RM-DS03-IN01
(WATER SENSORS) INFRASTRUCTURE IMPROVEMENT - WATER SENSORS AT THE SANITARY FACILITIES

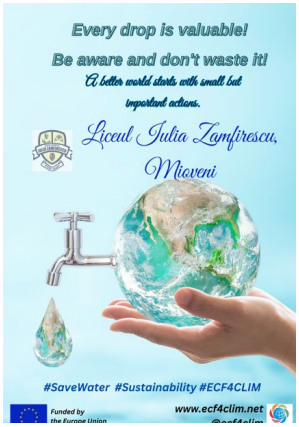
Upper secondary school

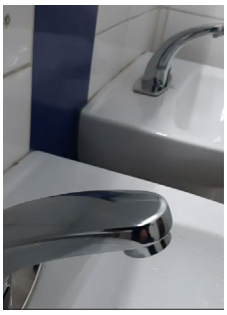
The intervention replaced traditional sinks with sensor-equipped models in all school restrooms. These motion-sensor sinks automatically control water flow, improving efficiency, hygiene, and convenience. Baseline water use was measured to assess impact accurately.

An educational component included posters in restrooms showing daily water use and promoting conservation. The ECF4CLIM team also created educational materials on water use and climate change, revised based on student and teacher feedback. These now serve as core teaching tools for integrating sustainability across subjects.

To support wider adoption, communication efforts promoted replication in other schools and homes.

Apa, o poveste educațională ...





Resources

Human	
Time	
Costs	€ € €

Relevant difficulties

While the process was ultimately successful, several challenges emerged that should be addressed to improve future replications:

- Funding and Procurement - Although water sensors are not prohibitively expensive, securing funds remains a barrier. The school relies heavily on municipal funding or must seek support through special projects. Clear budget planning and early engagement with funding bodies are essential.
- Technical Planning and Installation - The installation of water sensor requires preliminary planning regarding sensor placement, compatibility with existing plumbing infrastructure, and data connectivity. Schools typically lack in-house technical personnel with enough expertise. Coordination with suppliers and municipal utility departments is recommended to ensure proper setup.
- Maintenance and Data Reliability - Unlike passive infrastructure, water sensors require ongoing maintenance, calibration, and data verification. Schools may not have the capacity or knowledge to manage these technical needs. A maintenance plan, training for staff, and access to technical support are crucial to ensure long-term functionality.
- Educational Integration - For the intervention to have a meaningful educational impact, simply installing the sensors is not enough. Dedicated learning materials should be created to help students understand water consumption, conservation, and the broader context of environmental monitoring.
- Use of Collected Data - The effectiveness of water sensors as an educational tool depends on how the collected data is used. The information should be visualised in accessible formats and regularly shared with students and teachers.

Engagement	Connections	Change	Action
The intervention at Mioveni High School exemplified how sustainability values can be	The project illuminated the connections between infrastructure, behaviour,	By showcasing the tangible benefits of simple, sustainable technologies, the	The installation of water sensors was a direct and impactful action for

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embedded into everyday school practices. By replacing traditional taps with motion-sensor models and integrating educational tools such as posters and learning activities, the school fostered a sense of environmental responsibility among students and staff. Participants engaged in meaningful reflection about water conservation and hygiene, leading to greater self-awareness and personal responsibility.	and environmental impact. Students learned to recognise the broader implications of water usage—understanding it not just as a utility, but as part of a global sustainability challenge. Participants linked small-scale technological changes to systemic issues like resource depletion and climate change. Educational materials helped deepen this to wider ecological, social, and economic dimensions.	school inspired a vision of a more resource-efficient and environmentally conscious future. The project encouraged students to imagine how thoughtful design and infrastructure can lead to long-term ecological improvements. Teachers used the intervention as a launchpad for interdisciplinary sustainability education, helping students envision practical steps toward a more sustainable society.	sustainability, leading to an 11% reduction in water usage. Beyond infrastructure, the initiative empowered students to take ownership of their behaviours and to promote conservation practices actively. The communication and dissemination of the intervention's outcomes also ensured that its influence extended beyond the school, serving as a replicable model for sustainable action in other educational settings and communities.

Analytical Framework

Individual Competences

The water sensor intervention supported the growth of a wide range of individual competences, including sustainability literacy, critical thinking, self-reflection, and initiative. These skills empower students to become active contributors to a more sustainable society and confident advocates for environmental change in their communities.

- ✓ Acquisition of Practical Sustainability Knowledge - Participants gained concrete knowledge about environmental protection, particularly in relation to water conservation and sustainable resource use. This knowledge extended beyond theoretical understanding to include actionable behaviours in everyday life.
- ✓ Development of Critical Thinking Skills - The intervention encouraged deeper reflection on environmental challenges. Individuals demonstrated improved abilities to identify, analyse, and propose solutions to sustainability-related problems, including the systemic roots of overconsumption and waste.
- ✓ Integration of Sustainable Habits - Students reported integrating eco-conscious behaviours into their daily routines. This behavioural shift reflects the ability to turn knowledge into practice and illustrates personal ownership of sustainability values.
- ✓ Increased Self-Awareness and Reflective Thinking - Participants showed growth in self-reflection, including a heightened ability to recognise their own limitations and to evaluate the impact of their actions. This introspection supports personal responsibility and ongoing development.
- ✓ Improved Communication and Expression - The experience helped individuals gain confidence in expressing their opinions, particularly around environmental topics. This included greater clarity in articulating ideas and a stronger willingness to engage in dialogue with peers and community members.
- ✓ Personal Initiative and Influence - Students displayed greater initiative in advocating for sustainable practices, often influencing behaviours in their homes and social circles.

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Collective Competences

The water sensor intervention cultivated valuable collective competences, including teamwork, shared environmental responsibility, group problem-solving, and coordinated action. These skills contribute to building a school culture that supports sustainability and prepares participants for future collaborative efforts in both academic and real-world environmental contexts.

- ✓ Effective Teamwork and Collegial Collaboration - Participants consistently highlighted the importance of working together. The intervention created an environment where teamwork was not only necessary but valued, enhancing group cohesion and reinforcing the positive effects of collective effort.
- ✓ Shared Environmental Responsibility - The project nurtured a collective sense of care for the environment. This group-oriented attitude went beyond compliance, reflecting a sustained engagement with sustainability issues that was more impactful than isolated classroom instruction.
- ✓ Collaborative Problem-Solving and Analytical Thinking - Through joint planning and reflection—particularly among science-oriented students—the group developed collective analytical skills. This facilitated more effective project design and a deeper understanding of both the technical and environmental dimensions of the intervention.
- ✓ Common Understanding and Collective Action for Sustainability - Participants built a shared understanding of key sustainability challenges and demonstrated the capacity to act together in response. This common knowledge base and action-oriented mindset are seen as foundational for future environmental projects and initiatives.
- ✓ Enduring Impact Through Peer Learning and Group Engagement - The collective learning process reinforced the idea that long-term change is best achieved through sustained group engagement. Time spent working together on the project created deeper, more lasting learning outcomes than traditional, individual-focused lessons.

Technical-material Competences

The water sensor intervention successfully strengthened environmental and technical-material competences by connecting infrastructure improvements with practical learning. The experience fostered a better understanding of sustainable technology, encouraged responsible water use, and empowered participants to extend their conservation efforts to the broader community.

- ✓ Understanding of Sustainable Infrastructure - Participants gained concrete insights into how simple technological upgrades—such as sensor-based taps—can lead to real environmental benefits. The intervention served as a clear, observable example of sustainable infrastructure in action, reinforcing the practical connection between technology and ecological outcomes.
- ✓ Awareness and Monitoring of Resource Consumption - The intervention led to a measurable reduction in water usage—specifically, an 11% decrease—highlighting the effectiveness of consumption monitoring and efficient technology. This helped embed an understanding of how resource-saving devices can directly impact environmental performance and reduce operational costs.
- ✓ Promotion of Water Conservation Behaviour - Engagement with the project increased awareness of water as a finite and valuable resource. Participants became more mindful of daily water use and more committed to conservation practices, both within and beyond the school setting.
- ✓ Spillover Effects into the Wider Community - The behavioural changes observed extended beyond the school walls, as participants shared water-saving practices and insights with their families and local community. This dissemination of sustainable habits reflects an emerging competence in environmental communication and advocacy.

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