



POLITECNICO
DI TORINO



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To educate, discover
and innovate to impact
on a rapidly changing society.

STRATEGIC
PLAN
2018 | 2024

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DI TORINO**



STRATEGIC PLAN 2018 | 2024

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INTRODUCTION BY THE RECTOR

/ INTRODUCTION BY THE RECTOR

Just a few months after my appointment as Rector of Politecnico di Torino, I would like to share with you the new institutional Strategic Plan “PoliTO 4 Impact”. This Plan will guide the actions of the whole Politecnico community until 2024, the end of my mandate, and provide a farsighted vision of the period that will follow.

Strategy can be developed with a range of methods, with extremes at each end.

On one hand, the traditional approach sees strategy as “planning”, to be implemented typically through a top-down and deductive process, focused on “what to do”. This approach is suitable for stable contexts and hierarchical organizations.

On the other hand, for several years, a new approach has been emerging, where strategy is characterized as an “emergent” phenomenon. Here, a bottom-up process is adopted by following inductive reasoning and focusing on “what to be”. This approach fits non-hierarchical organizations, especially if they operate in uncertain and volatile contexts. It is based on specific organizational paradigms, extensive use of networks and team working and the continuous experimentation and evolution of processes and activities.

In the development of this Strategic Plan the “emergent” model was our natural choice not only due to the complex political, economic and social context that we are experiencing nowadays, but also in the full awareness of the collegial nature that characterizes what a university is and does.

These reflections have led to specific methodological choices within the process of structuring this Strategic Plan, and consequently, to clear effects on its contents.

From a methodological point of view, the process has been widely participated and both local stakeholders and members of the academic community have been actively involved. In particular, the process has been organized as follows: I) three workshops open to representatives of public bodies, economic institutions and civil society; II) six thematic workshops for those with roles of responsibility in our University (Deputy Rector, Director-General, members of the Board of Governors and of the Academic Senate, Vice Rectors, Delegates, Advisors, Executives, etc.); III) four workshops open to the whole academic community. In total, about 700 people participated in these workshops.

Coming to contents, the Strategic Plan is founded around four themes.

The theme of the “Impact” of universities’ actions on society is so central that it has been chosen as the title of the Strategic Plan itself. This is because a technical university such as Politecnico di Torino must address the needs of the local territory and of the whole nation, in accordance with the policies and strategies currently adopted by the best technical universities internationally. The unifying objective that will drive my term of office as Rector therefore is to use the three university missions to make an important impact on a society which is undergoing change.

The plurality of forms through which this impact is expressed necessarily leads to affirm each of the three university missions and their different expressions. The three missions require a harmonious and synergic balance and the adoption of new and effective tools. These include: experience-based and project-based education where teaching staff can nurture critical thinking in students; interdisciplinary research to create new technologies, products and processes; the creation of vertical value chains for technology transfer which involve a synergy of multiple actors.

Similarly, the Strategic Plan does not aim to identify specific disciplinary and sectorial priorities. This does not stem from an unwillingness to take decisions, but from the awareness that these decisions are to be made in a rigorous and structured way within a context that is continuously evolving, both in the short and in the long term, according to the frames of reference defined in the Plan itself.

Finally, the Strategic Plan affirms the nature of the University as an academic community and opens up to interaction and cross-pollination with the various actors in society, both at a local and at an international level. The University therefore assumes the role of an enabling platform, which the various members of an extended academic community can use to act and interact with each other, making an effective contribution to the mission of creating and sharing knowledge.

Strategic Plans often risk becoming a sterile and ineffective rhetorical exercise. This will not happen here. “PoliTO 4 Impact” will be concretely implemented in an Action Plan, structured into specific objectives, and subject to periodical assessments. The final section of this Strategic Plan presents a compendium of strategic objectives and enabling tools that constitute the starting point of the Action Plan. Furthermore, a new phase will begin after the presentation of the Strategic Plan: all Departments of our University will be asked to draft their own Strategic Plan, by adapting the objectives included in the Strategic Plan of our University to the specific needs and characteristics of each Department.

I am grateful for the professional contribution and dedicated participation of all those who took part in the drafting of this Strategic Plan at various levels. I hope that the great interest expressed in these months by all the members of our University will continue to increase, when the time comes to implement it.

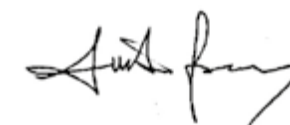
Now is the moment for us to look ahead to all our challenges and opportunities together, relying on our competence, enthusiasm and mutual trust, so that Politecnico di Torino will become one of the leading creators of a better future for our society.

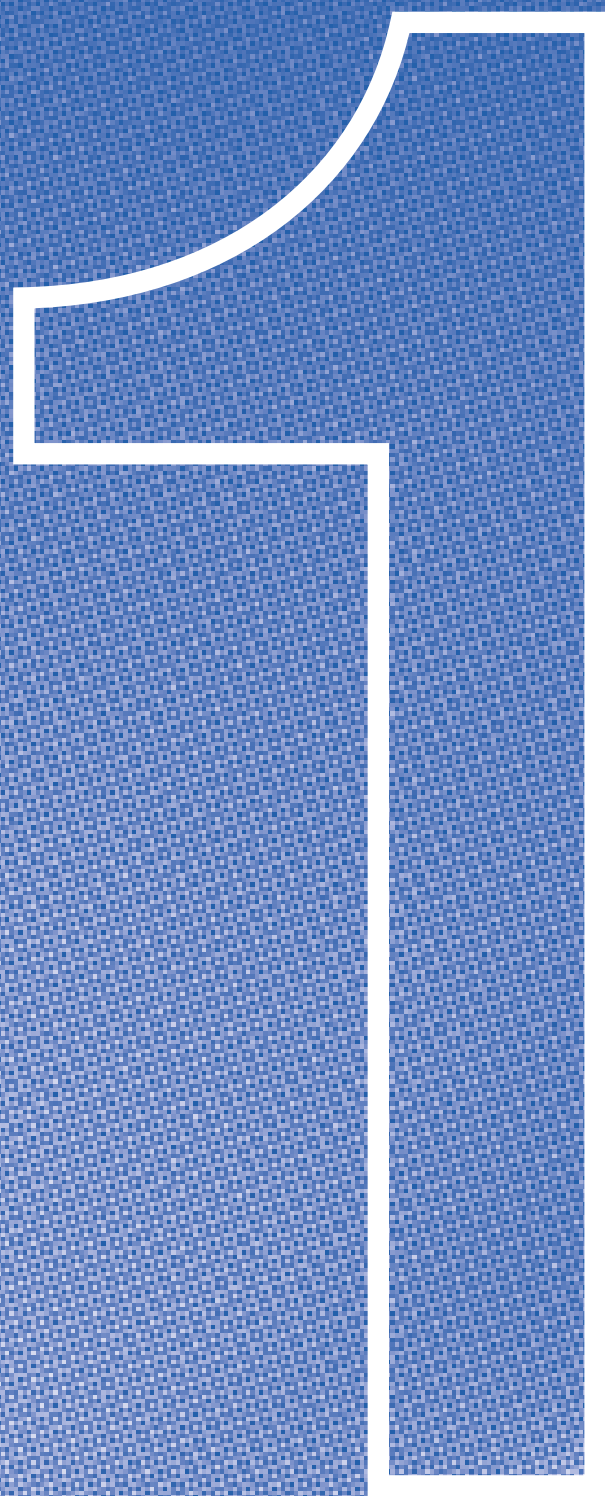
I wish you all the best in this aim.

Sincerely yours,

Guido Saracco

Rector
of Politecnico di Torino





THE STARTING POINT: OUR CONTEXT

/ OPPORTUNITIES
AND THREATS,
STRENGTHS
AND WEAKNESSES
OUTSIDE AND INSIDE
POLITECNICO

The Strategic Plan “PoliTO 4 Impact” has been developed in extremely volatile and uncertain times, which present potentially disruptive opportunities and are very hard to interpret.

The political, economic and social context is no longer that of the past decades, which were relatively stable and marked by a growing globalization.

Technology represents the pillar of our University's action and is now experiencing such a tumultuous and complex development in many fields that is hard to follow even for academics. Technology has become a crucial element in influencing political, economic and social processes. Technology may become either a driving force towards new paradigms of virtuous and sustainable development or a negative element leading to an even more uncertain future: it depends on how it is governed. We cannot neglect the potential effects of an inappropriate use of technology. These include the impact of information technology on privacy and human rights, ethical consequences of Artificial Intelligence or unemployment arising from technological displacement due to automation.

Specifically, new technologies will have also a significant impact on universities in terms of multidisciplinary, innovation in education and lifelong learning.

Aware of the importance of the current processes of technological and social change, Politecnico di Torino feels duty-bound to take up its own responsibilities, by promoting a wide vision of technology, taking into consideration a careful evaluation of the potential impact at economic, social, political and environmental levels and aiming to foster a sustainable development.

Politecnico di Torino, following the evolution of mechanisms of knowledge creation and sharing recognizes that its role cannot be limited to promote and support innovative processes in society, but has to improve its own capacity for internal innovation and change.

At an economic and social level, the rapid growth of countries once defined as “emerging” and the internal imbalances of Western economies generate significant social tensions. In addition, fears related to the possible consequences of mismanaged technological development are leading to diminishing trust not only in science and technology, but also in the concept of “competence” itself. At the same time, there is a growing demand in university education worldwide, for both traditional degrees and lifelong learning, especially in technical disciplines. These disciplines must be oriented towards a virtuous development of society as a whole. These uncertainties also have an impact at political level; in this regard, we can observe a growing skepticism towards the international openness that characterized the last part of the 20th century and even towards the cornerstones which underpin liberal democracy.

Politecnico di Torino has its roots in the historical period when Italy became a modern democracy and, since the very beginning, it has played a central role in the social and economic progress of the local community, while at the same time promoting an open international approach. Therefore, our University feels the responsibility of continuing to guarantee these founding values, by assuming the duty of interpreting and promoting them in the contemporary context.

Inevitably, Italy is deeply involved in these transformations and has to tackle them from a particularly difficult situation. Its social and economic bases are being undermined by severe demographic decline, an educational attainment level lower than the European average, an imbalance between emigration and immigration of young graduates, sluggish productivity growth in different economic sectors, and significant and enduring disparities within society and among territories. At the same time, in this unprecedented and complex evolving context, the economic levers available to the State are constrained by the accumulated public debt. This has been used as a reason to explain the significant reduction in funding for culture and education and, in particular, for universities and their principal missions. In this time of crisis, there is less investment than before in new generations, a crucial value for any country's development.

While Politecnico di Torino points to the need for more public investment in research, education and the “third mission”, it recognizes its responsibility to commit to supporting Italian society, its economy and policy-making process through its own competences and activities. This in order to contribute to reverse the current static situation and to foster the development of this country's significant and acknowledged potential.

Nowadays, Piemonte and Torino in particular, are among the areas which have suffered the most from the difficult situation described above. In the 20th century, Piemonte was one of the vertices of the Italian “industrial triangle”, but is now marginalized and considered “behind” other more dynamic regions. Torino is becoming a real university city, with a great capacity to attract students from other regions. However, it does not offer the kind of opportunities which encourage graduates to choose Torino to remain and start their professional lives. Alarming data are emerging at both economic and demographic level. The industrial base of the territory must be regenerated, starting from extant competences and competitive factors. This will compensate for the partial disengagement from the territory by a number of large companies, the still weak presence of medium-to-large enterprises and the fragmentation of the many SMEs. Politecnico di Torino can play a significant role in this field by contributing to the local system of innovation and technology transfer, to the creation of new businesses, to the sharing of knowledge with society to prepare it for the current rapid pace of change. At the same time, future developments of Politecnico di Torino will have a strong impact on the urban tissue and its population, thanks to the important new building plans, the impact of its academic community and the valuable industries who settle in the area to work in partnership with our University.

Since its foundation, Politecnico di Torino has had a central role in developing the various economic sectors in Piemonte. Today, it engages to renew its commitment towards its own territory, in order to contribute to its regeneration at economic, social, urban and environmental level. Through new approaches and activities related to the University's missions, Politecnico aims to promote a sound vision, which will activate a critical mass of intents and actions, together with local political, social and economic actors.

/ OPPORTUNITIES AND THREATS, STRENGTHS AND WEAKNESSES OUTSIDE AND INSIDE POLITECNICO

This Strategic Plan has been drafted by Politecnico di Torino within a context of “crisis”, using the word’s etymological meaning of “break point” or “decision”.

Some of the above-mentioned elements describe an unusual scenario which is hard to understand and can be interpreted **as both an opportunity and a threat**, depending on different points of view and on the ways in which these elements are managed.

This ambivalence can be found in particular with respect to the situation of the Torino area, where the economic and demographic decline represents a serious threat, but whose potential can however be exploited as an exceptional chance for recovery and as a solid opportunity of growth for our University. Politecnico di Torino is well aware that the difference between threat and opportunity depends also on its level of commitment to local recovery, on the national scene and in an international perspective.

Politecnico di Torino identifies **other interesting opportunities**:

an array of research and innovation perspectives deriving from emerging technological trajectories, and the opportunity of contributing – together with the actors who work in the field of technology transfer and finance – to the development of new virtuous and sustainable paradigms, which may pave the way for a real and positive impact on society;

innovation in pedagogical practices that may have an impact on both the initial phases of education of young students and lifelong learning. The objective will be to help our students develop the professional skills which are required to manage the complexity of technology and to meet the needs of the different economic sectors;

the opportunity of sharing knowledge with society as a whole, by exploring new channels and models, also through a better engagement of our alumni community at various levels;

a further development of our activities at international level, by strengthening existing networks in the fields of education, research and technology transfer, and by identifying privileged partners from Western countries, as well as from countries of growing strategic importance.

At the same time, these opportunities are counterbalanced by **some threats**, such as:

the potential effect of social and political processes, which may bring about significant consequences for the university sector at both national and global level;
a growing competition with international universities which enjoy better funding conditions, operate under more favourable regulatory frameworks and incentive systems.

Politecnico di Torino recognizes the following **internal strengths**:

the well-known value and commitment of the members of its academic community and the quality of their activities, for the achievement of the three university’s missions;

a significant relational capital with other universities and companies in Italy and abroad;

a sound financial and budgetary position, which is based on its good self-funding capability.

At the same time, Politecnico di Torino identifies some **weaknesses** which require action, such as:

a very high ratio between the number of students and faculty members. Politecnico is willing to tackle this problem without undermining the intake of students, and intends to keep improving the quality of education;

the complexity and rigidity of the decision-making and operational processes. This is mainly due to the Italian laws that govern the public sector, without taking into account the specificity of universities and of their international competitive dynamics;

an excessive focus on routine activities, which is partly due to administrative and bureaucratic burdens.

In this analysis, we can identify some aspects that place Politecnico di Torino “on a ridge” and that can be seen **as both strengths and weaknesses**, depending on how they are interpreted. In particular:

the traditional commitment of the members of our academic community shows signs of suffering from a sense of weariness and growing individualism. This could be caused by difficult work conditions and distortions produced by the current assessment systems;

the high-level reputation of Politecnico in academic, industrial and social contexts needs to be strengthened, by focusing on a stronger communication strategy.

Many of these critical aspects and opportunities are common to all technical universities all over the world, despite the different contexts in which they act. In particular, the issue of “impact” has become crucial: universities aim to be catalysts for effective innovation, economic development and social prosperity. They also need to maximize the effectiveness of their most obvious and natural goal, i.e. the education of new generations. “Impact” requires the ability to reflect and act with a farsighted and international perspective and – at the same time – it calls for the ability of working efficiently at local level. In a similar way, impact requires harmonious action on all three university missions, by taking into account their mutual interactions.

Politecnico di Torino will face this challenge by leveraging on its most valuable resource, namely the people who belong to our academic community, with their capability to work together and at their best for the development of our University and for the progress of our society as a whole.



VALUES AND VISION

/ OUR VALUES

/ OUR VISION
AND ITS IMPLEMENTATION

/ OUR VALUES

We are aware that Politecnico di Torino needs to play an active role to conceive and develop its future. This is true especially for technical universities, which pursue the goal of contributing to the socio-economic development of their territories and countries. To this end, universities educate competent and responsible professionals, contribute to the growth of knowledge and innovation, disseminate their research results to the production system and share the culture they have generated with society as a whole.

Politecnico di Torino intends to reaffirm the guiding principles set forth in Article 3 of its **Statute** (see Annex to this section).

These principles are reflected in a system of values, which summarize the vision, and the intents of the whole academic community. These principles are stable references that orient the University's future strategic and operative choices.

In particular, Politecnico di Torino intends to assert a set of values inherited from the previous generations who built the history of this University over the past 160 years, and which shape the experience of the present:

its role of public University which serves our country with an open, inclusive, democratic and liberal approach;

its constant commitment to working with rigour and integrity, not as an end in itself, but aiming to achieving tangible and effective results in all fields of action;

its openness to cooperate with other universities, society, the world of business and the institutions at local and international level, always with a strong motivation towards integration and inclusion.

As for any other kind of heritage, it is crucial to keep enriching it with new values, which can support our actions in this new historical scenario. On this basis, Politecnico di Torino is going to embrace the following values:

a farsighted perspective towards the future: every single action should be oriented to improve the quality of life both at local and global level, reduce inequalities, build social responsibility towards future generations with an eye to social, economic and technological sustainable development;

spirit of initiative to play an effective role in supporting and fostering such a broad perspective of development.

/ OUR VISION AND ITS IMPLEMENTATION

In the recent past there has been an important debate concerning the role of universities in modern society both in Italy and abroad. New issues are being discussed in different countries in relation to their university systems. They include the "new missions", the social function of universities in the process of knowledge creation and dissemination, as well as the relationships between faculty members and students. This debate has led to a variety of projects and reforms, which in many cases have been accompanied by tensions.

In Italy, the debate has been especially influenced by new assessment processes and incentive systems which were almost absent in the past. Nevertheless, these systems risk to lead to a very partial and constraining vision of the academic activity and to reduce it to a mere "factory" of students and research products.

Politecnico di Torino reaffirms its institutional aims, established in Article 2 of the **Statute** (see Annex to this section). Bearing in mind this and a changing and turbulent context, Politecnico di Torino embraces the vision of:

an academic community committed to generating and sharing "polytechnical knowledge" for effective and sustainable development of society at global, national and international level.

This vision can be structured in details in four main pillars:

Being an academic community implies:

valorising people, as faculty members, technicians, librarians, administrative staff and students, who all commit themselves to working individually and collectively in a rigorous way; fostering the development of diverse and constant interactions among the members of the community.

Being an academic community also implies:

encouraging a growing openness towards the interaction with other communities and organizations: Italian and foreign universities and research centres, the alumni community, firms from any industry sector and size, spin-offs and start-ups, public and private institutions, as well as the various components of the civil society.

Putting the generation and sharing of "polytechnical knowledge" at the heart of our policies implies:

being committed to working in a complex cultural scenario which is nurtured by scientific, engineering, architecture, planning and design disciplines. These need to be blended together and combined with human and social sciences, so to lead to the design of systemic solutions, which may pave the way for effective and virtuous development at political, economic, social and environmental level.

Generating and sharing "polytechnical knowledge" also implies:

assuring and improving the effectiveness of the processes that enable education, research and third mission activities. These processes need to be adapted to the current rapid pace of change, both when they happen inside and outside the University, in partnership with other actors.



ANNEX TO SECTION 2 / ABSTRACT OF THE STATUTE OF POLITECNICO DI TORINO

ART. 2 - INSTITUTIONAL AIMS

Politecnico is a research-led university whose primary objectives are the enhancement of technological and scientific research capabilities and their integration into a higher education framework. Its activities are rooted in the production, attraction, conservation, development and transfer of knowledge in the fields of architecture, engineering and other polytechnic sciences. Its role extends to enhancing the development of society through the transfer of technology and services to the community.

Politecnico undertakes fundamental and applied research; it co-ordinates and develops research projects, both at an international and national level; it encourages the acquisition of the most advanced scientific and technical knowledge and enhances the expertise existing within Politecnico itself and the specific research skills required in different scientific fields; it actively searches for and supports strategic research sectors and the development of interdisciplinary activities.

Politecnico provides courses at all university levels; it defines the characteristics, delivery and contents of its degree programmes; it aims to consolidate and enhance its education system through innovative teaching models; it also develops and implements programs and projects at advanced levels, as well as for lifelong learning and professional development; it rewards students on the basis of merit criteria.

Politecnico provides career guidance for students, a service which aims to facilitate their integration into the professional workplace and it also monitors students' specific career progress; it promotes initiatives which create professional employment; it creates opportunities to maintain cultural and individual links among Alumni.

Politecnico considers the expertise of its personnel to be an asset and invests in human resources by promoting staff development, reward and quality. Politecnico values the abilities, professional experience, skills and effort of its personnel and it promotes initiatives which encourage the commitment and empowerment of staff.

Politecnico di Torino places great importance on its international dimension and supports this with joint actions with other foreign universities, research institutions and enterprises; it promotes and supports the international mobility of students, professors and researchers; it promotes alliances with other actors aimed at participation in international projects in education and research, by activating, when necessary, specific structures and joint degree programmes.

Politecnico is committed to technology transfer of innovations and knowledge to the economic and productive system, as well as to practitioners in specific sectors.

Politecnico contributes, through its teaching and research, to a development process based on the principles of social cohesion and sustainability, also from an environmental perspective. In particular it promotes cooperation among institutions in order to encourage growth in the cultural, scientific and professional community.

ART. 3 - GUIDING PRINCIPLES

1. Politecnico, as a community, works in mutual agreement with students and personnel. It considers the respect for fundamental human rights and freedom of thought, research and teaching to be of primary importance.

2. Politecnico promotes quality in research, teaching and administrative activities.

3. Politecnico encourages discussion and debate on topics related to the achievement of its institutional goals. It guarantees participation in the Governing Bodies to all personnel and students; it assures transparency and communication within the University as well as with the public.

4. Politecnico promotes the effectiveness and efficiency of technical and administrative activities toward the achievement of its institutional goals and it utilizes the appropriate means for management, evaluation and rewarding.

5. Politecnico assures equal opportunities, including gender equal opportunity, in every aspects of the academic life and it operates to sensitize the academic community to a common awareness of the issue.

6. Politecnico adopts the Code of Ethical Conduct of the University Community, shared with the other Universities in Piemonte. Title V of the present Statute establishes the penalties for violations of the Code of Ethical Conduct.

7. Politecnico protects its own bibliographic, documentary and museum heritage. It ensures proper storage of documents and supplies the instruments, which guarantee consultation and reliability in both a traditional and a digital environment.



EDUCATION

/ THE DEMAND
FOR EDUCATION

/ CONSTRAINTS

/ LEARNING
CONTENTS
AND PEDAGOGY

/ A LIFELONG
LEARNING
EXPERIENCE

/ GOVERNANCE

Through this Strategic Plan, Politecnico di Torino aims to reaffirm the central role of its mission in the field of education. Education represents a cornerstone of its action and the main channel to transfer “polytechnical knowledge”, new competences generated by research and the *know-how* of those – professionals or managers – who are actively part of a rapidly moving world of work to the benefit of society.

/ THE DEMAND FOR EDUCATION

Politecnico di Torino's strategy for education starts from an analysis of the complex evolution of the demand for education in the specific fields in which our University is involved.

There is a very negative demographic trend in Italy, and Piemonte seems to be particularly affected by this phenomenon. Population projections suggest that the number of high school graduates will suffer from a significant decline after 2024. This fact is even more alarming if we consider the low percentage of young students who enrol in Italian universities compared to other countries. This gap is not closing fast enough and Italy ranks in the last positions of the OECD rankings for educational attainment. Among the possible causes of this phenomenon, there are the lack of Bachelor's degree programmes that provide professional skills, the weakness of the policies which support higher education, the low demand for university graduates from Italian firms, which leads to high youth unemployment rates. These trends undermine the future of our country, especially in a scenario where the competitiveness of nations and territories depends more and more on the knowledge and competences that they are able to create.

However, some factors go against this trend and allow Politecnico di Torino to have an optimistic stance on the future.

First of all, the number of young people who enrol in Engineering programmes is growing at a national level, while the number of students enrolled in Architecture is quite stable (Architecture intake in Italy is capped to a fixed number of students). This trend especially stems from the stronger employability of graduates who attain engineering degrees. We can view this fact with satisfaction, but at the same time, we are concerned that students not receiving an appropriate orientation could end up choosing these studies without having an adequate aptitude.

Secondly, there is a growing percentage of young students who choose to move from other Italian regions in search of high-quality education, thanks to the strong reputation of Politecnico di Torino. This internal migration takes place for both Bachelor's and, even more, for Master's degree programmes. Politecnico di Torino wishes that future reforms of the Italian university system may lead to higher investments and foster a balanced growth for all universities throughout the country. In the meanwhile, always taking its structural and financial resources into account, Politecnico di Torino is going to keep admitting as many qualified applicants as possible. Our University aims to offer up-to-date educational programmes and train young professionals who may have a significant impact also on their home regions.

Furthermore, there has been a significant reduction in the dropout rates of Bachelor's students. Besides reducing the average graduation delay, this element leads to a progressive increase in the number of high-achieving students who enrol in year two or beyond and who are likely to move to a Master's degree programme.

Finally, despite a youth unemployment rate of about 35% and a percentage of NEETs close to 25%, over one fifth of Italian firms cannot find the professionals they need. According to recent surveys, nearly 300.000 highly qualified professionals will be required by Italian companies over the next five years to keep Italy as the second-highest manufacturing country in Europe. The educational offer of Italian Higher Technical Institutes (ITS) is currently insufficient, with little more than 10.000 students. Thanks to a favourable regulatory framework, Politecnico di Torino is going to offer a 3-year Professional Bachelor's degree programme in the manufacturing sector, in cooperation with local ITSs.

On the other hand, there is a growing demand for high-quality university education coming from “emerging countries”. These international students not only are heading towards the universities of the traditional Anglo-Saxon areas, or the countries that share the same language, but also towards Italy. Politecnico di Torino intends to pursue a strong international recruitment strategy, especially for Master's degree programmes, with a thorough assessment of the applicants' educational background.

A further increase in the population of international students is going to balance partially the mobility of young Italians who decide to study abroad. It may also provide significant benefits for national students as well as for local businesses. In fact, Italian students will enjoy the opportunity of studying in a multicultural context. Local businesses will be given the opportunity to interact with international students and even hire them, thus enabling possible interactions with their home countries. To this end, Politecnico di Torino intends to confirm and enrich its “bilingual” course catalogue in Italian and English, also by promoting international recruitment of faculty members.

The recruitment of international students will focus on a limited number of strategic “Target” Countries. Liaison persons will be identified locally in those countries and will contribute to high-quality student recruitment. At the same time, Politecnico di Torino will renew its recruitment efforts also from European and Western countries. In this case, we will look at those countries where the costs of university education has increased more substantially. Prospective students will be especially offered the degree programmes, which are more appealing at an international level, relying on our University's excellence, on the initiatives in innovative teaching and experiential learning, and on the connections with Italy's key sectors.

Overall, we assume that the increase in the number of students applying for admission to Politecnico di Torino will compensate for the demographic decline, at least up to 2024. However, this Plan recommends a careful monitoring of possible future changes. We cannot deny that if the national policies for the recovery of our economy – to which our University is strongly committed – turn out to be unsuccessful, we may expect significant negative effects also in this context.

Managing this demand for higher education, which comes from local, national and international contexts, together with the rapid pace of technological change, will require strengthening our orientation and communication activities.

In particular, we will work towards the clear communication of our programmes' contents and the competences to which they aim. Our primary task is to address this communication to our prospective students in order to help them evaluate their talents and objectives. We will also communicate with businesses and institutions in a similar way, to make them aware of the potential of our graduates and promote their employability. Given our intent to constantly review our course contents and teaching methods, also by interacting with the business and professional world and with our alumni, these changes will be promptly shared with society. This communication strategy will therefore promote new contents and teaching methods that will be progressively introduced in our programmes in order to create a student-centred educational model. Thanks to this model, students can improve their attitude for critical thinking, relational skills and awareness of social responsibility; this will be pursued also by investing in new classrooms and laboratories.

In addition to specific campaigns, we are going to improve our communication by providing better access to the contents of the “Portale della Didattica- Teaching Portal web area” also for external users.

/ CONSTRAINTS

The goal of Politecnico di Torino is to continue to provide top-level education for a significant amount of students. This implies our decision not to pursue a model focused on teaching to a minority of particularly talented students. In fact, this choice would be in contrast with our University's history, with the awareness that our country suffers from a significant lack of technical graduates and with the sense of responsibility towards many "gifted and deserving students" who apply for admission to our University, in accordance with the Italian Constitution.

Nevertheless, today our University is not able to provide teaching services to all the students who apply for admission, since there are four considerable constraints. Our goal is to intervene on these constraints and moderate their effects.

The first constraint is related to **the educational background of our prospective students**.

To this regard, we are going to develop evaluation methodologies which take into consideration also students' motivations and their talent for the professions they are about to choose. Furthermore, we are going to keep implementing the existing support activities that help students with difficulties boost their academic progress, such as preparatory and remedial courses. However, due to the constraints related to our current infrastructures and human resources, we are currently unable to spread these initiatives broadly. Finally, we are going to monitor both incoming and outgoing student flows towards other national and international universities, by focussing not only on the number of the people involved, but also on the level of their academic performance.

The second constraint is related to the very **low number of faculty members**, which is partially due to the turnover threshold currently established by Italian law. At present and within the horizon of this Strategic Plan, this constraint is going to hinder a consistent increase in the number of faculty members. With the aim of settling this issue, Politecnico di Torino intends to establish a dialogue with the Italian Government in order to negotiate and adopt appropriate tools to curb the negative effects of this turnover policy (for instance, the possibility to recruit new faculty members using the university own funds, extraordinary recruitment plans for researchers, etc.).

Politecnico di Torino will also adopt contracts for professorial positions funded by external Institutions (see Italian Law n. 240/10, art. 18, par. 3). Our University is going to pursue policies that allocate resources to support the disciplinary fields with an excessive student-to-faculty ratio. This will be done, in order to balance demand and offer as much as possible. In the meanwhile, we are going to work on specific initiatives to enhance the disciplinary fields that are lacking student demand.

The third constraint is related to our **administrative services**, which are also affected by the standstill of the staff turnover. Administrative processes and procedures will be revised, simplified and digitalised so that the academic progress of our students will be managed more effectively and increasing support will be offered to our faculty members.

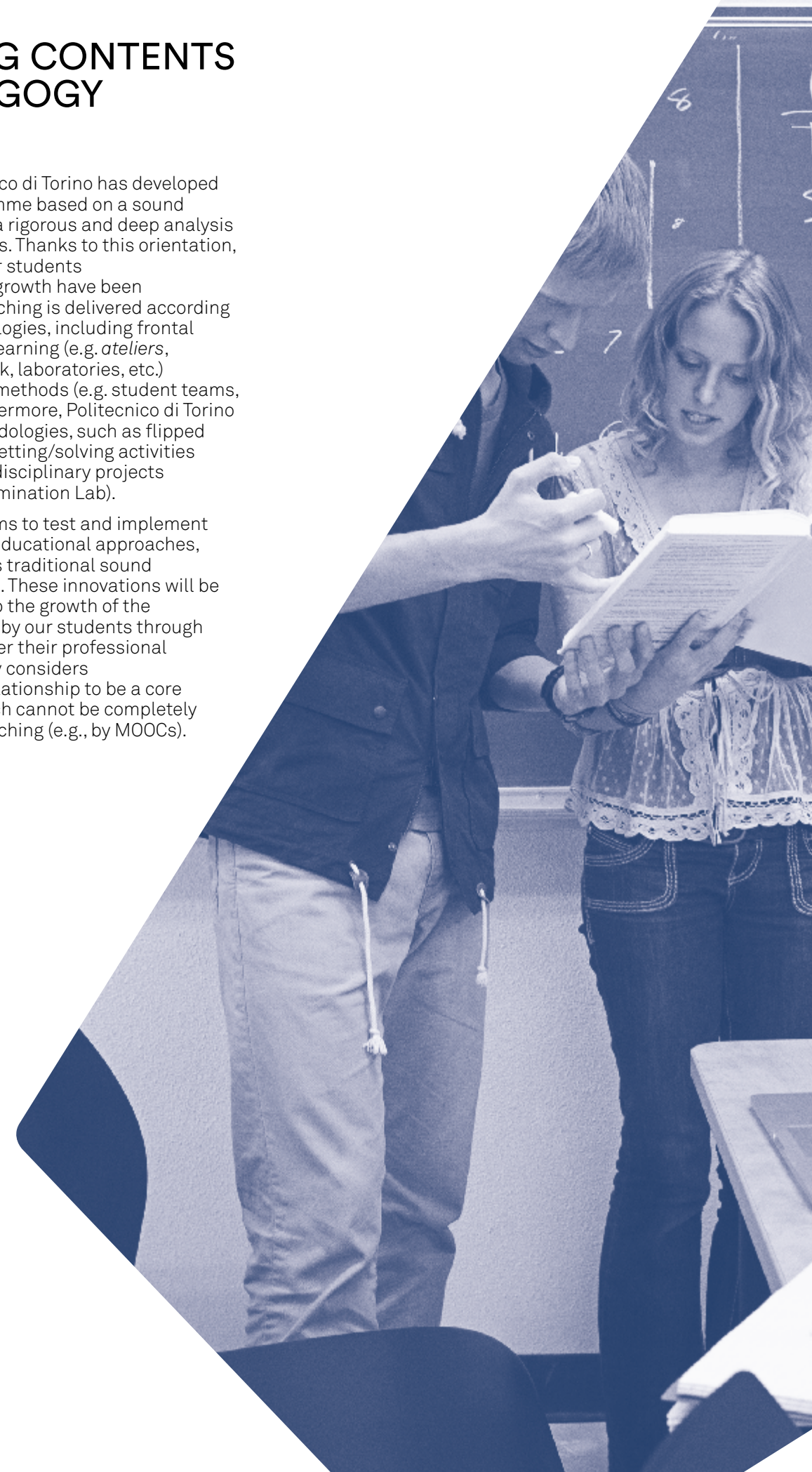
The fourth constraint is due to our **infrastructures**. It is well known that Politecnico di Torino has been suffering for a long time from a significant lack in infrastructures for teaching. Our ongoing Masterplan, which has already been approved, aims to rebalance and rationalize spaces, by taking into account the student population which may raise up to 40,000 students, compared to the current 34,000. There will be a close coordination between the detailed planning of the spaces and the new pedagogical formats (laboratories, classrooms for project-based courses, spaces equipped and dedicated to student teams). Innovative teaching formats will require spaces that may be converted to different uses in the medium term, as well as multifunctional areas that may be easily adapted to different activities in the short term.

In particular, we are going to focus on making available an appropriate number of large classrooms for traditional frontal teaching (*ex-cathedra* lectures) and some smaller classrooms for laboratory and prototyping activities (e.g. student teams), individual and group study.

/ LEARNING CONTENTS AND PEDAGOGY

Over the past, Politecnico di Torino has developed an educational programme based on a sound cultural structure and a rigorous and deep analysis of the taught disciplines. Thanks to this orientation, the employability of our students and their professional growth have been outstanding. Today, teaching is delivered according to a variety of methodologies, including frontal teaching, experiential learning (e.g. *ateliers*, workshops, project work, laboratories, etc.) and other educational methods (e.g. student teams, study visits, etc.). Furthermore, Politecnico di Torino is exploring new methodologies, such as flipped classrooms, problem-setting/solving activities and team-based multidisciplinary projects (e.g. through the Contamination Lab).

Politecnico di Torino aims to test and implement a variety of innovative educational approaches, without jeopardizing its traditional sound educational framework. These innovations will be introduced alongside to the growth of the competences acquired by our students through activities that may foster their professional maturity. Our University considers the teacher-student relationship to be a core educational value, which cannot be completely replaced by remote teaching (e.g., by MOOCs).



EDUCATION



Therefore, Politecnico di Torino is going to experiment a progressive transformation of educational models with the aim of favouring experiential learning - where appropriate - rather than the mere transfer of contents through frontal teaching. As a consequence, new educational models will pave the way for an ever more interactive relationship between lecturers and students. This is going to have two effects: on one hand, a more experiential, up-to-date pedagogy; on the other hand, a more effective use of our tenured faculty members. They will be able to work more than they can do today, to stimulate students' critical thinking and project capabilities. This teaching model will count on the support of competent teaching assistants and adjunct professors and will also include seminars and meetings with our alumni. Besides enriching the variety of the teaching contributions, this model will provide an opportunity to share knowledge and experience within a broader academic community. Finally, faculty members' recruitment policies will be modified in order to give adequate value to the candidates' teaching skills in dealing with both traditional and new teaching methods.

Pedagogy has to be revisited and this should not be done occasionally or as an individual effort, but systematically. This need stems from the constant evolution of professions, course contents and educational technologies, as well as the development of new learning practices adopted by young millennials.

In the pursuit of these objectives, Politecnico di Torino is going to establish a Learning Centre that will provide spaces for interactive team-based teaching and learning. A Teaching Lab is going to be created, to share experiences, foster new experimentations, spread best practices and train our lecturers. In addition, the Teaching Lab will work in connection with qualified international networks in order to advance a broad dialogue on "good practices" in higher technical education. As we just mentioned, considering that innovative teaching requires appropriate spaces, both the Learning Centre and the Teaching Lab will be strongly linked to our Masterplan in order to ensure a farsighted planning of the new areas. At the same time, existing areas will be slightly modified in order to enable some innovations.

The new educational model will require significant commitment from both lecturers and students. The former, especially at Master's level, may have to change the structure of their courses, sometimes radically. Students may need to reorganize their learning process and the development of their competences; they will become more autonomous even if they will continue to work under the guidance of a faculty member. With this aim, an explicit "educational deal" among the different members of the academic community will be necessary to highlight roles and commitments in this process.

In addition to these pedagogical aspects, our course catalogue will be enriched with new contents. Through this improvement, future engineers and architects will improve their competencies to face their professional challenges and enter the job market more quickly and effectively. Within the subsequent constant evolution of degree programmes, Politecnico di Torino will identify the right balance between a sound basic education and training on emerging technological trends, always considering their possible immaturity.

Firstly, contents will be enriched to rediscover and enhance the common roots of the polytechnical culture, which is centered on design competencies. Indeed, engineers and architects are the professionals who create the "artificial world" where men and women live and work. In fact, they share the common ability to find solutions to tangible problems. Today, this common culture is nurtured unevenly in the different degree programmes. Therefore, it needs to be implemented or revitalized through project-based activities that will be included in both individual courses and multidisciplinary activities. In particular, students will be guided from the traditional problem solving to a problem setting approach by developing the necessary skills. Problem setting is the ability to understand and develop wicked problem situations that are full of uncertainty and complexity. It will also be important to combine traditional "causal" with "effectual" reasoning approaches.

In this direction, Politecnico di Torino is going to constantly monitor how the 17 Sustainable Development Goals proposed by the UN 2030 Agenda have been introduced in the syllabus of each course. In addition, this will be an important point of reference for lecturers and students, as well as an incentive to analyse the interconnections between the different cultural fields and the complexity of the world.

Developing this kind of skills will enable students to engage in professional paths oriented to innovation and entrepreneurship while they are still studying at the university. Politecnico di Torino also acknowledges the educational value of alternative teaching formats, such as technical visits and student team activities. Therefore, our University will continue to support and spread these initiatives by identifying useful tools for their rational and stable implementation. In particular, support will be provided to the student activities, which aim to promote the role of technology in projects with social objectives at local and international level, under a service learning perspective.

Secondly, learning contents will be partially reviewed so that students can develop a better understanding of the impact of technologies on business, society, and environment, besides being taught traditional technical disciplines. Actually, fundamentals of economics, sociology, philosophy, as well as legal and managerial skills, are essential ingredients for a successful professional integration in complex organizations and in smaller firms, or even for working as professional freelancers. In this regard, Politecnico di Torino is willing to enhance the dialogue with other local universities in order to share faculty members' expertise and develop a course catalogue, which can provide our students with a sound complementary background in these disciplines. The right proportion in terms of credits assigned to these disciplines will have to be defined progressively in order to provide solid knowledge and not just mere general information.

Finally, Politecnico di Torino intends to ensure that students develop sound soft skills to improve their teamwork interactions and their capability to work in complex organizational and inter-organizational contexts. Special attention will be paid to communication and language skills, as well as on their agency and ability to take initiatives, thus enhancing the value of their technical skills. Students are going to develop some of these soft skills indirectly, for instance with team projects and public speaking. Other skills, such as technical writing, will be acquired by students by means of traditional or on-line courses that will be short and engaging. In this regard, the cooperation with our alumni community is going to be very important. Our alumni can help our students to enhance the technical-scientific skills developed in class or during laboratory activities by sharing their professional and behavioural experiences. Also in this case, the workload that should be dedicated to the development of soft skills will be defined progressively in order to ensure verifiable results.

Finally, Politecnico di Torino understands the importance of international student mobility and promotes it for as many students as possible, through the Erasmus programmes, thesis projects abroad and double degree programmes in cooperation with European and non-European universities. We achieved important results so far; therefore, we will continue to pursue these objectives by providing appropriate incentives to involve the various degree programmes in this internationalisation effort.

/ A LIFELONG LEARNING EXPERIENCE

The above considerations will be shaped into the various fields and levels of education in order to guide students along their entire professional life.

As far as **Bachelor's degree programmes** are concerned, Politecnico di Torino identifies two different needs that should be addressed. On one hand, it is fundamental to continue offering a sound education, which helps our students develop the core competencies, and an appropriate mindset oriented to methodological rigour and critical thinking when dealing with complex problems. On the other hand, we are going to plan a wider use of innovative teaching methods for the most well-established learning contents. This way, students will gain greater learning autonomy and an increasing importance will be placed on sessions dedicated to exercises and critical analysis, with lecturers and teaching assistants. Further educational innovations will be promoted for the disciplines with a more practical orientation, so that students can develop stronger design sensitivity. However, we do not believe that we will be able to increase significantly the flexibility of our Bachelor's degree programmes. This is due to the fact that, at Bachelor's level, we must ensure a common basic education for all programmes; moreover, the logistic and organizational impact of this kind of operation would be difficult to manage.

As for the **Professional Bachelor's degree programmes**, Politecnico di Torino intends to monitor carefully the demand for human resources from local companies and institutions, paying special attention to SMEs. This may lead to design a new degree programme to train mid-level technical professionals who should be able to enter quickly the labour market. This three-year professionalizing academic path will focus on manufacturing, mechatronics and textile engineering. It is conceived of as complementary education to other existing higher education initiatives at local level, such as the ITSs. The sustainability of this programme will be pursued by sharing lecturers, laboratory equipment and technicians, in order to support an intensive learning-by-doing approach. Thanks to this orientation, our University would be able to increase the intake of students whose aptitudes and talents are more oriented to technical practice than to scientific study. This experience will be a driving force for the professional higher education system, which currently has to balance the educational offer and the demand for highly-specialised technical graduates coming from the manufacturing sector.

We will need to review the structure of the internships for all Bachelor's degree programmes. Internships must be organized as supplementary learning activities, with the specific aims of providing practical technical skills, learning how to use professional tools and developing soft skills by experience. Internships will be designed to be real learning experiences, with the purpose of fostering their professional competencies.

Finally, we are going to boost our orientation activities for current undergraduate students to help them understand their talents and define which are the most suitable educational outcomes for themselves.

As far as our **Master's degree programmes** are concerned, we believe we can significantly intensify our innovative teaching actions. In fact, the higher maturity of Master's students will allow us to reduce the existing constraints - such as the number of hours dedicated to frontal lectures corresponding to each ECTS - and provide more flexibility to our programmes. In our Master's degree programmes we are going to put more emphasis on interdisciplinary activities and on the development of innovation-centred design competences. In accordance with the most common international practices, this flexibility could lead to a course catalogue based on a set of core subjects and a set of elective courses. In this way, students will be able to build their own academic path with an international perspective, in compliance with the legal constraints.

Without neglecting its mission of "mass university", in the past years Politecnico di Torino decided to promote **the education of particularly talented students** through supplementary honours programmes. The *Alta Scuola Politecnica* is intended for graduate students and offers a special programme focused on interdisciplinarity and innovation. The *Young Talents Project* is aimed for undergraduate students: it includes disciplinary and in-depth studies and introduces students to their first interdisciplinary experiences. Our University recognizes the importance of these paths, which allow students to grow and which are an ideal environment for pedagogical experimentation. For these reasons, Politecnico di Torino will promote and share the experiences gained with these two educational paths through the Teaching Lab, to the benefit of the other academic programmes. As for the *Alta Scuola Politecnica*, in agreement with our partner university, Politecnico di Milano, the School will be strengthened as the laboratory for educational innovation and eventually for developing new Masters' degree programmes that may provide an introduction to Doctoral programmes.

The **Doctoral School** of Politecnico di Torino plays a fundamental role to connect education and research. It is intended for students interested in pursuing an academic career in Italy and abroad. It also trains professionals who would like to work, with sound technical competencies and outstanding methodological rigour, in private companies or public institutions. In this regard, both the private and public sectors are progressively recognizing - albeit in different ways - the value of Doctoral degrees.

In the past years, the Doctoral School has been able to increase the number of candidates, the interactions with private firms and its international dimension. Our University will pursue some strategic initiatives in order to pave the way for further development.

The first and most important action consists in radically increasing the number of Doctoral candidates, by fostering the internationalization of our programmes. To reach this goal, we need to implement new policies to increase the amount of our fellowships, aligning them to European standards, and to raise the number of international partnership agreements.

The second initiative is the promotion of "*Industrial Doctoral Programmes*", which have the specific objectives of supporting candidates who wish to work for firms and institutions and of sharing knowledge and research results, without neglecting the scientific quality of the research that will be carried out. Furthermore, we will foster a tighter integration with our Master's degree programmes in order to facilitate the links between these two levels of education. These activities can be supported if we encourage new synergies between the Doctoral School and other entities, such as the "Specializing Master's Programmes and Lifelong Learning School", the *Alta Scuola Politecnica* and other organisational units that manage the relations with companies at different levels.

The **Specializing Master's Programmes and Lifelong Learning School** of Politecnico di Torino was established a few years ago. The activities carried out by the School have been progressively growing, but they need to be further strengthened, especially in the field of Specializing Masters' programmes offered on the free market without public funding and non-degree educational activities. To this end, we will need to rely on experience to explore the most suitable organisational and operational tools, in order to work effectively and responsively in such a competitive international environment. Specifically, we will establish a closer cooperation with specialized partners and top-level business schools. In addition, a closer coordination with the Doctoral School will be encouraged in order to enrich the course catalogue with both technical and soft skills, to be offered to both Doctoral candidates and students of the various Specializing Master's programmes.

Politecnico di Torino intends to be active also in the period that follows its students' graduation (*post lauream*). In fact, our University acknowledges that our alumni are still part of the academic community, though in different ways. They are an extremely important source of experiences, competencies, perspectives and relationships that we need to promote to the benefit of the entire community, and especially for the younger generations. At the same time, our alumni are professionals who might be in need of lifelong learning opportunities, considering that technologies are evolving rapidly, professional life becomes longer, and career paths require more and more flexibility. Politecnico di Torino understands the importance of developing stronger links with its former students. This key objective will be pursued by strengthening the actions and activities which are already implemented at present.

Firstly, our University will enhance its job placement activity, which is now mainly focused on internships and recent graduates. In this field, Politecnico di Torino is working actively, also thanks to the high demand for graduates coming from firms, which aim to recruit students before they finish their studies. Politecnico di Torino will confirm the initiatives that are currently in place and will develop new activities to support its alumni throughout their entire professional career. It will be crucial to maintain close contacts with the alumni community. This means helping them match their current competencies with emerging job opportunities and give them the chance to fill possible gaps in their academic background.

Secondly, the relation with our alumni will be developed at different levels, such as the organisation of periodic events and the use of networking tools, both commercial (e.g., social media) and proprietary. Politecnico di Torino will promote a broad and regular communication to update its alumni on institutional initiatives. Furthermore, our University will collect updated data on the roles and activities carried out by each former student, in order to put in place specific initiatives, such as new internships, joint research projects or technology transfer activities.

As mentioned above, our alumni will also be individually involved in a variety of initiatives, such as post-graduation surveys, cooperation in educational planning activities or seminars/workshops, student mentoring, lifelong learning courses, etc...

/ GOVERNANCE

The actions described above require significant collaboration between the Departments and the *Collegi*, in accordance with their collective responsibility in joint decision-making processes. Within our current educational governance framework, several *Collegi* are rooted in a single Department. The various *Collegi* are strongly linked to their Departments from a cultural point of view and strive for the allocation of resources. This may sometimes generate competitive tensions, which risks to hinder innovation. Therefore, we need to identify new decision-making processes and new responsibilities that may be able to separate genuine cultural concerns from competition among structures, at least partially and during initial experimentations. This represents a necessary condition for properly implementing new educational programmes and pedagogical formats.

To avoid any risk of a self-referential approach, every decision will be supported by objective assessments. In this regard, besides the already existing industrial advisory boards that support each *Collegio* in the evaluation of its course catalogue, Politecnico di Torino will develop new surveys to gather the opinions of a large number of alumni. These will be given the opportunity to evaluate the contents and educational effectiveness of each course, a few years after entering the labour market.

The *Collegi* will be asked to develop an educational innovation plan. This plan will be aimed to share and enhance the experiences that have already been achieved. It will also help develop new initiatives in line with the specific needs of the degree programmes run by each *Collegio*, also from an international perspective. This will be pursued also by working in synergy with the Teaching Lab. Finally, the *Collegi* will rely on the support of the Green Team to align the courses contents to the 17 UN Sustainable Development Goals.



RESEARCH

/ THE NEW
CHALLENGES
OF RESEARCH

/ THE VARIOUS
FORMS
OF RESEARCH

/ LEVELS,
ORGANIZATION
AND GOVERNANCE
OF RESEARCH

/ THE NEW CHALLENGES OF RESEARCH

Research today is becoming ever more complex on a global scale: Politecnico di Torino plays an active role in this scenario.

We observe a significant growth of the scientific community at international level, with an increasingly important output of research products. This process is also driven by the substantial contribution of the “formerly emerging” countries, which often receive very significant public and private investments.

As for scientific disciplines, we observe complex phenomena in which continuous progress on mature scientific paradigms is accompanied by significant turmoil and the emergence of new research trajectories, which quite often arise from environments other than academia.

In this context, research is being globally driven towards the major planetary and societal challenges. In this regard, it is worth reflecting on the Mega-Trends reported in the periodical OECD “STI Outlook” reports. These reports focus on climate change, population aging, new medical paradigms, digitalization and the role of technologies in managing geopolitical changes, such as migration and security. Similarly, the UN recommended the adoption of the 17 Sustainable Development Goals of its 2030 Agenda, which are also connected to the five priority clusters of Horizon Europe, the upcoming ninth EU Research, Development and Innovation Framework Programme.

These challenges require a multidisciplinary contribution from the various fields of science and technology, including, in particular, digital technologies. In fact, “digital transformation” permeates all sectors of research and industry and gives rise to the emerging productive paradigm called “Industry 4.0”, for instance. Therefore, the disciplines associated to “digital transformation” should be considered both as separate research topics and as interdisciplinary enabling tools for other fields of research.

In order to tackle future challenges, science and innovation will have to deal with deep changes. In particular, as far as basic research is concerned, we will need to embrace the principles of Open Science to promote broader knowledge sharing and better reuse of research data. Moreover, we will need to consider also ethical and social issues in our research activities, if we want to achieve responsible research and innovation.

Politecnico di Torino is working in a complex and tumultuous scenario by leveraging on its competencies and assets, but it also has to face some critical issues. The first issue is that our University’s baseline public funding is inadequate compared to international standards. The second issue is the low number of faculty members and staff. This problem is very serious if we consider that Politecnico di Torino has committed to providing education to a large student population. Finally, the last critical issue is the need to achieve a correct balance in research evaluation processes, using them as tools to improve the effectiveness of individual and collective actions. Evaluation processes should be oriented to broader and system-wide objectives that cannot be captured by mere bibliometric data. Therefore, the purpose of continuous improvement in this field will shape the strategic directions and operational decisions of our University, as described below.

The research strategy of Politecnico di Torino aims to make our University a leading player at national and international level, especially in relation to the importance and impact of its research activity on business and society. This strategic objective leads to a number of fundamental decisions.

Firstly, our research activities will be oriented to ensure the consistency with the Sustainable Development Goals and the Horizon Europe priorities, which well fit with our University’s competencies. The European Union Framework Programme represents an essential point of reference for both its economic relevance and for the opportunities it offers in terms of close interactions with other European and non-European actors. However, our University does not want to transform this orientation into a top-down approach which might impose the priorities of research agendas and research budgets. This orientation is based on the full respect of freedom of research and on the awareness that a top-level university cannot confine itself to simply following the guidelines of its funding bodies. On the contrary, it must take independent decisions which may lay the foundations for the drafting of future research programmes.

Secondly, Politecnico di Torino will increasingly support multidisciplinary research activities. In particular, our University will foster synergies between “digital” disciplines and other fields of engineering, architecture, planning and design. This commitment will lead to confirm the goals of the recently established Interdepartmental Research Centres and to encourage new initiatives in other cultural fields. At the same time, our University will advance the organizational model adopted by the Interdepartmental Centres and will promote the evolution of their research agenda on the basis of periodical evaluations and the identification of new strategic directions.

Finally, our University will foster a strong integration between the different phases of basic and applied research and the innovation-centred activities which will follow. This will ensure an impactful dissemination of research results towards industry and society. In this context, Politecnico di Torino will encourage the progressive diffusion of the principles of Open Science and Responsible Research and Innovation.

/ THE VARIOUS FORMS OF RESEARCH

Our University has always worked within the entire range of “polytechnical” research.

The research strategy of this Plan aims to increase both the effectiveness and the integration of the different research forms and, therefore, it seeks to boost the subsequent “third mission” activities. This approach will lead to adhere closely to the Horizon Europe programme and its three pillars (Open Science, Global Challenges and Industrial Competitiveness, Open Innovation).

With regard to **basic research**, our University is currently performing well, with some peaks of excellence. This activity is mainly developed by the more structured research groups, which have reached an adequate critical mass and are able to exploit synergies with applied research portfolios, which are easier to fund.

In this field, our University has recently promoted grants for basic research for all tenured faculty members and starting grants for tenure-track assistant faculty members. These grants aim to ensure the independence of researchers and they foster mobility and opportunities for further training. In addition, they also promote the aggregation of researchers around collaborative projects; they provide resources for curiosity-driven initiatives and enhance cultural update and the development of new competencies on emerging issues, which are required to carry out the University’s cross-cutting institutional tasks.

After a three-year implementation, our Governing Bodies will carefully evaluate the outcomes of this policy in order to improve its effectiveness, as it will be done for any other initiative of this size. Curiosity-driven research will be also supported by the attraction of external funds such as those offered by ERC and by FET Flagships.

Coming to **applied research aimed at industrial innovation and societal challenges** and funded by external sources, both public and private, Politecnico di Torino is currently having very good results in terms of success rate of its project proposals.

Over the years, sound support tools have been adopted to face the complexity of project management throughout the entire life cycle of a project and to interact with its external stakeholders. These skills have now been fully established.

Our University will enhance this type of research. It will work to improve the understanding and dissemination of the opportunities offered by EU research funding within the academic community and it will benefit from the positive effects arising from international cooperation with other universities and large multinational companies.

This will ensure that activities will be at the leading edge of research and will limit the risks of isolation and self-centeredness. Furthermore, in planning its research activities, Politecnico di Torino will focus on the contents and the relevance of results in order to avoid focusing only on the immediate economic returns of project funding. Politecnico di Torino will provide increasing support for the drafting of project proposals, especially with regard to the economic, ethical, legal and impact aspects of its projects. Our University will make greater efforts to engage local companies in research consortia, and especially SMEs which seem to be more inclined to get involved in this type of activity. A similar objective will be pursued with local public administrations, in order to engage them as project partners and in their capacity to shape the political and socioeconomic trajectories that may stem from research.

Our University is going to work to improve its involvement in the drafting of future “research agendas” at regional, national and European level, as well as to foster a better implementation and dissemination of the opportunities offered by EU research funding within the academic community, also by establishing a hub of Politecnico di Torino in Brussels.

More generally, Politecnico di Torino intends to continue to participate in a proactive way in the national and international networks of which it is a member, in order to share good practices, pursue common research goals and achieve a critical mass in supporting international bodies in the definition of research agendas.

Finally, dissemination of research results will be significantly enhanced by creating a “research agora”. This “agora” will be based on the strengthening of traditional communication channels, on the creation of a research and competence database and on an institutional “showroom”. This dissemination strategy will target external stakeholders to increase cooperation opportunities in industrial research and third mission activities. It will also target internal actors to favour interdisciplinary synergies among the various members of our community.

The activity of Politecnico di Torino in the field of **industrial research** is very effective, but our University still has a significant untapped potential. In recent years, Politecnico di Torino has provided increasing support to researchers, especially to help them establish partnerships with large companies. In Italy Politecnico di Torino pioneered the development of medium and long-term partnership agreements based on multidisciplinary research programmes, which often led to opening Joint Labs and locating industrial research activities within our campus. For Politecnico di Torino these agreements represent an important experience, which enabled our University to be on the frontier of technology and to increase its ability to compete with other universities at national and international level. These agreements also allowed to substantially reducing the often decried gap between research activities and innovation. Given this experience, Politecnico di Torino will continue to develop its partnerships with large firms by renewing existing agreements and establishing new ones, without limiting its perspective to local relations.

The partnerships with large firms will be accompanied by similar mechanisms, which will foster a fruitful interaction with SMEs, especially at local level. Our objective is to renew the industrial base of our territory and foster the emergence of new medium and large enterprises. These mechanisms will initially be tested and then scaled up so to take into account a variety of factors. Among these, the specificities of SMEs, the need to act selectively on the firms and sectors that can benefit the most from such cooperation, as well as the need to safeguard the efficiency of the actions carried out by our University and by the SMEs involved.

For both types of partnerships, Politecnico di Torino will work towards encouraging the development of long-term strategic relationships, rather than searching immediate economic returns only.

To this end, particular emphasis will be placed on the mobility of both academic and industrial staff and on the development of “Industrial doctoral programmes”. These courses are intended for young graduates or employees selected by their companies and will contribute to the growth of human resources, who can be a particularly effective vehicle for knowledge sharing and technology transfer.

In this regard, Politecnico di Torino needs to foster systematic connections between the offices responsible for these partnerships and the Office of Career Services, since it is aware that partner companies often consider collaboration in research activities and the recruitment of young talents as a bundle.

When negotiating with firms, it will be important to identify clearly the level of technological maturity actually achievable within the University and the level that should be absorbed and managed by our industrial partners, or by other actors who specifically work in the “technology transfer” value chain.

Finally, benchmarking with other Universities will be carried out in order to make contractual frameworks more flexible, so they can be more easily adapted to the different counterparties, and making sure that the mechanisms used to allocate the activities to the different members of the University are more transparent and streamlined.



The analysis carried out in this field revealed that there are still some difficulties when it comes to managing relations between research groups and firms or public institutions. In order to tackle these problems, our University will invest in staff members who will be in charge of managing these relationships: they will need to have adequate sensitivity to understand the technical-scientific contents of projects, the opportunities for exploitation, as well as the business and industrial needs of the counterparties. We will therefore work to build on previous experiences in order to strengthen a service of “research agents” who should be able to make proactive proposals to companies and a service of “account managers” who should look after established relations and work in close contact with research groups.

Our University recognizes that the different phases of research constitute a *continuum* of activities and relationships. For this reason, the overall structure of the University’s administrative services need to be reorganized in order to avoid overlaps between central and peripheral entities, parallelisms, fragmentation and discontinuities between the services which support research and technology transfer. A management control system aimed to cover planning and risk management will also be implemented. This will lead to strengthen and extend the services currently offered. In particular, Politecnico di Torino will enhance the services that provide support in the following areas: social, economic, legal and ethical dimensions of research projects, communication of research and funding opportunities, dissemination of research results, internationalisation activities, especially towards high-level universities and “strategic” countries.

In conclusion, Politecnico di Torino intends to increasingly support every single research phase and safeguard a harmonious development of the various phases. This way, our University is going to be able to preserve the balance it has achieved so far, which is a crucial value to ensure the ability to generate new knowledge and share it with society.

/ LEVELS, ORGANIZATION AND GOVERNANCE OF RESEARCH

Politecnico di Torino is the core of a very complex research and innovation “ecosystem” in which research and “third mission” activities are strongly linked to one another and to the different sectors of economy, relying on a number of “bridging institutions” founded in the last 20 years. This section analyses all the activities carried out within our University, while the activities developed outside Politecnico will be described in section 5.

Research activities are organized around the various Departments of the University, in accordance with national law and with academic tradition. Politecnico di Torino has 11 Departments, some of which work on a limited number of disciplines, while others conduct research on a greater variety of cultural fields. In recent years, Politecnico di Torino has decided to establish a number of Interdepartmental Research Centres which pursue the achievement of a critical mass in view of three possible and different goals.

The recent creation of the Interdepartmental Centres, in addition to the long-established organisation centred on the Departments has led to a new matrix structure which must be carefully governed. To this end, an in-depth analysis has been carried out to identify the different “places” (*loci*) where research is conducted. They include not only well-established institutional entities, but also the workplaces where our researchers operate every day. In particular, this analysis identified four main levels. Not only these levels have to coexist, but also they must mutually reinforce each other to let our University generate the highest impact on this fundamental mission.

/ THE THREE GOALS OF THE INTERDEPARTMENTAL RESEARCH CENTRES

— The first objective is associated with the need to acquire important research infrastructures and ensure their efficient and widespread use. In this context, the focus is on multidisciplinary activities which allow to jointly manage these assets.

— The second objective derives from the need to tackle complex research issues that have an interdisciplinary nature and are typically linked to the above-mentioned societal challenges. In this context, the various fields of the “polytechnical culture” focus on sharing research programmes and project activities.

— Last but not least, the third objective may be linked to the need to promote convergence of disciplines in a trans-disciplinary perspective, which encourages the emergence of new scientific paradigms. In this case, it will be possible to foster a closer collaboration among the various cultural fields where the common knowledge base can be merged progressively to give rise to new disciplines.

/ THE DIFFERENT "LOCI" WHERE RESEARCH IS CONDUCTED

— The first level is represented by **individual researchers**, who generally consider individual work as a significant opportunity for research flexibility and freedom. However, and especially in some cultural contexts, this *locus* of research may lead to research programmes which privilege quantitative aspects - in terms of bibliometric results - together with a low coverage of competencies, self-centredness, poor planning capability and a limited possibility to access infrastructures and effectively communicate research results.

— The second level is represented by **research groups**, which are considered by researchers (as well as by literature) to be the most effective *locus* of research. The research group is the main environment of a researcher's daily activity and dialogue. Research groups promote synergies between competencies; they facilitate access to financial resources and assets and allow achieving a "critical mass". At the same time, research groups require effective leadership and they need to avert risks of self-centredness when dealing with broader fields. Moreover, the "departmental house", where university groups have been growing has sometimes led to poor levels of multidisciplinary, which hinders new research and innovation paradigms.

— **Departments** are perceived as the "home" where each researcher develops his/her own career and the place where synergies between the three university missions can be implemented. Departments have sound planning capability and ensure effective visibility from the outside. However, researchers perceive that departments have a limited capacity of strategic elaboration. This implies the risk of reducing it to a mere logistical-administrative support centre or as a collegial entity acting as a counterparty to the central governing bodies.

— **Interdepartmental structures** are perceived as a place which favours the opportunities mentioned above (i.e., sharing of assets, research programmes, and cultural fields). They stimulate innovation and help to reach the technological frontier, but they require knowing how to work with a different approach, with adequate coordination and integration tools. By its own nature, this structure is a temporary entity and is strongly bound to the achievement of its own specific objectives, as outlined above.

It is essential that each one of these *loci* of research is properly supported and managed if we want to achieve a harmonious development of research in our University, as well as synergic and non-conflicting relationships among these *loci*. This operation will also be useful to valorise and leverage the relational capital accrued over the years in both academia and industry at national and international level.

Departments need to continue progressing up to the point where they can play the role they have been assigned to by the law and the Statute of Politecnico di Torino. In particular, they must become *loci* of strategic elaboration by means of adopting guidelines and plans which are consistent with this Strategic Plan and interpret its contents according to the specific features of each departmental community. This will allow preserving and boosting disciplinary competencies with the aim of nurturing future activities within the department as well as new interdisciplinary activities.

Interdepartmental Centres, after their initial implementation, should be dedicated to develop activities that must be complementary to the activities carried out by the Departments. In fact, they should be considered as *loci* devoted to "creating new cultures", and not simply to "bringing different cultures together". To this end, their missions must be outlined in accordance with their specific objectives and value creation mechanisms. These Centres need to become open, flexible and able to evolve. Moreover, and especially for research infrastructures, their management model should ensure strong synergies among their users. They must provide uniformity in policies granting use and access to infrastructures, expand visibility and enhance the services offered. Consequently, and to the benefit of the Departments, our Interdepartmental Centres will become real collaborative platforms open to the various areas of our University and to external actors. In this regard, our University will pay particular attention to the recruitment and training of highly qualified laboratory technicians who will provide competent support for the use of infrastructures.

Research Groups, besides being the *locus* of daily research activities, play a dual role: they are sources of knowledge and, at the same time, they are also the hubs of a complex network of relations, both internally and externally. This role must lead to a “vertical” contribution within the Departments and a “transversal” contribution to the activity of the Interdepartmental Centres, contributing not only to research but also to the other university missions. Nowadays these fundamental contributions are only partially recognised, more in form than in substance. To this end, we need to define new mechanisms to identify and valorise the membership to a specific “research group”, so that each group may find its right position in the complex organizational pattern of our University without any distortions.

Our University will continue to focus on the work carried out by **individual researchers**, but at the same time, it will promote their aggregation in research groups whose size and cultural background may allow tackling effectively the increasing complexity of technological research at international level. In particular, Politecnico di Torino is going to confirm its commitment to the implementation of the European Charter for Researchers principles. This will be done in order to guarantee a free research environment in which equal opportunities of work activities and career growth can be offered to all the actors involved. Moreover, our University’s choice to seek interdisciplinary research activities will result in the introduction of mechanisms, which should enhance this kind of experiences also when it comes to recruitment and career evaluation.

Particular focus will be placed on the external recruitment of faculty members, whose talents can integrate and complement the competencies of our current ones, in order to nurture multidisciplinary in research, as well as in education.

With the support of our academic community, this will allow us to enhance the process that ensures the continuous advancement of knowledge, which is our most valuable asset and is crucial to make a mark in a rapidly changing society. Our university will implement specific actions to attract highly qualified lecturers from abroad. These actions will be coordinated and combined with strategies aimed at strengthening international relations. The internationalization of research will also be promoted through policies supporting the outgoing mobility of researchers.

Finally, Politecnico di Torino will seek to create the essential conditions to encourage the professional growth of temporary research staff by offering them **fair career opportunities**. In particular, our University will plan positions for fixed-term researchers and research fellows in a way that should avoid the creation of large cohorts of senior researchers with limited opportunities for tenure.

At the same time, it will work towards a significant **rise in number of Ph.D. candidates**. To achieve this goal, Politecnico di Torino will increase the number of doctoral scholarships and the amount of the grants. It will also promote new international agreements with industrial or public partners. Thanks to these initiatives, our Ph.D. candidates will become the main group of non-tenured persons working to support scientific research at our University, in line with what happens in the best technical universities worldwide. Politecnico di Torino will especially work to help our young researchers develop competencies that may be successfully used in a variety of sectors. At the same time, they will be made aware of the various career opportunities available both inside and outside the academic world.





THE “THIRD MISSION”: TECHNOLOGY TRANSFER AND KNOWLEDGE SHARING

/ THE “THIRD
MISSION”
OVER TIME

/ THE VARIOUS FIELDS
OF TECHNOLOGY
TRANSFER

/ TECHNOLOGY
TRANSFER MODELS

/ CULTURE
AND COMMUNICATION

/ THE “THIRD MISSION” OVER TIME

Politecnico di Torino has always recognized the fundamental importance of its role in the activities related to the “third mission” of universities. As it is natural for any technical university, Politecnico di Torino has actively supported the development of Piemonte and Italy by cooperating with industry in the different phases of our history. Initially Politecnico di Torino supported the construction of our civil infrastructures; then, it participated actively in the first wave of industrialization in the Nineteenth Century. It also contributed to the “electric revolution” of the Second Industrial Revolution, as well as to the massive industrialization of the first and second post-war periods, all the way up to the electronics and information technology revolution of the last decades. Similarly, today Politecnico di Torino is contributing to the “Fourth Industrial Revolution” by exploiting the results of its decade-long research activities supporting the establishment of the local “Industry 4.0” Competence Centre.

At the beginning, our University found it quite natural to pursue its third mission, which mainly consisted in cooperation with companies and education of generations of “polytechnical” professionals, managers and executives. Over the last 20 years, the third mission has become more and more explicit and our University has pioneered specific initiatives at national level. The creation of the first Italian university incubator in 1999, the establishment of applied and industrial research laboratories within the “Cittadella Politecnica” in 2003, the development of the Office and the Laboratory for Technology Transfer in 2014 are some examples that showcase our University’s steady willingness and ability to interact with the economic and social environment.

Over the years, the “third mission”, originally intended and limited to Technology Transfer activities, has expanded and developed its sphere of action. “Sharing” and “co-generating” knowledge have become an ever more relevant topic of debate as far as the relationships with companies are concerned. Nowadays, the role of academia towards society in disseminating research results and promoting open debate on the social, economic and political impact of technologies is gaining momentum. The result of this process is a new model:

an open, accessible campus, keen to the quality of life and to inclusiveness, which promotes continuous dialogue with society and the local community and is able not only to develop new technologies, but also to foster positive applications inspired by sustainable development.

According to this Strategic Plan - and in line with the Horizon Europe programme - Politecnico di Torino intends to confirm and advance its “third mission” activities by embracing two core strategic objectives.

The first objective is to increase the resources available for our University, in a medium to long-term perspective. This objective derives from the awareness that, when we carry out third-mission activities, achieving results requires time and consolidation of relationships; to this end, seeking immediate and illusory returns should be avoided.

The second objective is to contribute to the development of our local territory and country with renewed commitment. To pursue this goal, Politecnico di Torino is going to foster the growth of the competitiveness of firms, promote the dissemination of a sound “polytechnical culture” in the different fields of society. Moreover, it will provide solid support to policy-makers in defining policies and norms that may foster the virtuous development of a society that is going through significant technological and societal changes.

In the pursuit of these strategic objectives, our efforts will be oriented towards two main directions. The first is the strengthening of the “**innovation value chain**”, which starts from the development of competence and research results and stretches into their industrial application. This will require coping with current gaps in skills and funding and developing new models suitable for the fields of architecture, design and planning. The second direction is oriented towards working in fields that are still relatively unexplored by our University, dealing with cultural promotion, communication and public engagement. These two orientations are presented in detail in the following paragraphs.



/ THE VARIOUS FIELDS OF TECHNOLOGY TRANSFER

The “third mission” consists of a wide variety of fields of action, which are closely related both to each other and to research and teaching. This section of the Strategic Plan presents the activities that actually follow those described in the previous sections from the point of view of organization and process. Reference is made to the sections on research and education for topics which deal with, respectively, collaborative research with industry and educational design and job placement.

In recent years, Politecnico di Torino has made great efforts to ensure effective legal, administrative and commercial support to **industrial property rights management**. Our University ranks very high compared to other Italian universities for its intellectual property performance, although our ranking is still poor at international level. This process will be improved, so that our patent portfolio may achieve a critical mass and become more attractive for licensing, both locally and internationally. This will increase economic returns and show our University's researchers the benefits of this activity. The licensing activity requires renewed attention if we want to overcome the difficulties encountered so far, such as the lack of professionals with appropriate skills and relationships and the relatively low “absorption capacity” of local companies. To solve this issue, our University needs to involve new professionals, foster Proof of Concept initiatives which seek to raise the Technology Readiness Level of patented technologies and extend its network of relations to a higher number of companies.

Politecnico di Torino has always worked to support

the **creation of innovative enterprises**, including research spin-offs (see Italian Ministerial Decree no. 168/2011) and start-ups established in close connection with our University. These activities are carried out through entrepreneurship training and active support, both within the University and with the help of the I3P incubator. In this regard, the results achieved so far have had a significant impact on the ability of the territory of Piemonte to generate hi-tech entrepreneurship. However, the growth rates in terms of number of start-ups and fundraising are lower than the rates of other “ecosystems” at international and national level. This is mainly due to a different economic dynamism of the various territories and to the lack of large venture capital firms in Italy. To fill this gap, training activities on entrepreneurship will be systematically offered to a wider number of students and researchers, while the University will foster new synergies with local government. The I3P incubator will also be relaunched, through its effective integration into the innovation ecosystem that we are building around our University and though the attraction of international seed and early-stage venture capital funds. In particular, the launch of new start-ups (and especially research spin-offs) will rely on technologies with greater maturity and founding teams with better competence, also by stimulating an early involvement of venture capital funds. This will allow the I3P to focus more on equity fundraising, as well as on the business and sales development of these start-up companies. Politecnico di Torino will make a review - and if possible, a simplification - of the requirements for the creation and management of academic spin-offs.

“Third mission” activities cannot disregard the **active involvement of individual researchers** and research groups, both in the activities carried out through the University and in the ones that faculty members are allowed to develop on their own by the current Italian law.

Currently, this involvement turns to be somehow unattractive, because of the scant incentives for devoting time and energy to “third mission” activities.

To this end, our University will have to adjust its career evaluation processes in order to take into account the activities carried out in this field. Free and independent activities are important as well, since they have always allowed a significant and widespread connection with industry, which has often been a precursor to institutional relationships and the development of faculty members' competencies.

However, their development is now hindered by the current legislation and by the interpretation of jurisprudence, which limits the possibilities for full-time faculty members. Collaborative actions will therefore be required in several fields to avoid losing opportunities for cooperation with external actors.

Relations with Professional bodies represent a “translation” of the “third mission” that must be enhanced and relaunched. Today, these relationships are limited to institutional fields, but further important synergies are possible and desirable, especially in relation to lifelong learning. In this regard, Politecnico di Torino can play a fundamental role in disseminating the most advanced technologies and research results to individual professionals by involving them in educational programmes, as well as by supporting the dimensional growth of professional services firms. The implementation of these paths will start from a smooth and constructive debate on the services rendered by professionals and the consulting activities carried out by the University.

In the **fields of architecture, planning and design** some prior experiences have been developed with local public administrations, local authorities, national heritage offices, private research centres, associations and NGOs, together with professional and entrepreneurial activities. The favourable conditions offered by the recently established Interdepartmental Centres, the output of new initiatives, among which the possible creation of a Design Centre, will further enlarge the scope of action in these fields. It is also important to underline the widespread and constant action carried out in cooperation with local actors by our University's Green Team for the organization of events, debates, talk shows on the topics of Agenda 2030 and the associated Sustainable Development Goals.

Our University is going to confirm and boost the Green Team's actions in order to have a positive impact not only on the campus (e.g., energy, food, waste, water, mobility, green shopping, etc.), but also on the local territory (urban outreach). The aim is to generate a widespread and multipolar service system (dealing with social inclusion, revitalization of urban areas at risk of degradation, cultural integration and social cohesion, welfare, urban regeneration, environmental sustainability, health and welfare promotion, active citizenship, etc.). It may be highly interconnected and accessible to the *milieu* of local actors (public and private companies and institutions at various levels).

Politecnico di Torino's impact on **industrial policy and attraction of investments** is rooted in a variety of structures and initiatives (e.g. Regional Innovation Poles, National Clusters, Industry 4.0 Competence Centre, etc.). Through industrial partnerships, our University has also played a leading role in encouraging new industrial and R&D settlements at local level.

Dialogue with relevant actors at local and national level will be strengthened in order to ensure continuous progress of these policies and give our University an increasingly active role in this process, also with the aim of creating a talent-friendly ecosystem which may favour the attraction and retention of high-quality graduates. Specifically, particular emphasis will be placed on attracting investments to the areas neighbouring our University's campuses, in line with specific initiatives such as the Energy Centre.

The “third mission” also includes the provision of **technical-scientific support to standardization bodies, policy-makers and independent regulatory authorities**, to help them understand the evolution of new technologies and govern their implementation in industry, society and the environment. The recent turbulent technological developments make it necessary and appropriate to strengthen these activities which – up to the present – have been mainly developed thanks to the initiatives of individual faculty members. This is a still unexpressed potential, where the technical-scientific competence and the impartiality of our University constitute an important value.

Finally, the “third mission” also deals with **international development cooperation**. Our University has had some important experiences in this field thanks to individual initiatives. However, these activities are still not properly promoted and they have not been organized in a common strategy. In this regard, our University will strive to reinforce its commitment to international cooperation. This will be achieved by paying particular attention to the regions of Asia and Africa, by participating into international networks working in this field and interacting with international organizations as well as by stimulating an active involvement of the various members of the academic community, including students.

/ TECHNOLOGY TRANSFER MODELS

The current Technology Transfer model is based on the overlapping of a variety of successful experiences from different historical periods. These experiences constitute a heritage of skills and relationships that must not be dispersed. On the contrary, they must be enhanced and made more synergistic.

Our University recognizes that Technology Transfer activities, conceived as a continuous process starting from research and ending in the production of innovative goods and services, cannot be fully implemented within the boundaries of a university. This statement is based on a deep reflection on our activities. From an institutional point of view, the action of a public university cannot extend to competing on the markets for goods and services. Financial reasons also suggest that it may be more coherent and effective for other stakeholders to finance specific phases of the Technology Transfer activities. Finally, organizational reasons make it clear that some Technology Transfer activities require skills and organizational approaches that cannot be implemented effectively in a public organisation, especially given our current regulatory framework.

These observations support Politecnico di Torino's intention to work, together with local actors, to build an “innovation ecosystem” consisting of complementary bridging institutions which may ensure full, uninterrupted and effective coverage of the Technology Transfer value chain. In particular, if we bring closer the offer of innovation with the firms representing the potential demand and the financial sector, it will be possible to promote an “early market” that may speed up both the development and the adoption of new technologies.

In the short term, the various Technology Transfer activities will therefore be entrusted to the administrative units of our University, to the recently established Links Foundation and Links Innovation company, to the I3P incubator, as well as to other entities that will progressively compose the mosaic of a true “**innovation district**”.

/ CULTURE AND COMMUNICATION

In the field of culture and communication, this Strategic Plan seeks not only to strengthen the traditional functions of the basic missions of our University (e.g., libraries, archives, press office, etc.), but also to organize them in a more structured manner. This would allow reaching an array of third mission activities that should be wider and more synergistic than traditional “Technology Transfer” activities. Therefore, the aim is to achieve a strong integration between cultural and communication activities. These activities have always been existing in our University, but they have not been considered as a whole, nor have they been the subject of any strategic planning.

Our University's commitment to this new field of action is inspired by the desire of improving external communication as well our University's corporate image and the services offered to our faculty members and students. Yet, these are not the only reasons for focusing on culture and communication. It is especially because we consider our University an open community that stems from society and wishes to evolve with society through a close dialogue based on common democratic values.

Culture and communication activities are intended as a whole; they are well structured and closely connected to each other and have a number of possible functions.

As for the **support for education and research**, our University will bolster its library and archival services and will launch projects to promote its museums, being aware that we are responsible for preserving and transferring the heritage of the past to the new generations. In addition, open access to research results will be strongly encouraged and promoted in order to bring our University's policies closer to the level of international best practices. Finally, the planning of a new and important Cultural Centre and Library will be started: this will also allow to overcome the current significant limitations of our existing buildings.

New initiatives will be launched with the purpose of enhancing the common **culture shared by the academic community**. This orientation starts from the idea that universities are institutions that attract people who are fond of knowledge and want to dedicate their professional life to it. Therefore, activities in support of the academic community will be promoted, by creating events for dialogue and acknowledgment, by revising ceremonies and celebrations, by highlighting important moments in our University's life, by thinking of innovative forms of expression of the University's appreciation towards the members of its community. In addition, new attention will be paid to the meetings among people. Therefore, logistical support and coherent communication will be provided to meetings of different types: meetings taking place inside or outside the University; workshops gathering a limited number of scholars or large conferences; scientific meetings or events open to the public; meetings organised by individual members of the academic community or by external bodies.

Communication is crucial to allow members of the academic community to work at their best and promote our University, its activities and its potential to civil society, businesses and institutions. Specific support will be provided to the members of the academic community who are willing to undertake dissemination and communication activities making use of their prestige and natural inclinations to do so. Communication will be strengthened at different levels on traditional and social media for a real leap in quality. This will be done by combining media-oriented activities with other actions, including cultural initiatives.

As for the commitment to **dissemination and dialogue**, our University will increase its responsibility to interact with society, to disseminate research results and establish dialogue with citizens and institutions on issues of particular relevance. Politecnico di Torino will make use of this dialogue to address the fears and hopes of those who have to deal with an increasingly rapid and powerful evolution of technology and will try to offer them a constructive contribution based on its competence. Our University will be able to play the influential role of “summoning people” by encouraging dialogue between those who are interested in a specific topic - perhaps even a controversial issue - in order to facilitate mutual understanding, also with the help of the members of the academic community. In addition, our University will participate in the cultural initiatives of civil society - such as festivals, conferences, debates - with the aim of contributing to the great debates of our time with its voice.

These goals will be achieved in different ways. It will be important to focus on physical places such as libraries, reading and meeting rooms, archives and museums. To this end, it will be necessary to give value to physical objects such as books and magazines, contents of archives, objects preserved in museums: a material heritage that requires care and sense of responsibility. The already mentioned project of a Cultural Centre and Library, conceived to serve both the academic community and the City, will represent the target of this process. In the era of digital revolution, physical spaces and objects coexist with digital spaces and objects, whose importance is constantly increasing. Therefore, we need to redesign all the online spaces of the University with an ambitious project which will involve both the contents and the graphic design. In this context, scientific publications (via open access), teaching materials and other support materials for career guidance (via open educational resources), as well as data (via open data) will pave the way for more visibility and greater impact of our University on society.



WHICH KIND OF UNIVERSITY?

/ OUR ACADEMIC
COMMUNITY

/ STAFF POLICIES

/ ORGANISATION

/ GOVERNANCE

/ A NEW CULTURE
OF QUALITY

/ SUSTAINABILITY
AT OUR UNIVERSITY

/ TOWARDS
A DIGITAL UNIVERSITY

/ THE MASTERPLAN

The three previous sections have outlined the main strategic orientations for the three missions of Politecnico di Torino: education, research and third mission. These strategic orientations partly confirm the path already undertaken by our University, and partly innovate it in a significant way. Therefore, managing change becomes crucial to make our University more rational and flexible in order to tackle today's challenges and especially the challenges of the years to come.

The implementation of this strategic plan will require a review of the mechanisms through which the University works on a daily basis. This section explores the vision of Politecnico di Torino as an “open academic community” (see Section 2). It examines its organization and internal processes and looks into the governance of our University.

/ OUR ACADEMIC COMMUNITY

When we discuss our University model starting from the concept of academic community, we make an important choice: that of focusing on the individual and collective actions of the members of the community, ensuring equal opportunities to all of them and promoting their talents and merit. Moreover, this choice implies that we want to rediscover and claim the almost millenary roots of the institution that we call university. Its history begins with the medieval guilds of students and teachers who chose to gather freely to generate and share knowledge and goes all the way to the words that Isidore Rabi addressed to President Eisenhower: “*Mr. President, we are not employees of the university. We are the University.*”

Choosing to put the academic community at the heart of our policies means looking at our University from a quite different point of view compared to the usual one. In particular, this perspective goes against the idea of considering the university as a “factory of graduates and research products” or as an “institution which provides services to its users”.

On the contrary, this choice leads to conceive the University and its organization as an “enabling platform”, which allows the various members of the academic community to contribute actively to the mission of knowledge creation and sharing, with effectiveness, efficiency and flexibility. This orientation leads to adopt specific management values and criteria. These include: focus on individuals as members of the community, promotion of relationships based on the principle of subsidiarity among the various units of the University, academic freedom, process agility and, finally the idea that individuals who are appointed to office within the university should serve the community as “firsts among equals”.

Specifically, these values are conveyed by the following strategic guidelines.

As far as our **organizational values** are concerned, since 2012 the University has adopted the Code of Ethical Conduct of the University Community and a Code of Behaviour of Politecnico di Torino. These documents list the ethical principles to which the members of the academic community are required to comply.

The expression and application of the principles included in these Codes, created in accordance with Italian law, will be oriented in a way that should ensure a substantial - and not merely formal - adherence to these values.

Our University aims to provide the members of the academic community with a good, open and dynamic environment for study and work, ensuring a **high quality of life**, from a physical, social and psychological point of view. This also includes intangible factors and the search for a balance between professional and private life.

Future welfare actions will be based on an in-depth analysis of situations and needs (e.g. number of parents with young children, commuting schemes, etc.). In this context, our University will consider both personal needs (e.g. childcare, care for the elderly and/or family members with disabilities), as well as the aspects that are more closely related to our University's missions (e.g. culture, transports, sustainability, etc.). In this regard, Politecnico di Torino will strengthen its capacity to offer support through counselling services.

Employee-centred welfare actions will aim to ensure autonomy in choosing and using services, for example by signing agreements with service providers, without neglecting at the same time the value of the initiatives that foster aggregation and help to strengthen the sense of belonging to the community. As for students, and in particular those who come from outside our region and from abroad, we will provide more services and opportunities which may foster dialogue, integration and aggregation. Therefore, welfare actions will be oriented towards creating places, facilities, cultural and recreational activities by stimulating students' initiative. This will take place by working in collaboration with specialized local bodies.

The promotion of **equal opportunities and inclusiveness** is inspired by our University's commitment to ensuring fair treatment and opportunities to all its members. Moreover, it stems from the belief that diversity and inclusion are core values for any university which aims to be a school of life, as well as a place for study and work. In this context, by sharing and implementing the principles of the European Charter for Researchers, our University will launch new initiatives to monitor and govern equal opportunities with respect to the various aspects of diversity, starting from gender diversity. This will ensure that all actors are offered full and equal opportunities to carry out their activities and pursue paths of cultural, professional and career growth in a merit-based perspective.

In an ever-changing social context such as the current one, our University will also need to develop a proper sensitivity to interpret the dynamics of exclusion and possible emerging forms of discrimination. Particular attention will be paid both to the aspects that may limit the full and free expression of each individual, and to any possible deviant behaviour that may be detrimental to the dignity of the individual.

Finally, **sport** is an important value for our University: it has positive effects on the psychophysical well-being of individuals. It also has an educational function and helps to bring people together. To this end, sport will be promoted at different levels, in cooperation with the actors involved (CUS – Centro Universitario Sportivo), taking advantage of student initiatives and encouraging the creation of on-campus areas dedicated to sport and recreation.

/ STAFF POLICIES

The first founding principle included in the Statute of Politecnico di Torino affirms that: *“Politecnico, as a community, works in mutual agreement with students and personnel. It considers the respect for fundamental human rights and freedom of thought, research and teaching to be of primary importance”* (see Annex to Section 2). People and their future are therefore the most valuable resource of our University.

The quality of working life, motivation and professional satisfaction of the people who work at Politecnico di Torino are important values, in accordance with our Statute and the vision that considers the university as a community. Moreover, these values are essential for a full and effective implementation of the university missions. Therefore, our investments will be made in the following directions:

— **Increase in satisfaction, trust, motivation and sense of belonging of faculty members, researchers, administrative staff, technicians and librarians**, through: I) development of a “sustainable campus” which may improve the quality of life; implementation of an increasing number of welfare and cultural actions, as well as other projects aimed at achieving equal opportunities; II) reinforcement of the importance of our University for the development of society and the region and its leading role in the process of stimulating national university policies; III) real and widespread career growth opportunities, also in terms of training activities and professional growth.

— **Rationalization of the workload of the faculty members to foster better concentration and a peaceful environment for action**, through: I) simplification of procedures and streamlining of red tape; II) greater attention to the quality of research, by limiting scientific hyper-production; III) greater support in the drafting of project proposals before their submission to the funding agencies with the help of qualified personnel (for example, in the fields of economics, sociology, ethics); IV) reorganisation of working life in the workplace to improve the current situation, based on periodic analysis of welfare and occupational health conditions; V) increase in the number of faculty members and opening of new fixed-term tenure-track positions.

— **Rationalization of the workload of the technical, administrative and librarian staff (TAB)**, through: I) simplification of procedures and reduction of red tape, also thanks to an active role of the staff itself (e.g., simplification as a “flagship project” tied to incentive pay); II) reorganization of working life within the departments and the various administrative units to foster a fair allocation of activities and resources, also by taking into account occupational health and welfare analyses; III) recruitment and professional development of staff required in a number of key sectors (for example, technologists and technicians for teaching and research laboratories, experts in IT, civil engineering and facility management, communication, as well as project management, research and innovative education).

— **Proactive engagement of those who feel “marginalized” and undervalued**. Those who live in a condition of detachment and disaffection will be involved in different initiatives, such as group projects, in order to allow them to renew their engagement and contribution to the development of our University. Those who feel detached because of “burn out” will be offered counselling and psychological support and encouraged to develop a more positive mind-set towards their job.

— **Training activities for the development of managerial skills**, intended for both faculty members and TAB staff, aimed at improving the quality with which the activities of our University are managed, with a particular attention to teamwork and the culture of service.

As mentioned above, the policies for recruiting **new staff members** and for **career progression** of current staff members will be crucial. In this regard, our University is committed to offering its employees real career opportunities, according to transparent multi-annual plans. This will be achieved by implementing, as far as possible, actions which should reduce temporary work and raise funds to overcome the legal limits of turnover (extraordinary ministerial plans, permanent positions financed by external bodies, etc.). Finally, the University is committed to providing effective **staff training** so that the professional careers of our employees may be in line with the needs of the University. These paths will be promoted for lifelong professional development and to guarantee flexibility. They will be conceived as tools to encourage individual growth and tackle the challenges of daily work as a team.

/ ORGANISATION

As it is true in other Italian universities, the organizational processes of Politecnico di Torino are very complex. Our administrative processes are the result of a stratification of determinants, which, on one hand, is due to tradition and routine, and, on the other hand, is caused by new requirements and regulations which become more and more constraining.

In this context, there is a clear incompatibility between the regulatory framework that governs the Public Administration and some specific features of the activities conducted by universities: this curbs the capacity of a university such as Politecnico di Torino, which is supposed to be competitive at international level.

This is a deeply rooted problem and various solutions have been proposed to overcome it, but none of them has been put into effect. Outside the University, Politecnico di Torino is going to suggest appropriate reforms at national level in the pursuit of a total or partial emancipation of universities from the regulations of the Public Administration, with an eye to gain autonomy and accountability. Internally, our University will go through a full review of priorities and processes in order to rationalize and simplify them. This may be also pursued by identifying structural solutions in compliance with current law, aimed at overcoming the aforementioned constraints.

Together with the review of processes, our University will also focus on our technical, administrative and librarian staff to acknowledge their existing competencies and foster their development. To do this, the University will offer them training activities, as well as the opportunity to have access to a variety of work experiences throughout their career. These policies are expected to make the work of our staff more qualified, by making good use of their talents and competencies, giving an active role to each individual not only in the implementation of processes but also in problem solving and continuous improvement.

The review of our administrative processes will also focus on the centralisation and decentralisation of activities, by taking into account efficiency and effectiveness and making appropriate use of technology. In particular, processes will be digitalised making sure they do not become a burden for users. On the contrary, the aim is to provide solutions which enable a better management and control of these processes. This will allow our governing bodies to get an overall view of the activities carried out by the University and their performance.

Data and information will also be made available to all members of the academic community in order to support their action effectively and stimulate new interactions. External stakeholders will have access to part of this information, with the objective to promote the knowledge generated by our University and foster further engagement and collaboration.

This rationalisation of processes will also include the mapping and review of paradministrative tasks (e.g. timetabling, project management, etc.) that are not strictly related to institutional duties and are currently undertaken by the faculty. The allocation of these activities will be based on the evaluation of the impact on scientific outputs and educational performances.

Our University, whose mission includes the generation of new technologies and innovation, will be able to seize the opportunity to become not only a developer of solutions, but also an experimenter and a user of these solutions. Open innovation programmes will be developed in cooperation with our technical and administrative offices pursuant to current regulations. The goal of these programmes is to make precompetitive experimentations of the solutions developed within our University’s “innovation ecosystem” and, possibly, implement technology procurement strategies on a larger scale. This activity will improve the services provided by our University and enhance the work of the various university units. In addition, it will offer an opportunity for experimentation and it may represent a beach-head market or the “innovation value chain” driven by Politecnico di Torino, and eventually foster the attraction of new research and innovation activities.



/ GOVERNANCE

The analysis of our University governance is based on the assumption that the University is characterised by a **collegial nature**, which represents a fundamental and non-negotiable value. However, this does not imply that the decision-making process cannot be strong and quick. Universities act according to the principle of subsidiarity, guaranteeing individuals, research groups and departments an adequate level of freedom and autonomy, especially in their cultural choices. This implies a constant tension between the objective of defining common directions, making strategic choices and implementing them with a top-down approach, and the objective of ensuring academic freedom, which is a legal cornerstone and a key value for the exploration of new fields of knowledge.

Finding the right balance between these two objectives will require an appropriate and explicit identification of the various levels of strategic objectives for our University as a whole and for its internal entities. It will also require new processes based on the constant dialogue among the various decision-making levels. This implies promoting the platforms where this kind of dialogue takes place, such as the *Collegi* and our Committee for Research, Technology Transfer and Services to the Community (CARTT). In addition, Politecnico di Torino will foster a process to make sure that the Strategic Plan is implemented at different levels. These activities will be carried out with a long-term vision, focusing on cultural aspects, and will be interpreted as a response and anticipation to challenges. The implementation of these activities will also take into account the outcomes of our assessments. This will lead to conceive assessment not only as a bureaucratic task or a tool for resource allocation, but also as an effective means of knowledge, dialogue and continuous improvement.

Strategic planning at different levels will be crucial to define an effective and transparent allocation of human and financial resources. These mechanisms will be developed to ensure a proper balance between performance-based rewards and the provision of an adequate support for initiatives that adhere to our strategic objectives and are based on robust and convincing plans.

/ A NEW CULTURE OF QUALITY

The Quality Assurance Monitoring Committee has analytic and supervisory functions and ensures impartiality thanks to its broad and representative composition. In addition to performing its quality assurance institutional task, including training activities and information, the Committee will develop new guidelines for each of the three university missions. This objective will be pursued by drawing inspiration from the *Leiden Manifesto*, adapting it to the specific features of our University.

The Quality Assurance Monitoring Committee will also suggest new integrated tools for ensuring the quality of life within our University. It will work to create a broad and shared culture of well-being in the workplace, inspired by the recommendations of the European Commission and the principles of equal opportunities, gender equality and diversity, participation, dialogue and ability to listen to people's needs in order to strengthen interpersonal relationships, sense of identity and belonging to our University. Moreover, the Committee will be involved in the definition of welfare strategies for the entire academic community.

/ SUSTAINABILITY AT OUR UNIVERSITY

For several years now, Politecnico di Torino has been following an integrated path, led by our University's Green Team, with the purpose of embracing the principles of sustainability with a holistic, shared and systemic approach in order to turn our campus into a tangible example of these principles.

Today our Green Team is the hub that gathers competence and information on the Sustainable Development Goals, adapted to the university environment. It coordinates all the activities for the promotion of sustainability at Politecnico di Torino with a twofold objective: ensuring that the 17 Goals of the 2030 Agenda are included in our educational programmes and mobilising resources from national and international projects in an aligned and optimized way.

The Green Team Office works on topics such as energy, energy efficiency in buildings, sustainable mobility, food, water and waste, communication and knowledge sharing. These vertical actions are complemented by cross-cutting engagement activities which are managed and supported by our administrative staff, faculty members and student representative sand focus on the wider impacts of sustainability on our "third mission".

Within the scope of this Strategic Plan, Politecnico di Torino will continue implementing these activities with the following objectives: promoting cross-pollination of innovative and transdisciplinary education; carrying out studies on the effectiveness of the actions and policies which seek to raise awareness among the academic community; ensuring better sustainability performance of our campuses; full adherence to the UN 17 Sustainable Development Goals.

The inclusion of sustainability in our Strategic Plan is not a mere planning exercise. Above all, it is an opportunity for us, as individuals and groups, to reflect upon our private and professional choices that can contribute to sustainable development. Achieving sustainable development has many different facets depending on the various forms of capital that we need to preserve and promote: natural, built, human, social and intellectual capital.

/ TOWARDS A DIGITAL UNIVERSITY

The objectives described in this Strategic Plan can also be achieved through our University's ability to exploit the "digital revolution" in a proactive way, by supporting changes and making use of the most recent solutions proposed by Information Technology (IT).

As it is true in all organizations, IT can no longer be limited to mere automation of administrative processes, but should increasingly seek to add value to the core activities of universities. IT should provide new paradigms for education and support research and technology transfer with new solutions such as collaboration tools, dissemination tools to show research findings and parallel computing facilities. Finally, IT will be able to offer new management tools ranging from big data technology and analytics for the support of decision-making processes to the use of the Internet of Things for facility management. IT is so crucial in university processes that it is necessary to pay special attention to cybersecurity issues.

A permanent Committee for IT strategies will be established with the aim of governing the digital transformation of our University. The Committee will work on 4 pillars: network and computing infrastructures, personal productivity and smart working tools, management services and software, education-oriented IT tools. The strategic objective of this Committee will be to turn Politecnico di Torino into a leading university in digital transformation at European level. In particular, it will deal with technology foresight activities, identifying its requirements and suggesting strategic choices for the selection of technologies and the implementation of these activities.

/ THE MASTERPLAN

The transformation of our university community has strong impacts on the planning of its physical space. A few years ago, Politecnico di Torino has started a complex process to govern this evolution with the purpose of meeting the need for more and better spaces.

Our University Masterplan represents a new and innovative tool also at international level. It seeks to translate the manifold demands arising from our community into real projects. However, this process should not be conceived as a mere translation of our governance choices into planning and functional organization of new spaces.

The Masterplan is a forum for dialogue where the spatial rendering of issues, needs and opportunities will allow to highlight the limits, problems, benefits and unprecedented interactions during the planning and decision-making process itself. Within this complex process, the development of our University's built environment will be pursued according to the environmental sustainability goals in a structured and widespread way, as already stated.

The Masterplan produces alternative depictions of possible future scenarios and highlights opportunities and issues that are usually not visible through standard decision-making processes. The Masterplan allows to focus on possible disagreements and different visions related to each decision. Therefore, it gives a valuable contribution to mediation, to the benefit of the governance of our University.

Besides the internal level, the Masterplan aims to share, mediate and coordinate our University's development projects with local stakeholders, also contributing to the quality and development of the urban, environmental, cultural, economic and social context.

Being a shared socio-technical process which aims to support Politecnico di Torino's decision-making process, the Masterplan will be closely connected to the implementation and future reviews of this Strategic Plan.



OBJECTIVES AND ACTIONS

/ FIRST MISSION:
EDUCATION

/ SECOND MISSION:
RESEARCH

/ THIRD MISSION:
TECHNOLOGY
TRANSFER
AND KNOWLEDGE
SHARING

/ STAFF POLICIES

/ FIRST MISSION: EDUCATION

The last section translates the contents of this Strategic Plan in terms of objectives and actions. The objectives deal with the three university missions, as well as with the staff policies of Politecnico di Torino; they have been quantified, when possible, to monitor their achievement. The actions, which actually represent tentative proposals, will lead to a coordinated programme of projects that will be further organized into an Action Plan and implemented in the close future.

1

OBJECTIVE

TO INCREASE PROGRESSIVELY THE NUMBER OF OUR STUDENTS UP TO 40,000 UNITS.

ACTIONS

Development of proper teaching facilities (classrooms and laboratories); increase in the number of faculty members; a more efficient use of the competencies of our lecturers; engagement of qualified and complementary external lecturers; introduction of new Professional degree programmes; communication initiatives on educational contents; review of our educational contents and development of new pedagogical methods.

OBJECTIVES AND ACTIONS

2

OBJECTIVE

TO CONTINUE ATTRACTING A HIGH NUMBER OF INTERNATIONAL STUDENTS (>15%), WITH GREATER ATTENTION TO THE QUALITY OF THEIR BACKGROUND AND POTENTIAL IMPACT ON THE ITALIAN ECONOMY AND THE POSSIBLE INTERACTIONS WITH THEIR HOME COUNTRIES.

ACTIONS

Careful selection of our target Countries; development of specific educational programmes for international students in close relation with industry; enhancement of the bilingual (Italian and English) course catalogue, especially for Master's degree programmes.

3

OBJECTIVE

TO BECOME AN ATTRACTIVE UNIVERSITY FOR STUDENTS FROM A GROWING NUMBER OF REGIONS, INCLUDING WESTERN COUNTRIES, IN ADDITION TO THE STUDENTS FROM OUR CURRENT INTERNATIONAL PARTNER COUNTRIES.

ACTIONS

Larger bilingual course catalogue; proposal for an up-to-date and student-centred education; increase in the quality, quantity and affordability of the services offered to our international students; better communication of the opportunities provided by the University; recruitment of staff with a higher level of English language competency also in the offices which provide student support (Offices of Student Services, other services, etc.); enhancement of our University's reputation and positioning in international rankings; availability of high level research laboratories and facilities.

4

OBJECTIVE

TO REDUCE STUDENTS' AVERAGE GRADUATION DELAY BY AT LEAST 10%.

ACTIONS

Higher number of examination sessions; support of assistants who can help lecturers during examinations; assuring the achievement of teaching objectives and especially the development of competencies during the courses; introduction of new tools to support learning; evolution of the policies for the transition from Bachelor's to Master's level.

5

OBJECTIVE

TO OPEN A UNIVERSITY TEACHING LAB, AS A TOOL FOR CONTINUOUS IMPROVEMENT OF OUR FACULTY MEMBERS' TEACHING SKILLS AND FOR TRAINING NEW LECTURERS.

ACTIONS

Annual awards assigned to lecturers who demonstrate strong commitment to teaching; systematisation of IT, multimedia and language support services in a common area; structured investments in new pedagogical and technical staff; investments in new teaching technologies and support for their implementation; introduction of incentives for faculty members, in the full respect of their teaching autonomy, who will make use of the Teaching Lab; dissemination of "good practices"; experimentation of innovative teaching methodologies which synergistically combine traditional teaching with digital and collaborative learning methods.

6

OBJECTIVE

TO INNOVATE OUR PEDAGOGICAL APPROACH WITH THE AIM OF FOSTERING STUDENTS' CRITICAL THINKING, SOCIAL RESPONSIBILITY, PROBLEM-SETTING AND PROBLEM-SOLVING ABILITIES, CAPACITY FOR INNOVATION AS WELL AS SOFT SKILLS.

ACTIONS

Creation of teamwork-based courses involving students from different disciplines for: (I) problem-setting and problem-solving (Bachelor's degree programmes); (II) innovation (Master's degree programmes); (III) development of prototypes and innovative methods (student teams); recognition of the commitment of the lecturers who work with student teams as part of their teaching workload; engagement of entrepreneurs, managers, professionals, doctoral candidates, etc., who will provide tutoring services to working groups in problem setting/solving and innovation classes on the basis of ongoing pilot experiences (School of Entrepreneurship and Innovation with Agnelli Foundation, Contamination Lab, etc.); creation of a University Learning Centre, in cooperation with Cottino Foundation, dedicated to design-oriented education, with a surface of at least 2000 m² for new classrooms; reconversion of spaces that are currently used for other purposes for student-centred teaching; construction of a "prototyping and student team house" hosting technicians and equipment to support the teams, also by creating a synergy with other actors; reinforcement of existing foreign language courses; introduction of soft skill courses (such as story-telling, communication...) in design-oriented classes; more focus on Final Projects/Theses and internships as a student-centred training tool.

7

OBJECTIVE

TO INCLUDE THE SUSTAINABLE DEVELOPMENT GOALS (SDG) OF THE UN 2030 AGENDA IN OUR CURRICULA.

ACTIONS

Making our lecturers and students accountable for the 17 SDGs and more familiar with this topic; special focus on integration paths intended for students coming from emergent countries which are the main target of the SDGs; assessment of the real connections among the specific SDGs associated with each course, its contents and students' progress.

8

OBJECTIVE

TO RECOGNIZE THE IMPORTANCE OF HUMAN AND SOCIAL SCIENCES AND INTERDISCIPLINARITY AS AN EDUCATIONAL VALUE.

ACTIONS

Creation of an interuniversity centre on human and social sciences; review of our course catalogue with the objective to add specific courses (currently on offer) and face-to-face lectures along with design-oriented classes; planning of educational programmes which can enhance interdisciplinarity and provide cross-pollination of STEM and SSH disciplines, by acknowledging their essential value for the progress of knowledge in the current evolving social context.

9

OBJECTIVE

TO BOOST OPPORTUNITIES FOR OUR STUDENTS TO STUDY ABROAD AND TO ACHIEVE A BALANCE BETWEEN OUTGOING AND INCOMING STUDENTS AT THE SAME TIME.

ACTIONS

Fostering educational experiences abroad for our students; improvement of the quality of life for incoming students in order to make our University more attractive; updating of our bilingual course catalogue and promotion of our University abroad.

10

OBJECTIVE

TO CREATE AN ALUMNI COMMUNITY PROACTIVELY COMMITTED TO OUR UNIVERSITY.

ACTIONS

Monitoring activity of our former students, independently from Alma Laurea (Italian Interuniversity Consortium for Job Placement) and development of our own database; investments in services to the benefit of our former students (social media tools, events, privileged opportunities for lifelong learning, etc.); turning our former students (especially those living abroad) into "antennas" for catching new opportunities to improve education (feedback from the labour market, student mentoring etc.) and for attracting funds to support research and technology transfer activities; incentives to retain and motivate our former students to invest in our University (donors).

11

OBJECTIVE

TO ENHANCE THE ACTIVITIES OF THE SPECIALIZING MASTER'S PROGRAMMES AND LIFELONG LEARNING SCHOOL AND TO INCREASE THE NUMBER OF ITS STUDENTS.

ACTIONS

Development of new Specializing Master's programmes offered on the free market and new on-demand training activities or activities included in the School catalogue; increasing initiatives carried out in partnership with highly reputed experts.

12

OBJECTIVE

TO RAISE THE AVERAGE PERCENTAGE OF FEMALE STUDENTS ENROLLED IN FIRST YEAR OF ENGINEERING PROGRAMMES TO OVER 35% WITHIN THE NEXT 6 YEARS; TO ACHIEVE FULL GENDER EQUALITY IN SOME DEGREE PROGRAMMES.

ACTIONS

Involvement of middle and high school female students and related mentoring in cooperation with other local bodies and companies concerned about the gender issue; development of specific incentives during both the pre-enrolment and enrolment phases.

/ SECOND MISSION: RESEARCH

1

OBJECTIVE

TO MAKE OUR DOCTORAL PROGRAMMES THE MAIN TOOL TO SUPPORT SCIENTIFIC RESEARCH AT POLITECNICO DI TORINO, RAISING THE CURRENT NUMBER OF DOCTORAL CANDIDATES BY AT LEAST 50%.

ACTIONS

Increase in the number of fully-funded doctoral positions, in particular related to agreements with companies, local authorities, research centres or international academic partners; better connections between Masters' degree programmes and Doctoral programmes to promote the transition of students from one level to the other; continuous updating of educational programmes; support to high-quality applied research in collaboration with private companies (Industrial doctoral programmes) in order to improve employment opportunities for doctoral candidates outside academia and to increase the number of scholarships funded by companies; implementation of welcome services for Doctoral candidates coming from outside Piemonte (housing services or other welfare benefits); initiatives to distribute a fair number of doctoral positions to the several disciplines within the various *Collegi*; increase in the number of calls for application for Doctoral programmes during the year to provide better opportunities for admission; measures to facilitate the financial reporting of the costs incurred for doctoral candidates in funded projects; evaluation of the possibility to extend the duration of Doctoral programmes from 3 to 4 years; increase in the amount of the doctoral scholarship up to 1500 Euros/month aligning it to European standards.

2

OBJECTIVE

TO CREATE A UNIVERSITY DATABASE ON RESEARCH FOR QUICK, EFFECTIVE AND TRANSPARENT MAPPING OF OUR COMPETENCIES.

ACTIONS

Increase in the number of Open Science publications and patents; development of a database of scientific production, research projects, patents and all relevant information on research activities (contracts, doctoral theses, etc.); development of a dedicated software for retrieving information; use and systematic improvement of the database to ensure full dissemination of research opportunities in different fields.

3

OBJECTIVE

TO INCREASE OUR UNIVERSITY SELF-FINANCING CAPACITY BY AT LEAST 50%.

ACTIONS

Strategic and operational review of the contract templates with companies; increase in the number of industrial partnerships and their specific financial value by sharing common medium/long-term objectives; incentives to maximize the criteria for the allocation of funds from the *Fondo di Funzionamento Ordinario* (FFO) – National Funding for Italian Universities – with particular attention to rewarding criteria; more support during the drafting of project proposals in response to competitive calls; creation of a hub of Politecnico di Torino in Brussels to influence EU research funding policies and to provide better information on funding opportunities to our faculty members; full implementation of the interdepartmental laboratories plan of our University and continuous monitoring of their activities; strengthening of the existing research infrastructures, also shared with other local bodies (e.g. universities, other research centres) and creation of new ones; adoption of a more flexible negotiating stance on intellectual property rights; renovation of our research laboratories to make them safer and to equip them with modern devices; dissemination of our University research activities through a specific web portal and creation of an appealing institutional showroom for visitors; creation of an administrative unit in charge of data management for strategic evaluations; specific bootstrap funding to raise resources for emerging issues.

OBJECTIVES AND ACTIONS

4

OBJECTIVE

TO HIRE NEW FACULTY MEMBERS TO FOSTER THE QUALITY OF RESEARCH, BY PAYING PARTICULAR ATTENTION TO THE RECRUITMENT OF PERSONNEL WITH COMPETENCIES THAT ARE COMPLEMENTARY TO THOSE ALREADY EXISTING WITHIN OUR UNIVERSITY.

ACTIONS

Monitoring of the quality of newly recruited staff through the criteria in use for the FFO reward amount, and with an eye to the definition of our future recruitment plans; definition and updating of a strategic plan on research which should identify new needs and which competencies are most required; boosting our research competencies through a part of the University budget strategically managed by the Board of Governors; attracting talented researchers also with the support of our partner foundations (starting grants, salary adjustments, family packages, etc.).

5

OBJECTIVE

TO WORK TOWARDS AN INCREASING QUALITY OF RESEARCH.

ACTIONS

Review of the internal criteria for assessing scientific production, inspired by quality rather than by mere quantity; implementation of a sound peer review system for powerful and transparent assessment of scientific production and proposals, which should not be limited to mere bibliometric criteria.

6

OBJECTIVE

TO PROMOTE THE AGGREGATION OF SINGLE RESEARCHERS AND RESEARCH GROUPS, ALSO AT AN INTERDEPARTMENTAL LEVEL, ON CURIOSITY DRIVEN PROJECTS, AS WELL AS ON RESEARCH TOPICS OF GREAT VISIBILITY AND IMPACT STILL UNEXPLORED IN OUR UNIVERSITY.

ACTIONS

Fostering the aggregation of departmental or interdepartmental groups who work on emerging research topics by leveraging on basic research grants and by providing support to new Interdepartmental centres.

7

OBJECTIVE

TO ORIENT INTERDISCIPLINARY RESEARCH TOWARDS THE ACHIEVEMENT OF THE SUSTAINABLE DEVELOPMENT GOALS OF THE UN 2030 AGENDA.

ACTIONS

Mapping of our scientific activity and capacity to address projects and publications towards the global and social challenges included in the 17 Sustainable Development Goals and the related Horizon Europe's five priority clusters.

/ THIRD MISSION: TECHNOLOGY TRANSFER AND KNOWLEDGE SHARING

1

OBJECTIVE

TO ENHANCE OUR CAPACITY TO GENERATE NEW INTELLECTUAL PROPERTY BY AT LEAST 50%.

ACTIONS

Raising awareness on the importance of protecting intellectual property or our researchers; recognition of the patents achieved by each researcher for academic career progression; improved administrative and legal support to researchers during patent drafting.

2

OBJECTIVE

TO STRENGTHEN THE GROWTH POTENTIAL OF OUR SPIN-OFFS WITH THE AIM OF TRIPLING THEIR CAPACITY TO RAISE EQUITY FUNDING AND TO GENERATE EMPLOYMENT.

ACTIONS

Expansion of the I3P incubator; involvement of Links Innovation; strengthening connections with stakeholders from the financial sector and venture capital funds.

3

OBJECTIVE

TO ENCOURAGE THE DEVELOPMENT OF SECTORIAL INNOVATION VALUE CHAINS TO PROMOTE THE IDENTITY AND CREDIBILITY OF OUR TERRITORY FOR ATTRACTING NEW INVESTMENTS AND BUSINESSES.

ACTIONS

In cooperation with external actors (e.g. foundations, local or national bodies, business associations, etc.), creation of an "innovation district" which should become the point of convergence for training activities, interdisciplinary and applied research, technology transfer, intellectual property management, creation of start-ups and services to companies, spaces for companies and start-ups; extension of the model which is currently applied to the energy supply chain (Energy Centre) to other supply chains, such as digital transition (e.g. Digital Revolution House), industry 4.0 (Industry 4.0 Competence Centre), space economy, circular economy, territorial planning, urban and territorial structures and infrastructures, etc.

4

OBJECTIVE

TO TRAIN A GROWING NUMBER OF STUDENTS IN INNOVATION AND ENTREPRENEURSHIP AND TO INVOLVE AT LEAST 25% OF OUR STUDENTS IN THESE EDUCATIONAL INITIATIVES.

ACTIONS

Cross-pollination of our educational programmes with new contents on entrepreneurship and innovation, by including problem setting/solving, human and social sciences, learning-by-doing, soft skills; involvement of entrepreneurs, start-up founders and professionals from the innovation sector who will provide their views and lead project work groups; greater collaboration in the field of entrepreneurship and training in innovation (e.g. School of Entrepreneurship and Innovation with Agnelli Foundation).

5

OBJECTIVE

TO BOOST OUR COMPETENCIES IN HUMAN AND SOCIAL SCIENCES TO THE BENEFIT OF OUR EDUCATION, RESEARCH AND TECHNOLOGY TRANSFER ACTIVITIES.

ACTIONS

Creation of an interuniversity Board for Science, Technology and Society; establishment of staff units who will provide support to strategic decisions, design and drafting of new project ideas (technical-economic feasibility studies, ethical-legal evaluations, social impact studies, dissemination actions, etc.).

6

OBJECTIVE

TO DEVELOP NEW MODELS FOR TECHNOLOGY TRANSFER IN THE FIELD OF ARCHITECTURE, PLANNING AND DESIGN.

ACTIONS

Engagement of the Interdepartmental Centres; enhancement of previous experiences in the field of relations with Public Administrations; launch of a brain-storming programme on territorial and urban problems with public discussions on important social issues; evaluation on the establishment of an interdepartmental Design Centre that will support education, businesses and departments and foster the transition from newly developed technologies into innovative products and services.

7

OBJECTIVE

TO IMPROVE OUR CAPACITY OF ADDRESSING THE SUSTAINABLE DEVELOPMENT GOALS OF THE UN 2030 AGENDA.

ACTIONS

Strengthening of our Green Team and Living Lab; institutionalization of the University Sustainability Weeks; periodic reporting on the education, research and third mission activities developed by our community with reference to the UN 2030 Agenda framework.

8

OBJECTIVE

TO CREATE A SERIE OF POLYTECHNICAL EVENTS.

ACTIONS

Creation of a single control room that will manage all cultural and communication activities, supported by a new administrative unit and a manager; investments in the development of professional skills which are not currently available within our University; planning and launch of a flagship event: the Festival of Technology; organisation of other cultural events: welcome ceremony for first-year students; graduation ceremony with the participation of prominent members of industry, science or society in the role of keynote guests; promotion of University awards for faculty members; introduction of a series of polytechnical Lectures dedicated to renowned personalities from our history; periodic meetings organized by our University at *Circolo dei Lettori* (Readers Club); participation in major events of our city, etc.

9

OBJECTIVE

TO ESTABLISH A CULTURAL CENTRE INSIDE THE CITTADELLA POLITECNICA AS A SYMBOL OF OUR CITY, OPEN ALSO IN THE EVENING, WHERE PEOPLE CAN MEET AND EXCHANGE VIEWS.

ACTIONS

Identification of a possible location and design for the Cultural Centre; inside the Centre, creation of a library which collects the most important publications for Bachelor's and Master's students, as well as for society in general; inside the Centre, creation of a permanent University museum with a showroom displaying our technologies to visitors "at a glance"; creation of spaces for our students (clubhouse for celebrations, spaces for creativity and student societies, study rooms, etc.); creation of spaces for cultural events (e.g. a hall for book presentations; an interfaith prayer and meditation room, etc.).

/ STAFF POLICIES

1

OBJECTIVE

TO DEFINE A LONG-TERM, FARSIGHTED AND TRANSPARENT PLAN FOR OUR TAB STAFF (TECHNICAL AND ADMINISTRATIVE STAFF AND LIBRARIANS), BY LIMITING THE EXTENSIVE USE OF TEMPORARY CONTRACTS.

ACTIONS

Establishment of a Board in charge to draft a staff planning that will ensure process transparency; limitation of the number of temporary positions; in the vast majority of cases, more opportunities for permanent employment, unless alternative job placements are possible; new training courses related to career development, seniority and professional environment; introduction of planned and transparent labour mobility.

2

OBJECTIVE

TO BRING THE TOTAL NUMBER OF TEACHING AND RESEARCH STAFF (FIXED-TERM RESEARCHERS, PERMANENT RESEARCHERS, ASSOCIATE AND FULL PROFESSORS) TO ABOUT ONE THOUSAND UNITS.

ACTIONS

Search for external funding, additional to turnover, to open new positions for tenured professors and fixed-term researchers (see art. 18, p. 3, L. 240/10); dialogue with the Italian Government to negotiate and adopt appropriate tools to curb the negative effects of the turnover policy; adoption of new extraordinary recruitment plans to invest in fixed-term researchers.

3

OBJECTIVE

TO SPEED UP CAREER PROGRESSION OF THE REMAINING STAFF IN "PERMANENT RESEARCHERS" POSITION.

ACTIONS

Priority investments in career progression for permanent researchers who achieved the National Scientific Qualification (ASN).

4

OBJECTIVE

TO REBALANCE THE RATIO BETWEEN FULL AND ASSOCIATE PROFESSORS.

ACTIONS

Finding additional resources for recruiting fixed-term researchers in order to make the POMs (Staff Recruitment Funds for Italian Universities) available for full professor positions with the aim of boosting career opportunities for associate professors; direct investments in new positions for full professors from other Universities, especially in disciplinary fields with an excessive student-to-faculty ratio or to fill the need for new competencies required by education and interdisciplinary research.

5

OBJECTIVE

TO FOSTER THE CONDITIONS FOR A 50% REDUCTION IN THE GENDER GAP BETWEEN CANDIDATES COMPETING FOR ACADEMIC POSITIONS.

ACTIONS

Implementation of a Gender Report for developing a plan of targeted policies; strengthening of the multidimensional nature of the evaluation of candidates in public open competitions; adoption of wider time margins (1.5 years) for measuring the impact of maternity leave and other types of leaves on scientific productivity; implementation of monitoring systems to evaluate the effectiveness of these measures on a continuous basis.

6

OBJECTIVE

TO MONITOR AND TO IMPROVE THE QUALITY OF LIFE IN THE WORKPLACE, THE MOTIVATION AND PROFESSIONAL SATISFACTION OF THOSE WHO WORK AT POLITECNICO DI TORINO.

ACTIONS

Development of a sustainable campus to improve the quality of life; welfare and cultural actions; rationalisation of workloads; initiatives for a proactive involvement of those who feel marginalised and activities to support those who feel "burned out"; training opportunities in managerial skills for lecturers and TAB staff; periodic survey of users' satisfaction.

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