

WIPO Advocacy Course - Case Study Submission

Name	Fazilet Vardar, Prof. Dr.
Role	Vice-President of Executive Board Coordinator for Research Collaborations and Innovation
Institution	ÜSIMP-University Industry Collaboration Centres Platform of Türkiye Izmir University of Economics
Country	Türkiye
Date of case study events	2010-2015
Case Study Title	Role of Advocacy in the Journey of the Turkish KE/TT Ecosystem

The following questions are designed simply to as a framework and assist your case study summary. Please feel free to provide as much information as required to understand and appreciate your outlined event(s). Note, a word/page limit has not been applied to your case study submission.

ABSTRACT

Türkiye has undergone a remarkable transformation in its Knowledge Exchange (KE) and Technology Transfer (TT) ecosystem over the past decade, achieving global recognition. Central to this journey has been the pivotal role of ÜSIMP (University Industry Centres Platform of Türkiye), whose contributions through advocacy efforts have led to awareness, capacity building, and the establishment of key infrastructures and frameworks tailored to the country's unique needs.

1. Background

- With a view to enlightening the reader and providing context for your case study, briefly outline the innovation ecosystem in your country (including aspects of the perceived value and recognition).
- of the challenge you are/were addressing and the reason for the need?

Türkiye's R&D&I Current Status as an Emerging Economy

Türkiye is an emerging economy (Figure 1) with a population of nearly 80 and Million GDP per capita PPP (2023) of \$13K. It ranks 38.3 in Global Innovation Index (2023), 53 / 137 in Global Competitiveness Index (2017-2018); 44.5 in Global Entrepreneurship Index (2019) and 39 in Global Innovation Index (2023).

GLOBAL INNOVATION INDEX ranking overall and by pillar -2023

Country/economy	Overall GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
Bulgaria	38	66	66	28	60	42	34	34
Türkiye	39	105	41	50	36	46	44	27
India	40	56	48	84	20	57	22	49

Figure 1: Türkiye's Ranking in Global Innovation Index 2023 (<https://www.wipo.int/web/global-innovation-index>)

Its institutions exhibit most of the common characteristics of developing ecosystems.

The Universities have rigid institutional structures restricting initiative taking and are at different levels of excellence with limited interdisciplinarity and institutional cooperation as well as insufficient cross-fertilisation for research and economic output.

On the other hand, companies have different levels of R&D focus, insufficient use of available R&D funds and awareness of benefits of collaboration with university and their main concern is immediate survival in economic instability. Therefore, effective and efficient implementation of technology transfer for increased societal impact is a challenge.

Türkiye, has been attempting to improve its socio-economic strength through the promotion of research and development, innovation (R&D&I) activities. The state has been implementing funding programs and incentives supporting the innovation capacity of small and medium-sized enterprises (SMEs) and universities, which have gradually diversified and become more sophisticated throughout the last 60 years.

The Journey for the maturation of National KE/TT Ecosystem

The establishment of the Scientific and Technical Research Council (TÜBİTAK) in 1963, - whose name was changed to *Scientific and Technological Research Council* in 1995, parallel to the shift to innovation- was the first milestone at national level.

The Establishment of complementary state organizations such as *Directorship for SMEs (KOSEB)*, *Turkish Technology Development Foundation (TTGV)*, *Turkish Patent Institute (TPI)*, etc has led the transformation in the first 30 years. In 1992, the first National Science Policy was published which initiated the start of Industrial support for Research and Innovation in 1995, with the establishment of TÜBİTAK Industrial Support Office (*TİDEB and later TEYDEB*) and thus the name change of TÜBİTAK. This was followed, in 2001, by a revised National Science, Technology & Innovation Strategy -Vision 2023 and Türkiye and become a part of the EU Research Area by as of the “6th EU Framework Programme” The cultural change triggered by integration with international R&I consortia brought about an increased awareness for capacity building in academia & industry.

This accelerated the allocation of state funds supporting industry& university collaboration, industrial innovation and the introduction of incentives customized to regional and sectoral needs continued with Laws for Technoparks, Regional Development Agencies, Centres of Excellence, Industrial R&D Centres and Clusters over a span of 15 years.

During this period, in 2007, the civil initiative, University-Industry Collaboration Centres Platform of Türkiye (ÜSİMP) was established by six founding members, each a university-industry joint research centre, co-funded by TÜBİTAK USAM Program between the years 1997-2006, in accordance with the triple-helix model. These Centres (Adana USAM, BİYOMEDTEK, ODAGEM, OTAM, SAM, TTGV) were the first institutional interface organizations in Türkiye.

When TÜBİTAK funding was terminated due to a legislative dispute in 2006, Adana USAM took the lead to organise these pioneering Centres to gather around a mission to contribute to the establishment, institutionalization and improvement of quality and performance of interface organizations. Thus, ÜSİMP was established to exploit the collective experience of its members in a co-learning environment, aiming to contribute to the development of national policies, strategies and action plans for effective and efficient implementation of KT/TT practices for proper exploitation of university-based knowledge and technologies.

The founding individuals were academicians dedicated to university-industry collaboration, and each were directing centres to facilitate this and set standards in an ecosystem which was in its infancy. They were motivated by social

responsibility and wanted to protect the tacit knowledge by creating a pool of experiences and best practices. By 2009, the group had extended to 16 members and these volunteers dedicated quality time to ÜSİMP's mission: to contribute to the establishment, institutionalization and capacity building of the KE/TT ecosystem.

They were aware that the first step towards this would be through effective interface organizations in the form of TTO's.

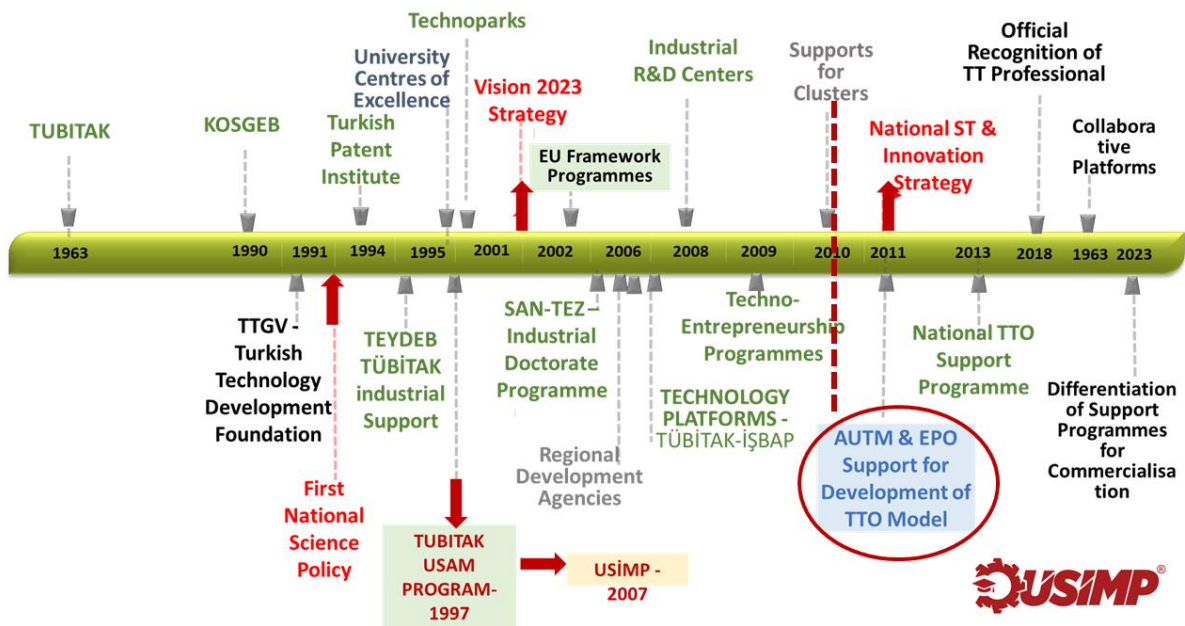


Figure 2: Time-line of the maturation of the Turkish KE/TT Ecosystem

Türkiye's second Strategy document "Vision 2023" declared a target of being among the first 10 large economies and reaching an annual income per capita of \$25,000, high-tech products constituting 8% of total exports and 3% of GDP spent on R&D by 2023. This was followed by a third document for "National Science, Technology and Innovation Strategy" announced by the STI Supreme Council in 2010 (Figure 2).

To reach these targets, the Turkish government initiated a range of mechanisms and programs to enhance the technological capabilities of companies and universities. Up until 2010, universities in Türkiye did not have active roles in contributing to economic growth via generating patents and commercializing research outputs, and there were no enforcement instruments for universities to do that. Thus a need for "interface organization -TTOs" formed to catalyse the movement to reach these overly ambitious national targets.

2. Approach

- a. Outline the steps that were taken to address the challenge, explaining why this approach was taken and if this is unique to your ecosystem

The challenge was to introduce the concept of TTO's and define the structure, responsibilities, expected outputs and widespread impact of these organisations within the local ecosystem.

This need originated from the fact that there were various models, with different pros and cons, in the different parts of the world and Türkiye had its own unique characteristics. Thus, importing a model developed for another ecosystem and directly implementing could not be successful. This motivated actors to seek a unique model for Türkiye.

ÜSIMP actively led task of developing the most suitable TTO model for Türkiye. The first steps towards this were two search conferences were organized on March 6-7, 2010, purely through the leadership of ÜSIMP with a visionary and proactive approach.

These were; the "*National Interface Program Workshop*" to collect views on framework of university-industry cooperation structures and the "*Evaluation of R&D Supports Workshop*" to evaluate the effects of existing supports on university-industry cooperation. Both were hosted by the Ankara Chamber of Industry with the participation of approximately 50 participants, with representatives of relevant institutions such as Higher Education Council (YOK), the Ministry of Industry and Technology, TÜBİTAK, Directorship for SMEs (KOSGEB), as well as universities, industrial stakeholders and NGOs. The aim was to define conceptual framework for a national model and identify the necessary actions including state supports and incentives towards their widespread implementation.

In the first workshop, technoparks, incubation centres, technology transfer offices and university industry cooperation centres were identified as best practices for technology transfer interfaces at national and global platforms. The participants agreed that the strategic importance of collaborations goes far beyond providing routine services and requires co-evolution of all stakeholders of the ecosystem. The vision and the awareness of universities should be the initiators to enable the "Interface Organisations" to work in an integrated manner with the university system (such as academic performance evaluation system, financial system, legal system, etc.). The structuring should include a wide spectrum of activities and services including matching basic and applied research expertise with industrial needs within a multidisciplinary, interdisciplinary or transdisciplinary perspective and identifying resources for the financing the multisectoral collaborations.

Consequently, the “Interface Organisations” should possess a wide range of skills such as business development, collaboration and management, contract management, systems engineering, project management, technology transfer, technology management, intellectual property rights management, technology audit, knowledge management, technology monitoring, consultancy and training.

The second workshop focussed on identifying the types of supports needed, actions to be taken to improve the targets and impacts of existing support mechanisms with respect to national policies, financial supports and legislation.

It was concluded that there were no serious problems in the overall industrial, technology and innovation policies designed and implemented by institutions such as TÜBİTAK, State Planning Organisation, Ministry of Industry. However, there was insufficient will for prioritization and political ownership and a lack of focus and coordination of these policies implemented by different institutions. Financial supports should also take into consideration the demands of the ecosystem and implemented in a complementary seamless manner. The non-selective nature of financial supports posed problems in terms of effective use of resources. Firms should be directed towards “priority” projects. It was emphasized that financial supports were initiated and implemented by different state offices and that it was imperative to integrate these and facilitate access. Special legislative measures were required to encourage university-industry collaborations such as involvement in industrial collaborations being included amongst the criteria for academic promotions and appointments

Consequently, at the end of these intense exercises, a consolidated report was prepared exhibiting the maturity of the national ecosystem with its pros and cons. This was disseminated to the officials, including the Ministry of Industry and Technology and Turkish Scientific and Technological Council (TÜBİTAK).

Based on the existing level of maturity, it was proposed that the “interface organisations” to be established in Türkiye should have a broader spectrum of responsibilities in comparison to their global counterparts who were strictly dedicated to the downstream operations of commercialising academic research outputs, starting with invention disclosures. The Turkish TTOs aiming to promote and catalyse industry-academia collaborations should possess a holistic approach and start with creating awareness amongst stakeholders for the need to collaborate.

This was a very radical perception, and the state officials had to be convinced about the suitability of this approach.

Consequently, ÜSİMP, opened the “Technology Transfer Office” model to discussion exploiting the international connections of one of its member

institutions. Ege University Science and Technology Centre (EBILTEM) who as one of the pioneers in the field, had a *Turkish Patent Institute Patent Information Centre* since 1999. EBILTEM had become the Turkish representative (one of 17 partners) in a European Patent Office project entitled "*Reorienting Patent Information Centres -PATLIB Centres*" and had established the first *PATLIB Centre* in Türkiye in November 2010.

Meanwhile, Türkiye was selected by EPO as one of the pilot countries to implement an IP Awareness Campaign to promote the dissemination of IP Knowledge in Universities. Subsequently in March 2011, EBILTEM was appointed as the National Coordinator of the project entitled "*Disseminating Intellectual Property Knowledge In Universities*", funded by European Patent Office (EPO), in cooperation with Turkish Patent Institute (TPI), EU Office for Harmonization in the Internal Market (OHIM, later renamed as European Union Intellectual Property Office -EUIPO). The activities of this project and the PATLIB Centres resulted in a cultural transformation in the Turkish ecosystem. The target audience of the Project was University Administrations, staff of Technology Transfer Offices, Patent Information Centres, researchers and students for enhanced networking and cooperation between university IP Teachers and between Technology Transfer Offices (TTOs) both at European and national level. The Road Map prepared involved:

- Raising the current level of awareness and knowledge on Industrial Property Rights (IPR) in Turkish Universities.
- Integration of IP courses at different levels into university curriculums
- Integration of IP in knowledge transfer activities of the universities
- Establishment and improvement of IP Offices and TT Offices within the universities.

Powered by the nation-wide network of ÜSIMP, the EPO Project achieved its deliverables under these main headings by June 2012.

- A Steering Committee was established composed of 34 University representatives, 4 representatives from TPI and 1 representative from Higher Education Council.
- A mail group was established to facilitate speedy exchange of information and distribution of announcements amongst the Steering Committee members.
- 7 Regional Coordinators and 27 Regional Representatives were selected.
- All Regional Coordinators contacted the Universities in their Regions and organized 1 to 3 meetings with Representatives from Universities to revise

the Road Map, the by-laws and -forwarded their feedback to the National Coordinator.

- Based on the feedback and discussions a "*Revised Road Map*" and "*Bylaws*" were finalized by November 2011.
- One of the deliverables of the Project was to document the current state of IP Awareness in Turkish Universities, through a wide-spread survey. Thus, a pilot survey was conducted during the periodic meeting of the "*Engineering Deans' Council*" to provide insight to the survey to be developed to determine the state-of-the-art of IPR Awareness in Turkish Universities. Based on this feedback, a "*Due Diligence Survey on Industrial Property Rights (IPR) in the Turkish Universities*" was prepared, sent to all University Rectorates accompanied by an official letter signed by TPI, requesting the survey is completed by the Heads of Departments in December 2011. A total of 2985 responses were received (82% response) by March 2012. The survey that contained 36 different questions and was divided into **7 different categories, namely:** "IPR Policy", "Education", "Specialization in IP", "University-Industry Collaboration Interfaces", "Research", "Commercialization" and "Infrastructure of the Universities". A final report was prepared and was submitted to TPI / EPO in June 2012.

In parallel to this, ÜSIMP pursued another international contact; AUTM. An MoU was signed (*Figure 3*) in January 2012 aiming "*to exchange information regarding technology practices and profession and to organize seminars and trainings, prepare reports, and temporarily exchange staff or subject matter experts*". The listed collaboration items included:

- Activities to raise awareness in the home country about the other party,
- The organization of an annual conference in Türkiye,
- The organization of specific workshops and seminars for Technology Transfer Office managers in Türkiye,
- The organization of a training program, including the development of a certificate program for consultants to be active in Technology Transfer and Licensing Organizations in Türkiye,
- Development of a mechanism for the Accreditation of Technology Transfer and Licensing Organizations, leading to quality assurance in Türkiye,
- Assistance in recruiting new members to the parties' respective organizations,
- The preparation of specific reports,

- Establishment of Technology Transfer and IPR Awareness at universities through seminars, workshops, exchange of good and best practices in Türkiye,
- Improvement or establishment of TT/IPR offices within universities in Türkiye,
- Establishment of training programmes at various levels in Türkiye,
- Staff Training for employees of TLO offices
- Training of Trainers
- Developing a template for "University IPR Policies".

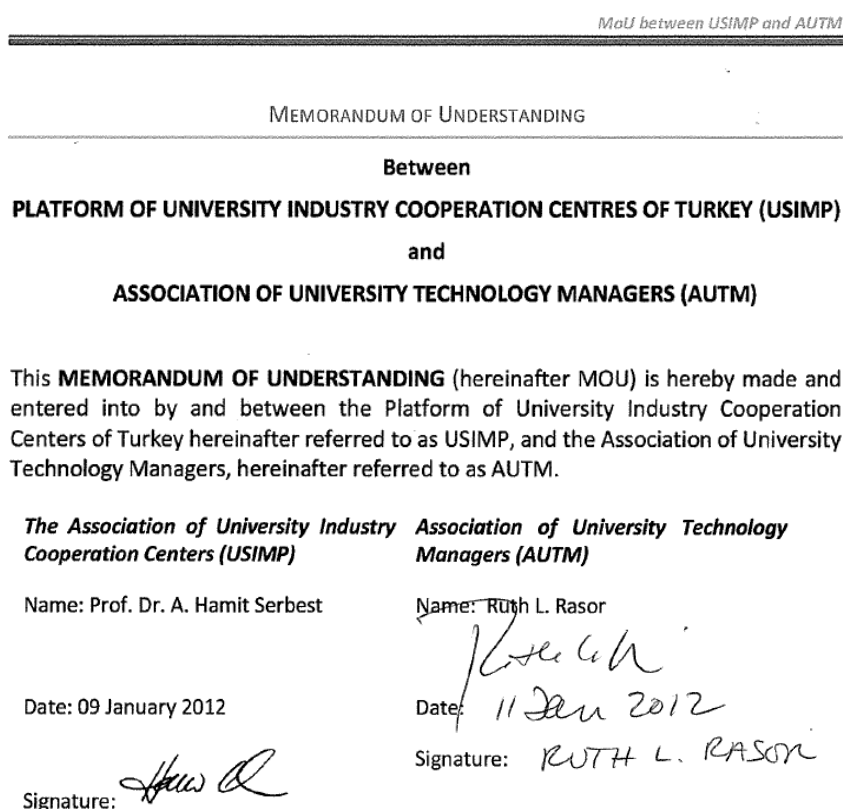


Figure 3: MOU Signed between ÜSIMP and AUTM

The MoU of ÜSIMP with AUTM, led to a series of activities with the participation of a wide range of key players, searching the optimum national Model for Turkish TTOs. A number of activities were realised in collaboration with AUTM, complementing the momentum created by the EPO project.

The triggering events were the three high-level "*Technology Transfer and University-Industry Collaboration*" workshops organised to determine the best model suitable for Turkish TTOs, in Istanbul and Ankara. Turkish Patent Institute (TPI) Turkish Union of Chambers and Exchange (TOBB) hosted these events between the dates 27-29 February 2012, with support from AUTM experts and

112 participants from 55 different institutions attended. These reinforced ÜSIMP's "policymaking" efforts through institutions and organizations such as Ministries, TPI and TÜBİTAK.

In April 2012, a "*University-Industry Cooperation Summit*" was held with 61 representatives from 48 different institutions and organizations that currently provide university-industry cooperation services at different levels, to discuss expectations from university-industry cooperation, current problems and solutions. The results of the 26-question survey on "University-Industry Cooperation" were discussed to evaluate the problems and expectations of the institutions and organizations that serve as "Interface" organizations.

During 2012 two other Workshops were held presenting international perspectives, models and practices:

1. "*The Status of Technology Transfer Offices in the USA and Their Impact on Universities*", October 10, 2012 - The rectors of all universities in Türkiye were invited with a written invitation from the Rector of Ege University and the positive and negative impacts of technology transfer activities in the US universities as well as experiences on the current status were shared with the 35 participants from 11 Universities.
2. "*Technology Transfer in Mediterranean Europe*", October 17-18, 2012 – 56 representatives from 33 different organizations from Mediterranean European countries participated in the event. A comparative evaluation of the existing practices of these countries with similar culture, geography, socio-economic conditions and thus similar problems on Technology Transfer was carried out.

The findings of the Summit survey and the discussions of the Workshops held in collaboration with AUTM and other international partners inspired the white paper prepared outlining a "*National Model for Turkish TTOs*". This was submitted as a report to YÖK, the Ministry of Industry and Technology and TÜBİTAK.

Consequently, special TÜBİTAK support programme was announced for the national TTO model (*Figure 4*) differing from the standard approach of starting with "invention disclosure" adopted globally. The national TTO Model for Türkiye, covered a wide spectrum of services, starting with creation of awareness and training to project development, funding, industry contracts, patent applications, IP portfolio management, commercialisation and licensing, spin-off formation and entrepreneurship, and it comprised of five Modules:

- M1: Awareness and Training – social media announcements, creating awareness, sharing information and organising trainings

- M2: Access to Finance for Research Projects – project development, directing to R&D funds, managing project applications and project management / monitoring
- M3: Industrial Collaborations – matching, Contract Research and Industrial services
- M4: IPR Management, Licensing & Commercialization - including invention disclosures, patent searches, portfolio management and negotiations
- M5: Creation of Spin-off's, Start-up's & Entrepreneurship – hackathons, business development, mentoring, signposting to incubation services

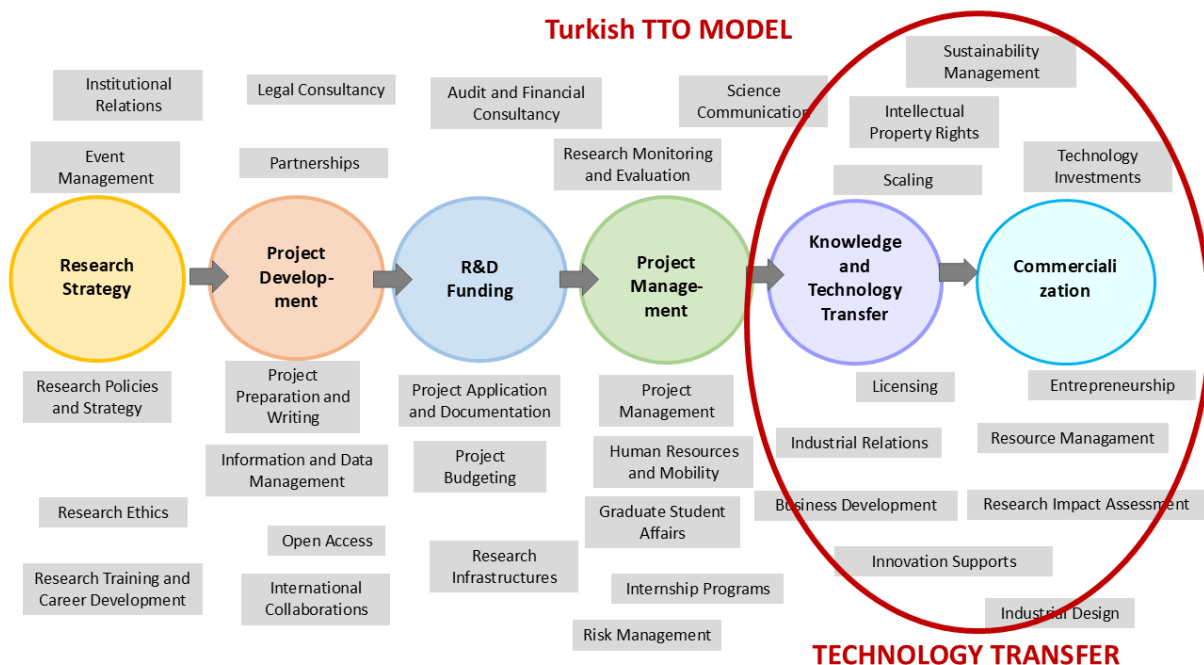


Figure 4: The holistic and Integrated Approach of the Turkish TTO Model

At the end of 2012, 10 best-practice TTOs were identified from different universities subsequent to a “TÜBİTAK 1513 TTO support” call, through a very competitive evaluation process. The selected TTOs were funded by the state for 10 years (500,000 USD per annum) based on annual performance. The 10 best practices were followed by an additional 35 by 2014. TÜBİTAK funded the development of university TTOs by 16 M USD over a period of 11 years between 2013-2024. Through this support, TTOs first focused on building their human resources capacity. This was followed by the development of institutional roadmaps, including IP policies and internal procedures.

These developments created a need within the Turkish KE/TT community for qualified “Technology Transfer Professionals”.

To complement this national movement, ÜSIMP started organizing Training Courses targeting at tech transfer professionals at beginners and advanced levels. Between 2012 and 2013 ÜSIMP organized a total of nine workshops, with approximately 700 participants, five of which were with experts invited based on the MoU signed with AUTM. These training events were followed by others organized with support from collaborating institutions such as, LES-Türkiye, ASTP and its members.

In 2015, ÜSIMP became a member of Alliance of Technology Transfer Professionals (ATTP) which opened the door for additional collaborations with peers and led to accredited courses for RTTP certification.

In addition, within the capacity of the EPO Project:

- IP awareness events were organized with Presentations to Senates of 23 different University throughout the country, as well as a presentation to the Engineering Deans’ Council of Türkiye (MDK) during their bi-annual meeting.
- A template for “*IPR Policy of Universities*” in Türkiye was prepared and made available to universities.
- 336 “Volunteer Trainers” were identified from in 4 regions. “*Patent Teaching Kit - Train the Trainer*” programme was held with TPI experts and 100 academic personnel participated in the courses.
- Translation of “*EPO Teaching Kit*” was completed and launched through collaboration of TPI and EPO.
- Under the leadership of TPI, in coordination with Higher Education Council and State Ministries, a new model was introduced for *Turkish Academic Promotion System*, in which filing, publication, search report, examination report and granted of patent will be evaluated separately.

Involving internationally recognised, experienced and prestigious organisations has tremendously enhanced the advocacy activities/efforts of the national KE/TT NGO (ÜSIMP) and has paved the way in the establishment of a sophisticated structure for a holistic and integrated ecosystem supporting R&D&I, although there is still a long way to go...

3. Outcome

- a. Outline the results so far and the expected or actual impact. Provide details of developed and/or implemented legislation as a result of your advocacy activities/efforts.

Legislation

In 2017, Türkiye abandoned “Professors’ Privilege” and a new IP law was introduced similar to the Bayh Dole Act, transferring ownership of the patents to respective universities.

This legislative change, combined with the establishment of Technology Transfer Offices (TTOs) under the TÜBİTAK 1513 support program, catalysed a rapid growth in university-originated patent applications: from just 15 in 2013 to 996 by 2018. A very detailed study on the history of IPR in Türkiye is provided by Temel (<https://www.elgaronline.com/>). The support programs, aided by legislative changes, have thus provided results within a very short span of time (*Figure 5*).

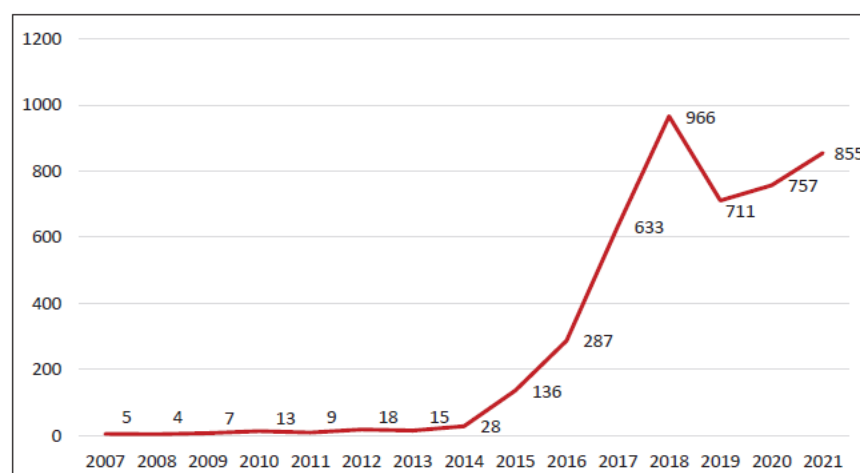


Figure 5: Number of University Patent Applications from 2007 to 2021 (Turkish Patent Report 2021, Patent Effect)

Today, despite the inherent limitations of an emerging economy, the Turkish KE/TT ecosystem has evolved to the extent that it is globally recognised.

The TÜBİTAK 1513 TTO support program also inspired and motivated other universities that did not receive support, to establish their TTOs with own resources. Currently within the Turkish ecosystem there are a total of 72 University TTOs, at different levels of maturity. Of these, 32 are supported by TÜBİTAK, while 40 provide services with own resources, with 50% operating under the legal

identity of universities (*Law 2547*) and the remaining under Technoparks (*Law 4691*) either as individual units or commercial entities. (*Figure 6*).

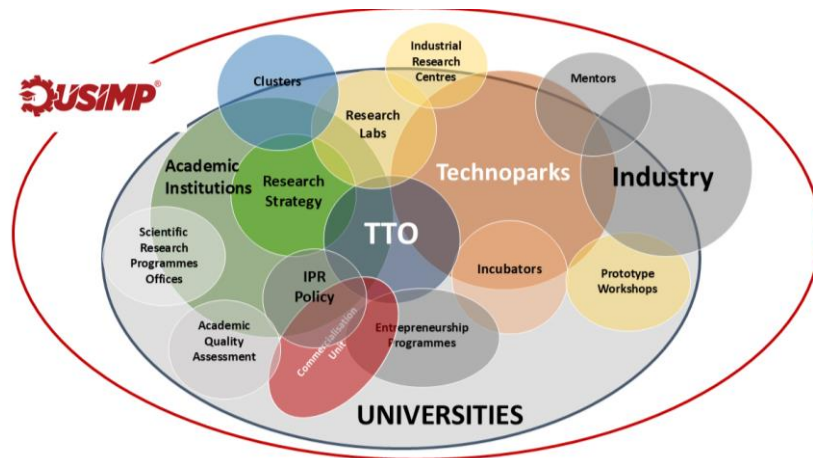


Figure 6: Ecosystem Map.

Within the general concept of “interface organisations” there are specialised offices under Industrial R&D Centres (*Law 5746*) Industrial Zones (*Law 4562*) and National Research Infrastructures (*Law 6550*) which perform equivalent services for the ecosystem. These report directly to the Ministry of Industry and Technology, have similar but separate metrics and benefit from special incentives defined by their respective laws.

These efforts have not only facilitated research commercialisation but also initiated a paradigm shift in Turkish universities, creating an awareness, forcing the development of strategies and systems for socioeconomic value creation within academic research frameworks.

Support Mechanisms to Address Challenges

Since commercialization of university patents is not straightforward for many reasons, including a lack of awareness, skills, and experience. To address these, Türkiye launched several targeted initiatives.

- **Venture Capital Funds:** A support program was introduced in 2018 to create and support technology-based startups to accelerate the commercialization of value-added products. Ten venture capital funds were established in collaboration with TTOs, technoparks, and similar organizations, to invest in promising technologies, especially in academic startups.

- **Patent-Based Technology Transfer Support Program** followed this in 2020, through which TÜBİTAK covers up to 75 percent of the royalty payment to any firm that intends to license a university patent.
- **Entrepreneurship Programs** have been developed supporting academic spin-offs and start-ups are active since 2015, under TÜBİTAK or the Ministry of Industry and Technology.

However, Türkiye is still far behind many developed countries in terms of commercialisation of university patents.

Looking at the Turkish KE/TT transfer ecosystem holistically, despite its late start compared to many developed economies, Türkiye has a very sophisticated R&D&I support mechanisms. It is currently implementing a wide spectrum of state funding programs, grants and incentives, that complement each other, addressing the different types and levels of needs of different target groups from students to entrepreneurs, academicians to SMEs and to large corporate structures (*Annex 1*).

Many of those programs created results and have contributed to Türkiye's goal of developing high value-added goods and services via R&D and innovation activities powered by university-industry collaboration. However, a comprehensive impact analysis is not available (*Temel, S. Insight Türkiye 2023 Vol. 25 / No. 1 / pp. 47-61. DOI: 10.25253/99.2023251.3*).

Training Skilled Professionals

ÜSİMP has also focussed on improving the KE/TT ecosystem by addressing human resource development.

Türkiye was the first country which officially defined and recognised the "Technology Transfer Specialist- level 6" as an occupation in 2018 as result of a four-year marathon with the "*National Vocational Qualifications Authority of Türkiye*". Subsequently, in 2024, "Standards for Qualification" consisting of the skills and competencies related to expected learning outcomes as well as the measurement and evaluation procedures have been approved in the form of the "*National Occupational Standard and Competency Framework for Technology Transfer Specialists in Türkiye*". Efforts are ongoing to establish ÜSİMP as the accreditation authority for the TT profession at national level

In parallel to the maturation of the ecosystem, ÜSİMP itself has also evolved through the experience sharing and co-learning process through interactions with its peer organisations. ÜSİMP is now an active member of international organisations such as ATP, ASTP National Associations Advisory Committee and

AUTM International Strategic Committee, continuing to learn and to contribute through its accumulated expertise of the last 25 years (Figure 7).

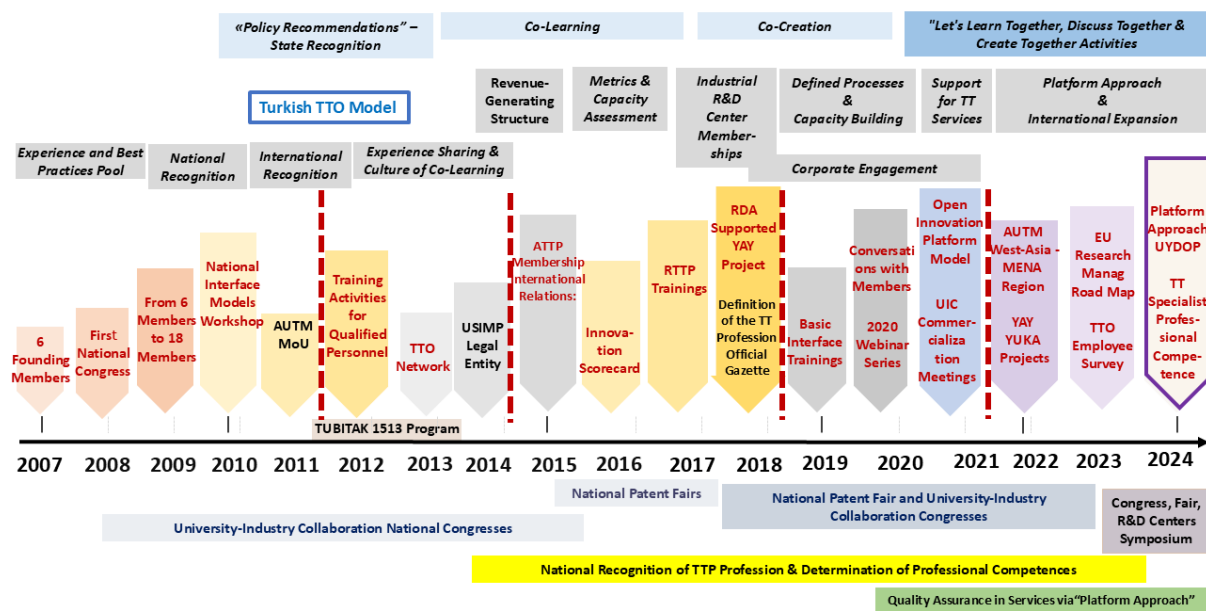


Figure 7: Evolution of ÜSIMP's Mission between 2007 – 2024.

The essential competencies and skills stated in "*National Occupational Standard and Competency Framework for Technology Transfer Specialists in Türkiye*". were aligned with the global "*RTTP Learning Outcomes and Core Competencies*" and the national "*TÜBİTAK Technology Transfer Capacity Development Support Mechanism*".

The technology transfer professionals' deficit that was so severe in 2012 is now less felt.

First Stage: 2010 - 2011

AUTM Trainings with RTTP Points

- Basics Level (12 CE), Advanced Level (12 CE) and IP Valuation (11 CE)



Second Stage: 2012 -2014

- Domestic Trainings to meet the TTO Professionals deficit (Native trainers with international participation) – 9 Trainings

Third Stage: 2015 - ATTP Membership

- Course Recognition - Trainings by Natives in Turkish covering the national legislations
- Event Recognition – USIMP National Congress & Patent Fair

Fourth Stage: 2018 - 2024 – RTTP Trainings

- 7 Accredited Courses - 23 Training Events (Trainings in Turkish delivered by RTTP holders)



Figure 8: Evolution of Professional Training Programs.

The professional trainings that have started as a result of AUTM collaboration in 2010 have led to 7 RTTP accredited training courses (*Figure 8*) provided by RTTP-holder trainers in Turkish incorporating the ecosystem-specific topics in addition to internationally accepted contents

These trainings facilitated the collection of CE points and have enabled the RTTP accreditation of 50 Turkish KE/TT professionals. ÜSIMP is leading the “snowball effect” by coordinating the one-to-one mentoring for RTTP applications to improve their quality and success rate.

Insights from Surveys and Benchmarking

However, despite all the efforts towards creating a mass of qualified experts in the ecosystem, ensuring the sustainability of the employment within the TTOs is still a challenge.

In 2023, ÜSIMP has decided that a proactive approach and direct assessment of the situation will lead to faster and more effective results for the ecosystem and sought the opinions of TTO managers and experts, through an “*Employee Engagement and Satisfaction Survey*”. The survey was sent to 301 and 183 employees (56% female) participated (61% response rate).

The aim of this study was to determine the levels of employee engagement and motivation and to identify expectations of employees, individual and institutional training and capacity building needs together with opportunities for improvement, and to propose action plans to respective state officials for increasing motivation and productivity (https://www.ÜSIMP.org.tr/uploads/calisan_bagliligi.pdf).

When the factors affecting loyalty of TTO personnel were analysed, competence and experience, work/life balance, line manager, participation in decision-making processes, team work, reliability, cultural diversity and inclusion were found to have significant contributions to employee engagement.

Table 1. Some highlights of Employee Engagement and Satisfaction Survey.

Strengths	Weaknesses	Areas for Improvement
Open and transparent communication of managers	Performance and Salary Balance	Rewards and Recognition
Freedom of Expression of Thought	Career Opportunities for High Performers	Career Development Opportunities
Involvement in Decision Making	Promotion of Qualified Employees	Position and Merit Alignment
Suitability of Work Coworkers -Team work	Adequate Human Resources	Brand Building

The survey revealed that employee loyalty in TTOs was 49% and 70% of the employees were satisfied working within their organizations particularly enjoying the co-learning environment and the team spirit. TTO employees stated that; wages and appreciation, career development, reliability, organizational structure and human resource management should be improved (*Table 1*).

Another study conducted in 2022, was to provide a basis for “Benchmarking” amongst TTOs (https://www.ÜSİMP.org.tr/uploads/istatistik_raporu_2022.pdf). The national “metrics data” annually collected officially only provides “Ranking” of institutions but does not enable the individual TTOs to compare themselves with their peers for identifying areas open for improvement for purposes of increasing their performance and competitiveness.

Therefore, this benchmarking survey was prepared by ÜSİMP’s volunteer experts to look at the ecosystem as a whole and evaluate the aspects that can be improved. The survey consisted of 43 questions under five main headings; Organizational Structure and Human Resources; University Industry Collaboration, Intellectual Property, Entrepreneurship and Financial Resources. It was sent to 68 TTOs asking data for 2022 and response was collected on a voluntary basis (15% response).

The study revealed that the range services offered varied according to the specialization of the interface, expertise of personnel, the needs of the stakeholders served, the existing infrastructure and the priorities of the affiliated institution.

63% of the staff working in TTOs have education at postgraduate level (*Figure 9*).

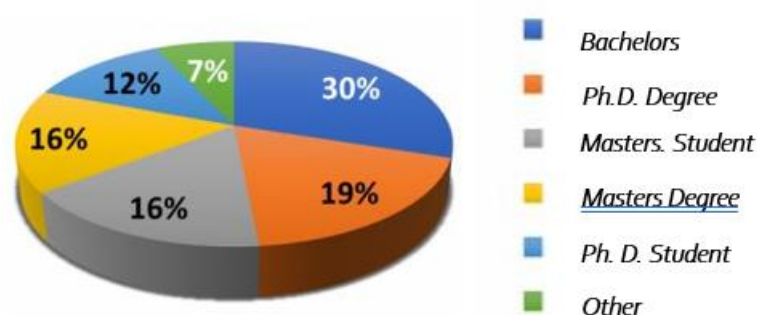


Figure 9: Education levels of Personnel at Turkish TTOs in 2022.

University-industry cooperation, intellectual property rights and commercialization services were offered by all interface structures participating in the survey. Patent applications filed by TTOs in partnership with industrial

organizations had 24% higher rate of being granted. Entrepreneurship and promotional services follow these. Some interface structures do not offer project support services

Interface structures have developed alternative income models to ensure financial sustainability (*Figure 10*). Services and consultancies provided within the scope of university-industry collaborations are among the major sources (89%) of income, where contracted research financed by private companies lead the Project activities. Licensing and commercialization revenues are also becoming a major resource for interfaces by 47%, with licensing to academic spin-offs leading the commercialisation activities, followed by licensing to large companies and SMEs.

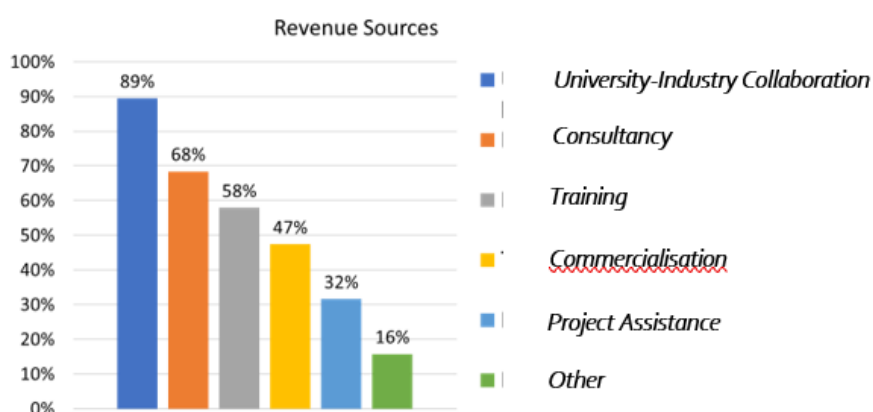


Figure 10: Revenue Sources of Turkish TTOs in 2022.

Further detailed data is available in the respective reports provided in the links above and can be accessed through ÜSIMP's web page.

Looking Ahead: Sustaining Momentum

The evolution of Türkiye's Knowledge Exchange and Technology Transfer (KE/TT) ecosystem reflects a remarkable journey from infancy to global recognition in 25 years. Guided by a combination of civil initiatives, international collaboration, and state policies and supports Türkiye has successfully established a holistic and integrated ecosystem. This transformation was driven by significant milestones, such as the establishment of TTOs, technoparks, and regional development agencies, alongside targeted programs fostering university-industry collaboration.

ÜSIMP has played a pivotal role in developing a national TTO model tailored to Türkiye's unique needs, focusing on awareness, project support, industrial collaboration, IP management, and entrepreneurship. Collaborative efforts with institutions like AUTM and EPO catalysed IP awareness and professional training

programs, resulting in a professionalized workforce with 50+ RTTP-accredited experts.

Through its proactive initiatives, ÜSİMP has been a driving force in fostering a collaborative and dynamic KE/TT ecosystem in Türkiye. Its efforts have transformed challenges into opportunities, laying the foundation for innovation-driven economic growth.

Despite these advancements, challenges remain. Surveys highlight the need for improved career opportunities, wage structures, and recognition systems within TTOs. Sustaining this momentum and fostering innovation-driven economic growth will require addressing systemic challenges, such as retaining skilled personnel, aligning with global standards, and ensuring financial sustainability.

In conclusion, ÜSİMP's strategic role and contributions exemplify the power of advocacy in triggering systemic changes for robust, innovation-driven ecosystems. Türkiye's KE/TT ecosystem may serve as an inspiring model for emerging economies, demonstrating the power of coordinated efforts, strategic partnerships, and continuous improvement.

Acknowledgements

Numerous unnamed individuals have contributed to this journey which has been continuing for quarter of a century and mentioning a comprehensive list is almost impossible. We are grateful to all.

However, it would be unfair not to highlight three names who have not spared their extended voluntary efforts and dedication.

- Professor A. Hamit Serbest who has been the President of ÜSİMP since its establishment having been voted every two years,
- Professor Hasan Mandal who has been supporting the ecosystem since the beginning and as the President of TUBTAK between 2018-2024 and
- last but not least Mr Cengiz Tarhan, the long-term Director of UCLB London (UK) who has mentored, guided and supported ÜSİMP's internationalisation efforts unconditionally.

Annex 1

TÜBİTAK R&D&I Supports

(THE SCIENTIFIC AND TECHNOLOGICAL RESEARCH COUNCIL OF TÜRKİYE)

ACADEMIC

- **1000- Funding Program for improving R&D Potential of Universities**

The purpose of this programme is to support projects under the scope of the calls specified to improve Research & Development potential of universities.

- **1001- The Scientific and Technological Research Projects Funding Program**

The purpose of this program is to support research projects that comply with scientific principles for generating new information, making scientific comments or solving technological problems.

- **1003- Primary Subjects R&D Funding Program**

The purpose of this programme is to support R&D projects conducted in Türkiye, having focused and trackable objectives in the scope of National Science Technology and Innovation Strategy and compatible with dynamics of science/technology. This programme also aims to provide coordination between such research activities.

- **1002- A Short term Support Module**

The aim of the Short-Term Support Module is to support short-term, small-budget research and development projects to be carried out in universities, research hospitals and research institutes.

- **1002- B Emergency Support Module**

The aim of the Emergency Support Module is to provide a faster evaluation process for the project proposals that will be prepared for the elimination of problems that may arise in urgent or unpredictable situations or for the project proposals that request support for supplementary research material and access to data etc. needed within the scope of an ongoing research.

- **1002 - C Fieldwork Urgent Support Program Focused on Natural Disasters**

This program aims to support short-term studies of researchers working at universities and research institutes who will carry out fieldwork in order to collect data after natural disasters such as earthquake, landslide, rockfall, flood, avalanche, fire, mucilage those take place within the borders of our country.

- **1004 - Center of Excellence Support Program**

Within the scope of the programme “High Technology Platforms”, the centres are obliged to engage in collaborations with industry for project proposals in support of a co-creation approach that is a strategic approach of TÜBİTAK. The programme is expected to pave the way to specialization of Research Infrastructures through RDI funding to a bundle of R&D projects in a specific technology area, between Technology Readiness Levels (TRL) 3-6.

- **1005 - National New Ideas And New Products Research Funding Program**

The aim of the program is to support applied research and / or experimental development projects for the purpose of developing a new national / international product / process / method / model that will decrease our dependence on foreign technology and / or increase our country's competitiveness. (for comparison table of 1005 with 1001, 1505 and 1005 programs please click here)

- **1007 - Public Institutions Research and Development Projects Support Program**

Calls are announced for the solution of problems and/or needs identified by public institutions. Within the scope of these calls, projects submitted by using the knowledge, researchers and infrastructure opportunities of universities, public R&D units and private institutions are supported.

In addition to the primary goal of meeting the R&D qualified needs of public institutions, there are 3 different subgoals of this program. These subgoals are listed below;

- ✓ Encouraging the cooperation between public, private institutions and universities,
- ✓ Targeting industrial production based on knowledge and high technology by using the results of basic and applied research in universities,
- ✓ Contributing to the employment of R&D personnel in the country.

- **3501 - Career Development Program (CAREER)**

The purpose of the Career Development Program (3501) is to encourage the studies of scientists with PhD degree, who have just started their careers by providing project support. It is a program aimed at supporting the work of the young researchers who will take the academic leadership of the 21st century, as well as maintaining the careers of the young scientists in the best way as researchers and lecturers, as well as improving our scientific level and increasing the role of science in the development of the country.

- **3005 - Innovative Solutions in Social Sciences and Humanities Research Projects Funding Program**

The aim of the Innovative Solutions in Social Sciences and Humanities Research Projects Funding Program is to provide social and public benefit in Türkiye by funding well structured, output and impact-oriented research and development activities in social sciences and humanities. This program contains three different dimensions as listed below:

- a) Developing methods, approaches and interpretations that will make innovative contributions to science, in the light of the findings of due diligence studies of the humanities through data collection and analysis.
- b) Establishing scientific foundations in the development of public policies.
- c) To reveal the social effects of technological advances.

INDUSTRIAL

1501 - Industrial R&D Projects Grant Programme

The program aims to support project-based research-technology development and innovation activities of Small and Medium-Sized Enterprises (SMEs).

The determination of the projects to be supported will also take into account the outcomes and impacts of the applicant companies (if any) within the scope of their previously supported projects, attempts to benefit from alternative non-public funding sources (especially applications to the European Union Framework Programs) and the priority of the project subject.

- **1503-R&D Project Brokerage Events Grant Program**

The purpose of 1503 Program is to bring together the representatives of universities, research institutions and industrial establishments in order to share the new project ideas and search for the possible collaborations. R&D Project Brokerage Events are national and/or international events organized to create an environment for cooperation opportunities through the active participation of representatives from universities, research and private sector organizations, and introducing their projects to each other.

- **1505-University – Industry Collaboration Support Program**

This program aims to contribute to the commercialization of knowledge and technology, which are generated within the university/public research centres and institutes in line with the industry needs, to the private sector companies which are based in Türkiye and committed to the exploitation of research results. In this program, the private sector companies are "customers" and research organizations are "implementers" in the RDI projects.

- **1507-TÜBİTAK SME R&D Start-up Support Program**

R&D is innovative activities carried out on a systematic basis in order to increase scientific and technical knowledge, and the use of knowledge in new applications (product, process). Innovation, on the other hand, refers to a set of scientific, technological, financial and commercial activities aimed at transforming an idea into an improved or new and salable product or process.

With the 1507 SME R&D Startup Support Program, small and medium-sized enterprises (SMEs) can be more competitive by improving their technology and innovation capacities, be able to carry out systematic projects, develop products with high added value, have a corporate research technology development culture, national and international support to take part more effectively in their programmes.

- **1515-Frontier R&D Laboratory Support Programme**

The 1515 Program applies an integrated perspective that extends beyond a consideration of the initial, establishment phase of the R&D laboratory. We realize that R&D laboratories flourish with long-term commitments. For this reason, the support of the 1515 Program extends to the phase of sustaining the activities of R&D laboratories in the long-run.

The 1515 Program offers an entirely grant-based financial model to cover up to 75% (for personnel expenditures, in some cases up to 100%) of the operating expenses of the R&D laboratory in Türkiye with up to 10 million TRY for each calendar year for a duration of at most 10 years.

- **1602-TÜBİTAK Patent Support Program**

1602 TÜBİTAK Patent Support Program aims to increase the number of national and international patent applications originating from our country and to increase the number of patents in our country.

- **1707-SME Support Call for Order-Based R&D Projects**

Within the scope of Order R&D calls, R&D projects that can quickly turn into products and have high commercialization potential will be supported.

Supporting R&D projects in partnership with Customer Organization, where SMEs, which constitute the majority of industrial organizations in our country, will develop innovative products/processes that are potential customers; it will both increase cooperation and enable more effective use of public resources allocated for R&D supports. This process will also contribute to the sustainable development of our country.

- **1702-Patent Based Technology Transfer Support Call**

The program aims the transfer and commercialization of patented technologies which are developed by higher education councils, research infrastructures, public enterprises, public research centers and institutes and early stage technology companies, as a result of scientific R&D and innovation activities to the capital companies located in Türkiye by licensing or assignment methods.

- **1831-Climate-informed and Green Innovation Technology Extension Program**

Within the framework of the Türkiye Green Industry Project carried out by TÜBİTAK and KOSGEB under the coordination of the Ministry of Industry and Technology with the support of the World Bank, the technical assistance services that SMEs will receive to meet the requirements within the scope of

compliance with the green transformation requirements will be supported by the 1831 Climate-informed and Green Innovation Technology Extension Program

- **1832-Call for Green Transformation in Industry**

Projects to be submitted to the call are expected to be a continuation of previously conducted R&D activities. Studies that have been carried out with the support of TÜBİTAK-TEYDEB or KOSGEB, that have reached a certain stage but have not yet been commercialized, and that include products or services that still require R&D efforts to be commercialized, are within the scope of the call. In addition, green transformation-oriented R&D and innovation projects that organizations have brought to a certain stage with their own financial resources can also be evaluated within the scope of this call, if the preliminary studies are stated in the project. Prototype development or improvement, validation and certification tests, on-site application, scaling, demonstration and field trials covering the THS 5-9 range are within the scope of the call.

- **1833-SAYEM Green Transformation Call**

Within the scope of the call, private sector, university, and public collaboration will be supported to create innovation platforms, forming a technology ecosystem for Research and Development (R&D) and Innovation Networks focused on industry. These networks aim to contribute to the sustainable growth of our country by developing high-value-added products or product groups. Under the leadership of the private sector and in collaboration with universities and the public sector, the establishment of a specialized R&D and Innovation Platform is encouraged. Through this platform, the creation of Productization Roadmaps (ÜYH) and support for Productization Programs (ÜPG) aimed at developing products or product groups for green transformation within the framework of these roadmaps will be facilitated. Consortium applications within the platform structure will be accepted for this call. The conditions for becoming the platform coordinator are specified in the call announcement.

INTERNATIONAL (BILATERAL COOPERATIONS)

- **1071 - Support Programme for Increasing Capacity to Benefit from International Research Funds and Participation in International R&D Cooperation**

The aim of 1071 Support Program is to increase the capacity of researchers of our country to apply to international support funds, to improve their success performance in applications, and to support projects within the scope of call areas to be determined for enhancing participation in bilateral and multilateral international R&D collaborations. Within the scope of the Program, the calls are open for applications from academia, academia-industry cooperation or industry in different disciplines and different types of projects. In the calls, the university-industry-public institution collaborations are encouraged in line with the bilateral and multilateral international cooperation mechanisms that support participation in the European Union Framework Programs and similar international programs. Application, evaluation and monitoring procedures of the 1071 Support Program are carried out by the **International Collaboration Projects Research Support Group (UPAG)**.

There are two types of supports within the scope of in bilateral calls :Research Projects and R&D Innovation Projects

SCIENCE & SOCIETY

- **4003 - Science Center Projects Support Program**

Science centers, which include experimental and applied activities, aim to make science and technology understandable and accessible to the society by bringing together individuals from different age groups and different backgrounds with science. TÜBİTAK aims to establish science centers in our country and

increase their number over the years, based on the foresight that science centers will play a critical role in disseminating the science culture in our society. In line with this goal, the Science Center Foundation Support Program was initiated with the decision of the Science and Technology High Council.

- **4004 - Education in Nature and Science Camps/Schools Support Program**

The program supports training programs, which facilitate the understanding of the target audience on scientific concepts, fields, processes through observation and scientific applications in natural sciences. The activities containing one or more of the following are supported by the program: experimental observations, workshops, field visits, utilization of games or arts for training, drama, measurement and evaluation, focus groups, sports, interactive training. Universities, schools, and public bodies may apply with their training projects for preschool children, primary and secondary school students, graduate and post-graduate students, teachers, governmental personnel.

- **4005 - Innovative Educational Applications Support Program**

Innovative Educational Applications Support Programme was launched in 2013 and designed for graduate students, academicians in universities, permanent teachers working actively in an institution, and employees of science centers run by public and municipal affiliates. Innovative Educational Applications Support Programme covers interactive activities that provide the students with the necessary knowledge and skills through innovative approaches to arouse interest and curiosity in their branches, develop positive attitudes, increase their motivation and enable them to learn. Since 2018, the project coordinator should have a Ph.D. degree.

- **4006 - TÜBİTAK Science Fairs Support Program**

TÜBİTAK Science Fairs Support Programme has been launched and the first call was published in 2013. This program aims to accelerate the dissemination of scientific culture therefore supports the secondary and high schools to organize Science Fairs in their schools. The Ministry of National Education and TÜBİTAK signed a protocol in 2015 for activities to promote the development of the science culture of students at secondary and high schools. The main purpose of this programme is to raise awareness about research techniques, reporting, and presentation skills among 5th-12th grade students, and to encourage them to carry out scientific studies and contribute to the development of their scientific approach skills.

- **4001 National and International Competition/Event Participation Support**

With the aim of contributing to the development of human capital, which is one of the main components of the National Technology Initiative, new support calls have been designed to encourage high school students, students at higher education levels, graduates and entrepreneurs to produce projects, to improve their projects through feedback and to participate in domestic and international scientific competitions and events.

SCIENTIFIC EVENTS

- **2223-B Grant Program for Organizing Scientific Meeting within the Country**

Within the scope of the program, support is given to meetings such as congresses, conferences, colloquiums, symposiums and workshops (including those to be held online) in order to meet scientists working in different institutions, share knowledge and experience, and prepare the ground for multidisciplinary and interdisciplinary studies.

- **2223-C Grant Program for Organizing Multiparticipant International Scientific Meeting**

Within the scope of the program, support is given to meetings such as congresses, conferences, colloquiums and symposiums (including online activities) organized in Türkiye in order to meet scientists working in different institutions, share knowledge and experience, and prepare the ground for multidisciplinary and interdisciplinary studies.

- **2223-D Grant Program for Organizing Scientific Meeting within the Framework of Bilateral Cooperation Agreement**

The scientific meetings will be supported for the purpose of development of cooperation in the fields of science, technology and innovation, joint research projects and establishing sustainable partnerships within the framework of bilateral cooperation agreements signed by Türkiye with various countries for the establishment of the domestic organized congresses, conferences, symposiums, workshops, seminars, panels, colloquia type (including online forum).

- **2237-A Grant Program for Scientific Training**

The purpose of the program is to support to the organization of theoretical and/or applied scientific events such as online courses and seminars (including online) to be organized in the country.

- **2237-B Grant Program for Project Training**

The program supports scholars who are members of a national university to organize project training at any university comprising theoretical and applied courses