IMT SCUOLA ALTI STUDI LUCCA

STRATEGIC PLAN 2025-2030

Approved by the Board of Governors on October 22, 2025, having acquired the opinion of the Academic Senate

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The year 2025 marks the 20th anniversary of the founding of the IMT School for Advanced Studies Lucca: an important opportunity to carefully reflect on the role of the School and its positioning within the research and higher education ecosystem in Italy and internationally.

This reflection led to drafting of the IMT School's first Strategic Plan, a carefully developed planning document that outlines the School's strategy from now until 2030 and guides its operations and future decisions (which will also be reflected in more detail in the Three-year Planning Documents that will be updated on a yearly basis).

The Plan is rooted in the very nature of the IMT School as a university of excellence which, through its research, teaching and third mission activities characterised by an interdisciplinary and strongly international scope, promotes the use of innovative solutions, both nationally and in the Lucca area where the School is based and operates.

The 2025-2030 Strategic Plan therefore defines the IMT School's commitment to continue to contribute in a significant way to the creation of public value, with particular attention to generating tangible and measurable impacts on local, national and international society, economy and culture, as well as in the academic, industrial and institutional spheres.

In a context of strong geopolitical instability and global challenges, this document aims to guide the IMT School on a path of sustainable development characterised – in line with the School's mission – by particularly challenging choices in terms of teaching and research.

The IMT School has long pursued policies of inclusion and overcoming any barriers or walls separating cultures, societies and disciplines, with the strong awareness that – as Italo Calvino eloquently wrote – "If you build a wall, think of what you leave outside it!". Taking this warning to heart, the IMT School intends to continue its teaching, research and third mission activities over the next five years, with a strong focus on internationalisation, innovation and interdisciplinarity.

THE RECTOR
prof. Lorenzo Casini

EXECUTIVE SUMMARY

The Strategic Plan outlines the development path of the IMT School of Advanced Studies Lucca (hereinafter also referred to as the "IMT School" or the "School") for the 2025-2030 five-year period. The Plan is based on the School's institutional mission, ensuring continuity and enhancing its defining features, such as close integration between teaching and research, innovation, interdisciplinarity, international scope and the Campus model. The development prospects are based on the concept of the IMT School as an academic institution for doctoral-level teaching of international excellence and as a think tank, in other words a research centre which, through its research and analysis activities, supports and guides institutions and businesses in identifying solutions to complex problems.

The planning process that led to the drafting of the IMT School's first Strategic Plan began with the principles of quality assurance and continuous improvement. Moreover, the process was based on a careful contextual analysis, listening to the needs of the School community, as well as a productive dialogue with selected external stakeholders, with a strong focus on a strategic integration with the Lucca area.

The five-year process of consolidating the School's role is structured along three lines of development: i. innovation, openness and inclusiveness; ii. sustainability; and iii. interdisciplinarity. These, in turn, are articulated along three strategic areas: a. research and teaching; b. infrastructure; and c. human capital. This approach – the result of a deep reflection on the School's identity twenty years after its establishment and on the direction it should take over the next five years – is characterised by a transversal approach, combined with the School's flexibility and ability to promptly respond to the needs and scientific, social, cultural, economic and technological challenges of the academic, industrial and institutional sectors.

As regards to research and teaching, in addition to developing the four Multidisciplinary Scientific Areas, the School has identified a set of transversal themes of strategic importance and of an innovative nature: sustainability; policies and impact on institutions, markets and technologies; human and artificial intelligence and future technologies; security; cultural heritage and cultural and creative enterprises.

With regard to the infrastructure dimension, the enhancement activity – a key requirement for further strengthening the Campus system as a strategic resource and framework for institutional action – involves building development, aimed at increasing the overall availability of space for the School, as well as strengthening the laboratory and IT infrastructure. Building development will, in turn, be accompanied by particular attention to the redevelopment of Lucca's historic centre and the enhancement of properties of historical significance.

Finally, as far as human capital is concerned, starting from an awareness of the importance of the IMT Community and the need to improve organisational well-being and enhance the potential of each of its members, the planned strategic actions include the implementation of welfare policies, the reception of Scholars at risk, the strengthening of the international dimension, the improvement of services offered, as well as specific actions aimed at each of the components of the School community.

1 INTRODUCTION

The 2025-2030 Strategic Plan is the policy document outlining the path that the IMT School of Advanced Studies Lucca (hereinafter also referred to as the "IMT School" or the "School") intends to pursue over the next five years. Within a coherent and unified framework, the Plan guides strategic decisions and short-term actions along a shared path towards the future. Specifically, the Plan is the cornerstone for the development of the School and of the framework within which the Governance and Administration objectives defined as part the drafting of the Three-year Planning Document must be pursued. This, with a view to integration with the budget, also in order to ensure the economic and financial sustainability of the School's teaching, research and third mission initiatives.

The choice of a medium-term perspective allows us to define a broader plan, aimed at consolidating the role of the IMT School through actions to be implemented along **three lines of development**: i. innovation, openness and inclusiveness, ii. sustainability and iii. interdisciplinarity. These, in turn, **are transversal to three strategic spheres**: a. research and teaching, b. infrastructure and c. human capital.

The Strategic Plan enhances the School's **interdisciplinary identity**, promoting actions that foster collaboration between Multidisciplinary Scientific Areas, with a focus on finding innovative solutions to strategically important problems based on cutting-edge methodologies drawn from various disciplines, as well as equally innovative and interdisciplinary academic programmes.

The Strategic Plan reaffirms the IMT School's **openness** to the outside world. The latter is the result of dialogue and collaboration with key stakeholders in the Lucca area, as well as of its long-standing cooperation with national and European organisations, institutions and companies, and with international players. The end goal is to define **a unified strategy based on a shared vision of development**, promoting the convergence of research, advanced education, institutions and companies in the productive and social context.

In this regard, the Strategic Plan is geared toward **innovation** and responds to the challenges of **sustainability**, outlining a five-year path focused on consolidating the IMT School's role as a driving force for sustainable development and innovation projects – including technological innovation – aimed at institutions and businesses at the local, national and international levels. In addition to the research effort, the infrastructure development project will be central to the local context, accompanied by the creation of value for the local community, including through **redevelopment initiatives** and the enhancement of cultural and social services offered to citizens.

2 THE INSPIRING PRINCIPLES

2.1 MISSION

As also reported by the Treccani Encyclopedia, the IMT School is a state institution founded in **Lucca** in 2025 and is one of the seven Schools of Advanced Studies in Italy, modelled on the Napoleonic *École normale supérieure* in Paris. Part of the Italian university system and funded by the State, the IMT School primarily awards PhD degrees, as well as *lauree magistrali* (equivalent to Master's degrees) and first- and second-level postgraduate master's qualifications, upon completion of a multi-year programme that includes mandatory courses, exams and the completion of Ph.D. research. Organised as a Campus, supported by the Fondazione Cassa di Risparmio di Lucca and spread across various spaces and buildings within Lucca's historic city walls (including the San Francesco complex, the San Ponziano complex, the residence on Via Brunero Paoli and Palazzo Boccella), the School is founded on a close integration of teaching and research. Moreover, **innovation** and **interdisciplinarity** characterise its four Multidisciplinary Scientific Areas: Economics, Management and Statistics; Neuroscience, Psychology and Philosophy; Systems Sciences; and Cultural Systems. The curriculum ranges from studies on **artificial intelligence** and **cyber-physical systems** to those on **human systems**, the **mind**, **sustainability** and **cultural heritage**.

The institutional mission of the IMT School for Advanced Studies Lucca is defined in the Statute in Article 1, paragraphs 3 and 4:

3. *The IMT School contributes to the advancement of the frontier of research and organises advanced academic courses on themes such as technological and institutional innovation, while achieving the full integration between research and teaching.*
4. *The IMT School functions as an international research university active in areas of elevated applicative value and as a graduate school and integrated Campus dedicated to merit-based recruitment and the formation of professional élites for institutions, businesses and the surrounding territory.*

Article 3 on the other hand sets out, in compliance with equal opportunities and against any form of discrimination, the general characterising principles:

- openness and international competitiveness in recruiting;
- residentiality, meritocracy, evaluation;
- interaction with the local territory and enterprise networks;
- the promotion of full and open access to the scientific literature produced by the IMT School;
- efficiency and transparency of the organisational model;
- responsibility, honesty, integrity and reciprocal respect.

2.2 PROSPECTS

The development prospects are rooted in the IMT School's institutional mission, ensuring the continuity and enhancement of its distinctive features. The Strategic Plan, to be implemented by 2030, is based on the concept of the IMT School as an academic institution for doctoral-level teaching of international excellence and as a think tank, in other words a research centre which, through its research and analysis activities, supports and guides institutions and businesses in identifying solutions to complex problems.

The School's vision is to:

- promote – through **dialogue** and **interdisciplinary collaboration – innovative research** to support society and change in the academic, institutional and industrial spheres;
- create an **inclusive environment** capable of welcoming and enhancing human capital, promoting the principles of **equal opportunities and organisational well-being**;
- have a **large, open and sustainable Campus**, which offers a lively and motivating environment not only for the IMT Community, but also serving as a point of reference for the entire city of Lucca and its inhabitants, for the global academic community and for the community of professionals and operators in the institutional field.

The contribution to the creation of public value will be expressed through the development, transmission and enhancement of knowledge and skills, with a strong focus on doctoral-level teaching, innovation, as well as dissemination and awareness-raising projects.

3 THE CURRENT SITUATION AND THE REFERENCE CONTEXT

3.1 THE FIRST 20 YEARS OF THE IMT SCHOOL

The 2025-2030 Strategic Plan – the first Strategic Plan developed by the IMT School – is presented on the occasion of the 20th anniversary of its foundation.

Established by a Ministerial Decree of the Ministry of Education, University and Research (MIUR) on November 18, 2005, the School immediately distinguished itself within the national university sphere as an academic institution of international scope, yet closely integrated into the city of Lucca and the surrounding area, as well as a research centre with a clearly inter-, multi- and trans-disciplinary vocation.

A distinctive element that has identified the School over the years is its organisation according to the **Residential Campus Model**, conceived with the aim of creating an environment conducive to dialogue and collaboration among all the various components of the School community (IMT Community) and to attracting human capital of excellence and of an international stature. The Campus, which has developed over time mainly thanks to the support of the Fondazione Cassa di Risparmio di Lucca, has significantly contributed to the redevelopment and enhancement of Lucca's historic centre.

The IMT School, by virtue of its relatively young age and **strong inter-, multi- and trans-disciplinary vocation**, is a dynamic academic institution, open to development prospects, change and the diverse communities of scholars, professionals and operators affiliated with international-level institutions. The decision to abandon – right from its early days – the traditional division into distinct disciplinary sectors in favour of a **transversal approach**, has enabled the IMT School to explore specific research topics in their full complexity from different methodological points of view, without adopting the disciplinary approach commonly associated with the university world. The choice of a decisive openness at an international level has been equally distinctive for the IMT School, leading both to the construction of a scientific and administrative infrastructure to support initiatives specifically aimed at promoting international exchange (for the benefit of the entire academic community of the School, with particular attention to its students), as well as to the adoption of English as the teaching/learning and communication language. The innovative internal structure based on Multidisciplinary Scientific Areas and Research Units (Table 1) guarantees and promotes the collaboration and interpenetration of knowledge, even in traditionally distant areas, which collaborate as needed in relation to the research topic or application problem to be addressed. The small size and single-level organisation, without decentralised structures, constitute a further added value, fostering interpersonal exchange and the flourishing of collaborative research. This research-driven approach therefore represents a highly distinctive feature of the School, making it a unique hotbed of experimentation nationally and rarely seen internationally. This, despite the recruitment of teaching and research staff and participation in national evaluation exercises, still strongly anchored to individual disciplines, being more challenging within the framework of this model.

Over the course of these twenty years, the IMT School has seen a balanced growth and

Multidisciplinary Scientific Areas	Research Unit
Economics, Management and Statistics	AXES - *Laboratory for the Analysis of compleX Economic Systems*
Neuroscience, Psychology and Philosophy	MOMILAB - *Molecular Mind Laboratory* PHIBOR - *Philosophy on the Border of Civilizations and Intellectual Endeavours*
Systems Sciences	DYSCO - *Dynamical Systems, Control, and Optimisation* MUSAM - *Multi-scale Analysis of Materials* NETWORKS - *Complex Systems in Nature and Society* SYSMA - *System Modelling and Analysis*
Cultural Systems	LYNX - *Centre for the interdisciplinary Analysis of Images*

Table 1 Multidisciplinary Scientific Areas and Research Units into which the IMT School is structured.

development of its human capital (Figure 1) and activities, recently also accelerated by the significant resources of the National Recovery and Resilience Plan (PNRR in Italian). In addition to strengthening its faculty, the School has attracted and trained top-level students and researchers, who now hold leading positions in various universities, organisations, institutions and businesses, both nationally and internationally, achieving extraordinary research results in all the relevant disciplines.

The recent accelerated growth has also affected – albeit to a lesser extent – the School's technical and administrative staff which, however, is characterised by a dynamism and quality that are difficult to find in other university contexts.

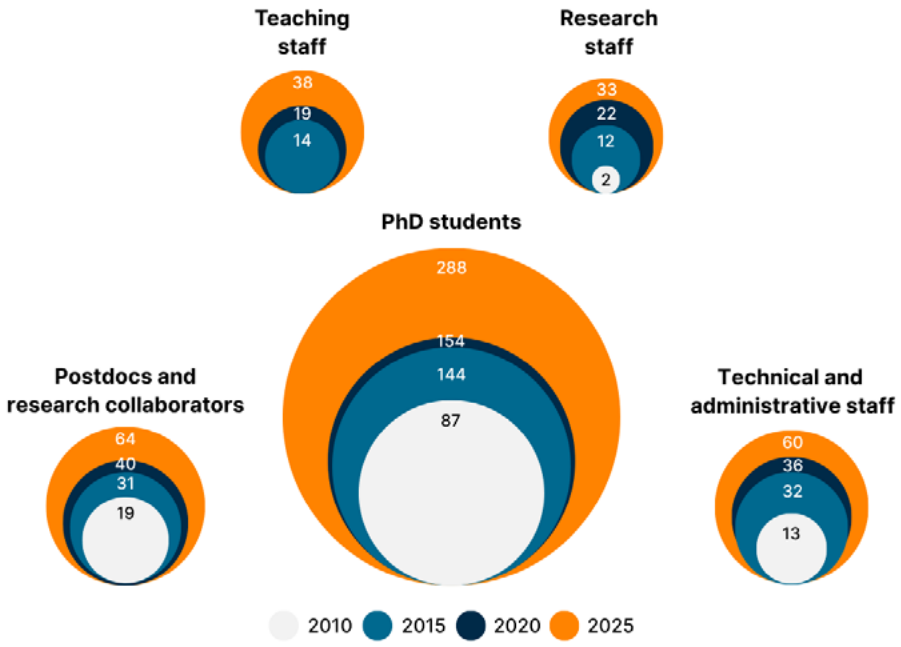


Figure 1 Growth of the IMT School in terms of human capital. For each category and reference year, the number of units as of December 31, 2010, 2015 and 2020, and as of June 30, 2025, are reported.

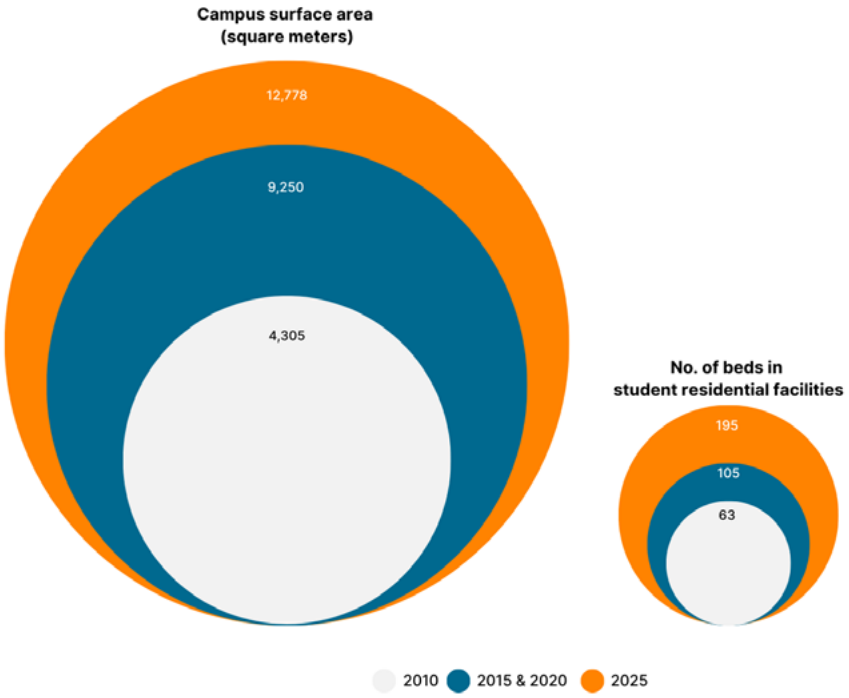


Figure 2 Campus growth. For each category and reference year, the number of units as of December 31, 2010, 2015 and 2020, and as of June 30, 2025, are reported.

The 20th anniversary of the IMT School's foundation served as a stimulus to carry out a deep reflection on its growth and development, from its inception to the present day, its distinctive characteristics, its achievements and those to be achieved. This context also gave rise to the project entitled "The words of research: 20 years of the IMT School for Advanced Studies Lucca" ("*Le parole della ricerca: venti anni della Scuola IMT Alti Studi Lucca*" in Italian), developed in collaboration with Treccani and soon to be published on the portal of this prestigious institution.

The project led to the selection of ten key words which, together and individually, represent the IMT School's identity and summarise twenty years of history, while also indicating the direction of development for the years ahead:

- IMT School for Advanced Studies Lucca;
- PhD;
- interdisciplinarity;
- innovation;
- mind;
- artificial intelligence;
- cyber-physical systems;
- sustainability;
- cultural heritage;
- Lucca.

3.2 CONTEXT ANALYSIS

Strategic planning cannot ignore the analysis of the relevant socio-economic context. Some key considerations that provide the framework from which the School's development path up to 2030 was defined are therefore presented below.

3.2.1. The national and international context

The current global context is fragile and uncertain, marked by strong geopolitical tensions and conflicts that negatively affect multiple spheres, from the economy to international collaboration, with a corresponding impact on research, teaching and development. Scientific research and international academic mobility are consequently facing growing obstacles due to more and more restrictive national policies on immigration and national security. Factors that have a general undermining effect on scientific progress, slowing the exchange of knowledge and limiting opportunities for collaboration in research and teaching. In this context, it is therefore crucial for universities to defend freedom of thought and research, promote the centrality of knowledge as a foundational element for the growth and development of societies, and implement reception initiatives.

Some of today's key global challenges necessitating the development of scientific knowledge are sustainability, a concept that permeates the environmental, economic, individual, social, cultural and demographic dimensions; the increasingly important role of technological innovation, particularly the use of artificial intelligence and big data; as well as the importance of studying individual, institutional and social behaviours, cultures and values.

In the context defined by the 2030 Agenda for Sustainable Development (hereinafter also referred to as the UN Agenda 2030) and the National Strategy for Sustainable Development, universities play a strategic role both in educating aware citizens and professionals capable of contributing to the achievement of the objectives of the UN Agenda 2030, as well as in promoting innovation and economic, environmental and social development thanks to research activities and, in particular, the necessary interdisciplinary approach in addressing the challenges outlined by the same Agenda. Academic institutions also contribute to this context through their interactions with the local population and the region, disseminating knowledge and promoting the principles of environmental responsibility and social equity.

Since the 1990s, the European Union's action has been accompanied by attention to the quality of regulation adopted, also given its strong impact on the development of member countries. While the initial focus was on drafting regulations, which is essential for the understanding and implementation of the same, more recently the European Commission has identified regulatory simplification, the reduction of administrative burden and impact analysis as the key elements of better regulation. With reference to this last aspect, although the European Commission has defined guidelines and tools to guide and inform the policy-making process (Better regulation: guidelines and toolbox), less than a third of the members of the Organisation for Economic Co-operation and Development (OECD) systematically use ex post evaluation to verify the effectiveness of the regulation implemented (OECD Regulatory Policy Outlook 2025).

In this context, the evaluation of public policies in Italy remains an area with much room for development. This, largely because the legislation on the subject appears fragmented, the ex post evaluation of the impact of the regulation is limited, the evaluation process is not always transparent and evaluation

results are often not taken into account in the definition of new policies (LUISS Policy Observatory Policy Paper no. 1/2025). A different, more critical and thoughtful approach is therefore needed, one that aligns political decision-making with the measurement and evaluation of results achieved: in other words, an evidence-based approach. This approach must aim to develop methodologies for medium- and long-term socio-economic-cultural impact analyses, which can ultimately serve as a guide to the policy development phase itself.

The report on "The Future of European Competitiveness", drawn up by Mario Draghi on behalf of the European Commission in 2024 (hereinafter also referred to as the Draghi Report), highlights how artificial intelligence (AI) constitutes a decisive factor for the economic, industrial and technological revival of the European Union, given its enormous transformative potential in terms of increasing productivity, improving the quality of public services and optimising the use of resources. With the goal to strengthen the European Union's competitiveness, the Draghi Report outlines an integrated approach to promoting AI adoption, combining infrastructure investments, the development of sector-specific models and innovation-friendly regulation.

The document also highlights the crucial importance of adopting a skills-based approach to adequately prepare students for a rapidly changing economy and job market. In a highly uncertain technological landscape, the importance of directly involving social partners and businesses in designing academic programmes to generate concrete job opportunities, as well as lifelong learning and refresher courses aimed at providing new skills to those already in the workforce to support technological change, are highlighted.

To make the European Union competitive again, the report entitled "Much more than a market", presented by Enrico Letta to the European Council in 2024 (hereinafter also referred to as the Letta Report), highlights the need to fully exploit the potential in research and development, stimulate innovation and encourage the creation of a solid technological infrastructure. In particular, the Letta Report proposes the integration and implementation of the so-called fifth freedom in the single market: promoting the dissemination of knowledge, data and skills to address knowledge fragmentation and create a competitive environment.

The 2025 ISTAT Report confirms the key role of technology, innovation and digitalisation in increasing labour productivity levels, including at a national level. For these factors to significantly impact the country's economic growth, the availability of adequately trained and skilled human capital is essential. However, a comparison between the Italian situation and that characterising the major European Union economies (France, Germany, Spain) reveals a deficit in the use of AI in production processes, which requires qualified human capital to fill.

The analysis of the national university system paints a complex and multifaceted picture, marked by the depletion of resources made available under the Italian National Recovery and Resilience Plan (PNRR) and the reduction in public funding, with consequent impacts on the financial sustainability of university operations. This is in stark contrast to the framework defined in the "European Strategy for Universities" presented by the European Commission in 2022, according to which it is crucial for Europe to adequately support the higher education sector so that it contributes to the implementation of the European Union's political agenda. With adequate funding – thanks to their privileged position as a link between teaching, research and innovation – universities can respond to the challenges faced by today's society, adapting to the rapidly evolving skills

required by the labour market and collaborating on the green and digital transition. To further complicate the picture, it should be remembered that career prospects for graduates have recently worsened. Confirming the trend seen globally, the 2025 ISTAT Report – in fact – highlights that the Italian labour market is absorbing graduates at a slower pace and with greater difficulty, showing employment rates more than 5 percentage points lower than the European Union average, together with the large number of graduates performing jobs below their qualifications. Therefore, enrolment in doctoral-level academic programmes that meet the needs of specific sectoral skills are a potential priority route to accessing qualified professions and higher incomes.

The national demographic picture for 2024 continues to show one of the lowest rates of graduates in Europe. With approximately 31.6% of young people between the ages of 25 and 34 holding a university degree (2025 ISTAT Report), Italy occupies the second-last place in Europe (2025 Almalaurea Report) and, despite a 33% growth recorded in the number of graduates over the last ten years, a significant gap is confirmed compared to both the European average and the European target of 45% of graduates in this age group by 2030.

Overall, therefore, in a context characterised by instability and change, it is important that the IMT School remains steadfast in its pioneering role and ready to support – with its research and academic programmes – the needs of diverse communities through an offer of innovative solutions.

3.2.2. The local context

The city and province of Lucca are particularly attractive from every perspective, both when it comes to their favourable location, as well as their rich cultural and historical heritage and industrial fabric. The local economy is characterised by its openness to the international context, the presence of numerous specialised manufacturing districts – including papermaking and shipbuilding – and tourism.

The picture that emerges from the "2025 Annual Report on the Economy of the Provinces of Lucca, Massa-Carrara and Pisa" depicts a business community sensitive to the issues of ecological transition and digital innovation, committed to strengthening itself and willing to invest in sustainability, skills and technological innovation. Despite the decline in production – confirmed at the national and regional levels – in 2024 Lucca's manufacturing industry in fact continued to invest in digital innovation and to prioritise sustainability. The local context is also characterised by increasing challenges when it comes to recruitment. During the course of 2024, in fact, approximately half of the hiring planned by companies encountered difficulties in identifying the desired professional profiles. Furthermore, another critical aspect is that of energy consumption and the increase in costs for companies.

In this context, the School can play a crucial role, supporting local development through research and innovative solutions, as well as through the academic programmes offered. The agreement with Confindustria Toscana Nord is instrumental in this regard, as is the financing or co-financing of doctoral scholarships.

3.2.3. Risk factors

In defining the development path of the IMT School, the following risk factors were identified:

- **stable public funding inadequate to ensure sustainable growth.** Despite the excellent performance, also confirmed by the results of the 2015-2019 research quality assessment (VQR in Italian) exercise and by the recognition as a Department of Excellence for the 2023-2027 five-year period, the base Ordinary Financing Fund (OFF) share is the lowest among the Schools of Advanced Studies in Italy. The resulting limited capacity to hire structured professional figures significantly undermines the IMT School's growth potential, preventing it from sustaining a volume of activity over time that is comparable to that of other Schools of Advanced Studies;
- **the lack of a generalist university** in the same city with which to collaborate for greater interaction with students and potential PhD students. To address this impasse, in January 2025, the IMT School signed a five-year framework agreement with the University of Florence. The agreement aims to promote collaboration in organising the academic offering, teaching activities and developing research projects of mutual interest. This agreement complements the collaboration with the University of Pisa, in harmony with the other two neighbouring Schools of Advanced Studies, namely the Scuola Normale Superiore and the Scuola Superiore Sant'Anna, as well as with other prestigious universities such as the University of Padua. Another measure implemented to mitigate this critical aspect is the Honours programme, launched on an experimental basis in 2025 at a national and international level and aimed at bringing young talents closer to the IMT School during their degree course;

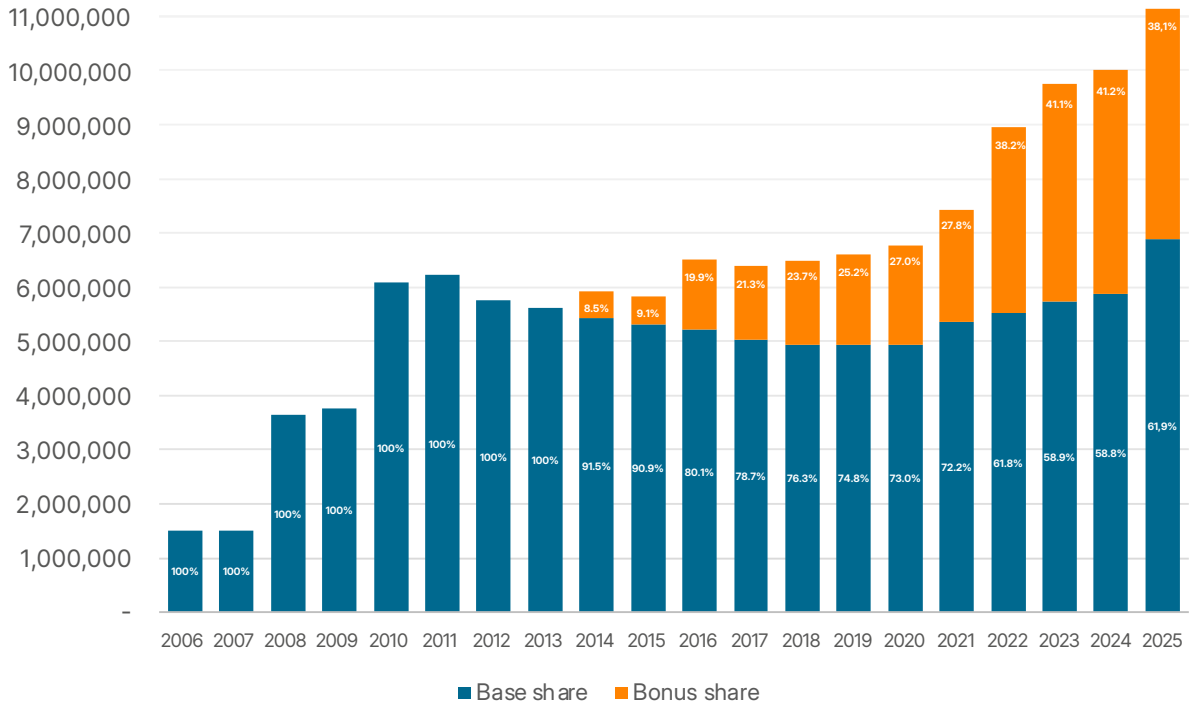


Figure 3 Trend of the base share and the bonus share of the OFF assigned to the IMT School from 2006 to 2025 (additional shares are not considered).

- **the limited availability of spaces.** Given the recent growth in staff, student population and academic activities, the buildings currently available to the IMT School are insufficient to support its institutional work. A building expansion project is therefore crucial to adequately supporting the School's development prospects and enhancing its services. For further details, please see section 5.2;

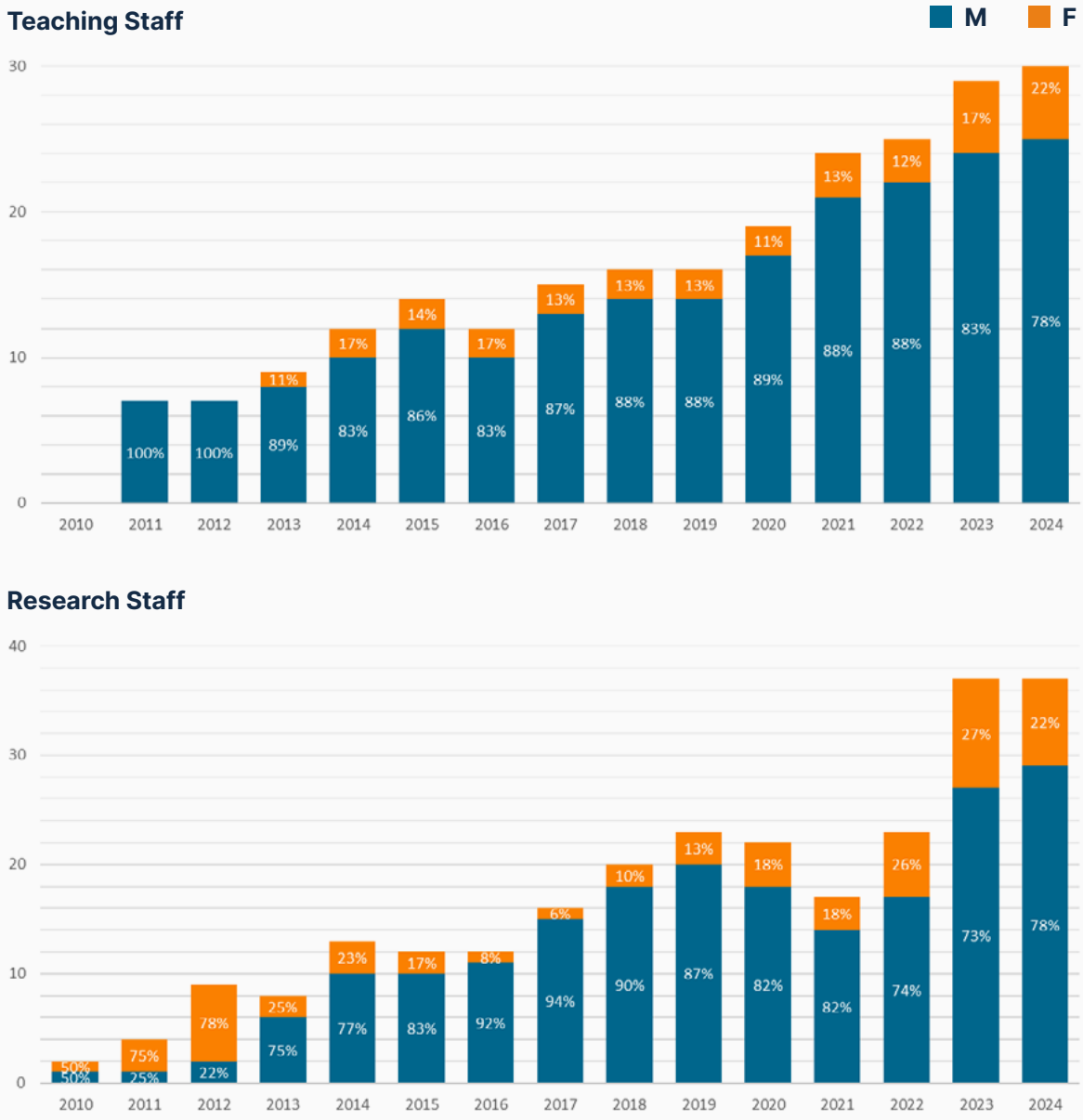
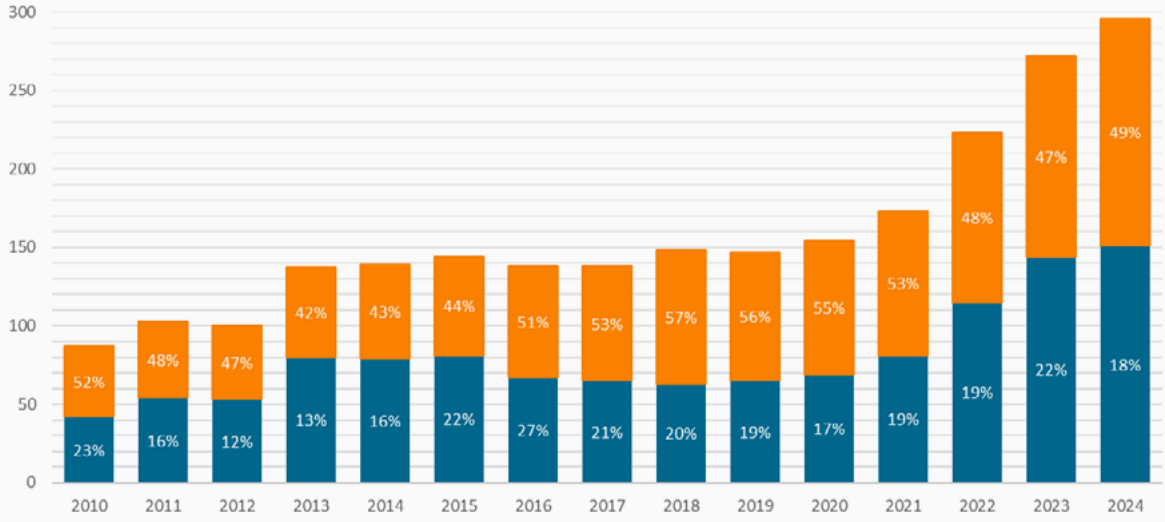


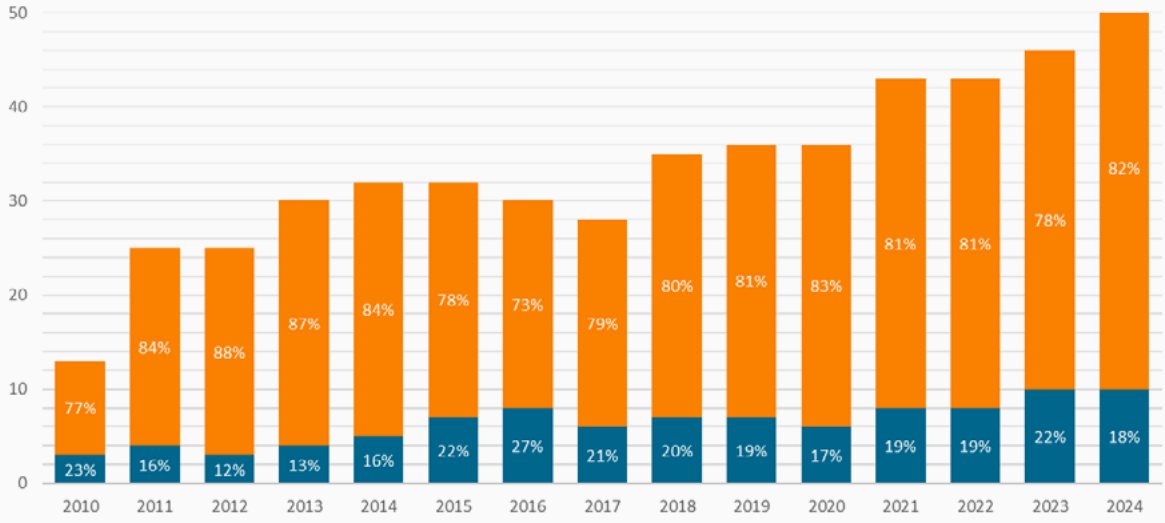
Figure 4 Gender distribution (data as of December 31 of each year).

- **The gender-gap.** While there is a substantial gender balance within the student community, in academic roles – as unfortunately also occurs in many other universities – there is a clear imbalance in distribution in favour of the male gender, which covers approximately 80% of tenure-track positions (figure 4).

Phd students



Technical and administrative staff



4 THE STRATEGIC PLANNING PROCESS

The process that led to the adoption of this document can be divided into the following phases:

1. context analysis;
2. dialogue with internal and external stakeholders;
3. definition of the strategy.

The process of drafting the Strategic Plan confirms the participatory approach to planning already implemented when defining the development guidelines set out in the 2025-2027 Three-year Planning Document.

The planning process that led to the development of this document, starting from the principles of quality assurance and continuous improvement, is based on a careful context analysis on multiple levels (see section 3.2), listening to the needs of the IMT Community and a fruitful dialogue with selected external stakeholders. With a view to integrating with the local area in which the School operates and developing a shared strategy, the founding pillars of the path towards 2030 were shared and discussed with the Municipality, the Province, the Chamber of Commerce, Industry, Crafts and Agriculture of North-West Tuscany, and the Fondazione Cassa di Risparmio di Lucca. Framework collaboration agreements have also been signed with the first three entities indicated, as well as with the Garfagnana Union of Municipalities.

Engaging external stakeholders is a key element in guiding the IMT School's development strategy between today and 2030, further enhancing its role as a key player in the Lucca area.

Following the identification of the key elements, the Rector established a dedicated working group – composed of the Vice Rector for Organisation, Planning and Budget, the Vice Rector for Research, and the head of the Planning, Control, and Quality Office – and began work on drafting the Strategic Plan. During the drafting phase, regular discussions with the Governance body, the heads of the Multidisciplinary Scientific Areas, and the entire IMT Community, as well as with key external stakeholders, added a great deal of value. During the completion phase of the document, additional input was received from the teaching and research staff and from the School's Governing Bodies.

5 DEVELOPMENT LINES AND STRATEGIC AREAS

To date, the IMT School has distinguished itself in the national and international university landscape for its flexibility and its ability to promptly respond to scientific, social, cultural, economic and technological needs and challenges in various sectors (primarily academic, industrial and institutional), dynamically adapting to changing contexts. Thanks to these key characteristics, the School has become a point of reference not only in the academic sphere, but also for institutional and corporate stakeholders.

It is therefore not at all surprising that the strategic approach resulting from a deep reflection on the IMT School's identity twenty years after its establishment and on the direction it should take in the next five years differs from the traditional configuration tied to the three university missions – teaching, research and third mission/social impact), instead favouring a transversal approach.

On the path towards 2030, the IMT School will define its action along **three lines of development**:

i. innovation, openness and inclusiveness;
ii. sustainability;
iii. interdisciplinarity;

to be broken down into the following **three strategic areas**:

a. research and teaching;
b. infrastructure;
c. human capital.

Figure 5 Development lines and strategic areas of reference for the 2025-2030 five-year period.

Moreover, the IMT School's development path will be accompanied by a careful communications strategy aimed not only at highlighting the results achieved, but also at sharing the path undertaken with all the relevant stakeholders, with a view to ensuring transparency and dialogue.

5.1 RESEARCH AND TEACHING

As regards to research and teaching, the IMT School will first and foremost continue developing the four Multidisciplinary Scientific Areas recognised in 2024, which have been the founding core of the academic institution during its first twenty years of existence. In addition, the School has carefully selected a set of themes transversal to all scientific areas and characterised by their strategic relevance and innovative nature:

- sustainability;
- policies and impacts on institutions, markets and technologies;
- human and artificial intelligence and future technologies;
- security;
- cultural heritage and cultural and creative enterprises.

In addition to the numerous activities already carried out by the Multidisciplinary Scientific Areas, the School aims to strengthen its role as a leading academic institution in these spheres – including on the international scene – by continuing to promote modelling (physical/mathematical, cultural and economic models), including those based on the use and exploitation of large amounts of data (big data) and high-performance computational techniques, as a cross-disciplinary approach to research.

At the same time, the School is committed to actively supporting the cultural shift associated with Open Science, adopting an approach that aims to make scientific processes and results as accessible, transparent and reusable as possible, both within the academic world, as well as by society at large.

5.1.1. The founding Areas

In 2024, as already mentioned, the School chose – following a participatory process shared with all faculty and researchers – to implement its Statute by establishing four Multidisciplinary Scientific Areas. For each Area, the definition that identifies it and which will be the basis for the research activities conducted in the coming years is presented below.

Economics, Management and Statistics

The Area's mission is to promote excellence in scientific research in the modelling and analysis of economic and social phenomena, using a wide range of theoretical and empirical tools. The Area encompasses various fields of economics and social sciences: from economic theory to applied econometrics, from international to political economics, from spatial and urban economics to industrial organisation, business economics, management, innovation and experimental economics. A key element is the focus on original research, capable of providing fundamental information for policymaking. This, by adopting an approach geared towards solving concrete problems and studying the environmental, demographic and digital transition that contributes to the development of effective policies and the analysis of their impact.

The interdisciplinary approach integrates expertise, skills and tools from various disciplines, including complex systems analysis, mathematical programming, probability and statistics, network studies, political science, behavioural science, neuroscience, computer science and artificial intelligence. The Area favours a modern approach to economics,

oriented toward concrete solutions to real-life economic and social problems, rather than rigorous adherence to traditional academic disciplines. This multidisciplinary and interdisciplinary perspective integrates the latest developments in data science, machine learning and human-computer interaction, seeking to combine them with more traditional econometric and experimental approaches.

Neuroscience, Psychology and Philosophy

The Area studies the complexity of human thought and behaviour, adopting a complementary approach that integrates the contributions of the MOMILAB and PHIBOR Research Units.

The Area aims to create an innovative research and teaching environment, in which empirical sciences and philosophical and historical analysis converge in a harmonious manner. This integrated approach fosters sophisticated research into the nature and evolution of human thought and behaviour, ranging from the study of the genetic, neurobiological and psychophysical bases underlying brain function and conscious subjectivity, to human experience as a product of the environment, culture, history and philosophical thought.

Within this context, the Area conducts cutting-edge research on the role that nature and the environment play in the development of the complex functional architecture of the human brain and mind, in its cognitive, affective and social components, using innovative experimental paradigms, computational methods and theoretical models, in different physio-pathological and conscious states. In parallel, the Area explores the foundations of logic, reasoning and human decision-making, and analyses how scientific knowledge and its models are developed, validated and redefined. It also studies the philosophical and epistemological dimensions of human thought and how knowledge systems evolve and influence each other over time and space from an intercultural perspective, in the dialogue between East and West.

The Area's research extensively overlaps with the fields of study pursued by the School's other Multidisciplinary Scientific Areas, such as social, economic and legal behaviour, human-computer interaction, advanced analytical methods, as well as cultural and technological systems.

Through this innovative approach, the Area not only aims to advance the frontiers of knowledge in cognitive science and philosophy but – even more ambitiously – to propose new conceptual models of what it means to be human.

Systems Sciences

The Area focuses on the analysis – through mathematical models – of various types of industrial, digital, natural, economic and social systems. It is rooted in the disciplines of applied mathematics, physics, statistics, computer science and information engineering, both civil and industrial. The Area brings together the skills of the teaching and research staff belonging to the DYSCO, MUSAM, NETWORKS and SYSMA Research Units, contributing to the activities attributable to the methodological pillar of the School's strategic development lines. This multidisciplinary methodological expertise includes tools such as machine learning, network science, analysis and control of dynamical systems, time series analysis, statistical physics, complex systems theory, numerical optimisation, differential equation integration methods, statistics, stochastic processes, agent-based systems, software analysis and formal methods.

Cultural Systems

The Area focuses on the cultural heritage, cultural phenomena and cultural and creative

industries, with the adoption of innovative, multi- and interdisciplinary approaches. Research and teaching activities cover a wide range of subjects, including archaeology, art history, museology, cultural heritage law, cultural heritage management, visual studies and contemporary history. This broad disciplinary range makes it possible to explore the issues of cultural heritage and cultural phenomena from a complex and multidimensional perspective, combining archaeological, art-historical, historical, legal and historical analysis of thought and technology with management approaches and the use of tools and methodologies specific to the digital humanities and the so-called "hard" sciences.

The Area promotes collaboration with external entities, including public institutions responsible for the protection and enhancement of cultural heritage (such as the Italian Ministry of Culture, the Regional Directorates, Archives and Autonomous Museums), as well as private institutions (foundations, including banking foundations, private museums, businesses and third sector entities). This synergy facilitates the development of interdisciplinary projects, enhancing the dialogue between academic research, field research, professional practices and the third mission, at both the research and teaching levels. The activities pursued by the Area are focused on addressing complex issues, adopting inductive, contextual and problem-driven methods, starting from specific case studies. This approach facilitates the transfer of skills to the world of work and strengthens the link between research and teaching.

The Area has been structured in an innovative way within the national and European context, combining collaborative research, interdisciplinarity and continuous attention to the skills needed in the sectors involved to generate lasting impact.

5.1.2. Sustainability

The UN 2030 Agenda for Sustainable Development defines sustainable development goals – with global relevance – across three key dimensions: economic, social and environmental. Within this framework, the IMT School is committed to researching more sustainable development models and managing fragility through the adoption of an interdisciplinary perspective. The School's contribution to sustainable development is inextricably linked to its three founding missions: education, research and the third mission. This, in turn, translates into educating new generations, developing new solutions, contributing to the definition of sustainable interventions and policies, managing technological innovations, managing the encounter between different cultures and knowledge, and disseminating knowledge throughout society. Complementary to this are studies on the topic of resilience, which is a prerequisite for sustainability. To be fully sustainable, in fact, a system – be it natural, social or economic – must have the capacity to resist, absorb, adapt and recover from exogenous disturbances and changes and increasingly more frequent and impactful crises.

Well aware of its need to actively contribute to achieving the goals of the UN 2030 Agenda, the IMT School aims to be recognised as a point of reference for research and the application of sustainable solutions for a more equitable development model that respects the environment and diversity. To accomplish this, the School has defined a series of coordinated and integrated actions, as already highlighted in the 2025-2027 Three-year Planning Document:

- attention to the economic sustainability of activities;
- ensuring sustainable growth of the teaching and research staff, accompanied by particular attention to gender equality and equal opportunities;
- the development of academic and research opportunities that combine innovation and sustainability;
- multidisciplinary research on the sustainability of technological, economic, geopolitical, cultural and social changes and on the tools for governing them;
- the commitment to developing concrete solutions to support the ecological transition and social inclusion;
- the promotion of a culture of Open Science to make research more efficient, inclusive, transparent and oriented toward the common good;
- the development of inclusive collaborative models in research, fostering a fruitful exchange between different cultures and application sectors;
- attention to building development, focused on the recovery of historic buildings and the minimisation of impacts.

With sustainability at the core of the School's work, the five-year plan includes two lines of intervention: scientific research aimed at developing tools and techniques for sustainable development in various sectors, and promoting awareness and disseminating a culture of sustainability.

The first line of intervention includes participation in cultural and social redevelopment projects, the development of concrete actions for ecological transition and social inclusion, as well as the identification of innovative solutions for industry (energy saving, reduction of polluting emissions, recycling of materials with a view to the circular economy). Open Lab, the research infrastructure created as part of the "Economic and Digital Resilience" (RED) project, will certainly play a key role in developing innovative solutions, thanks to which the School was recognised as a Department of Excellence for the 2023-2027 five-year period. Further initiatives to strengthen research on the topic will be carried out in collaboration with other universities, non-profit organisations, as well as local and national institutions.

The second line of intervention foresees that in the near future the IMT School will assume a prominent role as Scientific Partner of the **Pianeta Terra Festival**, an annual multidisciplinary event conceived and designed by Editori Laterza and promoted by the Fondazione Cassa di Risparmio di Lucca, which aims to raise public awareness on aspects related to our planet from an all-inclusive perspective – in other words from an environmental, economic and social point of view – and to invite reflection on how to preserve it; and **Pianeta Terra Tech. Innovation for life**, the Pianeta Terra Festival spin-off event in which successful startups and projects that have combined scientific research, innovation and sustainability are presented. The IMT School's involvement will take the form of high-value scientific and cultural initiatives aimed at raising public awareness with regard to issues of great importance to the future of the planet, while also promoting the dissemination of knowledge resulting from the research conducted by the IMT academic community. The School also plans to contribute to the dissemination of sustainability principles, organising a series of conferences to keep interest in these topics alive in the months between the **Pianeta Terra Festival** and the **Pianeta Terra Tech. Innovation for life** events.

In addition to the initiatives described above, the School – also thanks to its consolidated relationships established with numerous schools throughout the country – will continue to help raise awareness on aspects related to sustainability among the younger generations through outreach activities specifically designed for young people.

5.1.3. Policies and impacts on institutions, markets and technologies

In the context of the European Union's "Better Regulation Agenda" the IMT School contributes to the development of tools and solutions for evidence-based policy analysis, ensuring open and transparent access to the results of policy impact assessments according to the FAIR (Findable, Accessible, Interoperable, and Reusable) principles. Although Italy has adopted non-binding guidelines on the ex-ante and ex-post evaluation of policies since 2017, the Report to Parliament on the state of application of regulatory impact analysis (2023) highlights that significant problems persist at the implementation level, above all in the ex-post analysis of impacts and in open access to evidence (OECD, Better Regulation Practices across the European Union 2022). This process was further accelerated by the Next Generation EU programme.

In recent years, the IMT School has seen a growing commitment to examining the impacts of public and private policies in real-world contexts, including through innovative approaches and analysis tools. As evidenced by numerous research activities and projects, training activities and knowledge transfer initiatives, the analysis of economic, organisational, cultural, social and environmental impacts has been addressed across a broad spectrum of disciplines: from cultural heritage to economic policies, from education to the regulation and support of cultural and creative industries, from the study of prosocial behaviour to territorial regulation, from regulating automation to the healthcare sector, through the adoption of diverse disciplinary approaches.

Based on the assumption that policy analysis and its impacts can be a tool to support informed and conscious decisions, the IMT School intends to further strengthen dialogue with local communities, institutions and businesses, providing data and analysis that can support the evaluation of policy effectiveness. To this end, it is crucial to structure the study of the concrete impacts generated by public and private policies on key sectors of social, cultural and economic life and on practices, actors, structures and stakeholders to capture not only the desired effects, but also the unexpected ones, in the medium and long term.

The School aims to further enhance its interdisciplinary identity by adopting an empirical and comparative approach to studying policy impact. The approach integrates different knowledge and methods to construct a comprehensive view of policy impacts and is based on the following principles:

- assume policies – in other words planned intentions – as the starting point for the analysis and focus attention on their costs and observable effects, which are the object of study;
- study the impacts in their context to understand how policies are implemented, what changes they produce, what resistance they encounter, what innovations or frictions they generate;
- analyse the interaction between regulatory levels (local, national, European and supranational rules and regulations), paying attention to overlapping, contradictions and encroachments, and develop an evidence database, including through the use of artificial intelligence tools;
- integrate diverse knowledge, methods and approaches in an interdisciplinary manner to obtain a comprehensive picture of policy impacts and define standardised, scalable analysis methodologies applicable to very different fields;
- evaluate the impact of the use of artificial intelligence models and future technologies on the market and institutions.

5.1.4. Human and artificial intelligence and future technologies

Digital transformation, combined with sustainability, is central to the research and development lines defined by the European Commission for Industry 5.0 and for the "An economy that works for people", "European Green Deal" and "Europe fit for the digital age" strategic priorities, with important and immediate repercussions on the industrial and institutional fabric of the local territory. The IMT School will therefore promote cutting-edge research activities through its network of international collaborations and interaction with the local industrial and institutional fabric on digital transition issues in various application areas, creating a centre of expertise and a privileged observatory for the region on future technologies and their impact at the individual, corporate and institutional levels.

In recent years, there has been a significant development in terms of integrating "artificial" intelligence, which governs industrial processes and devices, with "human" intelligence, which determines how individuals interact with such systems. Within this framework, the IMT School's work over the next five years will be focused on basic and applied interdisciplinary research along the following lines:

- the sciences that study the brain, the mind, perception and cognitive abilities, decision-making processes and emotions, human cultures and behaviours;
- the sciences that shape information, its representation, diffusion and processing;
- the disciplines that study simple, complex or cyber-physical systems, be they economic, social, legal or cultural;
- automation sciences, aimed at improving the conditions of workers, individual assistance and their safety through human-machine collaboration, developing autonomous and robotic systems that interact fluidly and safely with humans and the environment;
- economic and welfare analysis to study the social, cultural and economic impact of the transition to pervasive automation and digitalisation, which poses enormous challenges in terms of professional retraining, income inequality and labour market stability;
- human/machine interfaces, integrating the sciences that study human behaviour with the algorithms that determine the behaviour of artificial systems;
- physics-inspired and/or data-driven simulation methods for complex, large-scale problems, integrating experimental measurements from sensors with predictive computing systems to create digital twins of industrial and/or institutional systems, as well as complex phenomena (e.g., urban mobility, tourist flows, etc.), reducing time to market in the development of new solutions;
- cybersecurity and resilience of human and cyber-physical systems. In a context where the growing interconnection between the digital and physical worlds increases the potential criticality of infrastructures, with possible catastrophic consequences in the event of failures or attacks, it is necessary to develop methods capable of predicting and preventing such problems and implementing countermeasures to mitigate their effects;
- the integration between simulation and data. Combining qualitative and quantitative data from heterogeneous domains – such as biosignals, neuroimaging, economic statistics, 3D scans of artefacts and image archives – is a complex computing challenge, particularly given the growing availability of big data. The effective integration of these sources requires the development of infrastructures, algorithms and computing models capable of managing large volumes of heterogeneous data, ensuring interoperability, scalability and reliability in the analysis and simulation and forecasting processes applied to big data;
- the development and application of digital twins, dynamic virtual models capable of replicating the behaviour of complex

systems in real time, be they biological, industrial or social. Interactive platforms which, through the continuous integration of data from sensors, computer networks and heterogeneous databases, allow for monitoring, predicting and optimising the performance of a corresponding physical system: from improving industrial and production processes to managing critical infrastructure, from personalised biomedicine to urban planning and the protection of cultural heritage;
- the application of AI as a new, powerful analytical tool to understand and enhance human systems (institutional, social, economic and cultural). The goal is, on the one hand, to apply AI models to discover patterns, dynamics and hidden knowledge within vast economic, social and cultural datasets and, on the other hand, to develop protocols, procedures and institutional systems aimed at making the use of AI more effective and safer, taking into account the reality of human decision-making processes and behaviour. At the same time, because AI trained on historical data can perpetuate or even amplify biases and interpretative gaps, it is crucial to ensure that technology promotes a plural and critical view of the past.

More specifically, the IMT School's research on these topics will focus on the following aspects, derived from the considerations outlined above: artificial intelligence supporting human systems, data integration, the social and economic impact of automation, as well as the resilience of human and cyber-physical systems.

In addition, activities will also be developed along the following lines of research:

- *analysis and modelling of decision-making processes*. This line of research focuses, on the one hand, on the "virtuous circle" between the study of the brain, mind, human thought and behaviour and, on the other, on their modelling for predictive, representational and computational purposes. The goal is twofold: to create biologically and psychologically plausible models of human cognitive functions, decisions and behaviours and, at the same time, to develop better-performing computational models based on them;
- *advanced automation and human-cantered cyber-physical systems*. This line of research aims to integrate artificial intelligence into the physical and productive world in a safe and collaborative way, taking into account the role of the human agent, its socio-cultural context and the reality of its decision-making processes. The goal is to develop autonomous and robotic systems that interact seamlessly and safely with humans and the environment, providing them with the best conditions for making informed decisions. In this context, particular attention will be paid to the study of human-computer interaction, with a focus on the cognitive and behavioural effects of AI and on how such technologies influence individuals' cognitive functions, behaviour or decision-making processes;
- *interpretability of decisions*. In high-stakes contexts such as automated economic, healthcare or political decision-making, the inability to fully understand AI's reasoning is a critical obstacle to its adoption and trust;
- *virtuous behaviours in the era of total connection*. The sustainability of the increased complexity of human systems requires a greater capacity to virtuously resolve the social dilemmas they face, in a context where humans are more easily reached by automated and personalised stimuli and information (e.g., recommender systems).

In its role as a meeting point between these disciplines, the IMT School has naturally inserted itself into these lines of research, whose findings can offer transformative, ethically grounded applications that benefit society, the environment and cultural heritage.

5.1.5. Security

Security is one of the most complex and transversal challenges of today, combining geopolitical, economic, social, environmental, cultural and technological aspects. Growing international instability, climate change, digital transformation, international mobility and the interconnectedness of global systems necessitate an innovative and interdisciplinary approach. The IMT School thus intends to strengthen its role as a centre of excellence capable of developing skills, producing cutting-edge research and transferring knowledge to society, businesses and institutions.

Draghi and Letta's Reports on European competitiveness also invite reflection on the issue of security. It is crucial for the European Union not only to strengthen security – a prerequisite for sustainable growth –, but also to remember its many facets and implications, not limited to the field of defence, with an impact that also extends to energy and financial policies, as well as the information and technology sectors.

The complexity of the current geopolitical, technological and environmental landscape has brought to light new risks that have progressively redefined the concept of security, intertwining it with those of crisis and fragility. Russia's invasion of Ukraine, in particular, has set in motion a sequence of events that threatens the long-established security order of Europe and of the rest of the world, bringing the threat of a conflict between superpowers and a nuclear confrontation back to the forefront of the global political agenda for the first time in decades. The first quarter of the 21st century thus presents itself as a critical juncture in human history, marked by a series of global crises and interconnected challenges: climate change, resource scarcity, mass migration, cyber threats, terrorism, populism and the rise of China.

Geopolitical conflicts lead to economic upheavals that transcend national borders, hindering the trade of goods and services, the movement of capital and the mobility of people, thus posing a growing threat to global growth and freedom. Climate change – and in particular the increasingly frequent extreme weather events – can compromise essential services and the production of goods, impacting socio-economic stability. The scarcity of natural resources, made worse by increasing global demand, fuels tensions between nations and accentuates social inequalities, threatening political and economic stability. Mass migration movements, often triggered by war, persecution or unsustainable environmental conditions, pose complex challenges to reception systems and test social cohesion in destination countries. Finally, terrorism continues to be a transversal threat, capable of destabilising entire regions and creating insecurity through targeted and unpredictable acts of violence.

Furthermore, it should not be forgotten that the digital transition has inevitably brought with it new threats in the form of cyber-attacks affecting critical sectors – from public administration to transportation, from manufacturing to financial services and healthcare –, compromising the availability of IT systems and networks, putting at risk the security of personal data and spreading disinformation.

Well aware that the complexity of the landscape requires a transversal approach to identify the most suitable tools to effectively respond to the new security-related challenges, the School's contribution over the next five years will focus on the following areas:

- *digital security and resilience*. The School promotes the concept of security not only as protection from threats, but as an infrastructure for resilience and development. In particular, within the Economic and Digital Resilience (RED) project, recognised as a

Department of Excellence for the 2023-2027 five-year period, digital security is redefined as a key element of the post-pandemic transition. The School's design guidelines leverage robust, reliable and inclusively accessible digital infrastructures to ensure continuity and innovation in emergency crisis contexts;

- *intelligent infrastructure and data protection*. The School not only aims to create an environment focused on experimentation, but also a digital governance and management laboratory, where sensitive software and datasets are managed with rigorous protocols and tools are developed to support interdisciplinary research under conditions of maximum reliability;
- *security in institutional networks and across the local territory*. The current context characterised by increasing digitalisation and interconnection between physical and social systems requires a broadly conceived vision of security, which includes the protection of critical infrastructures, sensitive data and decision-making processes;
- *teaching and awareness*. Thanks also to the national PhD programme in Cybersecurity, the School has helped train a new generation of scholars capable of supporting and increasing the resilience of citizens, public institutions and businesses against cyberattacks through the development and implementation of more secure and reliable digital processes and infrastructures;
- *security as a social mission*. Through the Open Lab and other laboratories, the School strengthens its third mission activities, using security and digital resilience as tools for cultural and social impact. Experiments on hybrid work models, studies on psychophysical well-being in digital contexts, as well as the functioning of production chains in times of crisis offer data, evidence and solutions that foster constructive dialogue with citizens, institutions and businesses. From this perspective, security is not understood only as protection from threats, but also as an enabling condition for sustainable and inclusive development;
- *economic and financial security and production chain security*. Through predictive models, quantitative tools and interdisciplinary approaches, the IMT School directly contributes to the analysis and understanding of the impact of crises and conflicts on production chains and the economic-financial system. The goal, in fact, is to develop the capacity to monitor and forecast vulnerabilities that threaten market stability and the resilience of value chains, as well as to provide concrete support to institutions and economic actors, contributing to crisis prevention and management policies focused on sustainability and production continuity;
- *security, geopolitics and international cooperation*. The IMT School contributes to identifying mitigation and international cooperation strategies and to promoting inclusion, social cohesion and sustainable integration. This, through the study of the implications of natural resource scarcity on global markets and energy security, the analysis of new forms of terrorism and radicalisation, with particular attention to online dissemination mechanisms and their impact on political and social stability, as well as the analysis of the dynamics and effects of mass migration movements;
- *security of digital heritage*. Yet another area of development concerns security applied to digital heritage, understood both as a set of digitised cultural assets and as native digital cultural production. The growing availability of archives, images, 3D models and datasets requires advanced solutions to ensure the protection, authenticity and long-term accessibility of these resources, which are fundamental to collective memory and research. The IMT School aims to strengthen the necessary skills, expertise and infrastructure for secure digital preservation, promoting protocols, standards and

methodologies that preserve the scientific, cultural and economic value of heritage, protecting it from technological threats, cyberattacks and the risk of obsolescence.

5.1.6. Cultural heritage and cultural and creative enterprises

Culture, cultural heritage and creativity are present in the UN 2030 Agenda both as a sector (Goal no. 11, Target 4) and as an area that contributes transversally to 14 of the 17 identified goals. Specific indicators, in relation to the 14 goals in which culture, cultural heritage and creativity can play a key role, have been developed within the UNESCO Thematic Indicators for Culture in the 2030 Agenda. This fact alone – in other words the dual presence of important cultural spheres, both within a specific objective and, much more pervasively, as a driver of 14 of the 17 goals identified in the UN 2030 Agenda – is indicative of the fact that culture, cultural heritage and cultural and creative industries must be understood in a broad, articulated and multifaceted way, also in terms of their impact.

Moreover, in recent years both the G7, with the "Florence Declaration" of 2017, as well as the G20, with the "Rome Declaration" of 2021, have reaffirmed the strategic role of culture and cultural heritage as a tool for promoting dialogue between people and socio-economic growth. Both declarations saw the participation, in various capacities, of IMT School teaching staff, confirming the position of excellence achieved by the institution in this field of research.

In fact, the IMT School has been conducting research and training on cultural heritage, cultural phenomena, cultural and creative industries and their multiple impacts since 2009, considering them complex systems that require a multidisciplinary approach and innovative methodologies. In particular, the School addresses the historical, archaeological, historical-artistic, historical-visual, regulatory, institutional, museum-related, archival, social, cultural, technological, economic and managerial dimensions of cultural heritage, cultural and creative industries, as well as relevant cultural phenomena, with special attention to the practices they generate, presuppose and/or incorporate. The diverse cultural spheres in which the School conducts its research and the diverse and innovative methodologies it adopts aim to analyse change and innovation from a historical perspective, as well as to evaluate the impact of individual, collective and institutional cultures in the face of change (be it social, economic or technological). Great importance is given to teaching and field research, making it possible to oversee both the academic, as well as the institutional/professional spheres at the international level. There are also numerous third mission initiatives related to the theme of cultural heritage organised by the IMT School or in which it participates at the national and local level.

That said, on the path towards 2030, the IMT School intends to intensify the following:

- teaching, research and third mission activities, including those carried out in collaboration with bodies and institutions responsible for the protection and promotion of cultural heritage at local, national and international levels;
- field training at the extra-university level;
- research and promotion of activities relating to archives and libraries;
- research relating to cultural and creative enterprises, their social, economic and cultural impacts, as well as their organisation;
- research and teaching on the impact of artificial intelligence on copyright protection and creativity;
- research relating to regulatory and institutional aspects, including their impacts;
- research and teaching related to digital

transformation and social, geopolitical, economic and labour market changes in the culture, cultural heritage and cultural and creative industries spheres;
- impact analyses in the cultural heritage and cultural and creative industries spheres, as well as analyses of actual and potential cultural heritage visitors;
- enhancement and study of museums and collections, as well as archaeological research;
- analysis – including from a historical perspective – of the practices of utilisation, production and organisation (including work) linked to cultural heritage and the cultural and creative industries;
- development of interdisciplinary and innovative methodologies for measuring the impacts of culture and cultural heritage, particularly in relation to relevant contemporary phenomena such as globalisation, technological development, attention to the health of the planet, and the sustainability – including social sustainability – of the lives of individuals, institutions and industries.

5.2 INFRASTRUCTURE

The IMT School finds an indisputable strength in the residential Campus model adopted, consisting of several buildings located a short distance from each other within Lucca's city walls. The Campus, in fact, constitutes the fundamental premise for ensuring the interdisciplinary and collaborative nature of teaching and research activities. It also directly contributes to the full integration between teaching and research, fostering interaction between the student community and the academic community and facilitating the development of inter-, multi- and trans-disciplinary dialogue. In addition to hosting the student community free of charge, the Campus also welcomes external collaborators – including lecturers, visiting professors, and foreign visiting research fellows –, thus fostering a constant flow of new knowledge and enhancing opportunities for exchange and collaboration withing the School. The Campus also serves as a setting for many of the scientific and educational events organised by the IMT School and aimed at the public, facilitating dynamic interaction with the city of Lucca.

The strengthening of the School's existing infrastructure is therefore essential to further enhance the Campus, in its role as a strategic resource and as a framework for the actions and developments defined in this Strategic Plan.

A careful analysis of internal needs gives rise to a development plan divided into three lines of action:

- **building development**, aimed at increasing the overall availability of spaces serving the School, in response to the needs of the IMT Community, to be accompanied by a review of the allocation of spaces intended for teaching, research, support or with auxiliary functions;
- the strengthening of the **laboratory dimension** in terms of spaces dedicated to research activities, the related instrumentation and tools, and the creation of new laboratories;
- the strengthening of **IT infrastructure** (server farms, network infrastructures, access and security systems).

With a view to sustainability and openness to the local area, the development perspective will then be accompanied by redevelopment and interventions serving the city of Lucca, as well as energy efficiency and saving policies.

5.2.1. Building development

Since its founding, the IMT School has built and implemented an **infrastructural development model inspired by the principles of environmental, economic and social sustainability**. Located in the heart of Lucca's historic centre, the School has transformed abandoned or underutilised historic buildings into vital spaces for research, teaching and university life, adopting an urban regeneration approach that enhances the existing architectural heritage. This model, perfectly aligned with Goal no. 11 of the UN 2030 Agenda, has made it possible to synergistically combine academic excellence and territorial responsibility. The Campus' sustainability is also evident in its adoption of soft mobility solutions, promoting access on foot or by bicycle, the presence of a university guesthouse that reduces the need for daily commutes, energy efficiency programmes, rational water resource management, as well as initiatives to promote the recycling of various materials. Sustainability strategies adopted also include promoting remote working and off-site study trips, coupled with the progressive digitalisation of services. All these actions were made possible thanks to a prudent investment policy that leveraged public and private resources. Ministerial funding and the strategic support of the Fondazione Cassa di Risparmio di Lucca have, in fact, enabled high-impact interventions to be implemented at a modest cost to the IMT School's budget. Looking ahead, sustainability will be further strengthened through an integrated growth vision, with a focus on expanding the existing infrastructure in a functional, flexible and eco-friendly manner, with additional spaces for teaching and laboratory research.

The increase in staff and the expansion of the academic offering, with a consequent increase in the size of the student community, have been a key factor in defining the direction of the IMT School's development. The current challenges related to the availability of spaces for teaching activities, offices for teaching, research and administrative staff, study areas for the student community, as well as workstations for research staff has made it necessary to rethink the available spaces and to adopt innovative solutions such as the introduction of a reservation system. These solutions – however dynamic – have not succeeded in fully compensating for the need for additional space. It therefore remains essential to expand the Campus to provide adequate spaces for the daily study and research activities of the student community and academic staff, as well as to accommodate existing or future labs.

Starting from a need that has been quantified to necessitate an additional 3,000 square metres of space, the School's objective is to acquire one or more buildings to be used as a multipurpose centre in which to house the various research laboratories, spaces equipped for teaching and orientation activities, additional study and work stations, a guesthouse, as well as auxiliary spaces such as the server farm, the archive and the warehouse. The multifunctional configuration of the additional spaces is designed to ensure maximum flexibility, optimise the use of resources, as well as promote sustainable management of the School's environments, in response to the current shortage of study and workspaces for the student community and junior research staff. The School's ability to translate its vision into concrete, well-structured projects consistent with funding policies is a distinctive element and an added value for the region and for the Italian university system.

The building development will be implemented in compliance with applicable sustainability requirements, with particular attention to ensuring the configuration of a widespread city Campus whose locations can be reached via eco-sustainable routes with zero CO_2 emissions. Moreover, close collaboration with the city of Lucca and with the Fondazione Cassa di Risparmio di Lucca will be crucial in integrating the School's building heritage within the local urban fabric.

5.2.2. Enhancement of the laboratory dimension

The current laboratory system is an essential infrastructure for the IMT School, for supporting and developing research and training activities. The active laboratories reflect the School's interdisciplinary approach, integrating expertise in fields such as neuroscience, systems science, simulation and social sciences. These spaces provide fertile ground for interaction between different disciplines, fostering scientific production that combines theoretical rigour, empirical experimentation and applied implications. These spaces also constitute an essential element of the residential dimension, of the daily collaboration between academic staff and the student community, as well as actively contributing to the intellectual and scientific vitality of life on Campus. In response to the growing needs of the academic and student body, as well as the development of research projects, the IMT School has outlined a strategic plan for the expansion of its current laboratory infrastructure. The creation of a new multipurpose centre will provide the School with spaces suitable for hosting existing laboratories, as well as new specialised laboratories with a highly interdisciplinary content. The expansion of laboratory infrastructure is in line with national and European strategic priorities – sustainability, digitalisation, innovation and resilience – with the aim of increasing the IMT School's ability and success in accessing funding on a competitive basis, strengthening public-private partnerships and supporting participation in strategic initiatives.

5.2.3. Enhancement of IT infrastructure

The IMT School's development plan includes the construction of a new server farm dedicated to high-performance scientific computing and the archiving of sensitive data, in synergy with the developments envisaged in its Data Management Plan. The new infrastructure will expand the current equipment, renewing both the servers that support the student population and those used to conduct interdisciplinary research.

Compared to cloud solutions, which can be activated as needed, a physical infrastructure acquired by the School is considered essential to ensure the secure management of sensitive and confidential data and the prototyping of data analysis and interpretation algorithms developed or used by virtually all of its Multidisciplinary Scientific Areas.

5.2.4. Redevelopment interventions and services provided to the city

At a time that increasingly pushes institutions toward conscious development, the School intends to continue its building development with particular attention to the **redevelopment of the historic centre** of its host city – Lucca – and the enhancement of buildings of great historical significance. In this regard, it is worth mentioning the significant contribution to the redevelopment of the Eastern part of Lucca's historic centre thanks to the masterful restoration of the San Francesco complex and the renovation of the residence on Via Brunero Paoli, projects carried out by the Fondazione Cassa di Risparmio di Lucca and completed in 2013 and 2023 respectively.

The purchase of Palazzo Boccella, a historically significant building previously abandoned and currently undergoing renovation and energy efficiency improvements, is also in line with the widespread Campus project that minimises environmental impact.

Continuing along a growth path strongly oriented towards recognising and enhancing the

value of the local area, the IMT School intends to strengthen its commitment to urban regeneration and promoting dialogue with citizens. To this end, initiatives are planned to improve the usability of public spaces, promote access to knowledge and culture, support the quality of life in Lucca's historic centre, as well as to promote the values of sustainability, inclusion and collective memory (e.g., a project to enhance the San Francesco Complex in collaboration with the Fondazione Cassa di Risparmio di Lucca, the creation of open Wi-Fi networks and the redevelopment of spaces near the Campus, extension of library opening hours, etc.). These actions are part of the IMT School's broader mission to actively contribute to the urban, cultural and social fabric of the city of Lucca. The School also intends to continue its work in the field of Public Engagement, recognised as a two-way process of exchange and mutual enrichment with society in response to local needs, confirming the numerous initiatives already created to stimulate young people's interest in research and innovation and promote informed and participatory citizenship. In this sense, the School Campus will continue to serve as a framework for outreach initiatives and dialogue with the city of Lucca.

5.3 HUMAN CAPITAL

The IMT School contributes to the development of qualified human capital by investing in the development of a residential community. As the School looks to the future, it is key to remember the central role played by the IMT Community and the need to improve organisational well-being and enhance the potential of each of its members.

Along the lines of developing innovation, openness and inclusiveness, the School has identified the following directions that are of interest to the entire IMT Community:

- the implementation of **welfare** policies, with particular attention to psychological and physical well-being and work-life balance;
- the reception of **Scholars at risk**. Considering the importance of defending – in every setting and with every means – human rights and, more specifically, the right to individual freedom, political rights and the protection of freedom of expression, the IMT School intends to continue its initiatives to welcome and support students and researchers at risk or who are refugees, also with the support of the Fondazione Cassa di Risparmio di Lucca;
- **strengthening the international dimension** through incoming and outgoing mobility programmes, welcoming highly qualified scholars from foreign institutions (Visiting Professors, Visiting Research Fellows), and a more prominent role for the School in international collaborations and networks. In particular, the School is committed to continuing to incentivise and support – through concrete measures, as has already been done in recent years within the framework of the PRO[1] intervention programmes – research and/or study periods abroad by PhD students. The School also intends to increase the number of joint agreements[2] for the awarding of joint degrees or double degrees, as well as the number of international cooperation agreements aimed at strengthening collaboration in the academic, scientific and research fields, student mobility and the exchange of teaching and research staff[3];
- **improving the services offered** with a focus on reviewing, simplifying and

[1] *Programmazione delle università* (PRO3) 2021-2023 and 2024-2026 pursuant to, respectively, Ministerial Decree no. 289 of 25 March 2021 and no. 773 of 10 June 2024.

digitising administrative processes and sharing best practices. The organisational development of the Administration, which must be structured in such a way as to ensure adequate and effective support for the School's institutional mission, will be crucial in this sense.

Investment in human capital will then be structured differently for each of the components of the IMT Community.

With reference to the student community, the IMT School's action will focus on:

- **attracting** and **nurturing talent**, including through the introduction of an Honours Programme, a teaching and research orientation programme aimed at high-profile academic students enrolled in the first year of a master's degree programme or the second-last year of a single-cycle degree programme, in Italy or abroad, with strong study interests related to the themes of the School's Multidisciplinary Scientific Areas, and residential orientation initiatives, in the form of seminars held by illustrious scholars and opportunities for discussion with the School's teaching and research staff, aimed at students enrolled in the second-last year of secondary school, to be held in the Garfagnana area;
- the training of human capital with advanced knowledge in response to specific skill needs, as highlighted in section 3.2;
- the strengthening of listening and engagement initiatives in the School's self-evaluation and review processes;
- the strengthening of the Career Services function, also in collaboration with the IMT Student and Alumni AssociationAPS (IMT SAA), to help guide students in managing effective professional transitions and making informed career choices, consistent with

Solar year	No. of Visiting Professors and Visiting Research Fellows	No. of students abroad	No. of students abroad with the Erasmus+ programme
2010	25	32	11
2015	33	39	21
2019	25	27	20
2024	28	49	27

Table 2 Data relating to the international dimension, with particular regard to the number of Visiting Professors and Visiting Research Fellows and to the number of periods abroad carried out by the student community.

[2] At the time of drafting of this Plan (2025), joint agreements were in place with the following foreign institutions: *KU Leuven, Ludwig-Maximilians-Universität München, Tilburg University, Universidad de Alicante, Universitet Leiden, Universitatea din București, Université Paris 1 Panthéon-Sorbonne*.

[3] At the time of drafting of this Plan (2025), agreements (Memorandums of Understanding) are in place with: *Complexity Science Hub* – CSH based in Vienna (Austria), *School of Data Science of the University of Virginia* (USA), *Irpin State Tax University* (Ukraine), *Universidade Federal do Ceará* (Brazil), *Universitet Leiden* (Netherlands), *University of Oulu* (Finland).

their educational path and the skills acquired.

With specific reference to the teaching and research staff, the School's action will be oriented towards:

- **the sustainable rebalancing of the gender gap**. Through the implementation of specific measures and a continued focus on scientific excellence, the IMT School is committed to ensuring sustainable staff growth, paying close attention to gender balance among its teaching staff and to equal opportunities;
- **enhancing the professional paths of young researchers**, in particular by ensuring an environment congenial to the development of research projects, collaborations and soft skills;
- **the sustainable growth of teaching activities**, while maintaining the strategic centrality of doctoral programmes, ensuring a balance between commitment to teaching and research.

Finally, regarding technical and administrative staff, the IMT School's commitment is aimed at the necessary **promotion of the principles of merit and professionalism**, to be achieved – on the one hand – through a better definition of roles, recognition of responsibilities and improved financial conditions and – on the other – through investments in training and a commitment to continuing to offer a stimulating and flexible environment.

6 MONITORING AND INTEGRATION WITH PLANNING

The Strategic Plan provides the foundation for a coherent and integrated development path that translates the IMT School's vision into strategy and actions, considering available resources and quality assurance principles.

The implementation of the policies and actions outlined in this document must be accompanied by careful annual monitoring, aimed at verifying the progress of the works and the influence of internal and external factors on them. In addition to allowing the School to promptly identify any critical areas and define appropriate corrective actions, the monitoring results will form the basis for the Three-year Planning Document and the Integrated Activity and Organisation Plan *(Piano Integrato di Attività e Organizzazione* in Italian). These planning documents will quantify – taking into account the economic and financial availability – the resources dedicated to the implementation of the strategy outlined in this document and will define the operational planning of the activities.

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