



# EUROPEAN POLICYBRIEF



**HORIZON-WIDERA-2022-ERA-01-70**

**TOPIC: CREATING NEW PARTNERSHIPS IN LOCAL COMMUNITIES**

**PROJECT: ICSE SCIENCE FACTORY**

**DATE: NOVEMBER 2023**

## INTRODUCTION

The ICSE Science Factory project addresses key challenges experienced in European countries and globally namely the need for skilled employees in STEM-related sectors, the need to educate today's and tomorrow's citizens for a life that relies on science and technology and the need to empower citizens to tackle challenges and find sustainable solutions. The importance to overcome these challenges was once again evident in the Covid pandemic: We need citizens who can engage in scientific discourse and have an understanding of scientific problem-solving processes. And we need qualified scientists to meet the society's key challenges. This will contribute to create a more resilient, inclusive, and democratic European society - one of the strategic orientations for R&I investments under Horizon Europe. The project also incorporates current national policy initiatives in the five countries of the consortium (Croatia, Cyprus, Germany, Portugal, Turkey), which deal, for example, with the development of transversal competences, strengthening the role of women in STEM professions or with 21st century challenges and skills. To this end, the ICSE Science factory has set itself the overriding aim to create new partnerships in local communities. These partnerships will foster improved science education for all citizens by engaging learners in real-life problem-solving situations within education, the workplace and other learning environments. This will be achieved through a unique blend of strategies, each offering a different perspective on the issue, thereby maximizing its impact. These new partnerships will thereby contribute to a learning continuum for all, and raise interest for science studies and careers, in particular among women.

## EVIDENCE AND ANALYSIS

The results, research, and experiences from previous projects, including Open Schooling, Education for Responsible Citizenship and the promotion of girls in STEM, have shown that collaboration and exchange between teachers, researchers and professionals, as promoted in Open Schooling activities, has great

potential for research and innovation and that all sectors can benefit from it. However, it also became clear that there is a **need for support** from schools to integrate new teaching and learning methods such as Open Schooling into the classroom. There is also a need to overcome stereotypes about science that discourage young people and adult learners alike from taking an interest in scientific discussions and careers. This is where the ICSE Factory concept comes in:

With the aim of increasing the level of scientific knowledge in communities and engaging students in science, the project focuses on building local networks developed different formats which are being implemented, optimized and evaluated within the ICSE Science Factory, namely the **Lighthouse Activities** (interdisciplinary workshops on real-life problems for community members) and **supported open schooling activities** in schools will provide collaborative science learning opportunities for all citizens on a local level that demonstrate the relevance of science for real-life challenges and contribute to a lifelong learning continuum. **Interactive career talks** (role models exchange with young people in the active phase of their career orientation on their science careers and working life) will raise interest in science studies and science careers among young people, with a particular focus on girls and women.

The **project evaluation will provide evidence** of the extent to which these formats meet the challenges and can contribute to achieving the overall objectives. To this end, the evaluation will analyze the extent to which students' self-efficacy and attitudes towards science change as a result of participating in the various activities, whether participation in the various activities has an impact on students' career aspirations and the extent to which parents' backgrounds (occupation, experiences with parents) influence students' career choices. In addition, the extent to which the behavior and beliefs of the participants are influenced by the different activities.

The ICSE Science Factory works to **build local sustainable networks** of schools, researchers, and professionals at the local level in the five partner countries to strengthen dialogue between often isolated fields and to share and apply research results among different stakeholders. Formats such as the ICSE **Science Factory Convention and local public fairs** across all five partner countries will be implemented and optimized to create, circulate, and use science for the benefit of society. The project will use **best practice examples** to demonstrate how to connect science and community and how these networks can be established on a permanent basis.

## POLICY IMPLICATIONS AND RECOMMENDATIONS

At this early stage of the project, based on experience from other projects and research, the following recommendations can be made to policy makers, which are also relevant to our project:

- Teachers need **supportive measures** to integrate new teaching methods such as open schooling into their daily lessons. They also need to be recognized for their initiative in introducing innovative methods, including by providing resources and time for development. This not only affects individual schools but must be introduced at a systemic level: Integrating Open Schooling into the curriculum and aligning it with education standards to drive innovation in education.
- We are confident that our project will help to develop suitable formats as supportive measures that contribute to a transformation of teaching and learning with the aim of increasing the number of scientists and the level of scientific knowledge within communities. However, **further research is needed** to comprehensively analyse the impact of open schooling and the benefit of local networks and stakeholder engagement, both on learning and on schools and education systems, which informs evidence-based policies to promote and scale up Open Schooling at the systemic level.
- Many teachers are willing to adapt, learn from one another, and engage with the new approach, embracing the learning opportunities, transforming their teaching methods, and taking positive

action. However, teachers' positive attitude alone is not enough to achieve impact on education systems. The challenge is to make open schooling for all, ensuring **widespread adoption through a systematic and holistic approach**. Mainstreaming open schooling requires going beyond individual schools and projects.

- **Stakeholder engagement** is essential to enable a more **scientifically literate** society and empower citizens to tackle challenges and find sustainable solutions: Therefore, initiatives to create synergies between all stakeholders, including teachers, students, parents, communities, researchers, entrepreneurs and industry should be further encouraged.

## SUSTAINABILITY AND LEGACY

The ICSE Science Factory project is expected to make a significant contribution to science education and the promotion of science as a valuable tool for societal problem-solving. The project's expected impacts are substantial, contributing to the EU's efforts to combat a shortfall of scientists and citizens versed in science, and fostering a lifelong learning continuum for all citizens. The project's focus on community involvement and real-life problem-solving also ensures that scientific knowledge is not just created and circulated, but also used for the benefit of society. The project will develop the following outputs which can be exploited:

- Sustainable cross-sectoral partnerships in five European countries for cross-sectoral exchange and the sharing of research results.
- Evaluated package of activities (lighthouse activities, open schooling, career talks, local fairs) tailored to raise participants motivation to learn science and to increase their knowledge of and about science.
- Reports on all activities with optimized concepts and best practices examples.
- Document on how to support mentoring across the partnership.
- Policy Briefs to inform policy on the outcomes of the project and give recommendations.
- Evaluation protocol and instruments to further inform and support similar projects and initiatives.
- Dissemination, Communication and Exploitation Plan with best practice examples further inform and support similar projects and initiatives.

## RESEARCH PARAMETERS

The evaluation concept of the ICSE Factory project is designed to see to what extent the project has reached its objectives: to foster improved science education for all citizens by creating new partnerships in local communities, such as between teachers, students, scientists, researchers, innovators, and professionals in enterprises.

The project evaluation has a twofold purpose: on one hand it is intended to measure the project's short-term impact in terms of the promotion of science literacy, perceived relevance and positive attitudes towards science and scientific careers, as well as increased sustainability awareness and individual capacity to act on environmental issues. On the other hand, it will provide a collection of multiple case studies from five European countries, illustrating how open schooling activities may be articulated to adapt to different regional contexts, as well as barriers and supportive aspects for their successful and productive implementation.

Due to the scope and ambition of the evaluation concept, a mix methods approach is used, combining quantitative and qualitative methods. To this end, specific questionnaires were developed for the main

target groups (students, teachers, scientists, parents, people from the industry) and a template for regional case studies focusing on the key concept behind the ICSE Factory project: the development of open schooling activities as means to connect school and communities and to provide more authentic, relevant, and meaningful STEM education.

## PROJECT IDENTITY

<b>PROJECT NAME</b>	ICSE Science Factory (ICSEfactory)
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<b>WEBSITE</b>	<a href="https://icse.eu/international-projects/icse-factory/">https://icse.eu/international-projects/icse-factory/</a>
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<b>FURTHER READING</b>	No publications published within the project yet



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