

PUBLIC ENGAGEMENT AND THIRD MISSION

FRAMEWORK AND
VISION AT THE
POLITECNICO DI MILANO



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MILANO 1863

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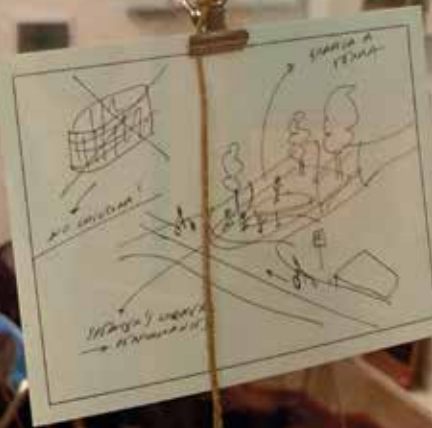
Francesca Cognetti, Martin Broz, Ida Castelnuovo



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A NOI VOUREI CI FOSSE ALTRO
OLTRÈ PIAZZA HORBEGNO :)
VALUTARE IL PARCO TROTTER
SAFERE UNA BUONA IDEA



INTRODUCTION

This document was conceived with a view to reporting an exploratory study started in June 2020 by a dedicated working group, set up by the Politecnico di Milano in order to strategically frame the issues of social responsibility and **public engagement** (PE) within its own agenda.

The working group is coordinated by Francesca Cognetti, Rector's Delegate for Civic Engagement and Social Responsibility, with support from the Public Engagement and Communication (PEC) Division and its Social Responsibility Projects office staff. Donatella Sciuto (Executive Vice Rector and Delegate for Research) and Cristina Masella (Delegate for Budget and Management Control) also contributed to the group's tasks.

The main objectives of the study were identified as follows:

- **Survey and classification of projects, initiatives and practices in place at our University**, in order to place them in a coherent and meaningful framework related to the fields of social responsibility (or "social third mission") and, in particular, public engagement.
- Identification, based on the aforementioned survey, of **specific features and distinctiveness of a "polytechnic approach"**.
- **Alignment of the Politecnico's frame (also in a ranking perspective)** with the schemes promoted by ANVUR (Italian National Agency for the Evaluation of Universities and Research Institutes), and with the taxonomies established at the international level, including the Sustainable Development Goals (SDGs) defined in the UN's 2030 Agenda.
- **Definition of a University strategy** with regard to social responsibility and PE, with the objective of producing shared guidelines for future development.
- **Improvement of communication praxis and channels** adopted at the Politecnico, in order to maximise the impact of actions promoted by the University in favour of society.

In order to better observe the Politecnico as a field of initiatives and practices, it was deemed necessary to preliminarily identify and describe the context of what is defined as *public engagement*.

As illustrated in Chapter 1, this ‘umbrella term’ applies to various forms of interaction between science and society; it first appeared in reflections in the Anglo-Saxon world and then started being used internationally, both in scientific and technical debates.

It has also been in use in Italy for some years now (Chapter 2), where it appears in the lexicon and categories used by the Ministry of Universities and Research in the context of its own functions related to governing and assessing academic activity. From there it filtered down into communication materials used by universities and, sometimes, in the names given to departments, administrative divisions or offices within them, such as the Public Engagement and Communication Division (PEC) at the Politecnico di Milano.

PE is also at the core of an inter-university dialogue and coordination mission undertaken by APENet, the Italian Network of Universities and Research Institutes for Public Engagement. APENet (now an association) is working to promote a PE-oriented renewal of the strategic agendas pursued by Italian universities and research centres. The presence of the Politecnico di Milano in the association’s board is proof of the commitment of our University as regards its own reform.

After this overview, the task of detecting the ‘polytechnic’ PE and social responsibility initiatives (Chapters 2 and 3) was performed, making it possible to reconstruct the current state of development of this domain. The mapping was neither exhaustive nor systematic, but it allowed to identify an initial frame of reference, in the expectation that in the future we will be able to rely increasingly on semi-automatic data collection procedures, which the University is already looking to enhance.

The data collection made it possible to proceed with an interpretative reading of the picture emerged, as well as to support drafting the *SDGs@Polimi 2021* report, which represents an accurate documentation of the Politecnico’s actions oriented towards the 17 Sustainable Development Goals.

As will be seen, the combination of identified initiatives includes actions promoted within a central, University agenda, as well as practices and experiences relating to a departmental level. In this second case, a fundamental source of information was the exchanges held with the twelve Directors and other departmental personnel¹ (April-October 2021). These meetings were of particular importance for the working group, since they also allowed to identify each department’s specific point of view, expectations and sensitivities, then to think together about a shared strategy and operational approach.

In several cases, besides directors the meetings also involved department managers, communications officers and/or teaching staff with specific responsibilities for third mission. This provided further contribution to focusing on the current developments of the social responsibility picture at the Politecnico, in its strongest aspects as well as critical issues and weaknesses that should be addressed as a priority.

Among the most interesting acknowledgement that emerged from these talks was what appears as a dual opportunity: on one hand, for departments traditionally

achieving low economic exploitation of research (first 'pillar' of the third mission, according to ANVUR), the possibility to offset by capitalising on their commitment to the production of public goods (second pillar); and conversely, for those boasting higher exploitation and technology transfer levels, the opportunity to improve outreach and social responsibility as key issues.

The search for future strategic directions must also be seen in this light. The conclusive notes of the document are dedicated to defining some general guidelines, intended to be promoted and shared to the greatest possible extent at all levels of the University. The priority fields of action include the improvement of monitoring and data-collection systems and the development of mechanisms to enhance and promote public engagement at the Politecnico.

¹ The following participated in the meetings:

DMEC - Department of Mechanical Engineering: Marco Bocciolone (Director)

DASTU - Department of Architecture and Urban Studies: Massimo Bricocoli (Director), Gloria Paoluzzi (Department Manager)

DABC - Department of Architecture, Built Environment and Construction Engineering: Stefano Capolongo (Director)

DESIGN - Department of Design: Alessandro Deserti (Director), Stefano Maffei (Director's Delegate for Third Mission)

DICA - Department of Civil and Environmental Engineering: Alberto Guadagnini (Director)

DFIS - Department of Physics: Lamberto Duò (Director)

DENG - Department of Energy: Giovanni Lozza (Director)

DMAT - Department of Mathematics: Giulio Magli (Director)

DCMC - Department of Chemistry, Materials and Chemical Engineering: Mariapia Pedferri (Director), Barbara Del Curto (Director's Delegate for Communication)

DIG - Department of Management, Economics and Industrial Engineering: Alessandro Perego (Director)

DAER - Department of Aerospace Science and Technology: Giuseppe Sala (Director)

DEIB - Department of Electronics, Information and Bioengineering: Stefano Tubaro (Director), Fabio Conti (Department Manager), Laura Brambilla (Department Communications Officer).



1. PUBLIC ENGAGEMENT AND SOCIAL RESPONSIBILITY IN RESEARCH: AN INTERNATIONAL FRAMEWORK

Origins and context

In general terms, **public engagement** (hereinafter also referred to as PE) means forms of interaction between the scientific community and citizens, which entail **the involvement of the public as an active subject in knowledge diffusion and production processes**.

The development of these practices is associated with a quite diverse movement that has gradually called into question – especially since the nineties – some assumptions of a more traditional approach, particularly to science communication. In its initial phases, the debate mainly involved the United Kingdom, where the expression *Public Engagement in Science and Technology* (P.E.S.T.) was originally conceived as a desirable alternative to *Public Understanding of Science* (P.U.S.), the latter describing the British policy on scientific education of citizens, formally adopted in 1985¹ but aligned with an already well-established approach to the popularisation of science and research.

This tradition is characterised by a ‘science literacy’ perspective, which is in turn hinged around the so-called deficit model, or an interpretation of relationships between scientific knowledge and society which postulates that the addressees of science communication lack understanding of scientific theories and methodologies.

¹ The policy was formalised in a document containing official instructions and guidelines, prepared by a special committee of the Royal Society and mainly targeted at the scientific community, which was urged to fulfil its duty of communication to the public at large (Bodmer, 2010).

This premise is clearly associated with a dualistic vision tracing a sharp boundary between experts and non-experts, where scientific education is identified with a mere transfer of notions to a passive recipient (the public), in an essentially linear and one-way flow.

The same deficit model also tends to recognise information as the key not only to scientific understanding by the public, but also to the public's trust in science itself, and therefore the acceptance of its technological and social applications (and implications) (Quaranta, 2007).

Such assumptions are systematically called into question by those authors who, especially since the early 1990s (see Wynne, 1991 and others), tend to shift the focus from *understanding* of scientific knowledge by the public to *engagement* of the public in research, whereas research itself is meant as a combination of non-linear and sometimes accidental processes. In fact, the latter underly the generation of new knowledge and innovation and cannot be described as completely enclosed in laboratories and research centres.

The idea of public engagement was therefore born in contrast to a unidirectional conception of knowledge transfer, whose linearity is contradicted by the **circularity** of a continuous exchange relationship between science and society. It is through this exchange that a useful knowledge can be built, and socially acceptable development trajectories can be defined.

Based on the questioning of the deficit model², first and foremost PE calls for a reassessment of non-expert/informal knowledge, which is not necessarily inferior, but rather complementary to scientific knowledge. In fact, the two forms should be able to interact with each other, in the context of the complex and unpredictable dynamics that link research to social progress.

The basic conditions of PE are therefore **transparency** and **inclusivity** in public discussion of scientific research and its social implications. Although instances of that nature have been traceable for a long time (in the philosophy of science for example), it is especially in the first two decades of the 21st century that they were clearly revived within an extensive movement of innovative ideas and impulses such as the appeal to *public engagement in research*, among many others.³

² Specifically, the link between knowledge/information transfer, the 'correction' of misconceptions and consensus building in technological sciences is considered to be too simplistic. In some cases such correlation is even deemed fallacious, like in situations in which a greater amount of information does not facilitate a convergence of opinions between the public and the scientific community (as often happens in biotechnological and medical contexts), or induce even greater scepticism towards scientific positions, as various research projects have shown (Bucchi, 2004). What is specifically undervalued is the role played by value systems, personal experiences, previous learning and other factors in the opinion-forming process, based on what in fact cannot be called mere reception, but rather the active processing of facts and knowledge by the public.

³ In general terms, this movement can be summarised in a request for more democracy in science-society relationships, in light of a widespread interest, such as the public's growing propensity to study and

In this perspective, attention is not only dedicated to 'scientific literacy,' but also the empowerment of stakeholders, who must be given the opportunity to interact actively and productively with experts. Interaction can extend to participation in specific research phases, innovation pathways and/or decision-making processes linked to them.

Consensus, information, consultation, reappropriation and the social protection of knowledge are aspects covered in a series of documents containing strategic guidance for research and innovation, as well as development agendas, which have appeared at the international level in the last two decades, such as the OECD's invitation⁴ to conceive innovation in the 21st century no longer as profit-oriented and favouring partial interest, but rather from a global perspective with the primary aim of personal development and collective wellbeing.

The issues of innovation and development are at the centre of another important document, namely the 2015 resolution of the United Nations General Assembly known as the *2030 Agenda*, and the 17 related SDGs/Sustainable Development Goals. The 2030 Agenda proposes structural and permanent cooperation between governments, public authorities at all levels, local communities, civil society, the private sector and academia, seeing this as a prerequisite for systematic progress and fair and sustainable development, which is why the partnership-based approach (or multi-stakeholder collaboration) is stated to be the main tool for achieving the SDGs (goal 17). One particularly interesting aspect of the Agenda is the emphasis placed on the social responsibility of universities, which it recognises as having a fundamental role within the aforementioned partnerships and sustainable development processes.

Of even more significance for research is the European Commission's *Horizon 2020* framework-programme (2014-2020 financial period)⁵, which introduced the expression 'Responsible Research and Innovation' (RRI) as "an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation". Just like other declarations from the same period, the programme promotes 'open culture', that is, the free circulation and 'cross-fertilization' of ideas, greater transparency and accessibility of scientific and educational materials, and the adoption of inclusivity criteria in research and ways to participate in decision-making processes concerning the transfer of new technologies and innovative services to society (Mazzucato, 2018). The underlying principle is that which links democratic growth to the affirmation of a right to 'scientific citizenship' and identifies the latter as an opportunity to overcome a top-down and expert-driven logic, and

question technical and scientific issues. This often manifests as expectations, but also apprehension or scepticism towards the evident repercussions of research and innovation on every aspect of individual and social life (as is the case of the ICT sector).

⁴ OECD (2011), *Fostering Innovation to Address Social Challenges. OECD Innovation Strategy*.

⁵ ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

therefore the key to bringing scientists and citizens closer together, with knowledge as a common good at the centre (Quaranta, 2007).

The same European programme also makes explicit reference to PE (cited as 'Public Engagement in Research and Innovation')⁶, reaffirming it as one of the main means for achieving and promoting RRI and, more generally, criteria for greater inclusivity and sustainability in research. The European Union directives on RRI are also evoked in the new *Horizon Europe (2021-2027)*⁷ programme, which proposes to increase the impact of research and innovation in the development, maintenance and implementation of EU policies, while tackling global challenges such as climate change, and supporting the co-creation and greater diffusion of knowledge.

The strategic guidelines defined by the European Commission's Priorities for 2019-24, including the 'Green Deal' objectives and the creation of an 'economy that works for people', as well as the New European Bauhaus⁸ initiative, also emphasise how research and innovation must increasingly promote inclusivity, accessibility, sustainability and quality of projects and policies to improve the living spaces of European citizens.

Public Engagement: general features and variations

The 2030 Agenda and the Horizon 2020 programme are two of the most important steps of a general restructuring of international policy on research, innovation and sustainable development. While both frameworks require an increased responsibility by the technical-scientific and academic world in relation to social challenges, towards greater inclusivity, the latter explicitly mentions responsible research and public engagement, introducing these expressions into the language of European programming.

In the face of a growing popularity of the term, it is useful making clear that PE does not refer to a formalised model or specific method, but rather it is a 'buzzword', whose main usefulness in recent years has been to trace possible directions in the renewal of the academic mission and inspire alternative forms of interaction between science, the market and society (Bensaude-Vincent, 2014).

⁶ In the document, public engagement has affinity with other notions such as 'engaged research' or 'socially-oriented research'. A recent study identifies three principal phases in the development, from the late 1990s onwards, of the issue of participation within European guidelines on scientific/technological matters: an initial focus on public participation within the scientific-technological governance frameworks defined by the Commission (2000-2010), an alignment of European policies with the growing emphasis on innovation (2010-2014) and increasingly evident attention, from 2014 to date, to co-creation and citizen science as new forms of public engagement. (Macq, Tancoigne, Strasser, 2020)

⁷ ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

⁸ europa.eu/new-european-bauhaus/index_en

This has allowed and still allows universities and research centres to benefit from being the interpreters when it comes to structuring their own PE agendas or strategies.

Therefore, public engagement does not refer to a methodology, but rather a heterogeneous and multifaceted family of practices that have expanded in recent years, which the British NCCPE (National Coordinating Centre for Public Engagement) describes as a “myriad of ways in which the activity and benefits of higher education and research can be shared with the public”⁹.

Nevertheless, these practices tend to be associated with some background elements which make it possible to define the scope of PE.

When approaching the possible definitions of PE, one can start with the **common characters** which tend to emerge across the various experiences, regardless of their specific qualities. These include:

- A dimension related to the *sharing* of knowledge (as a public good) between experts and the public.
- A recognised *mutual benefit*, for the public but also the researcher (in terms of training, the quality and social productivity of research, etc.), generally within a framework of bi-directional interaction between the two parties.
- Attention to a *social and/or cultural impact* dimension.
- A *strategic value*, linked to the sharing of visions on future society, as well as the promotion of scientific citizenship and the knowledge society¹⁰.

Besides these combined elements – which, in a sense, represent the essential features of Public Engagement – one can identify more ad hoc descriptions that may emerge from the observation of various **levels (or intensities) of public engagement** seen in PE practice, ranging from the mildest examples of contact between science and the public to veritable forms of knowledge co-creation (e.g., citizen science).

For instance, the University of Oxford’s strategic document titled “Public Engagement with Research” (2016) identifies three main levels of citizen engagement, each associated with specific types of action and relationship between researchers and the public:

- *Collaboration* between researchers and the public on particular projects or to help define future research direction, policy or development.
- *Consulting and listening* to the public, in order to gather its opinions, concerns and views on science and research, as well as hearing potentially interesting insights.

⁹ From the website www.publicengagement.ac.uk/about-engagement/what-public-engagement

¹⁰ These attributes are often highlighted in the so-called ‘grey’ literature produced by supranational institutions, government agencies, research networks and individual universities. In this specific case, the European Commission’s framework programmes related to responsible research and innovation (RRI) were consulted, as well as documents focussed on PE, drawn up (among others) by: the British National Co-ordinating Centre for Public Engagement; the Scottish inter-university Beltane Public Engagement Network; the Irish Universities Association, which promotes social responsibility among Irish universities through the Campus Engage programme.

- *Informing* and *inspiring* the public (young people, adults and family audiences) about research.

Several examples are provided for each category: citizen science and other modes for the first; public debates, panels and online consultations for the second; festivals and public or online presentations for the third.

As can be easily understood, what changes is also the degree of citizen participation in the production of knowledge and, at the same time, the degree of bidirectionality of communication, which are highest in the first category (implying veritable co-production of knowledge), medium in the second (in which citizens contribute to the research in terms of assessment and orientation) and lowest in the third.

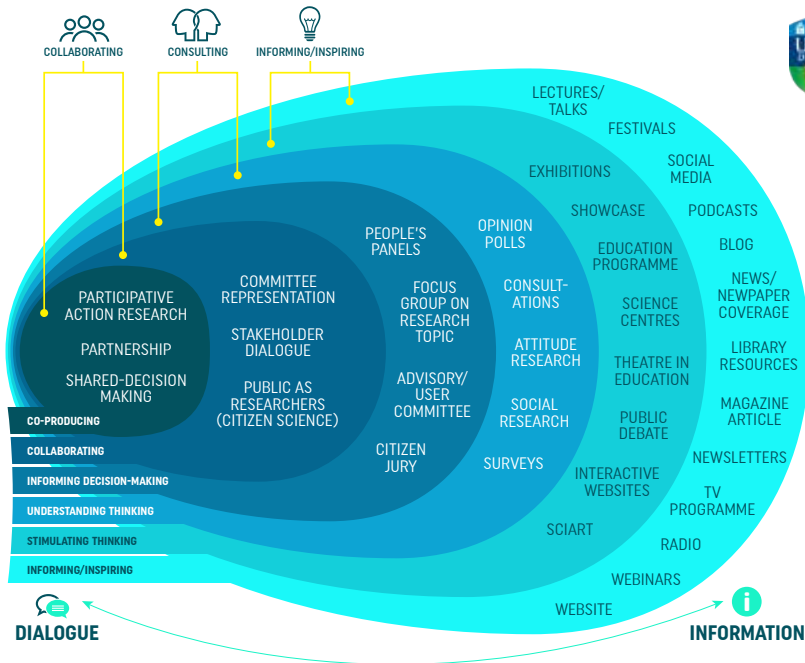
It is important to emphasise that even the last category does not refer to a merely one-way process, but rather to contexts in which members of the public can discuss among themselves, ask the speaker questions and, not least, express their own level of interest and agreement. It is no coincidence that reference is also made to digital engagement tools, which provide feedback mechanisms, thus alluding to a necessary innovation in communication formats, which must be able to not only 'inform' but also 'inspire'.

University College Dublin (UCD) proposes a similar – albeit more complex – classification to the one described above, which identifies six grades of PE, with examples (figure 1).

Also in this classification, the highest level is *co-production* (of knowledge, decisions, action strategies) and the lowest is *inspiring* and *informing*, the latter including more traditional forms of divulgation.

The titles of the fourth and fifth categories, namely *understanding* and, below it, *stimulating* public thinking, respectively, are also interesting, and well represent the varying nature of contributions made by the two parties. In the former, the citizen is involved to a greater extent, since he is given the opportunity to express his ideas and positions to the researcher (who must ensure to appreciate them through appropriate analytical and interpretation schemes); in the latter, it is the experts' knowledge and point of view that is expressed first, leading to exchange dynamics, reflection and further investigation.

FIG. 1 GRADES AND RESPECTIVE EXAMPLES OF PUBLIC ENGAGEMENT



Based on Wellcome Trust Public Engagement 'Onion'- Adapted by the UCD Public Engagement Working Group

Source: University College of Dublin, UCD – ucd.ie/publicengagement/about

One significant aspect is the fact that while the three levels identified by the University of Oxford refer to public engagement *in the context of research*, in the model produced by UCD the perspective is extended to the university mission as a whole, where PE represents “the many ways in which research”, but also “teaching” and “contributions to society” (what we call the third mission) “are influenced by and shared with the public for mutual learning”¹¹. This explains some of the reported examples, which include innovative teaching (through theatre and other tools), culture in the broadest sense, as well as citizens’ panels and other decision-making methods, that can be adopted in a wider dimension of actions and policies of public interest, beyond the perimeter of research alone.

¹¹ www.ucd.ie/publicengagement/about

So, these latter descriptions lead us to observe how the concept of PE, which was originally emphasised as *public engagement in science and technology, or in research and innovation*, is progressively expanding towards a new category embracing also other contexts in which university activities take place. This also results in PE practices being experimented as a mean to integrate research, teaching and interaction with industry and society (the three 'missions' of university), often focussing on development actions shared with local communities (expressions such as civic engagement and community engagement are often used for this).

The ongoing progress has stimulated many universities to adapt their organisational structures, besides their agendas, in a gradual shift towards the *institutionalisation* of PE practices. Such evolution tends to follow two trajectories: on the one hand, the creation of action plans and dedicated bodies, and on the other (especially in universities with more consolidated experience), a progressive normalisation of PE as an integral part of research and other activities¹². In both cases, many people suggest that there is a strategic need for investment in *training on public engagement* for the staff: primarily researchers – who are required to overcome their resistance to a more communicative, collaborative and transparent way of working – but also other personnel (UCD explicitly mentions public engagement *practitioners*).

Towards an Engaged University

It should be noted that the issue of institutionalisation almost necessarily leads to a deeper reflection on the nature and role of a university of the future, in terms of its relationship with society.

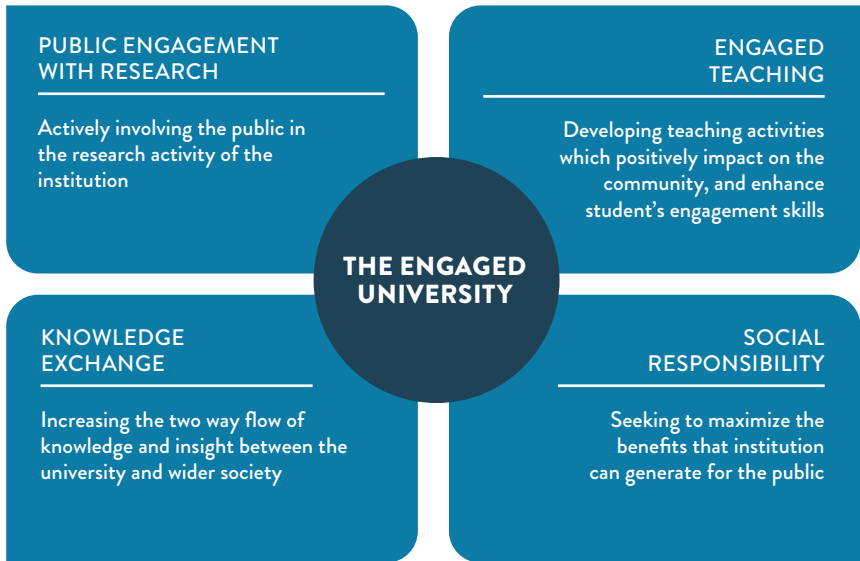
The inter-university centre NCCPE has made a particularly relevant contribution in this regard, seeing an “engaged university” as the basis for developing and consolidating social responsibility at British universities.

In this case too, the most interesting aspect of the proposal is the fact that it goes beyond the field of inclusive and collaborative research alone, to also look at teaching, knowledge creation and the third mission. All these components are reflected and reformulated with a view to engagement, and so, in addition to PE, reference is made to engaged teaching, knowledge exchange (rather than transfer) and social responsibility (in the strictest sense, as returning value and public good to society).

According to the NCCPE's vision (summarised in Figure 2) these four areas intersect to define what an engaged university is on a more comprehensive level.

¹² In this regard, the University of Oxford emphasises the two priority objectives of embedding PE as an axis of research culture and practice and enabling its researchers to interact with the public productively.

FIG. 2 THE FOUR PILLARS OF THE ENGAGED UNIVERSITY



Source: NCCPE (National Coordinating Centre for Public Engagement)
publicengagement.ac.uk/about-engagement/what-does-engaged-university-look

Another aspect of great significance is the fact that social commitment and public engagement are seen not only as *transversal*, but also as *embedded components of the academic mission* in all its dimensions, and no longer 'extra' elements.

Progressing towards the engaged university is a difficult challenge which must be viewed in the long term, and in this regard the NCCPE also gives guidelines that particularly focus on aspects such as the sharing of a mission, active institutional support and the involvement of all personnel, from students to technical staff (for more details see the full text of the proposal¹³).

From the Italian perspective, this may represent a useful inspiration for reconceiving the social responsibility of academia, if not a roadmap for the university and research system.

¹³ NCCPE, "What does an engaged university look like?"
publicengagement.ac.uk/about-engagement/what-does-engaged-university-look



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2. NATIONAL FRAMEWORK AND INITIATIVES AT THE POLITECNICO

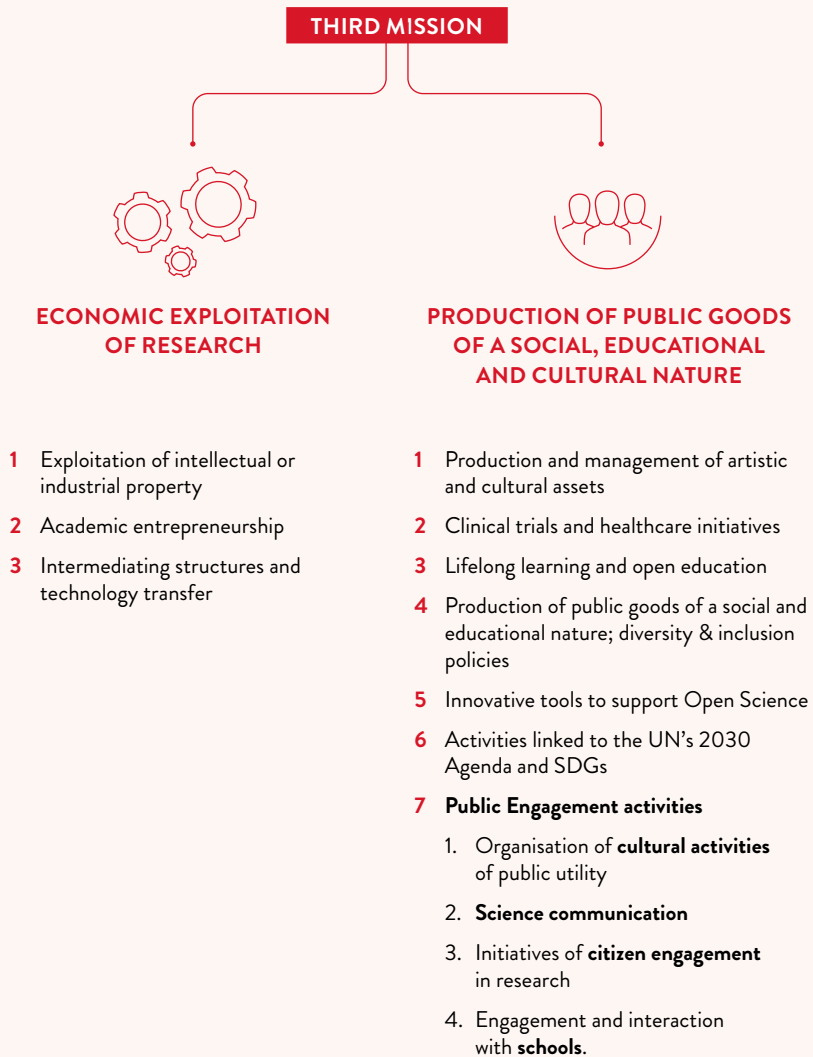
Moving on to the national context, it is useful to remember that the expression ‘public engagement’ has become part of the Italian institutional lexicon, being used at the same time in certain specialist reflections (Chiarelli, 2017) and in broader public debate (Becchetti, 2021); this has particularly been the case since the publication of the handbook titled “La valutazione della terza missione nelle università italiane” [Assessment of third mission at Italian universities], by ANVUR (National Agency for the Evaluation of Universities and Research Institutes) in 2015.

When illustrating the criteria adopted for the governmental assessment of the quality of research (ROA/VQR), the handbook provides new clarifications about the ‘third mission’, already recognised in legislation as one of the university’s institutional mandates¹ after ANVUR itself introduced that term in 2011². While in this occasion the third mission was characterised as “openness to the socio-economic context through the exploitation and transfer of knowledge”, the 2015 handbook provides a more systematic description, subdividing it into two major variants: on the one hand, the economic exploitation of research (namely patents, spin-offs and activities carried out on behalf of third parties), and on the other its *social enhancement* or, more accurately, actions that can be classified as “activities producing public goods of a social, educational and cultural nature”.

¹ Legislative Decree 19/2012 and Ministerial Decree 47/2013.

² Call for participation in the 2004-2010 Research Quality Assessment (ROA/VQR).

FIG. 3 THE THIRD MISSION OF UNIVERSITY ACCORDING TO THE ANVUR CLASSIFICATION (2015)



The latter definition is of more interest to us here since it can generally be associated with the university's social responsibility. Within this category (which we may refer to as 'social third mission'), ANVUR includes 7 more specific fields of action (Figure 3), one of which is called 'Public Engagement'. This is defined as "the whole of non-profit activities of educational, cultural and developmental value to society" and is in turn broken down into four types of action, i.e.: *cultural promotion to the public; science communication; citizen engagement in research; engagement and interaction with schools.*

The explicit and detailed reference to PE in the ANVUR handbook therefore represents an important step in the process of formal recognition of this presence in Italian universities, soon followed by the addition of the 'Public Engagement' entry in Cineca's IRIS data collection and management system, and of related items largely corresponding to the types reported in the handbook.

The ANVUR classification partially differs from models proposed abroad, as can be seen from the fact that fields such as 'Innovative tools to support Open Science' and the 'Production of public goods' are placed outside of the perimeter of PE. Nevertheless, it now constitutes an important reference point for Italian universities, which are progressively adapting to the same scheme, as well as an index that is already adopted in the formal assessment of third mission.

In fact, the third 2015-2019 RQA data-collection phase (started in January 2020) required Italian universities to select case studies that they deemed to be emblematic of their own third mission and PE agendas. The selected case sheets were then submitted to a special "interdisciplinary" committee of experts" [GEV interdisciplinare], including members with non-academic profiles, appointed to assess them in terms of external impact, based on specific criteria detailed in the ANVUR call.

Perhaps the most significant aspect of this new 'season' in governmental assessment is the fact that it is requiring Italian universities to systematically address the issue of the social, cultural and economic impact of their own activities, and it is safe to assume that this will reshape, or at least affect internal assessment and recognition procedures, as well as trends in universities' strategic planning.

More recently, besides ANVUR, many universities themselves decided to undertake the task of framing and monitoring these issues at the national level through the establishment of APEnet, the Italian Network of Universities and Research Institutions for Public Engagement. APEnet was set up to encourage a greater institutionalisation of PE and, since 2018, it has been seeking to promote the culture of PE and good PE practices within the Italian research and higher education system³.

³ The association's vision, guiding principles, objectives and field of action are illustrated in the manifesto titled "APEnet per il valore pubblico della conoscenza" [APEnet for the public value of knowledge], which can be downloaded from the website www.apenetwork.it. The activities carried out by APEnet so far include data collection aimed at creating an open database of documentary resources (published on the same website), to help universities strengthen and expand the culture of PE in the Italian context. Link: www.apenetwork.it/it/raccolta-documentale-sul-public-engagement.

The network is now an association, currently encompassing 64 universities and research institutes, and is led by a board which includes the Politecnico di Milano as a core member.

Our university can therefore be considered among the most active participants in shared reflection on PE in the Italian context, starting from the effort to identify its field of action, benefits and general sense, which APENet summarises in six obligations: *responsibility, circularity, reciprocity, diversity, transparency and sustainability*.

To support this framework, APENet promotes monitoring at a national scale, based on a self-assessment tool or 'barometer' submitted every year to its members.

A similar operation is also promoted by the ITA.CON project⁴, which aims at identifying the best tools to improve the effectiveness and efficiency in the processes of knowledge exchange between university and society. The project is supported by the European Commission through a Technical Support Instrument (TSI), which provides Member States with 'tailor-made' assistance to design and implement reforms in the field of third mission, and also involves site visits aimed at framing the perception that the various universities have of their own socio-economic impact.

Investment in the Third Mission at the Politecnico di Milano

The gradual consolidation of a socially responsible perspective at the Politecnico di Milano is partly linked, directly or indirectly, to a component of *investment by the University* in that direction, which is especially prominent in some areas.

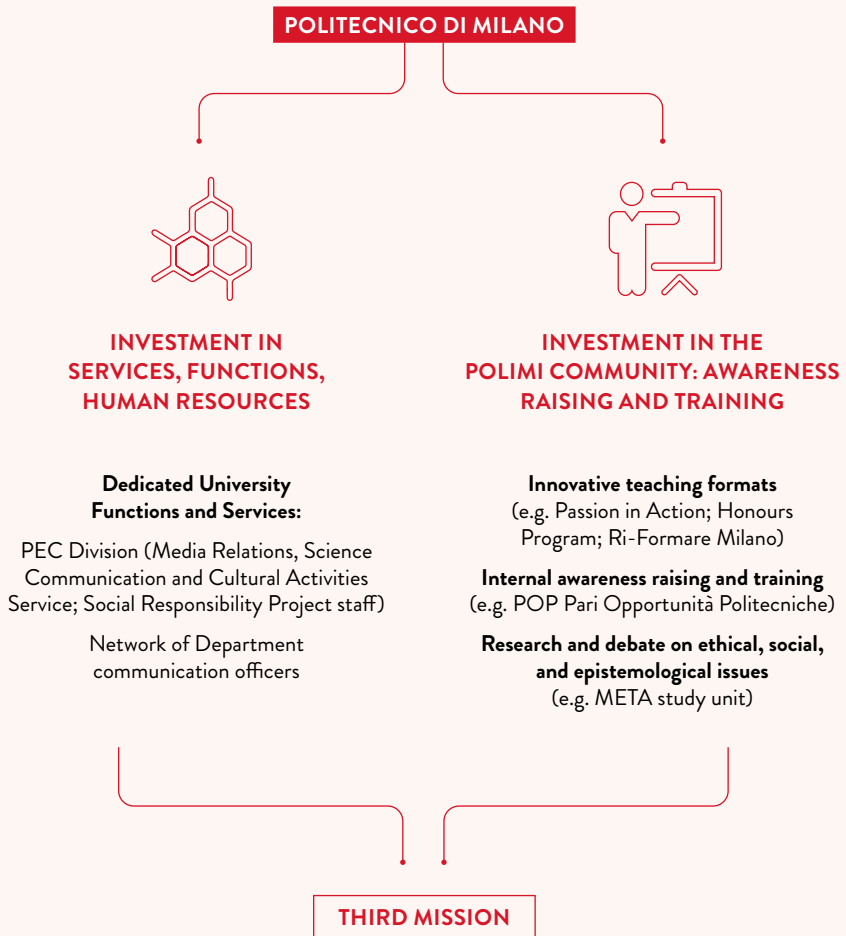
Several important steps in this sense took place in the last decade. Besides the push provided by the publication of the ANVUR criteria, the following, more internal turning points should be highlighted:

- The launch, in 2012, of the **University's social responsibility programme called *Polisocial***, which laid the foundations for strategic initiatives such as the *Polisocial Award* and *Off Campus*, along with other forms of social engagement.
- The introduction of thematic agendas linked to the objectives of inclusivity and responsibility, including the *Città Studi Campus Sostenibile*⁵ project (2011) and the *POP Pari Opportunità Politecniche* ["Equal Polytechnic Opportunities"] strategic programme (2018).
- The creation of the humanities and social studies unit *META*, a permanent interdisciplinary group that extends to the philosophical and sociological fields and is dedicated to studying and debating the ethical and social implications of new technologies.

⁴ ITA.CON: Improving the system of knowledge exchange and collaboration between universities and society in Italy.

⁵ Joint initiative by the Università Statale di Milano [State University of Milan] and the Politecnico di Milano.

FIG. 4 THE POLITECNICO'S INSTITUTIONAL INVESTMENT IN SUPPORT OF SOCIAL RESPONSIBILITY AND PUBLIC ENGAGEMENT



- The adoption, in 2014, of an internal policy on open access to scientific knowledge and the results of research, and, more generally, the development of a digital infrastructure and contents aimed at fostering the consolidation of open culture in various environments, including teaching (creation of the *Polimi Open Knowledge* platform with support from the METID service).
- The evolution of Communication and External Relations into the *Public Engagement and Communication Division (PEC)* in 2020, and the allocation of staff to the management of 'social responsibility projects'. Added to this, other forms of support have been activated at the departmental level, such as the network of department communication officers and (in some cases) the creation of roles with specific responsibility for third mission.

As shown in Figure 4, in addition to *direct programming* of third mission and PE initiatives (through the provision of guidance, formats, etc.), this investment should be understood both in terms of *technical-administrative and management support*, through dedicated functions, services and personnel (PEC and departmental staff), and in terms of *awareness raising and training* among the polytechnic community.

This latter component deserves a separate mention, as it does not really entail actions/measures that can be attributed to the third mission. In fact, they do not involve any exchanges with external parties, but rather an 'internal public' as target: the polytechnic community as a whole (as in the case of POP) or more specific segments of it, as is especially the case with students, to whom particular attention has been paid in recent years, with the intention of fostering the development of cross-discipline and soft skills to integrate curricula. In this regard, it is worth mentioning the University's *Passion in Action* initiatives and more specific programmes offered by the Schools (former Faculties), including the *Honours Programme 'Engineering for Sustainable Development'* (ICAT and AUIC Schools) and Ri-Formare Milano (AUIC). Another example are the initiatives, generally led by departments, which combine innovative teaching with the development of soft skills in the context of science communication (the *FDS* laboratory of the Department of Mathematics/DMAT being the most representative case).

Nevertheless, from our perspective, internal investment in awareness raising and training constitutes a fundamental lever for the development of third mission and PE at the Politecnico, representing veritable **training in university-society dialogue** and the creation of a positive cultural climate for academia to redefine its roles (Cognetti, Colombo, Pasqui, 2018). As regards younger targets, there is a strategic impulse among a new generation of researchers and professionals who are more socially aware and responsible. As regards younger targets, there is a strategic impulse among a new generation of researchers and professionals who are more socially aware and responsible.

Polytechnic Public Engagement initiatives

Mid- and long-term investment by the Politecnico combines with direct commitment to fostering social responsibility, and particularly PE practices; a rather vital landscape presenting a variety of initiatives and experiences (some well-structured, others less so) of which we provide an overview in this report.

One should note that, when surveying and mapping the cases, as a general criterium it was decided to follow the ANVUR categories and the underlying concept of public engagement, in which the 'public' mainly corresponds to citizens, both individual and associated.

The decision to maintain a specific focus on interaction between the world of university and research on the one hand, and non-academic, non-specialist audiences on the other, can primarily be explained by the need to shed light on a field that has been identified and formally recognised only recently in our country. In fact, PE is arousing increasing interest among Italian universities, whose urge to comply with governmental schemes, however, is not always paralleled by full understanding by the academic community. Contributing to sense-making, then framing the current picture of 'polytechnic' PE as a basis on which to anticipate some possible directions and impulses to further development, are thus the two main purposes of this document, which was intended as a limited summary precisely to avoid the risk of dispersion, considering the extensiveness and complexity of what we call the third mission. In addition, this mapping operation is also meant as an opportunity to promote the recognition, value and growth potential of some 'minority' and sometimes informal PE practices, which are scantily visible and often underestimated by their own authors.

In contrast to what ANVUR proposes, we have seen how other models, originating mainly from abroad, allow for a 'pluralistic' interpretation of the public, opening to parties such as institutions and businesses. The National Agency describes the production of goods, services, knowledge, and innovation as an outcome of productive interaction with several 'publics' (local and/or sectorial public bodies, foundations, firms, etc.) and places it under the generic 'third mission' label.

However, it is rather problematic to separate it from the realm of PE, especially when some of these exchanges are observed from closer up. On the other hand, several of our departments are intensely engaged on that front and recognise its strategic relevance, sometimes in the wake of consolidated traditions linked to the technical identity of our University, where research and development appear to be highly intertwined.

It is therefore a very high-interest issue, but one which we believe would be better investigated in a study of its own, precisely due to its specific weight, large scale and articulation within the Politecnico. In addition to this – and again following the ANVUR classification (Figure 3) – it is easy for the "production of public goods" to

encroach into the “economic exploitation of research”, which is reason for greater prudence when it comes to setting the scope of this study.

Having said that, and coming to the picture being revealed, one first notes that polytechnic PE practices transcend the field of research and innovation and cut across all academic missions, in line with a trend registered among other universities. At the Politecnico more specifically, there is a frequent inclination towards practical and laboratory-based work, which is in some way characteristic of a technical institution. The intensity of interaction with the public also varies, as better illustrated in the next chapter.

As regards the actions promoted directly by the University, it should be noted how they mostly relate to recurring programmes, which over the years have led to the general improvement of the **science communication** offer, through major schedules like *MeetMeTonight* and the *Festival dell'Ingegneria* [‘Festival of Engineering’], some more specific events and, more recently, the online magazine *Frontiere*. To these must be added a more general **cultural animation** agenda (e.g. *Polimifest* and *PolimiRun*) directed at diverse targets, including children and teenagers (*Tutti all'università!*, *Polimi4School*).

In some cases, this development is the fruit of the structuring of once experimental and small-scale initiatives, proving that fringe practices can play an inspirational role in the design of actual formats (one such example is *PolimiOpenLabs*, created on the basis of activities first carried out independently by individual lecturers and laboratory staff).

In other cases, pilot projects of departmental origin paved the way for the creation of larger-scale programmes with partially different content, such as Mapping San Siro, which had a fundamental role in the adoption of the *Off Campus* initiative.

It should be specified that some initiatives are part of formalised collaboration between the Politecnico and external partners, sometimes within pre-structured formats. These include: *MeetMeTonight* (Italian version of the European Researchers' Night), which brings together several universities and scientific institutions, with support from the Municipality of Milan; *Tutti all'Università!* [‘Everyone to University!’], a children’s teaching cycle delivered in university classrooms, co-organised with the Focus Junior magazine; *Milano Arch Week*, a week of events dedicated to architecture, promoted by Triennale and the Municipality of Milan with scientific support from the Politecnico; the *Student Chapter SPE-PoliMi-SC*, headed by the Society of Petroleum Engineers⁶.

⁶ It is also worth mentioning: UNESCO support for initiatives such as the *Honours Programmes* and *MantovArchiettura*; municipal public support for the creation of *Off Campus* spaces in the city; the ongoing collaborative relationship between *Laboratorio EFFEDIESSE* (Department of Mathematics) and several primary and secondary schools, in the context of projects in some cases also supported by the Ministry of Education.

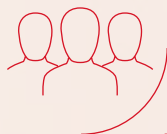


The main sources used in the mapping were the PEC Division's agenda (website and other material), the internal database on Cineca's IRIS platform, as well as the departmental websites. In addition to this, talks were held with the twelve Department Directors, which made it possible to identify significant projects implemented at this level and reconnect them to the specific perspective and 'sensitivity' of the various disciplines.

The survey was carried out based on a sample rather than in an exhaustive way, since the field in question is highly dynamic and internally diversified, as well as largely non-formalised (many activities are actually voluntary, and often one-off and small-scale, thence generally difficult to detect).

SOCIAL RESPONSIBILITY AND PUBLIC ENGAGEMENT AT THE POLITECNICO: CASES AND INITIATIVES

The various initiatives are reported for illustrative purposes and do not represent the entire record of cases found to exist at the Politecnico di Milano.



THIRD MISSION

SOCIAL RESPONSIBILITY

1 Socially responsible research

E.g. *Polisocial Award* (University and Departments);
development cooperation projects (Departments)

2 Social and environmental responsibility programmes

E.g. *Città Studi Campus Sostenibile* programme (University)

3 University in the local area

E.g. *Off Campus* initiative (University)

4 Free access to scientific and teaching content

E.g. *Re-Public@polimi* archive (University); *POK Polimi Open Knowledge* portal and related MOOCs (University, in support of Departments, Schools/ex-faculties and individual lecturers)

5 Public Engagement

CULTURAL/RECREATIONAL ACTIVITIES

Social and cultural animation

E.g. *Polimifest / PolimiRun / Polimibus / Incontro con l'autore* [Meet the author] / *TEDxPolitecnodiMilanoU*

Exhibitions and shows

E.g. *Aperitifs in the Historic Library / Historic Archive exhibitions / Cultura Meccanica* (DMEC Department) / one-off exhibitions in departmental spaces

COMMUNICATION OF SCIENCE AND RESEARCH

Public information

E.g. *Frontiere* (magazine/newsletter, research) / Media Relations service/PEC Division / official websites and social network pages / knowledge clips by PhD students (DCMC Dep.)

Science/research communication events

E.g. *MeetMeTonight / Arte e Scienza* [Art and Science] / *Festival dell'Ingegneria / Milano Arch Week / MantovArchitettura / Polimi4Kids / Tutti all'Università!* [Everyone to University!] (Polimi-Focus Junior joint format, with DICA and other departments)

Lectures and guided visits

E.g. *PolimiOpenLabs* (guided visits to DICA, DAER, DCMC and other departmental laboratories) / specific initiatives

ENGAGEMENT AND INTERACTION WITH SCHOOLS

E.g. *Polimi4School / FDS – Educational Training and Experimentation laboratory* (DMAT Dep.) / *School@DEIB* programme (DEIB Dep.) / *DICA4schools* project (DICA Dep.) and related *Student Chapter SPE-Polimi-SC* (coord. DICA and DENG Depts.) / *Lezioni Lincee di Fisica e Chimica* [Physics and Chemistry Lectures] (DFIS Dep. with Accademia dei Lincei)

ENGAGEMENT IN RESEARCH

Public dialogue and discussion

E.g. *Virtual Seminars Series* (DCMC) / C3S seminars (DICA) / individual seminars with open discussion

Engagement in research projects

Use of PE detected among the methodologies of individual laboratories/lines of research/projects

E.g. *Environmental Intelligence laboratory* (DEIB) / *Planning and management of environmental systems* line of research (DEIB) / *Polifactory* interdepartmental laboratory (DMEC, DEIB, DESIGN Depts.) / *Polisocial Award* (individual projects) / *Vocabolario di quartiere* [Neighbourhood vocabulary] (DESIGN) / *Istantanee di S.Siro* [Snapshots of San Siro] (DASTU) / development cooperation projects (individual cases) / individual research projects on behalf of third parties / individual European research projects, e.g. *SISCOODE - Co-Design for Society in Innovation and Science* and *CIMULACT – Citizen and Multi-Actor Consultation on Horizon 2020* (participation from the DESIGN Dep.).



3.

THE POLITECNICO CASE: INTERPRETATIVE READING, TRENDS AND DISTINCTIVE FEATURES

As we have seen, the current picture of social responsibility at the Politecnico is the result of the relatively recent development of a diverse mix of multi-scale initiatives, practices and functions, which altogether constitute a record of cases cutting across several aspects, from the sectors and positions implicated to the specific format and even the content and type of action carried out.

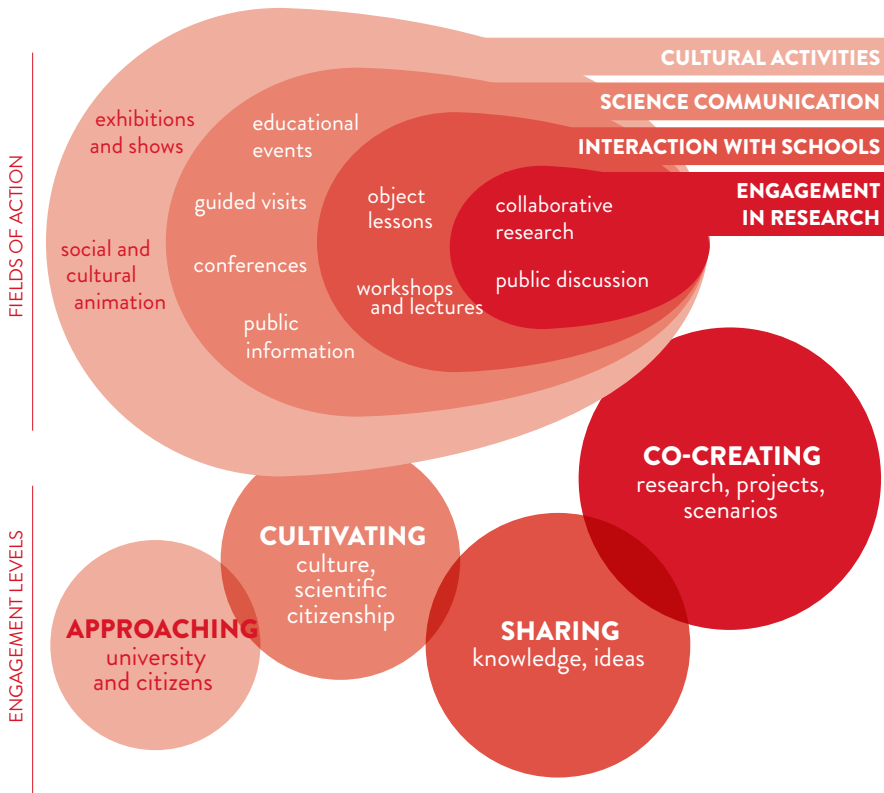
Besides variations in the institutional levels involved (one or more Departments, Schools, the University's central administration, or forms of cooperation between them), one observes that the role of Politecnico in respect of third mission tasks may also differ, e.g., from host or unique organiser to co-promotor with external entities (universities, local authorities, publishers, or others).

Typologies and formats too appear to be rather variable, primarily in terms of how much structured and/or embedded the actions and functions are. The range of cases is fairly diverse, be it informal initiatives by individual lecturers, the usual recourse to communication channels, one-off or repeated projects (sometimes as part of more or less stable templates), more widely encompassing policies and properly strategic plans adopted by the University, ending up with fully institutionalised functions incorporated as services or permanent units.

General identikit and evolutionary paths of Public Engagement at the Politecnico

Coming to the practices of public engagement proper that are found to exist at the University, it was deemed helpful to propose an interpretation scheme based on the **'level' of engagement**, which is to be superimposed on the four fields of action defined by ANVUR and already illustrated in chapter 2. In fact, we believe this new scheme to be particularly useful for framing the actual value of the practices identified and their underlying significance.

FIG. 5 PE AT THE POLITECNICO: 'FIELDS' OF ACTION AND 'LEVELS' (OR 'SIGNIFICANCE') OF ENGAGEMENT





Intersecting with each other, 'levels' and 'fields' together define the general framework for PE at the Politecnico, as can be seen in this diagram (Figure 5), loosely based on the one proposed at Fig. 1. Unlike fields, levels should be understood both in terms of significance and as grades of engagement; or, in other terms, the principal benefit deriving from the activity carried out, as well as the varying mode and 'intensity' of interaction between university and external stakeholders. For this reason, although parallels can be drawn between fields and levels, the latter can cross-cut the former or even intersect with each other, their boundaries being rather more blurry than those of fields.

In our reading, we propose four main levels, namely *approach*, *cultivate*, *share* and *co-create*, which we shall understand as the key to an alternative reading of current PE and social responsibility practices at the Politecnico, but also as a sensemaking device to be employed and developed in view of future action.

Approaching

Make university and citizens approach each other and, at the same time, transmit; inform people, communicate with them, and ultimately engage the public in direct experience of the Politecnico.

In addition to more ordinary examples such as online communication, this item particularly applies to activities that promote public awareness of and contact with our university, such as when university spaces and resources are opened up to external visitors: archives, laboratories, but also the campus and departmental spaces. 'Transmit' or 'approach' is also applicable to events involving social participation (through sport, entertainment, etc.) or general cultural events not closely tied to a disciplinary dimension. By targeting both the polytechnic community and citizens of Milan/people from outside, these events provide both parties with the opportunity to deepen reciprocal contact. One should also note that these events involve the campus in its social and physical dimension, more than the institutional one, narrowing the distance or even eliminating what is usually a separation from the civic fabric. The university grounds are therefore rethought as a permeable and enjoyable space, and as a living part of the city. Annual events such as the aforementioned *Polimifest* or *PolimiRun*, but also exhibitions, screenings and some significant formats implemented by some departments (e.g. *Cultura Meccanica*, DMEC) bear witness to a direction that the Politecnico has already taken. This can be described as a clear move towards the construction of the most elementary component, but also the foundation of an 'engaged university'.



Cultivating

Promote common references and values between university and the public, i.e., a pooling of cultural and scientific education bases, as well as ethical and values-based principles which, together, are the essential prerequisite of scientific citizenship as an expression of democracy.

This entails an action of a dual nature, as it affects both the academic community (present and future) and citizens themselves (starting with the new generations), the former in terms of training in transparency, communication skills, and correct positioning towards the public, the latter with reference to education on scientific principles, information on contents, purposes and future of research, and preparation for dialogue with academia.

In the first sense, as already highlighted, internal awareness raising/training activities (see Figure 4) can be of strategic relevance, and although they cannot be accurately categorised as PE, they are still complementary and synergic with it. As for the second front, this primarily refers to science communication, as well as those activities which promote the experience of culture, art and technology as sources of intellectual inspiration and facilitators of understanding of scientific issues by people of all ages, including children and teenagers. Over the years, a rich agenda of events and templates of this type has been developed, with a high level of participation by departments, often within centrally promoted formats (the various festivals, or channels such as *PolimiOpenLabs*, inspired by lecturers themselves), but also independent initiatives and even more spontaneous actions by individual researchers.

In fact, the boundary between internal and external targets appears to be not so distinct, when one assumes how a good strategy for 'cultivating' must rely on factors such as mutual learning and so-called cross-fertilisation, expecting such an approach to be increasingly valued at the Politecnico as well. Some of the mapped cases, of great experimental value, are able to embody this synthesis, for instance by mobilising young researchers and even students in the guise of science communicators. Among these are the knowledge clips (*pillole*) by PhD students in Chemistry, or the lectures and object lesson formats implemented by several departments in primary and secondary schools: *School@DEIB*, *DICA4schools*, *Student Chapters* and particularly the Department of Mathematics' *FDS lab*.





Sharing

Encourage the sharing of knowledge, but also ideas and perspectives on change, between specialists on the one hand, and citizens and social actors on the other.

This includes the most interactive dissemination formats, as well as conference events and contexts for shared discussion and reflection on issues linked in various ways to development, as is the case in the *Off Campus* programme, which also involves a university-neighbourhood relationship dimension.

The growing number of workshops, meetings and conferences open to two-way communication between researchers and the public is a sign of keen interest in moving further in this direction on the part of an increasing number of departments and teaching staff. This occurs in the context of a growing appreciation for online/blended options which, compared to analogue and traditional formats, often embed interaction making it easier, and allow reaching increasingly wide audiences (as is the case with virtual seminar schedules promoted by DICA and DCMC).

Less easy to detect are cases related to sharing and exchange practices within the research process itself, which tend to be embedded in wider-ranging projects and often not really clarified. However, it can still be noted that research funding schemes, and particularly European ones (on which many of our projects rest), now explicitly require the presence of a public outreach and sharing component.

Finally, the development of this level also relies on the application of the open access principle as an underlying 'infrastructure', which the Politecnico has now been systematically implementing for several years. The further promotion of a more broadly defined 'open culture' should thus be considered a strategic lever for encouraging an inclination to share among researchers, as a custom more than an exception.

Co-creating

Public engagement at its highest grade, or the inclusion of external stakeholders (communities, various types of representative and beneficiary, exponents of civil society, public or private institutions) in research, design and scenario building activities, and possibly in decision-making processes related to them.

Engagement can therefore affect both the research itself and the definition of its objectives and content, in addition to the co-design of its intermediate and end products. This level leads one to appreciate a collaborative culture that has been spreading in recent years, along with the affirmation of European research formats and thanks to some initiatives launched by Politecnico. The *Polisocial Award*, for instance, promotes multidisciplinary but also collaborative research and partnerships with various types of non-academic parties. Since its 2022 edition, the initiative has also been making explicit reference to public engagement approaches.

As in the case of sharing, the co-creation component too is often dispersed, and therefore difficult to extrapolate from projects actually entailing it. One must also recognise the more or less habitual application of inclusive methodologies in a number of research units, for example the *Environmental Intelligence* laboratory and some specific lines within the DEIB department or, to some extent, the *Polifactory* interdepartmental lab (DESIGN, DMEC, DEIB). In addition to this, there are several more specific experiences, such as the *Vocabolario di quartiere* ['Neighbourhood Vocabulary'] and *Istantanee di S. Siro* ['Snapshots of San Siro'] initiatives (DESIGN and DASTU, respectively).

In general, inclusivity is less obvious (and therefore rarer) in research practice than in other areas, since it requires particular dedication, motivation and commitment, and needs to be managed with a certain degree of familiarity and competence. For this reason and others, its benefits are not always clear to researchers, especially in the absence of effective levers or rewarding mechanisms. While the Polisocial Award or the logistical and 'motivational' support provided by Off Campus already represent valid incentives from the University, the creation of targeted forms of stimulation will be highly desirable in the near future, alongside dedicated training actions.



Emergent features of a 'polytechnic approach'

The fourfold structure proposed above seeks to frame the identity of the PE practice inside the Politecnico, which is being developed in part spontaneously, in part as the result of external stimuli, and in part on the basis of policies, programmes and forms of support promoted by the University.

The distinctive features of this emerging 'polytechnic approach' include an interpretation whereby engagement and social responsibility *intersect the various academic missions*: research, the expanding third mission, and even teaching.

In this regard, as we have seen, particular attention is paid to the *training of students in dialogue with society*, by promoting their contact with real world contexts, and more generally an investment in the *social skills of the polytechnic community*.

Such vision is backed, in the first place, through the *deployment of university structures, staff and other resources*, as the most concrete prerequisite for initiatives that are open or oriented to the public, which are expected to develop further in the future. While in some cases it is pre-existing resources that are upgraded, in others it is ad hoc forms of support that are driving a mutually beneficial *innovation in university-society relationship* and in the former's role, as well as the implementation of *new forms of cooperation with external partners and stakeholders*. In this regard, one relevant example is the Polisocial Award funding, which not only promotes the social impact of research through collaborative formats but is also becoming a framework encouraging PE practices. Equally strategic is the Off Campus initiative, by which the University is incentivising *forms of university-community connection* that have never been seen before in Italian academia.

Another feature is the frequent *experimental, applicational and laboratory-like inclination* of the practices examined, which can be found in various areas, from research to teaching, up to projects with/in schools (where a playful approach to learning is shown to be of particular use). This is a relevant aspect and a sign of the Politecnico's ability to enhance its technoscientific identity even when it comes to PE.

A further distinctive aspect is the attention paid to implementing a *variety of approaches and communication formats*, which perhaps gives rise to *innovation in the languages* of science communication and cultural promotion. It is interesting to note that, in some cases, popularisation purposes combine with an aim by Politecnico to promote itself as an active presence in the urban life of Milan, i.e. within initiatives that are inspired by an 'open campus' concept.

The next thing to be mentioned is the growing *attention paid to the auditing, measurability and communicability of the social impact* of academic activities (including PE and the third mission), not just following governmental requests for accountability, but also in the interests of establishing indicators and models for monitoring and assessment.

Lastly, let us consider what can be defined as an *investment in knowledge and expertise* with regard to the issues connected to the university's social responsibility, which is deployed in various ways: from the identification, at several levels, of individuals with competence and/or responsibilities for enhancing and coordinating third mission agendas, to the implementation of research and in-depth investigations (such as those on ethical and social issues promoted by the META group, or the study of models for monitoring socio-economic impact by a special working group within the Department of Management, Economics and Industrial Engineering).

Although this 'identikit' is incomplete and relates to a still not mature (but in fact emergent) framework, in our opinion it constitutes an initial basis on which it will be possible for the Politecnico di Milano to establish a veritable institutional strategy for the development and consolidation of its own public engagement agenda, and its social responsibility mission more generally.



4. PROSPECTS

In conclusion, one can observe that a process of growth, articulation and institutionalisation is underway at the Politecnico, concerning a set of practices that we recognise as 'public engagement'. Such category is understood in its most comprehensive sense, which encompasses the multidimensional and multimodal features highlighted in the taxonomies of Anglo-Saxon derivation, and largely intersects what we have defined as the social and cultural third mission.

At present, the process is already being driven in part by agendas that the Politecnico has formalised, but primarily by the inspirational force of smaller scale initiatives, often experimental and/or linked to specific circumstances.

This can be seen from the mapping of the various cases summarised in this report, a picture that appears rather heterogenous in terms of scales, contents, methods used and the degrees to which the relationship with the public is understood. These variables respond to specific objectives but are also subject to the variety of disciplines cultivated at our University and the respective 'traditions' of university-society dialogue.

The overall landscape shows some relevant **elements of strength**, already emphasized as the main features of a 'polytechnic approach':

- intersectionality with academic missions
- emphasis placed on training and awareness raising
- allocation of dedicated resources, tools, and investment in support structures, both at the central and departmental levels
- the specific weight attributed to practice-based and laboratory-like approaches
- the development of original languages and concepts, and, more generally, innovation in forms of university-society dialogue.

In addition to these, other more specific qualities can be highlighted again.

First and foremost, it is important to note the considerable *richness and variety of science and research communication actions*, particularly those targeting primary and secondary school students. Such variety has further increased in the recent period,

thanks to the development of online/blended options which, while necessary during the 2020-2021 Covid-19 pandemic (which imposed a setback to in-person events), also made it possible to expand the audience and stimulate many researchers to communicate their work.

Although not yet particularly widespread, the *adoption and consolidation of PE approaches within departmental laboratories and research lines*, as a methodology and an integral part of the investigation process itself (i.e., for priority setting, data collection, audit, assessment, etc.), constitute another valuable aspect. This is a sign not only of the Politecnico's growing alignment with benchmarks of inclusivity and responsibility in research, but also of our researchers' awareness of the benefit that these practices entail for research.

Other aspects have also been outlined, such as the growing attention paid to the issue of *social impact*, including on the research side.

Alongside these aspects, some **weaknesses and problems** also emerge and should be highlighted. Limited to aspects internal to the University and leaving external obstacles aside for the moment, we can observe:

- signs of fragmentation and discontinuity, with a significant component of informal or 'shadow' practices that are difficult to identify (especially at the departmental level) and therefore to place within a coherent framework.
- the related obstacles to data-collection and monitoring, mainly due to a low propensity of researchers to declare and enhance their PE activities, which in turn is linked to both a lack of incentives to do so and a low awareness of the added value of PE.
- a lack of 'intensive' (and usually more challenging) PE practices, particularly those entailing engagement in research, compared to a considerably wider science communication agenda.
- a still insufficient practical and organisational support by the University to the implementation and management of engagement activities.

Since a trace of possible improvement paths is already inherent in the identification of these limitations, we want to conclude this report by highlighting some **guidelines** which may inspire a strategic agenda aimed at fostering a further development of public engagement in the next future.

These include:

- Investment in *stimulation, promotion and awareness-raising mechanisms*, primarily focussed on research and teaching personnel, in terms of incentives and rewarding as well as in the form of organisational assistance (besides promotion through media support). In this context, the setting up of a training agenda open to all staff is to be understood as strategic.

- The facilitation of *data collection, monitoring and assessment*, maximising possible synergies between central administration, departmental staff and researchers, as well as the practicality of semi-automated information collection tools (including Cineca's IRIS platform).
- The promotion, over the medium/long term, of *structural and organisational transformations*, providing an opportunity to reconsider research, align it with the internationally established inclusivity, responsibility and social impact requirements, and redefine the indicators and parameters used in internal assessment.

Moving through these transformations, it will be possible to promote innovation in the Politecnico di Milano's role, in terms of its nature as both a scientific and higher education institution, and an active, receptive, and responsible participant in the processes of exchange with society as a whole.

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