219.998.780 |
| Residenziale (in affitto) varie tipologie, senior living | 356.400.000 |
| Retail, ristorazione e commercio diffuso, wellness e servizi alla persona | 147.000.000 |
| Ricettività varie tipologie, Hotel e residence, Aparthotel, Suite Apartments, temporary home | 50.400.000 |
| Produttivo innovativo, produzione leggera, manifattura tecnologica avanzata | 90.750.000 |
| Parcheggi | 117.973.800 |
| Housing sociale e student housing | 75.240.000 |
| Leisure/spettacolo, entertainment/svago, cultura/espositivo/museale, edutainment | 28.500.000 |
| Ricavi vendita Area al Galeazzi | 25.000.000 |
| Ricavi vendita Area Università Statale | 11.618.750 |
| Ricavi vendita Area ad HT | 3.918.200 |
| Rimborsi da Fondazione HT per vendita Palazzo Italia - Cardo NO e US6 | 21.946.968 |
| Previsioni di rimborso dei costi di supercondominio (rump up) | 38.170.847 |

Source: Economic analysis section of the intervention plan (Piano Integrato di Intervento) (2019).

At that point, the Urban Planning Agreement was approved and Arexpo was assigned a central role as implementing party for the project to be developed by Lendlease. Consequently, the latter started its role as the contracting authority of the area.

1.3.1 The concession

The relationship between Arexpo and Lendlease is ruled by the terms of the concession, which is characterized by the following key elements:

- It consists of two blocks: an immediately granted 250,000 sqm area and an additional one, accessible upon the fulfilment of specific requirements, for a total of 480,000 sqm⁴);
- The concession agreement implies a total investment amounting to €4.5 bn, of which €2.5 bn by Lendlease;
- Over the 99-year concession period, Lendlease will pay Arexpo annual fees amounting to a total of €671 mln in nominal value terms;
- The main source of revenue for Lendlease will derive from the rent and sale of private offices and residential buildings developed in the area included in the concession surface rights;

⁴ See the report “Mind – Milano Innovation District. Persone, Ambiente, Economia E Innovazione Per Il Paese” by Harvard Business Review Italia, 2022.

- Arexpo will supervise the project and bear the risks associated to the urban and infrastructure authorization procedures, while remaining the landowner. Lendlease, on the other hand, will shoulder the industrial and financial risks, taking on the role of project manager of the initiative.

1.4 MIND vision and mission

The joint efforts of Arexpo and Lendlease ultimately lead to the conceptualization of MIND (Milano Innovation District), an innovative urban district and new neighbourhood for the city of Milan, whose development met two main objectives:

- Position Milan as a city of attraction for talent, businesses and capital from around the world;
- Implement urban regeneration activities based on sustainability criteria.

The Masterplan, indeed, established the foundations for the mission and vision of the project.

Since the initial stages of the planning process, the district was intended to be a unique hub of experimentation. In this framework, the collaboration of the public and private sectors was supposed to lead to an international platform of excellence in research and development in the fields of biology, medicine, pharmacology, and genomics as well as a pioneer in terms of urban sustainability and social inclusion.

MIND was, in fact, conceived as a place where the citizen could rediscover its centrality in the urban landscape thanks to high life quality conditions and an innovative environment where new technologies, procedures and collaboration models could be implemented for the first time. The district was, essentially, thought as a novel model of smart city within the traditional city.

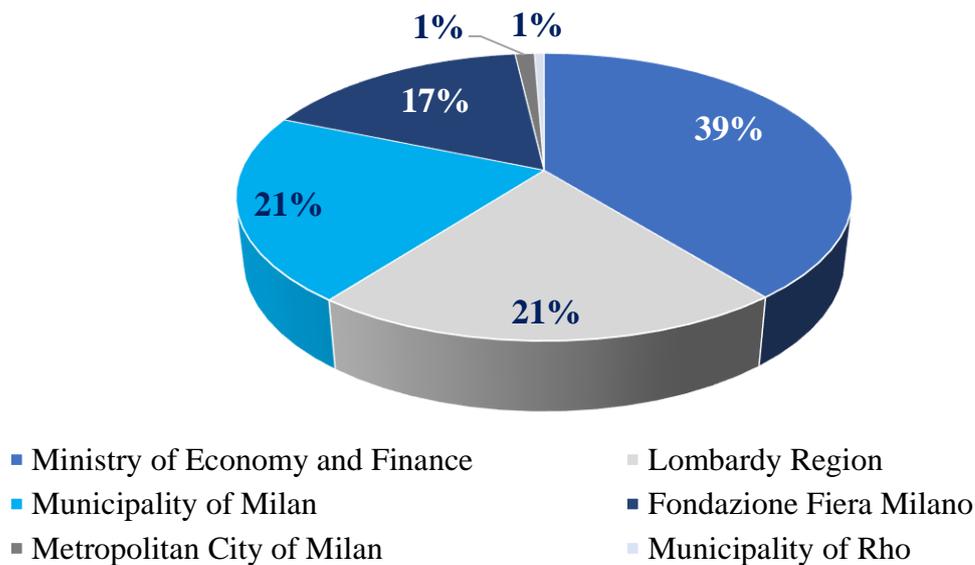
2. The key actors

The conception of the MIND district stems from the collaborative efforts of two prominent entities, Arexpo and Lendlease. These key players operate under distinct principles, contributing a unique perspective and assuming specific roles within the project.

2.1 Arexpo

Internally organized as a private entity, the company carries out a public-service role due to the predominantly public nature of its shareholding (Figure 6). In fact, it essentially operates as a public entity, being subject to public procurement regulations and contributing to the consolidated governments account.

Figure 6: **Arexpo shareholder structure**



Source: Authors personal elaborations from Arexpo. Retrieved from: <https://www.arexpo.it/en/about-us/#:~:text=Our%20shareholders%20are%20the%20Ministry,of%20Rho%20with%20smaller%20shares>

Founded with the specific and limited objective of managing the EXPO area in the post-exhibition phase, the company mission and business scope has evolved, up to transforming into a national player of urban regeneration projects, in which it assumes a key role in:

- Establishing public-private partnerships;
- Managing the entire administrative process, including assuming full risk on behalf of the public administration (PA);
- Facilitating the relationships among the PA, investors, and the community;
- Fostering dialogue between private entities and the academic world.

2.2 Lendlease

The company is leader in the real estate sector, particularly in the development of urban areas, with projects spanning Australia, Asia, Europe, and the Americas. Currently managing assets totalling €20 bn, encompassing urbanization and regeneration projects in 15 cities and 8 countries across the world, and boasting a development pipeline exceeding €62 bn (as of December 2023)⁵. The company was established in 1958, has been listed on the Australian Securities Exchange since 1962, and its shareholders include various relevant global funds and institutional investors, among which Macquarie, The Vanguard Group, and BlackRock.

The company is organized into three primary functions:

- **Development:** acting as intermediary between clients and architects and engineers, it is the guarantor that buildings design and construction align with the requests coming from the commercial side;
- **Investment:** it acts as financial investor by channelling the company resources into real estate projects;
- **Construction:** it is directly in charge for building specific real estate projects. In most countries, the company does not undertake construction activities, but it hires a general contractor.

⁵ See Lendlease website at: <https://www.lendlease.com/au/>

Lendlease establishes itself as a company dedicated to urban regeneration and development, prioritizing environmental and social considerations. Its overarching mission is to create value for the entire community.

Prior to the launch of the tender process by Arexpo, Lendlease manifested its interest in the EXPO area, unveiling its vision for the district's future evolution in a collaborative book on innovation districts co-authored with Carlo Ratti.

3. The MIND district

The revitalization project for the area is grounded on three main pillars, each one leading to the construction of ad-hoc spaces and buildings (Table 1 and Table 2):

1. Attracting renowned public institutions (the anchors):

- I. IRCCS Galeazzi: hospital of the San Donato Group resulting from the consolidation of two institutions, IRCCS Istituto Ortopedico Galeazzi and Istituto Clinico Sant'Ambrogio, into a unified facility;
- II. Campus Unimi: the future location of the scientific faculties of the University of Milan;
- III. Triulza Foundation: established in a former farmhouse, it is the district headquarters. The foundation maintains a strong dialogue with the third sector and engages in various activities aimed at stimulating interest on the area, knowledge dissemination, innovative initiatives and interactions among a wide range of stakeholders;
- IV. Human Technopole: research institute specialized in life sciences. Actively operating since 2016 in the appropriately repurposed Palazzo Italia, one of the main permanent buildings of EXPO exhibition.

2. Becoming a hub for innovative entrepreneurial entities:

- I. Federated Innovation: initiative promoted by Lendlease with the contribution of Cariplo Factory as a catalysing entity. Founded by 32 companies, it represents an acceleration hub aimed at facilitating open innovation among private companies of small, medium, and large size. It serves as a venue for implementing new business ideas to promote sustainable development. It can be seen as an overarching structure stimulating the interaction among the district's entities.

3. Delivering smart urban spaces to citizens:

- I. MIND Village: area comprising office buildings and coworking laboratories resulting from the rejuvenation of the exhibition pavilions;
- II. West Gate: mixed-use space dedicated to offices, residences, and services. It comprises two main buildings:
 - a. The MoLo building: a multifunctional building intended to become the iconic gateway of the West Gate;
 - b. The Horizon building: designed to host relevant entities, including EON, with whom they have established commercial agreements for the smart energy supply of heating and cooling services.

For the development of Phase 1 of the West Gate, Lendlease initiated a collaboration with the Canada Pension Plan Investment Board (CPP Investments) in July 2021. The agreement involves a 50:50 co-investment totalling €400 mln in an Italian fund (Renaissance I) managed by

Lendlease Italy SGR to finance the development of 150,000 square meters of space located in the western part of the MIND district.

Table 1: Detailed description of MIND’s public anchors

| PROJECT | Detailed information |
|--------------------|---|
| Galeazzi Hospital | Total area amounting to 180.000 sqm. The building is 16 floors tall and hosts 600 beds. It also comprises research laboratories and training areas. The hospital required an investment amount of €500 mln for its construction and equipment costs. (Assolombarda, 2023) |
| Triulza Foundation | No-profit organization, hosted by the Municipality of Milan in the building called Cascina Triulza. Since its establishments, it promoted more than 200 initiatives amounting to more than €4.5 mln of investments and involving 58.000 people and 53 companies. (Graziano, 2023) |
| Human Technopole | Total area amounting to 35,000 sqm, it comprises 5 buildings and will host 1,000 researchers. It has been estimated that €1,4 bn have been invested for the initiative. |
| Unimi Campus | Total area amounting to more than 200,000 sqm, it is dislocated across 5 buildings. At full capacity, it will host 14,000 students. The campus required financial resources for more than €400 mln. The area was acquired from Arexpo at the price of €13 mln in 2019. (Laura Cavestri, 2023) |

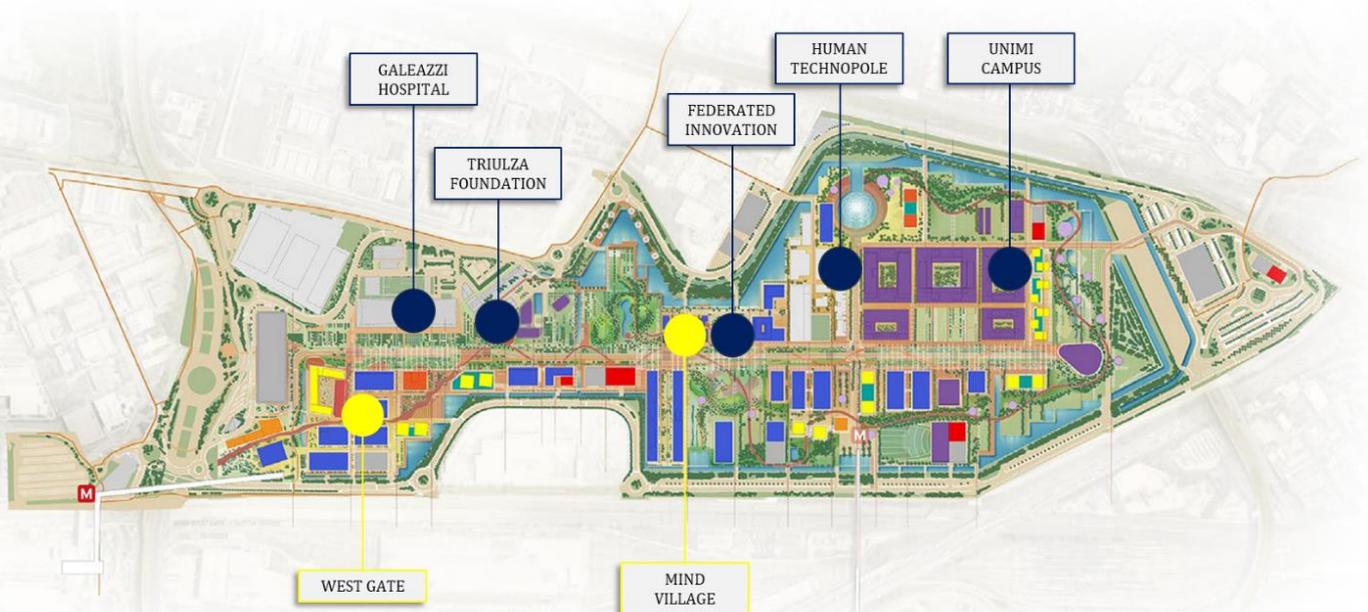
Source: Authors personal elaborations.

Table 2: Detailed description of MIND’s private projects

| PROJECT | Detailed information |
|----------------------|---|
| Federated Innovation | Network of 38 companies that has conceived over 100 research and development investment projects in less than 2 years. Its members contribution amounts to €1,900,000 annually. (Harvard Business Review, 2022) |
| MIND Village | It has been the first area privately developed by Lendlease, starting from the exhibition pavilions. It is about 8,000 sqm office space and hosts laboratories and co-working initiatives. |
| West Gate | Mixed-use area developed by Lendlease, amounting to 200,000 sqm. It comprises around 14 private development plots, of which the first to start on site will be two main buildings: the MoLo and the Horizon. |

Source: Authors personal elaborations.

Figure 7: MIND district main entities



Source: authors' personal elaboration from MIND. Retrieved from: <https://www.mindmilano.it/en/the-district/>

3.1 The Public-private partnership: the new Unimi Campus

In July 2019, the University of Milan launched a project financing tender for the construction of its new campus in the MIND district. The tender concerned a concession contract for the design, implementation, and management of the forthcoming campus on the land the University had previously acquired from Arexpo. In 2020, the proposal submitted by the consortium led by Lendlease was judged consistent with the tender documents and objectives and, in December 2022, the BoD of the University of Milan eventually approved the final project for the scientific campus in MIND.

The initiative was structured as a PPP with the following characteristics:

- Concession duration: 30 years and 11 months (comprising 1 year for design, 3 years for construction, and 26 years and 11 months for management) (MIND, 2022);
- Private funding: €257,2 mln
 - Senior Project Finance Loan and VAT revolving facility;
 - Equity Investment by Quotaholders (Equity Investor 80%, Lendlease 17%, Renco 2%, Coopservice 1%).
- Public funding: €201 mln
 - Regional and State resources;
 - Unimi's own resources.
- Total Project Value: €458,2 mln;
- The University will pay the SPV annual fees for approx. €15 mln for all facility management services (including energy supply, ordinary and extraordinary maintenance, cleaning and other minor services) and approx. €14 mln for the availability fee;
- Total gross built area: approximately 210,000 square meters, with 111,260 square meters allocated to functions directly associated with the university's activities.

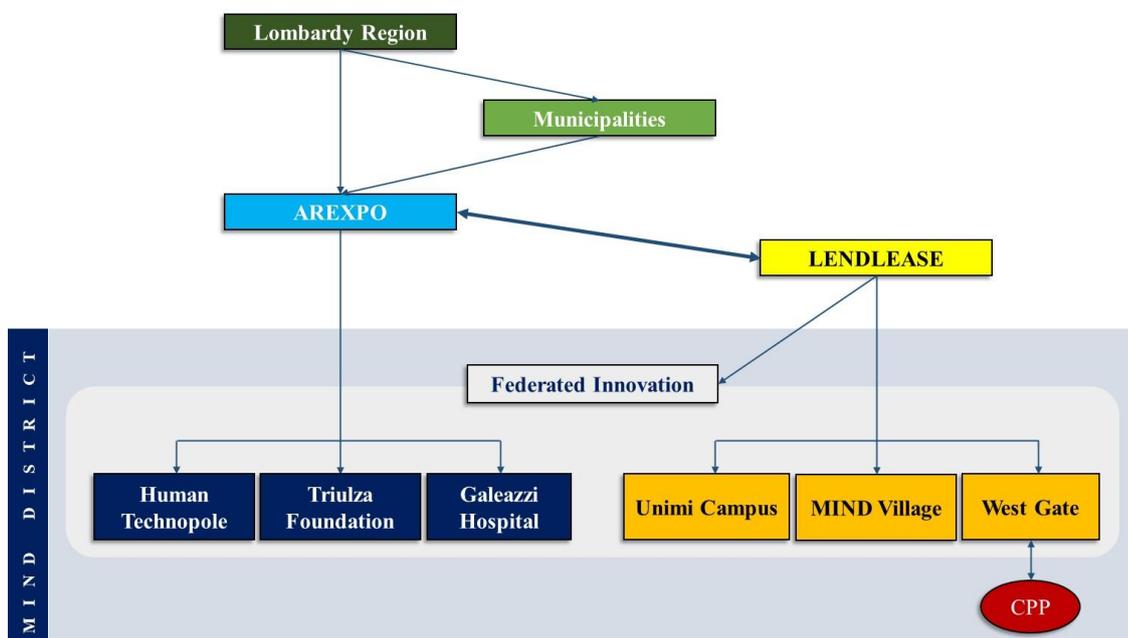
The primary stakeholders in the Unimi Campus PPP are the University of Milan and Lendlease, with Arexpo overseeing to ensure alignment with the district guidelines. However, despite its limited role, Arexpo plays a key intermediation role between Lendlease, the University, and local authorities,

particularly during challenging periods. In fact, in critical moments marked by the Covid pandemic and the surge in materials costs brought about by the Russia-Ukraine conflict, Arexpo facilitated essential public support for the project from the region and the local municipalities.

4. A new scheme of public-private collaboration

The implementation of the MIND district regeneration project follows a unique scheme of collaboration between the public and the private entities (Figure 8).

Figure 8: MIND project scheme of public-private collaboration



Source: Authors personal elaborations.

The novelty of the model lies in the fact that the public does not assume a passive approach but plays a fundamental role in the attraction of the private sector and the supervision, promotion and management of the whole area, actively cooperating with the institutions located in the district. In this framework, Arexpo plays a central role linking the public institutions to the long-term private partner. Indeed, the company serves as an intermediary in charge of facilitating Lendlease operations within the complex public context, governed by rules that significantly differ from the logics inherent to the private sector. In this regard, Arexpo and Lendlease act as distinct entities overseeing their respective projects while actively sustaining an ongoing bilateral dialogue. Besides its mediation duties, Arexpo is also directly responsible for supporting and managing the establishment of public institutions in the area (e.g. Galeazzi hospital, Unimi Campus, Triulza Foundation and Human Technopole).

Lendlease, on the other hand, leads the private development of the area. The Australian company acts as project manager of this part of the district according to the following business model:

1. Through its development department, the company collects requests from the commercial side and designs buildings accordingly;

2. The investment function channels part or all the financial resources needed to implement the projects and, in some cases, establishes Joint Venture agreements with co-investors (e.g. CPP Investments);
3. The company, then, delegates the construction activities to a third-party contractor, and oversees the latter to verify that the development of the residential and office buildings aligns to the commercial requests.

As outlined in the concession agreement, Arexpo retains supervising and control duties on the construction of the private part of the district. The entity is, in fact, responsible for assuring municipalities of a well-planned and consistent development aligned with urban planning projections. In this sense, the company is also in charge of managing the infrastructural network development across the whole area and operates with the substantial financial support that Lombardy Region has consistently granted throughout the whole project duration.

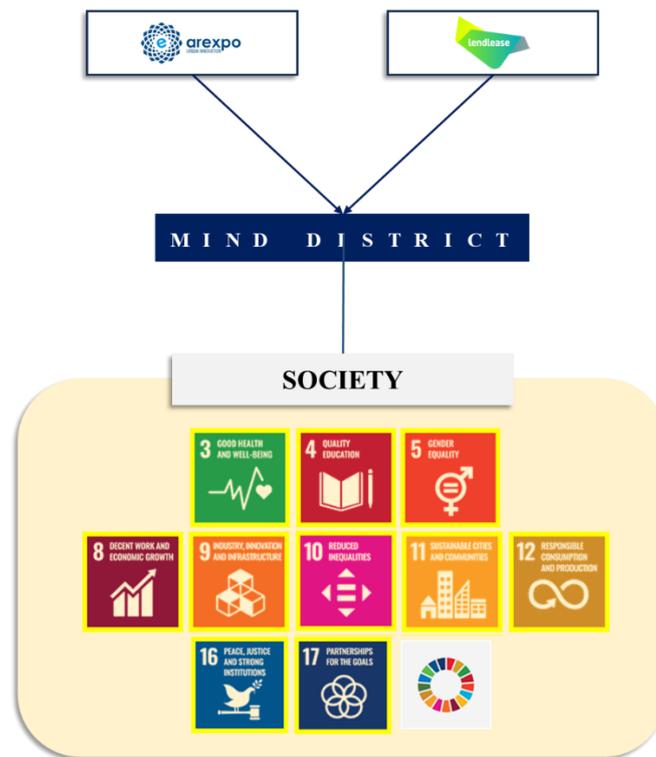
5. Economic, social, and environmental impact

By thoroughly examining the MIND case, it emerges that the project exhaustively meets the People First PPP criteria developed by the United Nations as it:

- Improves access and equity to infrastructure and public services: the district is designed to be an inclusive space where the public sector effectively delivers its services to citizens;
- Is economically effective: the project significantly impacts national and local occupational and economic metrics. According to a report by Harvard Business Review (2022), the MIND district project is estimated to generate a substantial impact in terms of economic growth at the national level by resulting in an increase in GDP amounting to 877 mln euros and generating a total of 6,090 full time jobs;
- Invests in resilience and climate change: the district was designed to be entirely built with sustainable materials and fuelled by renewable energy. Moreover, the area is expected to become a zero-carbon district by 2025;
- Is replicable: Arexpo is currently applying the approach developed with Lendlease in other urban regeneration initiatives;
- Ensures large stakeholder engagement: MIND can be considered as an experimentation hub where many different entities are involved to develop new ideas, procedures and technologies through constant contamination and collaboration activities.

Moreover, from the social perspective, the project has implications in terms of fair and inclusive economic growth, community cohesion and well-being, and accessible education and research and spurs sustainable development goals by acting on the SDGs depicted in Figure 9.

Figure 9: **MIND social impact – UN SDGs**



Source: Authors personal elaborations.

6. Key take-aways

The MIND project, despite being inspired by existing global initiatives such as the London Olympic Park project, has evolved into a truly unique urban neighbourhood. Over the years, it has gained international recognition and is increasingly seen as a potential model for the development of future innovative districts. In this regard, many missions abroad have been undertaken, along with agreements with similar entities involved in the construction of international innovation parks, fostering information exchanges and the constant exploration of new practices and high-impact urban regeneration schemes.

The same Arexpo, initially established as local entity with limited scope, has expanded its operations up to covering the entire regional and national territory. The company is, in fact, exporting the MIND model to other areas, partially replicating the approach, and adapting it to different contexts.

Despite being in the early stages of development, some initial valuable insights can be drawn from the project in relation to urban regeneration initiatives:

1. **Public Leadership:** a crucial aspect of successful urban regeneration projects lies in recognizing and understanding the public interests held by local or national entities in a specific area. This assessment is vital to gauge the project's potential and formulate a well-suited design. Without a robust public interest, the development of the area is jeopardized. This approach aims to prevent the repetition of past mistakes where private entities may have contributed to undesirable urban initiatives. In essence, for urban regeneration projects to thrive, it is

- imperative for public institutions to take the lead. The initial step involves evaluating the level of interest that public administrations have in a particular territory. If this interest is lacking, private investments may be directed toward structures with limited public utility;
2. Competent Facilitation in a Shared Language: the establishment of an entity carrying out an intermediation role between the public and the private stakeholders is essential to the project success. In fact, the complexity of urban regeneration initiatives requires that parties communicate effectively and in a common language. Competent facilitation is crucial in managing discussions, especially when dealing with multiple parties, each with their interests, to identify a common objective;
 3. Balancing Public and Private Interests: the success of urban regeneration projects relies on finding a balance between public and private interests. Private entities should not be penalized but the initiative must be financially rewarding for all the involved parties.

References

- Arexpo. (n.d.). <https://www.arexpo.it/en/about-us/#:~:text=Our%20shareholders%20are%20the%20Ministry,of%20Rho%20with%20smaller%20shares>
- Arexpo. (2019). *“Programma Integrato di Intervento-Proposta definitiva. MIND-Progetto di rigenerazione per uno sviluppo urbano sostenibile.”*. Arexpo.
- Angelidou, M. (2014). Smart city policies: A spatial approach. *Cities*, 41. <https://doi.org/10.1016/j.cities.2014.06.007>
- (2023). *Assolombarda - Visita della Filiera life sciences presso l'IRCCS Ospedale Galeazzi - Sant'Ambrogio*. Assolombarda.it. <https://www.assolombarda.it/desk/life-sciences-desk/appuntamenti/visita-della-filiera-life-sciences-presso-lirccs-ospedale-galeazzi-santambrogio>
- Blasi, S., Ganzaroli, A., De Noni, I. (2022). Smartening sustainable development in cities: Strengthening the theoretical linkage between smart cities and SDGs. *Sustainable Cities And Society*, 80, 103793. <https://doi.org/10.1016/j.scs.2022.103793>
- Bull, R., & Azennoud, M. (2016). Smart citizens for smart cities: Participating in the future. *Proceedings of the Institution of Civil Engineers - Energy*, 169(3), 93–101. <https://doi.org/10.1680/jener.15.00030>
- Cavestri, L. (2023). Milano, entro l'anno la prima pietra per il campus statale al mind. *Il Sole 24 Ore*. Retrieved 2024, from <https://www.ilsole24ore.com/art/milano-entro-l-anno-prima-pietra-il-campus-statale-mind-AE86y5rD>.
- Consorzio Guidato da Lendlease Si Aggiudica Gara per masterplan e Sviluppo Parte dell'Area. (2017). <https://www.arexpo.it/consorzio-guidato-da-lendlease-si-aggiudica-gara-per-masterplan-e-sviluppo-parte-dellarea/>
- Dameri, R.P. (2013). Searching for smart city definition: A comprehensive proposal. *International Journal of Computers & Technology*, 11, 2544–2551.
- Dyvik, E. H. (2024). *Urbanization of the global population, by Regional Development 1950-2050*. Statista. <https://www.statista.com/statistics/671366/change-in-urbanization-of-countries-worldwide-by-regional-development/>
- European Commission. (n.d.) *Smart cities*. European Commission. [online] Available at: https://commission.europa.eu/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en
- Forecasting Infrastructure Investment Needs and gaps*. Global Infrastructure Outlook - A G20 INITIATIVE. (n.d.). <https://outlook.gihub.org/>
- Fox, O., & Stoett, P. (2016). Citizen participation in the UN Sustainable Development Goals Consultation Process: Toward Global Democratic Governance? *Global Governance: A Review of Multilateralism and International Organizations*, 22(4), 555–573. <https://doi.org/10.1163/19426720-02204007>
- Gervasoni, A., Lertora, M., Pascarelli, G. (2022). *PPP & Private capital for sustainable infrastructure and smart cities (1st ed.)*. Università Cattaneo Libri - Guerini Next.
- Global Outlook (2022). *Global Infrastructure Outlook - A G20 INITIATIVE*. Global Infrastructure Hub. [online] Available at: <https://outlook.gihub.org/>
- Graziano, L. (2023). *Happy birthday Fondazione Triulza! from expo to mind, ten years of Social Innovation - Fondazione Triulza*. Fondazione Triulza - Una rete di energie per la società civile.

<https://fondazionetriulza.org/buon-compleanno-fondazione-triulza-da-expo-a-mind-dieci-anni-di-innovazione-sociale/?lang=en>

Harvard Business Review Italia. (2022). (rep.). *Mind – Milano Innovation District Persone, Ambiente, Economia E Innovazione Per Il Paese*.

Joshi, S., Saxena, S., Godbole, T., & Shreya. (2016). Developing Smart cities: An Integrated Framework. *Procedia Computer Science*, 93, 902-909. <https://doi.org/10.1016/j.procs.2016.07.258>

Lendlease. (n.d.). <https://www.lendlease.com/au/>

Magri, V. (2020). *E' Attiva La concessione a lendlease per lo sviluppo di un'area di mind a Milano*. BeBeez. <https://bebeez.it/non-categorizzato/attiva-la-concessione-lendlease-lo-sviluppo-unarea-mind-milano/>

Moser, H., & Nealer, E. (2016). *Barriers to bankable infrastructure: Incentivizing private investment to fill the Global Infrastructure Gap*. Rowman & Littlefield.

Schwarz-Herion, O. (2022). The Role of Smart cities for the Realization of the Sustainable Development Goals.

Statista Research Department, & 15, S. (2021, September 15). *Development of the world population until 2050*. Statista. <https://www.statista.com/statistics/262875/development-of-the-world-population/>

The district. MIND. (2022, July 25). <https://www.mindmilano.it/en/the-district/>

The New Urban Agenda. The New Urban Agenda | Urban Agenda Platform. (n.d.). <https://www.urbanagendaplatform.org/nua>

The World Bank. United Nations. (2017). World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100, United Nations [online], United Nations. Available at: <https://www.un.org/en/desa/worldpopulation-projected-reach-98-billion-2050-and-112-billion-2100>

The World Bank. (2020). Urban Development At-A-Glance. The World Bank. [online] Available at: <https://www.worldbank.org/en/topic/urbandevelopment/overview#1>

United Nations Department of Economic and Social Affairs (2018). 68% of the world population projected to live in urban areas by 2050, says UN. UN DESA, United Nations [online]. Available at: <https://www.un.org/development/desa/en/news/population/2018-revision-of-worldurbanization-prospects.html>

Population Division of the Department of Economic and Social Affairs. (2022). *2022 Revision of World Population Prospects*. United Nations. Retrieved from: <https://population.un.org/wpp/>

MIND. *Università Statale di milano: Sarà Lendlease a realizzare il nuovo campus scientifico a mind*. MIND. (2022). <https://www.mindmilano.it/universita-statale-di-milano-sara-lendlease-a-realizzare-il-nuovo-campus-scientifico-a-mind/>

Visvizi, A., Perez del Hoyo, R. (2021). *Smart cities and the un SDGs*. Elsevier, San Diego

Woetzel, L. (2017). (rep.). *Bridging Infrastructure Gaps. Has The World Made Progress?* McKinsey & Company.