

TECHNOLOGICAL TRANSFER AND NEW RESEARCH HORIZON

Connecting university, industry and communities to innovate and transform society

With the orientation of international and European research towards the so-called “knowledge economy”, the role of universities in relation to socio-economic-cultural dynamics has undergone a definitive transformation. This new model, based on cooperation between universities, institutions, businesses and communities, positions academic institutions as key players in innovation and transformation of society, actively participating in the transfer of technology and knowledge to meet the evolving needs of the reference territories.

The challenge of technology transfer arises in response to the transitions and polycrises affecting contemporary societies. It does not seem to concern only the hard sciences, traditionally involved in the development of market-oriented products and services. The disciplines of Architecture and Civil Engineering, particularly in the area of Technological and Environmental Design – with its strategic, predicting and operational capabilities aimed at managing the complexities of built environment processes – play a central role.

On the one hand, it is necessary to have the ability to transfer theoretical knowledge into activities that connect innovation and its reproducibility, also through design initiatives or services actions to support institutions, associations or companies. The 2030 Agenda, the NEXT Generation EU policies and the “Mission 4” of the PNRR are oriented in this direction. On the other hand, new capabilities must be developed to implement regional innovation ecosystems, repositioning universities in a key role for the definition of new sustainability scenarios as advocated by the Agenda of the European University Association for *Open Science*.

Authors are invited to contribute by highlighting both disciplinary and interdisciplinary experiences in technology transfer, whether completed or nearing completion. The objective of contributions is to address, with a critical thinking, the aspects concerning the transition from the research culture centered only on know-how and know-who, towards the new scenarios of development of scientific knowledge, understood as vectors of innovation that operate through the connection between know-what, know-where and know-why (Fronzizi, 2020).

The contributions must highlight, through objectively verifiable indicators, the actual environmental, economic and socio-cultural impacts of these experiences in their respective implementation contexts.

During the evaluation phase of the contributions, particular attention will be given to the ability to document how technology transfer affects the value creation in the built environment, and what are the impacts obtained also through processes of participation, co-production of knowledge, co-decision and co-working.

Therefore, authors must clearly specify: the internal contextual inputs and the external environmental variables, highlighting local specificities and diversities within which the activities have been developed; the outputs and outcomes related to the impacts, positive/negative repercussions, cultural, social, economic benefits actually generated on the territory (*EU Knowledge Transfer Metrics*).

TECHNE 30 will therefore gather theoretical contributions, research, and design experimentation related to one of the following topics:

1. Market-oriented technology transfer

Technology and knowledge transfer activities, also within the scope of academic entrepreneurship (patents, spin-offs, start-ups, innovation centers, incubators, etc.) through which research results are valorized, developed or used outside of university institutions. Contributions must highlight the actual innovative, socio-economic and cultural impacts in the involved territories and sectors of employment and in the related value production chains specifically connected to the construction industry.

2. Technology transfer to address socio-ecological transitions

Sharing activities, with public or private non-academic and/or research entities, regarding the use, management and enhancement of assets, including those owned by universities (museums, botanical gardens, laboratories, archives, etc.), or services and consultancy aimed at supporting users and/or communities in addressing environmental, housing and socio-economic transitions, problems and emergencies. Contributions should detail the results, impacts and social and economic, local and supra-local consequences obtained through these activities and any repercussions on the technological and environmental culture of the project.

3. Technology and knowledge transfer to support decision-making and assessment processes

Initiatives for the production, sharing and valorization of technologies and knowledge, carried out in collaboration with non-academic and/or research subjects, to satisfy unexpressed needs of communities, respond to emerging requests from the construction sector, supporting the involvement of users and stakeholders in the innovation of design, decision-making and assessment processes. Contributions should document the outcomes and impacts of these initiatives in generating and sharing new knowledge and skills for transforming and managing the built environment across various scales.

Abstract submission *November 18th, 2024*
Abstract acceptance *December 16th, 2024*

TIMING

Article submission *March 03th, 2025*
Reviewed article result *April 15th, 2025*
Reviewed article submission *May 15th, 2025*

PUBLICATION DATE
TECHNE | 30
31TH OCTOBER 2025



TECHNOLOGICAL TRANSFER AND NEW RESEARCH HORIZON

Connecting university, industry and communities to innovate and transform society

WHY

More than twenty years after the ratification of the European Community new strategic goals (EC/Lisbon, March 2000 – sect. I, points 8-13) to launch a knowledge-based economy European space for research and innovation, the role of universities in relation to socio-economic and cultural dynamics has definitively changed.

The traditional linear vision that framed universities as dispensers of knowledge and expertise through top-down processes has been joined by new interaction modes based on the activation of networks with various public and private actors and institutions.

The new operative framework can be traced with the so-called “triple helix” model (state, business, university), which is today increasingly oriented towards approaches in which the community plays a decisive role. The emerging scenario therefore sees the universities as a major player in innovation, at national and international level.

Scientific communities involved in research and education are asked to take an active part in the technology and knowledge transfer to meet the changing environmental, cultural, and economic needs characterising the societies in which universities are embedded (Fronzizi, 2020, pp. 1-33, 37-45). In the Italian context, the PNRR (Piano Nazionale di Ripresa e Resilienza) through its Mission 4 “Education and Research”, also calls for a progressive engagement of universities as drivers of change for the evolution of the country’s economic system.

WHO/WHAT

In this transformation, some activities of the so-called Third Mission are positioned. In the evolution of monitoring and evaluation processes of academic institutions (ANVUR/VQR, in the Italian context), the Third Mission has assumed a central strategic role in determining the performance and social impacts of universities, highlighting their capacity to interact with the economic and productive sectors. Universities have thus progressively extended their roles beyond research and education, interfacing directly with society, according to principles of interdependence, reciprocity, and inclusiveness (Turriziani, 2024, pp. 1-21). The operational scope of the Third Mission has consequently expanded to include technology transfer activities (e.g. patents, spin-offs, start-ups, incubators, etc.) and knowledge dissemination, to include: communication initiatives; service and advisory activities for the design; results and impacts of actions on the environmental and socio-economic territorial aspects relating to the First and Second Missions.

However, the challenge of technology transfer cannot refer to experiences whose results from products, processes and/or projects are limited to solving specific problems, without objective innovative environmental, socio-economic, and cultural outcomes.

The ongoing transformations in the field of scientific research are far broader, as they imply a paradigm shift. Research set up according to the oppositions between theoretical and applicative dimensions, between top-down and bottom-up decisions, or between deductive and inductive logics loses effectiveness because it is exclusively centred on know-how and know-who.

Instead, new scenarios are emerging that focus on the development of scientific knowledge as vectors of innovation, also utilizing heuristic and abductive processes to connect know-what, know-where, and know-why (Fronzizi, 2020, pp. 12-23).

WHERE/WHEN

This hybrid approach of doing research also addresses the goals and needs imposed by the transitions and polycrisis that affect all contemporary societies. The fields of application also seem to extend beyond the STEM disciplines, usually involved in the development of inventions directly marketable as products or services.

Disciplines of architecture and engineering appear to be central, because their intermediate position where technical and humanistic knowledge coexist, in a distinct vision oriented towards interdisciplinary dialogue and the creative co-production of sustainable futures (Bassanini *et al.*, 2021, pp. 1-29, 97-148; Perulli *et al.*, 2018, pp.1-122, 149-174). This vision is inherent to Technological and Environmental Design, which is linked to predictive and strategic but above all pragmatic capability to manage complexity and thus transition.

On one hand, the Agenda 2030 sustainability goals (UN, 2015) emphasize the need to translate theoretical and conceptual knowledge into actionable, cross-system implementation strategies. University institutions are directly involved as connecting agents between the producibility and design of innovations, including through project, service, and technology/knowledge transfer activities to support organisations, associations, or companies (Losasso, 2014).

These capabilities are unavoidable today to respond appropriately to the continuous environmental, ecological, health, humanitarian, geopolitical, and military emergencies that afflict human habitats, globally or locally. In this direction, the NEXT Generation EU policies (and the consequent Italian PNRR) also reflect a widespread need to disseminate research results into verifiable outputs and outcomes on the physical territory and related production networks.

On the other hand, the guidelines of the European University Association's (EUA) Agenda for Open Science draw attention to the new capabilities to be developed for the implementation of regional innovation ecosystems, defining universities as “leading innovators” and “honest brokers in innovation for a sustainable future” (EUA, 2023, Priority 2&3).

In this second direction, a strengthening of the proactive role between universities, public or private companies, communities and stakeholders is wished.

This role cannot, however, be limited to the outsourcing of performances and services to bypass bureaucratic procedures (Giofré, 2014) or to mechanical knowledge “transmissions” that could also be implemented by non-university intermediaries (Claudi de Saint Mihiel, 2019).

For both development trajectories, it will therefore also be crucial to prioritize methodologies and procedures for qualifying and assessing the effective results of these activities, as suggested, for example, in the European Union's *Knowledge transfer metric studies* (UE Knowledge Transfer Metrics, 2020-2022, Phases 1&2; La Porta, 2021).

HOW

New dimensions are therefore emerging in research across various disciplines that deal with the built environment at different scales. The triple helix model is already evolving towards further openings. Evolution models are beginning to be envisaged on double fields.

The so-called “quadruple helix” is aimed toward the active involvement of the public and civil society in innovation processes according to endless frontier modes. The “quintuple helix” model is projected to support new knowledge and responsible practices to address socio-ecological transitions in the medium and long term (Thorsten, 2011; Frondizi, 2020, pp. 33-37). At the same time, in alignment with the objectives of the PNRR, there is also a move toward a “Fourth Mission” for universities that will be able to put their research with the Third Sector actors and in the *Open Science* challenges to tackle inequalities and educational poverty (Iannantuoni, 2024).

On these issues, TECHNE intends to contribute with call for papers #30, focusing both on the following aspects: the technology transfer that acts on the construction sector in a market-oriented way or aimed at addressing the socio-ecological transitions; the technology and knowledge transfer that can support the decision-making and evaluation processes of transformation and management of the built environment. The call for papers aims to give relevance to disciplinary and interdisciplinary experiences by asking authors to respond synchronously to two emerging questions.

The first issue concerns the need to address technology transfer through ways that focus on results and effects. It will therefore be important to address or document experiences whereby technologies and knowledge derived from research are transferred into the dynamics of innovation, policy, production, and management of the built environment and to support the community’s needs.

The second issue concerns the critical-analytical framing of the results and impacts by highlighting the technical, environmental, socio-economic, and cultural effects achieved.

For the case studies presented, it will therefore be essential to focus on contextual inputs, external variables, outputs, and outcomes, with which to specify the cultural, social, and economic benefits generated on the territories, supported by verifiable indicators.

BIBLIOGRAPHICAL REFERENCES

- Bassanini, F., Treu, T., Vittadini, G. (Ed.) (2021), *Una società di persone? I corpi intermedi nella democrazia di oggi e di domani*, Il Mulino, Bologna.
- Claudi de Saint Mihel, A. (2019), “La Terza Missione tra dimensione innovativa e funzione di public engagement”, *TECHNE - Journal of Technology for Architecture and Environment*, (18), 341–344. DOI: <https://doi.org/10.13128/techne-7550>. Available at: <https://oaj.fupress.net/index.php/techne/article/view/7550>.
- Consiglio Europeo (2000), *Conclusioni della Presidenza alla sessione straordinaria del 23-24 marzo 2000*, Lisbona. Available at: https://www.europarl.europa.eu/summits/lis1_it.htm.
- European Union (2020), *Knowledge Transfer Metrics. Towards a European-wide set of harmonised indicators*. Available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC120716>.
- European Union (2022), *Knowledge Transfer Metrics. Exploration of composite indicators for knowledge transfer*. Available at: <https://op.europa.eu/en/publication-detail/-/publication/d3260d80-5e59-11ed-92ed-01aa75ed71a1/language-en>.
- European University Association (2023), *EUA Innovation Agenda 2026*. Available at: <https://www.eua.eu/downloads/publications/eua%20innovation%20agenda%202026.pdf>.
- Frondizi, R. (2020), *La Terza Missione delle Università. Strategia, Valutazione e Performance*, Giappichelli Editore, Torino.
- Giofrè, F. (2014), “Terza missione: spin off universitarie in Italia tra opportunità e criticità”, *TECHNE - Journal of Technology for Architecture and Environment*, (7), 27–32. DOI: <https://doi.org/10.13128/Techne-14528>. Available at: <https://oaj.fupress.net/index.php/techne/article/view/4345>.
- Iannantuoni, G. (2024), “L’università si apra a Terzo settore e sociale”, *Formazione*, 19 gennaio 2024. Available at: <https://www.vita.it/giovanna-iannantuoni-presidente-crui-luniversita-si-apra-a-terzo-settore-e-sociale/>
- La Porta, L. (2021), “Terza Missione: come si misura il trasferimento di conoscenza”, *Education Around*.
- Losasso, M. (2014), “Ricerca, progetto architettonico e trasferimento delle conoscenze”, *TECHNE - Journal of Technology for Architecture and Environment*, (8), 8–12. DOI: <https://doi.org/10.13128/Techne-15050>. Available at: <https://oaj.fupress.net/index.php/techne/article/view/4377/4377>.
- Perulli, A., Rostan, M., Semenza, R. (Ed.) (2019), *La terza missione degli accademici italiani*, Il Mulino, Bologna.
- Porta, L. (2021), “Terza Missione: come si misura il trasferimento di conoscenza”, *Riflettere | Proporre | Agire*, 17 aprile 2021. Available at: <https://educationaround.org/blog/2021/04/17/terza-missione-come-si-misura-il-trasferimento-di-conoscenza/>.
- Thorsten D.B. (2011), “The Idea of a Green New Deal in a Quintuple Helix Model of Knowledge, Know-How and Innovation”, *International Journal of Social Ecology and Sustainable Development (IJSESD)*, IGI Global, vol. 2(1), pp. 1-14, January. Available at: <https://ideas.repec.org/a/igg/jsesd0/v2y2011i1p1-14.html>.
- Turriziani, L. (2024), *Il processo di trasferimento tecnologico universitario*, Wolters Kluwer, Alphen aan den Rijn.
- United Nations (2015), *Transforming our world: the 2030 Agenda for Sustainable Development/SDG 7*, Resolution adopted by the General Assembly on 25 September 2015. UN A/RES/70/1. Distr.: General 21 October 2015. Available at: <https://www.un.org/sustainabledevelopment/development-agenda/>.