

MEMBER PROPOSAL

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Questions

1. Name of Proponent(s)*:

Luis Antonio Izquierdo Horna

2. Country(ies)*:

Perú

3. Title of Proposal*:

Bringing circular economy principles to public schools: A practical initiative for sustainable waste management education

4. * WHAT IS THE CENTRAL IDEA OF THE PROPOSAL?

This proposal aims to integrate industrial ecology principles into public educational institutions by developing a structured program focused on circular economy practices and sustainable waste management. The initiative will provide practical tools to optimize waste reduction, recycling efficiency, and resource recovery in schools through a combination of policy recommendations, infrastructure improvements, and community engagement strategies.

The project will develop standardized waste classification frameworks and decision-support tools that enable schools to implement effective waste segregation, identify inefficiencies, and enhance their environmental performance. By aligning with national and local waste management regulations, the initiative will ensure that schools transition from traditional waste disposal methods to more sustainable, closed-loop waste handling systems. Additionally, the initiative will establish a replicable model that can be scaled to different educational contexts, facilitating collaboration between researchers, policymakers, and school administrators. It will foster interdisciplinary engagement by integrating insights from industrial ecology, environmental policy, and sustainable resource management.

Through this proposal, the project will ultimately create long-term sustainability benefits by reducing environmental impact and promoting efficient resource utilization in public schools.

5. * WHAT IS THE BENEFIT TO THE SOCIETY AND MEMBERS?

This proposal contributes to society by enhancing waste management efficiency in public educational institutions, promoting circular economy principles, and reducing environmental impact. By implementing structured waste classification systems and optimizing resource recovery, the initiative helps schools transition toward more sustainable and responsible waste management practices. This directly supports waste minimization efforts, reduces landfill dependency, and encourages material reuse and recycling. From a broader perspective, the project strengthens community awareness and engagement in sustainable waste practices, fostering a culture of environmental responsibility among students, teachers, and administrators. By aligning with existing waste management policies, it also supports municipalities in improving their local sustainability strategies. For stakeholders involved, including researchers, policymakers, and environmental practitioners, the initiative serves as a model for applying industrial ecology principles in institutional settings. The methodology and strategies developed can be replicated in other educational institutions, enabling long-term sustainability benefits. Furthermore, the collaboration between academic institutions, schools, and government agencies ensures a scalable impact, positioning this initiative as a key contributor to sustainable resource management and policy development.

6. * WHO WOULD GOVERN OR OPERATE THE PROPOSAL?

The proposal will be governed by the Universidad Tecnológica del Perú (UTP) and led by Dr. Luis Izquierdo-Horna as part of the Colegio Seguro program, which currently focuses on seismic risk assessment in schools. This initiative will complement its existing work by incorporating solid waste management strategies into the program's scope.

The execution will involve collaboration with school administrators, municipal waste authorities, and sustainability organizations to ensure practical implementation. UTP will oversee research, methodology development, and monitoring, ensuring that waste management solutions align with national policies and institutional sustainability goals.

7. * WHAT RESOURCES ARE AVAILABLE TO SUPPORT THE PROPOSAL (e.g. Administrative, Financial, personnel)

The proposal will leverage the existing structure and resources of the Colegio Seguro program at the Universidad Tecnológica del Perú (UTP), which currently focuses on seismic risk assessment in public schools. This initiative will complement the program by incorporating solid waste management strategies.

- Administrative Resources: UTP provides institutional support, including project coordination, research development, and stakeholder engagement. The Colegio Seguro program has established relationships with school administrators, municipal authorities, and government agencies, facilitating smooth implementation.

- Financial Resources: The program operates with an annual budget of approximately 2000 euros.

- Personnel: The project involves UTP faculty members and volunteer undergraduate students.

Integrating this proposal into the existing Colegio Seguro program ensures an efficient, multidisciplinary approach, utilizing current infrastructure to enhance waste management strategies in public schools.

8. * IS THIS PROPOSAL DEFINED WITHIN A SINGLE ISIE SECTION OR ACROSS SECTIONS?

This proposal aligns with multiple ISIE sections, as it integrates concepts from circular economy, industrial ecology, and sustainable resource management.

- Circular Economy Section: The project applies circular economy principles to optimize waste reduction, recycling, and resource efficiency in public educational institutions.

- Education and Industrial Ecology Section: It promotes the application of industrial ecology in real-world educational settings, demonstrating sustainable waste practices at the institutional level.

- Sustainable Resource Management Section: The initiative supports effective resource use in schools by implementing structured waste classification frameworks and decision-support tools.

By bridging these sections, the proposal fosters interdisciplinary collaboration and ensures a holistic approach to waste minimization in public schools.

9. IF ISIE MEMBER FOR <2 YEARS, PROVIDE NAME OF SUPPORTING ISIE BOARD MEMBER OR SECTION LEADER

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10. EVIDENCE OF SUPPORT FOR THE PROPOSAL (FROM WITHIN OR ACROSS SECTIONS OR REGIONS)

The Colegio Seguro program, led by the Universidad Tecnológica del Perú (UTP), has gained recognition and institutional acceptance for its work in seismic risk assessment in public schools, receiving support from local education authorities, municipal governments, and school administrators. This program has been successfully implemented in multiple educational institutions, demonstrating strong operational capacity and stakeholder engagement. In just the first semester of 2024, Colegio Seguro directly benefited over 2,000 students and more than 100 teachers across various public schools, reflecting its extensive reach and impact.

Building on this foundation, the expansion into solid waste management aligns with the program's vision of comprehensive risk reduction and sustainability in schools. The proposal has received preliminary interest from municipal waste authorities, sustainability organizations, and educational institutions, all of which recognize the need for structured, data-driven waste management solutions that align with national and local waste policies. These stakeholders acknowledge the importance of improving waste segregation, recycling efficiency, and sustainable resource use within schools as part of

broader sustainability efforts.

Additionally, school administrators participating in Colegio Seguro have expressed willingness to integrate complementary waste management strategies, leveraging the program's established network to facilitate implementation, monitoring, and evaluation of proposed waste management improvements.

By leveraging the credibility and operational framework of Colegio Seguro, this proposal has the potential to scale its impact beyond seismic risk, offering a replicable waste management model adaptable to various educational contexts.

11. APPROXIMATE BUDGET IF APPLICABLE (Financial estimates and explanations)

The proposal will operate with an estimated budget of between €2,000 and €3,000, covering key activities such as waste management assessment, development of training materials, and pilot implementation in selected schools. Colegio Seguro program currently has an annual budget of approximately €2,000, which can partially support administrative and logistical aspects.

The budget will be used for training workshops, awareness sessions for school communities, and monitoring of waste management efficiency in schools. In addition, part of the budget will also cover technical support and honorariums for facilitators involved in training and evaluation activities.

12. OTHER

This proposal aligns with global sustainability goals, particularly SDG 4 (Quality Education) and SDG 12 (Responsible Consumption and Production), by promoting structured waste management practices within public schools. By integrating circular economy principles and industrial ecology methodologies, the initiative fosters a more sustainable approach to institutional waste handling, reducing environmental impact while strengthening community engagement.

A key aspect of the project is its scalability and adaptability. The methodology can be applied across various educational institutions, ensuring long-term benefits beyond the initial implementation phase. The collaboration between universities, local governments, and environmental organizations will enable knowledge-sharing and policy development, reinforcing sustainability efforts at both institutional and municipal levels.

Additionally, the project contributes to the evolution of the Colegio Seguro program, expanding its scope beyond seismic risk assessment to include environmental sustainability. The program's established partnerships provide a strong foundation for implementation, making it an ideal platform for integrating structured waste management solutions.

Finally, this initiative supports evidence-based decision-making, generating valuable data on waste management efficiency in schools. This information can be used to guide future policy recommendations, ensuring a lasting impact on institutional sustainability and resource optimization.