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ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

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Contribution by Turkey

to the CSTD 2021-2022 priority theme on “Science, technology and innovation for sustainable urban development in a post-COVID world”

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PRIORITY THEME 2: STI for sustainable urban development in a post-COVID world

United Nations Commission on Science and Technology for Development (CSTD)

Dear CSTD member,

The [24th CSTD annual session](#) selected “STI for sustainable urban development in a post-COVID world” as one of the priority themes for its 25th session (2021-22 period). This theme addresses SDG 11 on sustainable cities and communities.

Urbanization is a complex megatrend touching on various issues including economic transformation, environmental sustainability, inclusion and poverty eradication, and resilience to natural disasters, climate change, and public health emergencies like the COVID-19 pandemic. Cities also play a central role in shaping innovation and technological diffusion. In addition, peri-urban areas present increasing challenges in terms of poverty, sustainability, mobility, and economic performance. The 19th CSTD explored innovation and urban development in 2016. Since then, accelerating technological change and its deep impact on issues such as urban planning and management, critical systems’ resilience, and citizen and community involvement make it advisable for the CSTD to update its findings and to examine and share emerging good practices and consider the latest trends in science, technology and innovation that can contribute to greener, more resilient, and more inclusive cities, particularly in light of the knowledge gained in developing innovative responses to the challenge of COVID-19.

The CSTD secretariat is drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel to be held on 17-19 November 2021. In this context, we are seeking inputs from CSTD Member States. We would be grateful if you could kindly answer the following questions based on your experience from your country or region.

1. What are the concrete challenges that your country has encountered in transition towards sustainable urban development to make cities productive, inclusive, and liveable?
2. How has the Covid-19 pandemic so far impacted on sustainable urban development, and what lessons could we draw from the Covid-19 pandemic on sustainable urban development?
3. What projects/policies has your country implemented to use science, technology, and innovation to make cities productive, inclusive and liveable? What are the main outcomes? What are the main challenges confronted while trying to implement these projects/policies?

Turkey’s Smart Cities Approach is defined in the 2020-2023 National Smart Cities Strategy and Action Plan. It aims to embrace all the dynamics of Turkey’s urbanization processes, led by the Ministry of Environment and Urbanization. Turkey’s Smart Cities Approach has been drawn up with the aim to gain the ability of interoperability by means of bringing an integrated perspective in Smart City policies at national level.

Turkey’s 2020-2023 National Smart Cities Strategy and Action Plan will give acceleration to the social, economic and environmental development of Turkey by addressing Smart City transformation needs. Focusing on “Effective and Sustainable Smart City Governance” and “Competent and Producing Smart City Ecosystem”, this strategy established its vision as “Livable and Sustainable Cities that Add Value to Life”. In line with this vision, 4 strategic goals, 9 objectives and 40 actions have been determined. Completed and ongoing actions listed below:

- Smart city guidance mechanism is established.
- Smart city capacity development works are carried out at national and local levels.
- Smart city maturity assessment works are completed.
- Guidance is provided to municipalities with the intent of preparing specified strategy and road map according to local dynamics.
- The common terminology of smart city is determined and dissemination studies are carried out.

- NSDI (Turkey National Geographic Information System) integration is carried out by reference architecture works.

Besides, Smart City Maturity Evaluation Model is built to compare the maturity levels of the cities and to determine the competencies related to smart city governance and implementations. Primary actions listed below:

- Smart City Maturity Development Program will be prepared for each city, and financial support will be provided for each program by taking into consideration the current maturity of cities and evaluating Smart City Capabilities prioritized in the national layer. These Programs will be aligned with national strategies and policies as well as city-specific strategies.
- A guidance mechanism will be established and implemented by the Ministry of Environment and Urbanization for Smart Cities.
- Intercity Guidance Mechanism will be established by taking into consideration the maturity of cities.

Some success stories can be listed as below:

- Disaster Management and Decision Support System by AFAD (Disaster and Emergency Management Presidency): The Disaster Management and Decision Support System (AYDES) was developed in order to monitor and manage disaster and emergency processes electronically and to provide decision support to managers.
- Konya Waste Scada System: Konya's Selçuklu Municipality started to monitor the garbage containers instantly with the Waste Scada System Project. Waste Scada System, which has an environmentally friendly technology, takes its energy from the sun and does not need extra wiring. The system can manage not only the level of waste in the garbage container, but also the medical waste and waste oil collection units. The technology can be easily installed on already used containers, vehicles and other elements without the need to change the existing infrastructure.
- Istanbul Metropolitan Municipality Smart Recycling Container: The smart containers recognize the plastic bottles and give transportation prizes for the plastic bottle wastes. The smart container also gives other information like waste capacity, services hours, etc. to the center.
- Başakşehir (Municipality in Istanbul) Living Lab: Başakşehir Living Lab is the first Living Lab in Turkey, which is among more than 300 Living Labs approved by the European Union ENoLL (European Network of Living Labs) organization. It was established in 2012 in order to spread information technologies and design-based innovation and entrepreneurship and to provide an environment for new business formations. Başakşehir Living Lab, also known as Başakşehir Innovation and Technology Center, opened its doors to the public and entrepreneurs in 2014. Başakşehir Living Lab is a center operating within Başakşehir Municipality, where products and services on information technologies and design can be developed and tested with real users in a real-life environment. It is an environment of experience, research and innovation that enables the society to see the real added value of new products and services.

More access stories can be reached through (in Turkish):
<https://www.akillisehirler.gov.tr/basarili-ornekler/page/6/>

On the other hand, for making cities productive, inclusive and liveable "Producing Cities Program" will be implemented by the end of this year in 13 "growth pole" cities which have growth potential like metropolises. DG for Development Agencies is responsible for the development and implementation of the program and it will be implemented by means of development agencies settled in the selected regions. The overall objective of the Program is to improve the business environment, innovation ecosystem and investment climate of these cities and in this way increase their competitiveness and create a more balanced economic and demographic habitation system all across the country. Beside of these, enhancing quality of life in these cities and job creation for qualified labor force are other expected outputs of the Program.

4. Can you provide examples of policies/projects/initiatives aimed at strengthening national STI capabilities for sustainable urban development? For example, how does your country build technology and innovative capabilities through investments in R&D and human capital? What institutional and regulatory arrangements are in place to stimulate R & D and innovation, and to effectively address unintended consequences of technological innovation, such as privacy, ethical, gender and other concerns?

Various support programs are implemented to increase the competence of the private sector as a public sector in our country. Law No. 5746 on Supporting R&D, Innovation, and Design Activities came into force as an example of one of these mechanisms, and steps were taken towards the formation of R&D and design culture and the development of R&D, innovation, and ecosystem in our country. R&D and design centers aim to develop products with high added value, quality, and standards, and to contribute to employment with the qualified personnel they employ. These centers play a major role in the development of the industry of the city where they are located and in increasing the university-industry cooperation. Thus it makes a positive contribution to urban development.

In addition, another structure that aims to strengthen the national STI capabilities for sustainable urban development is the Technology Development Zones (TDZs) established by Law No. 4691. TDZs aim to produce technological information, commercializing the produced information, raising the product quality and standard in the product and production methods, developing innovations that increase productivity and reduce production costs, ensuring the adaptation of small and medium-sized enterprises to new and advanced technologies.

TDZs provide job opportunities and accelerates the entry of foreign capital into the country that makes advanced technology investments, by increasing the competitiveness of the industry, provides significant contributions to the development of our cities. Furthermore, many support and tax incentives are provided to entrepreneurs in Technology Development Zones (Technoparks), which make significant contributions to sustainable urban development.

Besides, TÜBİTAK R&D and Innovation Support Programs involve priorities based on the Green Deal for innovative solutions to contribute to protecting ecosystems from climate change, clean and circular economy, clean, affordable and secure energy supply, green and sustainable agriculture, and sustainable smart transport. Here the objective is to ensure a more target based and comprehensive RDI support systematic, prioritization efforts within the scope of the current National STI Strategy at all levels in line with the European Green Deal.

Within the scope of TUBITAK's R&D Programme Calls, which were opened on 15 February 2021, the project proposals that are directly related to "TUBITAK Priority R&D and Innovation Topics within the Scope of Green Agreement Compliance" within the framework of the "Green Deal", in the first period of 2021 are announced to be provided with additional points within the evaluation processes. In this context 5 main research topics and total 30 R&D and innovation topics were determined in line with the European Green Deal. The 5 main green deal topics are given below.

- 1- Clean and circular economy
- 2- Sustainable smart transportation
- 3- Clean, accessible and secure energy
- 4- Climate change, environment and biodiversity
- 5- Green and sustainable agriculture: farm to fork

In addition, in the new calls for TÜBİTAK 1004 and SAYEM support, platforms targeting the areas of harmonization with the European Green Deal, including the circular economy topics with a focus on high-tech products and high-tech information-intensive services, will be prioritized. Also, within the scope of the most recent call for the Patent-Based Technology Transfer Support Call (Patent License), priority has been given to similar areas based on the European Green Deal.

Also research projects prepared under the programme of TÜBİTAK- 1001 Supporting Research Programmes including green deal topics are rewarded by extra bonus during the evaluation phase.

In addition “Smart Cities and Transportation” has been determined as one of the priority areas for the TUBITAK 2242 - University Students Research Project Contests in 2021. This programme targets :

- To encourage associate and undergraduate students to develop scientific solutions in all areas that the country needs and to develop projects that improve their knowledge and skills in this context
- To develop RDI based solution projects that will improve students' knowledge and skills

5. Could you share case studies of regional and international cooperation that have helped your country in strengthening STI capacities? Can you provide success stories in this regard?

Turkey has been actively developing programmes and initiatives to help researchers in developing innovative and conventional therapeutics and vaccines specifically tailored to tackle COVID-19. These initiatives are based on a co-creation approach and span across all actors of the ecosystem. Such an approach includes the COVID-19 Turkey Platform for vaccine and drug development, integrated with the STAR (The Intern Researcher Programme) call for young researchers, rapid calls for SMEs, support for entrepreneurs and another rapid call for the contributions of the social sciences and humanities to address the wide ranging socio-economic impacts of the pandemic.

Within the scope of the “the COVID-19 Turkey Platform”, in cooperation with the Ministry of Health, Turkish Health Institutes Presidency (TÜSEB) and Erciyes University, the first domestic inactivated COVID-19 vaccine of Turkey named “TURKOVAC” has started its Phase-3 studies, as of June 2021. It is announced by the Turkish Presidency and the Ministry of Health on 22nd of June 2021, that Phase 3 trials of the first domestically developed Covid-19 vaccine, named TURKOVAC, has inaugurated; and TURKOVAC is expected to be the first domestically developed vaccine to be available in Turkey; if its approval is fast-tracked after safety tests. Authorities has announced that the vaccine may be available for public use, hopefully before the end of 2021. The vaccine will be tried on thousands of volunteers and experts say the whole process can be concluded by November 2021. If its approval is fast-tracked, it will be fully available publicly by the start of next year. The trials will be held in more than two dozen centers across Turkey. The country also plans to export the vaccine once it is approved.

TÜBİTAK established a rapid funding mechanism specifically for SMEs that have research activities on COVID-19 diagnostics, protective and medical equipment as well as ICT solutions for the effective prevention, diagnosis and treatment of the disease. These projects are involved in a variety of research activities tailored to combatting the coronavirus pandemic, including intensive care devices, diagnostics, masks, medicines, substances and tools for disinfection, personal protective clothing, informatics applications and vaccine development and application methods. Successful projects have received support for a duration of 9 months so that a fast track to market could be facilitated.

In order to support young scholars' participation into COVID-19 research projects, a rapid call was launched. Undergraduate, graduate, doctoral and post-doctoral researchers were provided with the opportunity to conduct research in 70 publicly supported R&D projects under the Intern Researcher Scholarship Programme (STAR).

In addition to these activities, TÜBİTAK launched a call to reveal the impact of the COVID-19 pandemic on socio-economic, social and industrial developments. The call titled “COVID-19 and Society: Social, Human and Economic Effects of the Pandemic, Problems and Solutions” focused on determining the current status as well as short, medium, and long-term projections, foresight studies, forecasting and analysis studies. The scope of these effects extended to behavioral changes, equality of opportunity, accessibility of work, education, food supply and communication as well as psychological and sociological changes.

Moreover, 26 Development Agencies under the Ministry of Industry and Technology have announced a simultaneous COVID-19 Combat and Resilience Program on March 31, 2020, in order to minimize the effects of the COVID-19 outbreak. Within the scope of the program, 39 million TL support was given to 63 projects of public, private sector, universities and non-governmental organizations, and the total project size reached 48 million TL, including the co-financing amounts.

Under the series of pandemic focused hackathons, Turkey held a hackathon between the 20th and 22nd of March 2020, named Coronathon Turkey. It was a large local network partnership and many organisations, which also included the Ministry of Industry and Technology of Turkey, universities, and SMEs across the country were part of the organisation of the online event. Building on the Coronathon Turkey Competition, TÜBİTAK has continued to support entrepreneurs. Under the Individual Young Entrepreneur Programme (BiGG) of TÜBİTAK, institutions have supported 30 business plans by putting into action their accelerator programmes. Additionally, 540 Turkish entrepreneurs participated in the EUvsVirus Hackathon and took place among the top three challenge winners in various categories. 1 accelerator provided support to 1 team, which has a Turkish entrepreneur in order to meet their needs for the development and implementation of business idea.

At the international level, Turkey is already associated to European Commission's Horizon 2020 Programme, within the scope of which the calls have just been opened. Researchers and private sector in Turkey have and express intense interest in joining the international consortia for the RDI projects, which are focused on the spread of the virus, diagnosis and treatment methods; preventive vaccines, community protection and epidemic control. Within the scope of the EUREKA Programme, a joint call was launched for research and innovation projects aiming to respond to the specific needs of the COVID-19 pandemic in the short and medium term. The call is based on mutual consent between the participating funding bodies from Turkey, Canada, Austria, Denmark, Netherlands, Spain and France. Research and innovation projects related to COVID-19, particularly focusing on infection prevention and protection, sanitation technology, diagnostics and testing, therapeutics, vaccines and medicines, disease-tracking technology and analytical solutions for health systems were submitted.

Moreover, TÜBİTAK, as a more proactive approach, has initiated bilateral and multilateral cooperation actions to support joint RDI projects that will bring together Turkish researchers and researchers from countries with strategic importance in the COVID-19 pandemic. For this purpose, initial contacts have been made with TÜBİTAK's counterpart bodies in China, South Korea, Germany, England, the United States, the Netherlands, Thailand and France. Calls for joint RDI support will be launched as part of the bilateral cooperation agreements with China and Thailand.

In addition, TÜBİTAK plans to launch a multilateral call that is focussed on private sector, in collaboration with Canada, Germany, Austria, Spain, France, the Netherlands and South Korea. The objective of this call will be the improvement disease monitoring technologies utilized in personal protective equipment, disinfection materials, diagnostic and test kits and other therapeutics in the COVID-19 pandemic, diagnostic and test kits and other therapeutics in the COVID-19 pandemic.

6. Could you suggest the contact person(s) of the nodal agency responsible for projects/policies or international collaboration related to the theme? We might contact them for further inputs.

Please send your responses and any further inputs on the theme to the CSTD secretariat (stdev@unctad.org) by 6 September 2021. We look forward to receiving your valuable inputs.

Sincere regards,
CSTD secretariat