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ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

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Contribution by Türkiye

to the CSTD 2022-2023 priority theme on “Ensuring safe water and sanitation for
all: a solution by science, technology and innovation”

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PRIORITY THEME 2: Ensuring safe water and sanitation for all: a solution by science, technology and innovation

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

Dear CSTD Member,

The [25th CSTD annual session](#) selected “Ensuring safe water and sanitation for all: a solution by science, technology and innovation” as one of the priority themes for its 26th session (2022-23 period). This theme addresses SDG 6 on Clean Water and Sanitation.

Water is a most critical natural resource for human beings while clean water and sanitation is essential for human’s daily life. The latest available data shows that in 2020, 26 per cent of the world population did not have access to a safely managed drinking water service while 46 per cent did not use a safely managed sanitation service. Lack of access to safe water has clear gender impact as the burden of securing water falls disproportionately on women and girls with consequences for their income and educational opportunities. Lack of sanitation also creates specific risks for women and girls’ safety.

A range of technologies provide effective and affordable opportunities to improve the management of water and sanitation. Some are purely technological (e.g., water purification technologies, wastewater treatment technologies and increasing water availability technologies) while others relate to information and data management and sharing (e.g., hydrological observation, data exchange and forecasting).

Under this theme, the Commission will examine the key challenges facing developing countries in providing safe water and sanitation to their population. It will also highlight successful practices in applying science, technology and innovation (STI) to the management of water and sanitation services. Finally, it will explore how to enhance experience and technology sharing among countries to effectively address water and sanitation challenges.

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting on 25 -27 October 2022. We are seeking inputs from CSTD Member States. We would be grateful if your country could kindly answer the following questions:

1. What are the concrete challenges that your country has encountered in managing water and sanitation and providing access for all to these services?

When the annual usable water amount per capita in Türkiye is calculated using the address-based population data of 2017 published by TÜİK (Turkish Statistical Institute), it is estimated that this value will decrease to approximately 1.120 m³ in 2030 from its 2017 value 1.400 m³. Unless water resources are used more effectively and efficiently, Türkiye is likely to become a water-scarce country by the 2030s.

The main problems in using water resources effectively and efficiently are listed by Ministry of Agriculture and Forestry in National Water Plan (2019-2023) as below¹:

- Water is not being used efficiently and water saving is low. The loss-leakage rates are high especially in settlement areas.
- The use of technologies for water efficiency is not common.
- There are deficiencies in the saving incentive pricing mechanism.

¹<https://www.tarimorman.gov.tr/SYGM/Belgeler/NHYP%20DEN%C4%B0Z/ULUSAL%20SU%20PLAN I.pdf>

- Some chemicals directly affecting the waste water treatment plants and ultimately the water quality are being used.
2. What projects/policies has your country implemented to use the above-mentioned range of technologies and innovations or other STI, including frontier technologies (e.g., AI and drones) to address these challenges? What are the main outcomes? What are the main difficulties confronted while trying to implement these projects/policies? Pls. include the gender dimension.

Türkiye announced its 2053 Net Zero Emission Target on September 27, 2021. It is obvious that Türkiye can reach this target by developing its R&D and innovation capacity in green technologies. TÜBİTAK has a critical role R&D and innovation capacity building. TÜBİTAK has been one of the earliest institutions which announced the roadmap for the zero emission target for the year 2053, which was determined in order to fulfill our country's obligations arising from the Paris Climate Agreement. "Prioritized R&D and Innovation Topics within the Scope of Green Deal Agreement Compliance" is published at the beginning of the year 2021. With this view, TÜBİTAK gives priority to R&D projects covering areas in line with the European Green Deal in its several R&D support programmes. In its 1501 Industrial R&D Projects Grant Programme and 1507 SME R&D Start-up Support Programme TÜBİTAK prioritize projects within the scope of Green Deal Agreement Compliance gets extra points in project evaluation phase. In addition TÜBİTAK 1512 Entrepreneurship Support Programme's 2021 and 2022 calls were targeting R&D and innovation topics within the scope of European Green Deal Agreement.

Tackling climate change and realizing the "2053 zero emission target" requires university, government and industry actors to collaborate and to join efforts and capabilities. Accordingly, TÜBİTAK directed its platform based support tools to the areas of compliance with the European Green Deal for achieving impact and for mobilizing the R&D and innovation accumulation within the scope of co-creation models. In TÜBİTAK's new call for proposals of the "High Technology Platforms Support and Industry Innovation Networks Mechanism (SAYEM)", areas focusing on sustainable solutions to mitigate and adapt to climate change attracted significant attention.

3. Can your country provide examples of policies/projects/initiatives aimed at strengthening national STI capabilities in managing water and sanitation for ensuring their access by all population in your country? One example is what institutional and regulatory arrangements are in place to stimulate R & D and innovation in managing water and sanitation for access by all.

Türkiye's first climate council was organized in February 2022 with the aim to form a roadmap in line with the Paris Agreement to reach the 2053 net zero emissions target. TÜBİTAK took the responsibility for leading "Science and Technology Commission" within the context of the first Climate Council of Türkiye. Science and Technology Commission was established to foresee the technologies of the future that are required and will contribute to our country's 2053 net zero emission target and green development policy. Ground-breaking R&D and innovation-based solutions are discussed in specific themes chosen in accordance with the EU Green Deal topics. We aimed to foresee the technologies of the future for adaptation and mitigation to climate change, to enable our country to develop its R&D and innovation capacity in these technologies, and thus to turn the climate change crisis into an opportunity in the medium/long term. With a multidisciplinary holistic approach, we held more than 40 online meetings with the participation of 97 experts from universities, private sector, NGOs and public institutions. We have prioritized 34 technology main topics and 262 sub-topics consisting of targets. These main topics can be grouped in five main themes namely "Climate Change, Environment and Biodiversity", "Clean and Circular Economy", "Clean, Accessible and Secure Energy Supply", "Green and Sustainable Agriculture", "Sustainable Smart Transportation". Most of these 34 technology main topics have direct or indirect targets to manage water and sanitation for ensuring their access by all population. These targets include topics in a wide range like water supply, water treatment, agricultural water, Artificial Intelligence in water supply and agriculture, drone and satellite technologies in agriculture, water efficiency and sanitation.

4. 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?

Horizon Europe projects which are co-funded by Türkiye and European Union can be shown as examples of successful international cooperation in strengthening STI capacities. These joint projects show how stakeholders from different countries and sectors can come together to tackle problems on climate change. Below a good example to these partnerships can be found.

Water Security for the Planet (Water4All): The partnership aims to reduce water stress, better protect water resources and ensure the adaptation of water resources to global changes by 2030. The partnership proposes a portfolio of multinational, multifaceted and cross-sectoral approaches covering policy, environment, economy, technology and society to ensure water security for all in the long term².

In addition, we can find good examples of international projects among projects funded by Horizon 2020. AQUACOSM-plus and Waste2Fresh are two of them.

AQUACOSM-plus advances European mesocosm-based aquatic RI by integrating the leading mesocosm infrastructures into a coherent, interdisciplinary, and interoperable network covering all ecoregions of Europe. The project with 10 Million Euro budget started in 2020 and planned to be finished by March 2024. The Turkish partner of the project is Middle East Technical University³.

Waste2Fresh proposal addresses freshwater resource scarcity and water pollution challenges exacerbated by energy-intensive industries which are major users of fresh water (for e.g. processing, washing, diluting, heating, cooling, and transporting products) and pollute freshwater resources. 20% of global industrial water pollution comes from textile manufacturing. Breakthrough innovations are needed in energy-intensive industries to recycle water and create closed loops in industrial processes. The project with over 9 Million Euro budget started in 2020 and planned to be finished by November 2023. The Turkish partners of the project are Konya Technical University, Erak Giyim, Uludağ Environmental Technologies R&D Center⁴.

Please indicate contact person(s) responsible for projects/policies and international collaboration in this context in case we need clarification on the inputs.

Sincere regards,
CSTD secretariat

² <http://www.waterjpi.eu/joint-calls/joint-call-2022-water4all>

³ <https://www.aquacosm.eu/>

⁴ <https://waste2fresh.eu/>