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Contribution by Latvia

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

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

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

- Funding/resources - financial capacity of municipalities and citizens is not always sufficient to invest more in water supply and sewage collection and treatment. EU funds for improvement of water supply networks will not be available in the next EU financial planning period, therefore municipalities will need to use their resources to continue to improve drinking water supply services.
- Natural content of groundwater - it is complicated to comply with the standards for specific parameters, naturally occurring in groundwater: iron, manganese, sulphate, ammonium;
- Remedial measures - they are necessary to decrease concentrations of the naturally occurring substances (like iron, manganese and sulphur), but in some cases they are not implemented or slowly taken;
- Ageing infrastructure;
- Insufficient data on the status of very small water supply systems;
- Governance and organisation of water supply services.

Upgrading within the sector may be challenging due to rather large number of small providers of water supply services as well as lack of new specialists.

The Baltic Sea is one of the most polluted in the World. Approaching problems in silos, by parts, prevents us from achieving the Paris goals or a clean Baltic Sea, which we have studied every aspect for over 40 years. Currently the various departments of the Latvian Government are collecting various information/ data relating to the state/ pollution of the waters both in the Baltic Sea but also on the other main water sources including rivers and lakes. This information is collected for the needs of each department using sensors, drones, satellite imaging and this is usually collected in intervals of weeks or months in some cases. This data is then analyzed locally by the individual department and stored in the local information systems. What is needed is data sharing and communication systems/ collaborating to create one platform to see the impact human activities in agriculture, urban environment and production creates.

- Emerging pollutants;
- Further improvement of the management of individual (decentralized) wastewater collection and treatment installations;
- Sludge management of drinking water and wastewater treatment processes;
- Untreated wastewater spillages during flood events in urban areas.
- Besides the water pollution, disrupted water cycles are a global problem resulting from industrial, agricultural, urban and financial pathways that are ingrained into and root-cause of how natural ecosystem work or doesn't work towards the needs of humanity. A new mindset must allow us to sustain and regenerate the common good basis on which individual, social, and nature's needs and interests rest.

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.

- Latvia has conceptualized the new nation-brand: “Latvia – a country with a mission”. Latvia intends to adopt the mission-oriented approach to drive socio-economic development, innovations, technology transfer and international cooperation. Mission “Sea 2030” has been chosen as the first mission. With the mission “Sea 2030”, Latvia stands for the renewal of an important resource for the region - the Baltic Sea. The main goal of the mission is to address the issues of climate change, pollution, and the circular economy by creating an environment for the creation of innovative projects and ensuring sustainability, while positioning Latvia as an innovative and forward-looking country that offers its unique solutions. The mission will be an opportunity for new forms of cooperation and innovation, building on existing economic competencies and those that will be developed in the future. As a result, we plan to attract global partners, investors who stand up for the values that are important to us and the world, by solving global challenges.
- Several planning documents have been developed, for instance, “Wastewater management investment plan for 2021 - 2027”, where such an information as “Summary of the need for investment in new agglomerations” is also included. Although there are no specific references to drones, it applies in general to implementation of environmentally friendly technologies. However, as the document is newly developed, there is no information on progress of this initiative.
- Chemical quality of water expressed as percentage of samples that fail to meet the national standard for the so-called chemical indicator parameters are steadily improving over years due to improvement of drinking water purification systems – especially in relation to removal of iron and sulphates. In Latvia drinking water is free of dangerous chemical elements like arsenic and lead. Challenges related to the drinking water quality are solved through modernisation of water preparation and purification technologies and installation of water improvement equipment in water supply systems.
- The use of renewable energy resources – solar power plants have been used for the production of electricity for the self-consumption of water supply enterprises to reduce expenses on electricity. It can reduce tariffs for drinking water and enhance interest of consumers to use centralised water supply.
- A mobile pipe flushing device that collects data on water flow, pressure and turbidity. After data registration, specialists can analyze data and give proposals for upgrade to flushing process. (more information in Latvian available here: <https://www.rtu.lv/lv/universitate/masu-medijiem/zinas/atvert/izstrada-inovativu-iekartu-udens-kvalitates-monitoresanai-un-uzturesanai>)
- 3D river flood model, specific to the Ogre pilot site, is created – water monitoring solution capable of predicting flood threats for the next 24 hours. Next step is to integrate this local solution into the national level Flood Risk Information System (more information in Latvian available here: <https://www.rtu.lv/lv/universitate/masu-medijiem/zinas/atvert/rtu-izstrada-digitalu-risinajumu-savlaicigai-pludu-prognozesanai-ogres-upe>)

- New strategy of waste water sludge management – national plan to optimize existing sludge disposal practice (more information in Latvian available here: <https://goodwater.lv/aktivitates/punktveida-piesarnojums/>)

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.

- National Science, Technology Development and Innovation plan 2021-2027; State research program.
- Mission “Sea 2030” is work in progress as needs to develop new infrastructure for mission data analysis, mission governance, co-creation of projects, testbeds and legislation frame. Mission-approach and Mission Sea is approved direction for Latvia that will align all forces and stakeholders to co-develop sustainability mindset at all institutional levels. Mission Sea is the platform for creating innovative solutions in systemic way.

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?

Educational platforms for water sector workers and teachers:

- Latvia participates in Pilot Platform of Vocational Excellence Water 2.0 (Pilot PoVE Water 2.0) which is a platform of education and collaboration to produce new water sector specialists (more information: <https://www.povewater.eu/> and <https://www.lwwwwa.lv/projekti/> (in Latvian)).
- Latvian and Estonian water works associations collaborate to strengthen professional education system on water sector (more information in Latvian: <https://www.lwwwwa.lv/erasmus-programmas-projekts-profesionalas-izglitibas-attistiba-vides-sektora/>).
- Riga Technical University and the Ministry of Education of Latvia participated in Interreg Europe project “iWatermap” (“Water Technology Information Roadmaps”): meeting on Challenges in the Water Technology Sector, Ideation sessions on the possible solutions on the challenges (more information: <https://projects2014-2020.interregeurope.eu/iwatermap/news/news-article/10561/challenges-in-water-technology-sector-eu-and-latvia/> and <https://www.rtu.lv/lv/universitate/masu-medijiem/zinas/atvert/zinatnieki-uznemeji-un-politikas-veidotaji-defines-virzienus-udens-tehnologiju-nozares-attistibai-latvija-un-eiropa> (in Latvian)).