



Flanders
State of the Art

A complex digital network graphic in shades of blue and white. It features a central globe-like structure with numerous overlapping circles and lines. Various icons are scattered throughout, including a smartphone, a cloud, a house, a car, a person, a gear, and a location pin. The background is a dark blue with a city skyline at night visible at the bottom left.

SMART CITY

LIMA

FLANDERS INVESTMENT & TRADE MARKET SURVEY

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SMART CITY LIMA

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1. INTRODUCTION

We live in the convergence of two important phenomena in the history of humanity: the acceleration of global urbanization and the digital revolution. A United Nations (UN) study points out that more than half of the population on the planet lives in cities and by 2050, city dwellers will account for more than 70% of the world's population (over six billion)¹. Taking into account that all urban areas present challenges to be overcome, sustainable development will increasingly depend on properly managing urban growth, especially in low- and middle-income countries that will lead the way².

In this context, there is an increasingly important demand to transform “traditional cities” into smart cities, which represents an opportunity for governments and citizens in Latin America and the Caribbean (LAC). With the emergence of digital technology, the internet and mobile technologies, this transformation is becoming more viable each day³.

According to the Inter-American Development Bank (IDB), a smart city is one that places people at the center of development, incorporates information and communication technologies into urban management, and uses these elements as tools to stimulate the design of an effective government that includes collaborative planning and citizen participation. By promoting integrated and sustainable development, smart cities become more innovative, competitive, attractive, and resilient, thus improving lives⁴.

More and more cities in Latin America are developing projects to become smart cities and the same happens in Peru. While there are already important advances in the field of smart city technology implementation in Lima, the political and financial capital of Peru, there is also interest for smart city development projects in other cities of the country.

Some districts of Lima, for instance, have implemented virtual libraries or internet in parks and public spaces; the payment of taxes through applications or web pages has also been facilitated⁵.

In December 2022, the district of Miraflores launched a Smart City Project, which makes this district the first to have a modern Artificial Intelligence System for citizen security and urban mobility⁶. As part of the project the district has acquired a new system of cameras with artificial intelligence, which clearly and precisely detect the facial recognition of passers-by, allowing to detect their identity without the need of physical intervention. It should be mentioned that this project is based on an inter-institutional cooperation agreement signed between the Municipality of Miraflores and the Ministry of Interior. Thanks to this agreement, it will be possible to use the

¹ Information extracted from “The Road toward Smart Cities: Migrating from Traditional City Management to the Smart City” published by the Inter-American Development Bank (IDB), <https://publications.iadb.org/es/la-ruta-hacia-las-smart-cities-migrando-de-una-gestion-tradicional-la-ciudad-inteligente>

² Information extracted from the United Nations (UN), <https://www.un.org/development/desa/es/news/population/2018-world-urbanization-prospects.html>

³ Information extracted from “The Road toward Smart Cities: Migrating from Traditional City Management to the Smart City” published by the Inter-American Development Bank (IDB), <https://publications.iadb.org/es/la-ruta-hacia-las-smart-cities-migrando-de-una-gestion-tradicional-la-ciudad-inteligente>

⁴ Information extracted from “The Road toward Smart Cities: Migrating from Traditional City Management to the Smart City” published by the Inter-American Development Bank (IDB), <https://publications.iadb.org/es/la-ruta-hacia-las-smart-cities-migrando-de-una-gestion-tradicional-la-ciudad-inteligente>

⁵ Information extracted from Gestion, <https://gestion.pe/peru/smart-city-lima-que-requiere-la-capital-para-convertirse-en-una-ciudad-inteligente-y-digital-noticia/>

⁶ Information extracted from the website of the Peruvian Government, <https://www.gob.pe/institucion/munimiraflores-lima/noticias/683193-miraflores-es-la-primera-ciudad-inteligente-del-peru>



National Police of Peru's (PNP) database, which is interconnected with the Serenazgo (municipal police) Surveillance Center. So in real time, through cameras that read license plates of cars and motorcycles and through facial recognition, stolen vehicles can be pulled over and people wanted by justice can be taken into custody.

Another smart city project was announced in March 2023: the company Seven Star Internazionale (SSI) that wants to promote the northern part of the country and that want to turn the most relevant cities, such as Trujillo, Chiclayo, Talara and Piura, to become smart cities. According to Massimiliano Nicastro, general manager of SSI, the project involves innovative urban transport solutions, digital tourism, the use of drones to clean beaches and lagoons, smart environmental solutions ...⁷.

⁷ Information extracted from Forbes, <https://forbes.pe/forbes-life/2023-03-10/smart-city-zona-norte-de-peru/>



2. LIMA TOWARDS A SMART CITY

Lima is the capital of Peru and a megacity with more than 10 million inhabitants⁸. Just like many other megacities, it faces numerous challenges, like vehicular traffic management, electrification, water and sewerage, amongst others. Year after year, various problems are identified and solutions are prioritized for those that require greater immediacy⁹. Citizen insecurity is another challenge that must be overcome. According to the “Urban Report on Citizen Perception in Lima and Callao 2021” of the Lima Cómo Vamos Organization¹⁰, 72.8% of those surveyed consider citizen insecurity as one of the most important problems affecting the quality of life in the city, followed by public and garbage accumulation (34.3%) and access to healthcare (30.8%).

Despite the fact that citizen insecurity is addressed to through public policies, bills or municipal ordinances and that important advances have been made in the field of smart city technology implementation, there is a long way to go.

According to Mr. Peter Yamakawa, dean of ESAN Graduate School of Business¹¹, a smart city should generate well-being and so it is a priority for Lima to increase citizen security with the use of smart cameras, to improve health services with virtual care and to develop traffic management with intelligent traffic lights¹².

According to Mr. Álvaro Castro, Digital Champion Leader & Control System Line Manager of ABB¹³ in Peru, Lima needs to digitalize and should have much more integrated systems. A first big step is to get the majority of the capital’s citizens connected to the Internet. As a matter of fact only 52.9% of Lima households has access to the internet, according to the National Institute of Statistics and Informatics - INEI (2019)¹⁴. As to better integrated systems, he thinks of the following solution in the healthcare sector during emergencies: ambulances should have a pre-established route to reach the destination point via smart traffic lights, enabling to have green during the entire route so that the ambulance can travel smoothly and reach its destination as quickly as possible. In addition to that, Mr. Castro remarks that more services such as telemedicine, mass medical appointments through applications, digitized citizen security, virtual laboratories, etc., should be developed in the city.

Also in the sector of transportation there is room for improvement. For Mr. Castro, Lima should have an application that manages the information of the public transport services and indicates when the next bus of each line will arrive. It should also indicate when there is a traffic jam and give details on the location of each of the buses and trains.

⁸ Information extracted from the website of the Peruvian Government, <https://www.gob.pe/institucion/inei/noticias/689179-poblacion-de-lima-metropolitana-supera-los-10-millones-151-mil-habitantes>

⁹ Information extracted from America Retail, <https://www.america-retail.com/peru/viabilidad-de-smart-cities-en-lima/>

¹⁰ Information extracted from Urban Report on Citizen Perception in Lima and Callao 2021, <https://www.limacomovamos.org/wp-content/uploads/2021/12/Encuesta.CV2021.pdf>

¹¹ ESAN Graduate School of Business is a Peruvian academic institution

¹² Information extracted from Gestion, <https://gestion.pe/tecnologia/smart-city-es-posible-que-lima-se-convierta-en-una-ciudad-inteligente-noticia/>

¹³ ABB is a global leader in power and automation technologies

¹⁴ Information extracted from Gestion, <https://gestion.pe/peru/smart-city-lima-que-requiere-la-capital-para-convertirse-en-una-ciudad-inteligente-y-digital-noticia/>



To get a broader picture of Lima as a smart city, we refer to the “IESE’s Cities in Motion Index” below.

2.1 Lima according to IESE’s Cities in Motion Index

“IESE Cities in Motion” is a research platform launched jointly by the Center for Globalization and Strategy and IESE Business School’s Department of Strategy. The initiative connects a worldwide network of city experts and specialized private companies with local administrations all over the world, with the goal of developing valuable ideas and innovative tools that can generate smarter cities and promote change at the local level¹⁵.

The “IESE’s Cities in Motion Index” has become a world reference, as it ranks 183 cities in 92 countries according to how they score on nine key criteria:

- Human capital (developing, attracting and nurturing talent)
- Social cohesion (harmony among different social groups in a city)
- Economy (including current and estimated GDP)
- Governance (the quality of state interventions)
- Environment (pollution levels, water quality and other gauges of ecosystem vitality)
- Mobility and transportation (ease of movement and access to public services)
- Urban planning (including health infrastructure, sanitation services and housing policy)
- International profile (branding and strategic tourism outreach)
- Technology (smart uses of ICT technologies).

According to the “IESE’s Cities in Motion Index” for 2022, Lima ranks 143rd overall and 12th in the regional ranking for Latin America, in which 27 cities were evaluated.

Although Lima does not occupy a top position in the ranking, it shows a marked improvement with respect to its rank in previous editions of the index, especially in the dimension of economy (rank #89 in 2022 vs rank #143 in the previous edition). This progress reflects the work that has been done to make it a smart city in all aspects and to improve its overall position.

¹⁵ Information extracted from IESE’s Cities in Motion Index, <https://www.iese.edu/faculty-research/cities-in-motion/>



LIMA IN THE IESE'S CITIES IN MOTION INDEX

Dimensions	Ranking
Governance	153
Urban planning	158
Technology	166
Environment	153
International profile	129
Social cohesion	154
Mobility and transportation	173
Human capital	126
Economy	89

Table 1: extracted from IESE's Cities in Motion Index



LIMA'S KEY DIMENSIONS

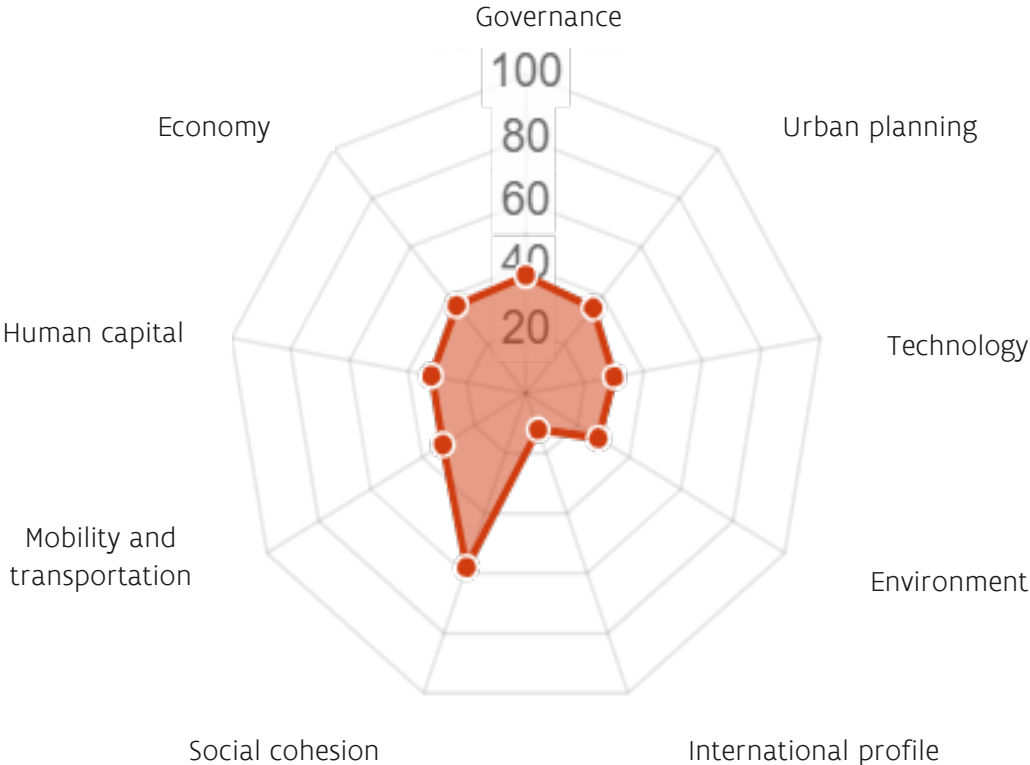


Image 1: extracted from IESE's Cities in Motion Index



3. METROPOLITAN LIMA DEVELOPMENT PLAN BY 2040

In September 2022, the “Plan de Desarrollo Lima Metropolitana al 2040” presented by the Municipality of Lima was approved. This plan, also known as **PLANMET 2040**, proposes the urban planning of the capital with a long-term geopolitical vision, as well as policies and strategic objectives to implement the infrastructure and conditions that are required to have a prosperous, orderly and safe city, in harmony with the environment¹⁶.

The aforementioned plan was prepared by the Metropolitan Planning Institute (IMP) of the Municipality of Lima under an agreement signed by the Municipality of Lima with the Ministry of Housing. It proposes a vision of Lima in a global, national, regional and metropolitan way, since it is a priority to take advantage of its geographical location (as a central part of South America, compared to the countries of the Asia Pacific basin) to integrate itself into the world economy from the nearby Port of Chancay, a private port project with the ambition to become the regional hub port of South America.

3.1 PLANMET: Geopolitical vision of metropolitan Lima

The PLANMET 2040 proposes a vision of Lima in the global, national, regional and metropolitan contexts¹⁷:

- Global context: Lima’s strategic and privileged geographic location in the central part of South America represents an opportunity to insert Lima into the new global economy in the Pacific Basin (economies of the Asia Pacific-Region)
- National context: the objective is to turn Lima into a development pole to form transversal mega-regions (mega regiones transversales) that connect the sea, the coast, the Andes and Amazon through logistic corridors, giving access to the Pacific and Atlantic Oceans (país bioceánico)
- Regional context: the goal is to work with regional associations of municipalities (mancomunidades regionales) to prioritize the execution of social, environmental, tourism and other kind of projects
- Metropolitan context: Lima takes the lead and assumes a coordinating role for projects with the 5 polycentric and sustainable territorial units, known as Lima Norte, Lima Este, Lima Centro, Lima Sur and Lima Balnearios del Sur.

The 3 key challenges are (see also image below¹⁸):

- Geopolitics: valorizing the strategic position of Lima and Peru in the new global economy in the Pacific Basin (economies of the Asia Pacific-Region)

¹⁶ Information extracted from the Municipality of Lima, <https://www.munlima.gob.pe/2022/09/14/lima-ya-cuenta-con-un-plan-de-desarrollo-metropolitano-al-2040/>

¹⁷ Information extracted from the Municipality of Lima, <https://www.munlima.gob.pe/2022/09/14/lima-ya-cuenta-con-un-plan-de-desarrollo-metropolitano-al-2040/>

¹⁸ Information extracted from PLANMET 2040, https://www.imp.gob.pe/es/recursos/Planificacion/RESUMEN%20EJECUTIVO_PLANMET%202040.pdf



- **Metrópolis Productiva** (productive metropolis): seeks the promotion of business agglomerations, productive, commercial and business clusters and the promotion of decentralized local economic development in the city
- **Metrópolis Participativa** (participatory metropolis): seeks to achieve efficient governance and to favor multilevel governance, promoting the public-private partnerships and citizen participation.

Priority projects

From the set of priority projects identified in PLANMET 2040, a group of 28 projects stand out that will make it possible to substantially improve infrastructure and public services in the coming years.

The following table lists the aforementioned 28 projects selected by the technical team of the PLANMET 2040. Among the project we can highlight the strategy “Consolidation of an interconnected city”, which contemplates a Smart City Master Plan in Metropolitan Lima.

PRIORITY PROJECTS²¹

Strategies	N	Priority projects
Promoting a compact, safe and resilient city	1	Rock and mud fall mitigation program in Lima East ²²
	2	Comprehensive improvement program for population neighborhoods in high-risk areas East Lima
	3	Densification of houses in areas adjacent to the hillsides of East, North and South Lima
	4	Green axes on slopes in North, East and South Lima
Consolidation of an interconnected city	5	Creation of Metro Line 3 + Feeders L3 ²³
	6	Construction of the Northern Peripheral Ring Road
	7	Via The Entrepreneurs
	8	Smart City Master Plan in Metropolitan Lima
Promotion of a deconcentrated and polycentric city	9	North (Lima Huaral) and South (Pampas de San BartoloMala) Territorial Plans
	10	Intermodal Passenger and Goods Transfer Area Ancón - North Lima
	11	North Metropolitan Bus Terminal, Comas, North Lima
	12	Master Plan for new water sources for Metropolitan Lima
	13	Intermodal Passenger and Goods Transfer Area San Bartolo - Balnearios del Sur

²¹ Information extracted from PLANMET 2040.

https://www.imp.gob.pe/es/recursos/Planificacion/RESUMEN%20EJECUTIVO_PLANMET%202040.pdf

²² Integrates the projects: Expansion and improvement of the mudflow protection service in East Lima, Quebrada Quirio, Pedregal, La Libertad, Carosio, Corrales and creation of infrastructure to control rock falls in North Lima district of Independencia, Lima East districts of San Juan de Lurigancho, Lurigancho, Chosica, Chaclacayo, Lima South districts of San Juan de Miraflores and Villa María del Triunfo.

²³ Integrates the projects: Creation of Lima Metro Line 3 and Creation – Alimentadoras L3



	14	Third Level Hospital III-1 in San Juan de Lurigancho, East Lima
Building an efficient governance	15	Institutional Strengthening of the IMP for the management of metropolitan development and TERRITORIAL UNITS
	16	Institutional information processing systems through the development of computer platforms at the metropolitan scale and AIM
Incorporation of new roads	17	Ancón – Carabayllo Road Interconnection
	18	Road Interconnection Av. Pastor Sevilla – Panamericana Sur
	19	La Molina Viaduct – Groove
	20	Cieneguilla – Pachacamac – Huarochirí (Las Tinajas) Interconnection
	21	Interconnection Lurigancho – San Juan de Lurigancho
	22	Cieneguilla – Huaycán Interconnection
Projects of the intermodal transportation system: metro, metropolitan lines, complementary corridors cable cars and gondola lifts (ordinance no. 2343-2021-MML)	23	New Central Highway
	24	Cable car Av. El Sol – Playa Venecia
	25	Expansion of the Independencia-Carabayllo Metropolitan Route
	26	Cable car estación Naranjal Independencia a Paradero San Carlos-San Juan de Lurigancho
	27	Cable car Cerro San Cristóbal
	28	Callao-Lima Chosica Railway Recovery and cable car Cerro El Agustino

Table 2: Information extracted from PLANMET 2040

In September 2022, representatives of the Municipality of Lima and the Korea Research Institute for Human Settlements (KRIHS) presented the diagnosis and initial approach of the Smart City Master Plan, which is part of the PLANMET 2040²⁴. This initiative, which has the support of the Korean Ministry of Economy and Finance and the Inter-American Development Bank, has the objective of establishing long-term guidelines - mainly in matters of citizen security, transportation, environment and tourism - so that Lima becomes the capital of smart cities in Latin America and the Caribbean.

The architect Miguel Romero Sotelo, mayor of Lima until December 2022, highlighted the importance of planning work with the technical support of international specialists. He also added that artificial intelligence has an important value, reason why it is already contemplated in the PLANMET 2040, and, that they want the smart city model to be implemented in the Historic Center, which is the heart of Lima, and also in the periphery, in order to provide massive and quality accessibility.

²⁴ Information extracted from the Municipality of Lima, <https://www.munlima.gob.pe/2022/09/20/peru-y-corea-plantan-un-plan-maestro-de-ciudad-inteligente-para-lima-metropolitana/>



4. RELATED ASSOCIATIONS

- **Government and Digital Transformation Laboratory**

The “Laboratorio de Gobierno y Transformación Digital” aims to co-create, produce, innovate, prototype and design digital platforms, technological solutions and digital services with public entities, academia, civil society and the private sector, directly involving citizens. Through this mechanism and the deployment of government projects on digital transformation, the Digital Government Secretariat²⁵ will promote the use of emerging technologies, artificial intelligence, blockchain, big data, Internet of Things, 3D printing, robotics, data science, smart cities, machine learning or others, while guaranteeing the ethical use of data and privacy in the digital environment.

In which way can it be interesting to contact this organization? Through this laboratory, public administrations (mainly regional and local governments) implement projects on digital government, digital innovation, open innovation, social innovation and digital transformation; can be interesting to promote the technologies that Flemish companies offer in the smart cities domain.

Meer info:

- <https://busquedas.elperuano.pe/normaslegales/ley-que-fortalece-el-laboratorio-de-gobierno-y-transformacio-ley-n-31449-2058360-1/>
- <https://www.gob.pe/laboratoriodigital>
- <https://elperuano.pe/noticia/85373-gestion-publica-gobierno-crea-el-laboratorio-de-gobierno-y-transformacion-digital-del-estado>

- **Specialized Committee for Smart Cities of the College of Engineers of Peru-Lima**

The “Smart Cities Specialized Committee”, which is part of the Lima College of Engineers (not of the Municipality of Lima) organizes the event “Smart City Foro Lima” (see 5. Related events).

Meer info:

- <https://www.electronica.org.pe/>
- <https://www.electronica.org.pe/2022/07/27/evento-internacional-smart-cities-foro-lima-23-y-24-de-agosto/>

²⁵ The Secretariat of Government and Digital Transformation is the governing body of the National System of Digital Transformation, where it articulates the public and private sectors, organized civil society, academia and citizens in matters of digital government, trust digital and digital transformation of the country



5. RELATED EVENTS

- **Smart City Foro Lima 2022** - https://www.forosmartcity.pe/es_PE/

This event, organized by the Smart Cities Specialized Committee of the CD Lima College of Engineers, is a hybrid space to share international experiences on smart cities. The first edition took place in August 2022.

Artikel over het forum: <https://www.electronica.org.pe/2022/08/24/con-exito-se-inauguro-el-foro-internacional-smart-city-foro-lima-gracias-a-exposiciones-de-especialistas-locales-e-internacionales/>

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The Inter-American Development Bank (IDB)

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- <https://www.gob.pe/institucion/rree/informes-publicaciones/3272178-guia-de-negocios-e-inversion-en-el-peru-2022>

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